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A FRAUD EXPERT SYSTEM: ENHANCING A RULE-BASED SYSTEM WITH OBJECT AND FUNCTIONAL COMPONENTS

by

JAMES E. BOWEN, B. COM.

**A thesis submitted to the Faculty of Graduate Studies and
Research in partial fulfillment of the requirements for the
degree of**

Master of Management Studies

School of Business

Carleton University

Ottawa, Ontario

May 1992

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"A Fraud Expert System: Enhancing a Rule-Based System with Object
and Functional Components"

Submitted by James Bowen, B. Com.

in partial fulfillment of the requirements for the degree of Master of
Management Studies

Thesis Supervisor

Director, School of Business

Carleton University
May 25, 1992

"The Lilliputians look upon fraud as a greater crime than theft, and seldom fail to punish it with death; for they allege, that care and vigilance, with a very common understanding, may preserve a man's goods from thieves, but honesty hath no fence against superior cunning: and since it is necessary that there should be a perpetual intercourse of buying and selling, and dealing upon credit, where fraud is permitted or connived at, or hath no law to punish it, the honest deal is always undone, and the knave gets the advantage."

Jonathan Swift, *Gulliver's Travels*, 1726

ABSTRACT

The thesis argues that modelling of a decision problem is enhanced by combining symbolic reasoning approaches with functional processing approaches.

The research will support this thesis by presenting a specific case in which an Artificial Intelligence (AI) model is enhanced by using functional processing approaches.

The research discussed herein examines the decision problems faced by experts in the investigation of economic crimes. At first it would appear that the reasoning abilities of experts can be modelled using only the symbolic reasoning approach. However, modelling of data entities and processing of numerical information are necessary in order to determine relationships and draw conclusions.

The decision problem was modelled, computerized and the working computer prototype was a realistic representation of an investigator's decision process and knowledge-base. This representation was achieved through the extensive assessment and organization of evidence, made possible by the functional components and objects.

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1.0 INTRODUCTION

A decision can be defined as the commitment to irrevocably allocate valuable resources. Generally, a decision is made from four types of information: domain knowledge; circumstances of a particular situation; preferences amongst choices; and, a methodology for arriving at a decision (Holtzman, 1989). The methodology of arriving at decisions can be based upon a formal approach such as decision theory. Decision theory assumes the axioms of both logic and probability theory, and augments them with a set of axioms defining the preferences of the decision maker.

Decisions can be classified along a spectrum where the extreme ends correspond to structured and unstructured decisions respectively (Laudon and Laudon, 1991). Structured decisions are those that are repetitive and for which there exists a well-defined set of procedures to arrive at the decision. Unstructured decisions are usually novel and the methodology for arriving at the decision is not clearly understood or formalized. Semi-structured decisions are those at the midpoint in the spectrum.

Humans face a variety of decision problems which require abilities ranging from reasoning with symbolic concepts to the processing of data using algorithmic routines. Many different approaches to

modelling or representing the decision process have been proposed. Disciplines such as decision science, computer science, and psychology have assumed different approaches and developed corresponding models (for a detailed overview see Arkes and Hammond, 1986). Each, of necessity, has underlying assumptions about the decision process, the inputs involved, etc., limiting the application of each model to particular problem types.

Two basic modelling approaches to problem solving were developed in the discipline of computer science: one allows symbolic reasoning based on qualitative models; and, one allows only processing of data. The symbolic reasoning approaches are grouped under the term Artificial Intelligence (AI) (Winston and Shellard, 1990). AI approaches attempt to model human abilities such as speech understanding, image recognition, knowledge representation, and learning capabilities. Other approaches, within the data processing area, attempt to model functional tasks and provide data abstraction abilities. A functional processing approach concentrates on finding those tasks or functions, and their linkages, which can be represented in the form of an algorithm (Bowen and Brown, 1985). A data abstraction representation concentrates on developing data entities for manipulation (Korson and McGregor, 1990).

The thesis proposed herein is that decision processes requiring reasoning and processing capabilities can be effectively supported by information systems that combine the two basic approaches, that is,

by "hybrid" information systems. This thesis will validate this by presenting a case in which an AI model is enhanced by using functional processing approaches. This demonstration is accomplished by the development of a decision problem's representation, and by the construction and testing of a computer prototype.

Difficult and important decisions often require computer-based support. Decisions which only involve the processing and analysis of large amounts of data are supported with Management Information Systems (MIS) and Decision Support Systems (DSS) (Turban, 1990). Expert Systems (ES) are often used to support decisions which involve symbolic reasoning using the expert's knowledge. The decisions supported by MIS, DSS and Expert Systems can be strategic and sequential, but usually do not involve both qualitative and quantitative capabilities. However, some decisions demand more sophisticated support than others. Sequential decisions made in a dynamic and responsive environment belong to this category; these decisions require expertise involving quantitative and qualitative data processing and analysis. These decisions include: new technology adoption; new product development; and, those made during negotiations or economic crimes investigation.

The research discussed herein examines the decision problems faced by investigators of economic crimes. Specifically, this thesis concentrates on offenses pertaining to fraud and false pretenses

which are the most common criminal acts currently being investigated by Canadian Police. According to Webster's Dictionary, fraud is the "intentional perversion of truth in order to induce another to part with something of value or to surrender a legal right." Fraud investigation involves matching the criminal code and related case law to the particulars of an investigation. The investigator must determine whether to investigate, how to investigate, when to conclude an investigation, and whether to lay charges.

At first it would appear that the reasoning abilities of the experts can be modelled using only the symbolic reasoning approach. However, at a more detailed level, modelling of data entities and processing of numerical information are necessary in order to determine relationships and draw conclusions.

The concept of modelling decision problems presented here can be generalized to a broad range of decision problems, for example, those decisions made by a robot controlling an assembly line, by a negotiator, or by a marketing manager. Those types of decision problems have a similar structure to problems faced by the fraud investigators.

The thesis is comprised of seven sections and 4 appendices. Section 2 provides a description of fraud investigation. Section 3 discusses the computer-based decision support tools of expert systems, objects,

functional decomposition, and decision support systems. Section 4 discusses the computerized fraud investigative prototype. Section 5 outlines the experiments conducted using the prototype. Section 6 outlines the generalizability of the thesis by using examples, and presents areas of further research. Appendix A discusses the choice of expert system shell. Appendix B discusses the expert system shell used to develop the computerized fraud investigation's prototype. Appendix C outlines the systems description of the prototype. Appendix D contains the source code.

2.0 CRIMINAL INVESTIGATIONS

The following sections discuss fraud and false pretenses. The investigation of any criminal offense is based on legal reasoning. Section 2.1 outlines the basics of legal reasoning which are then used indirectly to analyze the criminal investigation presented in Sections 2.2, 2.3 and 2.4. The last section discusses support for police investigations.

2.1 Legal Reasoning

When conducting an investigation, the law enforcement officer must not only be able to interpret the criminal code, but must be able to apply the same reasoning used in formulating the decisions reached in previous legal investigations. The officer must match previous court cases to the current case in order to determine if a particular issue in the current case has previously been adjudicated, and the court's judgment thereto. This section discusses the reasoning requirements for the general legal and law enforcement area.

The legal field attempts to apply previously determined legal rules to current situations. *Stare Decisis* or the Doctrine of Precedent, used in common law jurisdictions (Anglo-Saxon legal systems) states that

similar cases are to be decided similarly (Rissland, 1988). The basic method is to first determine similarity between cases, then find the rule of law in the first case and apply it to the second case (Levi, 1949). In many situations, case law is used to interpret legislation proclaimed by the federal and provincial governments.

A case is defined as a legal dispute with supporting collections of facts and arguments decided in the court (Rissland 1988). Each case or legal problem can be decomposed into a number of components. A case, therefore, can be represented by a hierarchical structure thereby facilitating the implementation of AI-based problem solving approaches (Turban, 1990). Each component can be analyzed and solved; component solutions are then synthesized in order to reach an overall decision, e.g., a possible court ruling.

The practice of law involves two methods of reasoning: deductive; and, inductive. Deductive reasoning begins by demonstrating that a general principle applies in a specific case; thus, the general principles, conclusions, or predictions are applicable to the specific case. Inductive reasoning attempts to derive a general conclusion from specific instances and in so doing states that the results of a specific case will be suitable for all similar cases. The conclusion resulting from inductive reasoning follows, with a degree of probability attached, and the conclusion is subject to change by the introduction of counter examples. Generally, statutory law involves

deductive reasoning, and case law involves inductive reasoning (Gabrovsky, 1989).

Legal reasoning involves (Rissland, 1988):

- 1) Reasoning with cases and examples through analogy. This requires the need to assess similarities and differences between the current case and previous ones.
- 2) Handling of problems which are poorly defined, such as proving an argument through a logical analysis of subjective information;
- 3) Handling fundamental conflicts between generally accepted legal rules, which are "rules of thumb" derived from the analysis of many cases; and,
- 4) Handling change, which is defined as the constant change in the proposed solution as the underlying facts change or are proven/disproven.

In order to model legal reasoning, the criminal code should be used to provide the foundation with law reviews and cases used to complete the inductive portion (Susskind, 1987). The final stage of the legal reasoning process is predicting the court's likely

interpretation of the facts, in order to determine a possible and feasible outcome (Susskind, 1987).

Problems of legal analysis lend themselves to modelling methodologies since the underlying knowledge required in the field is well documented. The decision process can be obtained from experts, and a significant cost savings can be generated by improving the number of successful decisions made by the legal analyst (Rissland, 1988). More than twenty years ago, the potential for AI applications in legal reasoning had been recognized (Garner, 1987).

2.2 The Problem

Economic crime and the need for its investigation has been recognized for many years. While there is no clear definition of economic crime, one example is:

... an illegal act or series of illegal acts committed by nonphysical means and by concealment or guile, to obtain money or property, to avoid payment or loss of money or property, or to obtain business or personal advantage.

(Edelhert, 1970)

Fraud and false pretenses are a subset of economic crime. The Canadian Criminal Code identifies fraud as:

Every one who, by deceit, falsehood or other fraudulent means, whether or not it is a false pretence within the meaning of this Act defrauds the public or any person, whether ascertained or

not, of any property, money or valuable security, is guilty of an offence.

Section 338 (1)

The Canadian Criminal Code identifies false pretenses as:

... a representation of a matter of fact either present or past, made by words or otherwise, that is known by the person who makes it to be false and that is made with a fraudulent intent to induce the person to whom it is made to act upon it.

Section 319 (1)

This thesis concentrates on the investigation of the charges of fraud and false pretenses, which are the most frequent charges investigated by the Ottawa Anti-Rackets Branch of the OPP. However, the investigation model developed for these two charges can be easily extended to cover other charges which are described in the Canadian Criminal Code.

A charge is defined as the act of applying or "laying" a criminal code offense against a suspect. Statutes passed by the Canadian Parliament provide the initial descriptions of the criminal offenses which the investigator must use in the investigation. Case law is also used to interpret the general descriptions of the criminal codes for each specific case. The criminal code's general description can be divided into more specific components. Typically case law provides an interpretation of a component from the offense's description based upon a court ruling concerning an actual case.

A fraud charge takes the following components into account: dishonesty; deprivation; money; securities; property; and, the victim. A false pretenses charge takes all the following components into account: whether the misrepresentation was made in the past or the present; whether the misrepresentation was made in verbal statements, in writing or through conduct; whether the suspect knew of the misrepresentation; the intent of the suspect; whether the suspect's misrepresentation(s) induced the victim to act; whether the misrepresentation was made directly, indirectly or through a contract; whether the item in question was capable of being stolen; whether the victim believed the suspect; whether the suspect obtained anything from the misrepresentation; and, whether the suspect merely exaggerated.. These components are identified in Figure 2.1. Based on his experiences a police investigator interrelates the knowledge of the statutes, case law, and the legal system in order to create a successful investigation procedure.

Figure 2.1: The Components Of Fraud And False Pretenses

2.3 The Offense Of Fraud

The components of the offense of fraud are interpreted by the case law. The investigator's goal is to prove, beyond a reasonable doubt, that each component of the criminal code offense is present. In order to prove that a component is present, case law is used to determine the appropriateness of the available evidence in the current case. The evidence, in generic terms, includes verbal statements and documents which the investigating official will attest as correct and normal or abnormal.

It must be established whether a piece of evidence proves a given component of the criminal offense. However, each piece of evidence may have a different value to the investigator. The value of a piece of evidence is directly related to the court's willingness to accept a particular piece of evidence as proof. Since few pieces of evidence would be deemed as complete proof, the investigator must amass enough evidence to achieve the goal of proving the charge beyond reasonable doubt. The investigator must decide if the evidence proving a component of a charge is more substantial than the evidence disproving it.

For example, consider the "property" component of fraud. While it has been defined by case law, the problem involves determining the court's acceptance of available evidence such as verbal accounts, written documents, corporate records, and sworn oaths against the

decided definition of ownership. If the only available evidence is in the form of verbal accounts, then the investigator may determine that further evidence is required and suggest the next step in the investigative procedure.

The investigation of fraud must determine whether there is or is not sufficient evidence to support a charge of fraud, or alternatively that the available evidence is inconclusive. Likewise the investigation of false pretenses must produce one of the three conclusions: sufficient evidence, insufficient evidence or inconclusive. To arrive at a conclusion, evidence must be assessed. The assessment is judgmental and involves measurement of the strength (or impact) of each piece of evidence on the possible conclusion. The strength of all the assessed evidence is aggregated and the conclusion derived. While individual pieces of evidence have a subjective strength measurement the conclusion is considered to be certain. This may be contrasted with the use of uncertainty measures in diagnostic expert systems, in which the conclusion reflects the uncertainty of the inputs i.e. evidence.

2.4 The Fraud Investigation

The description of the investigation process for fraud and false pretenses presented in this section was developed with the assistance of members of the OPP Ottawa Anti-Rackets Branch, and on the basis of the literature (Albrecht et. al., 1982; Bologna, 1984; Bologna and Lindquist, 1987; Campbell, 1979; Comer, 1977; Driver, 1979; Dworkin, 1977; Edelhertz, 1970; Krauss and MacGahan, 1979; Somers, 1984; US Department of Justice, 1977; Wagner, 1979).

In general, the investigative problem involves a decision maker (an investigator) who must react to events not under his/her control (labelled as an environment), and must determine a probable state of these events in order to develop a plan for the investigation. The decisions about these states form a sequence which terminates in the outcome or conclusion of an investigation. Thus, fraud investigation is a sequential decision process with an unknown outcome and interdependence between its consecutive steps. This process has several interesting characteristics:

- 1) Instead of beginning with the charge and searching for evidence, the investigator begins with effect (evidence) to determine the cause (charge).
- 2) The nature of the investigation is such that delays in gathering evidence are quite common.

- 3) Although there is an uncertainty of the strength of the evidence in proving a component of an offense, the conclusion must be certain. The investigator's set of evidence must be sufficiently strong to prove the conclusion "beyond a reasonable doubt."

The process in a typical fraud investigation begins with the receipt of a complaint either funnelled through another branch of the police or from the victim (or the victim's representative). This complaint usually contains the following attributes:

- 1) Information on the items exchanged, such as land, money, goods, promises, etc.;
- 2) The chronological order of events;
- 3) A hypothesis of charge, e.g., fraud, false pretenses, stock market manipulation, etc.;
- 4) The suspect(s) name and location;
- 5) The evidence available to the victim, e.g., documents, verbal statements.

Through the analysis of the complaint, the investigating officer must then decide the following:

- 1) What most likely happened between the victim(s) and suspect(s)?
- 2) Has a chargeable situation occurred?
- 3) Is there currently enough evidence, or can enough evidence be collected after the detailed investigation, to lay a charge?

If the officer or the police branch decides that the complaint describes a situation where a charge could be laid, a detailed investigation is initiated. The detailed investigation is tailored to fit the specific charge anticipated by an investigator. In fraud investigation, the possible charges include fraudulent stock market manipulation, fraudulent sale of real estate, false prospectus, and false pretenses. These charges can cover different illegal schemes such as a planned bankruptcy, supplier fraud, cash receipts fraud, real estate fraud, NSF cheques, credit card fraud, NSF kiting¹,

¹ Kiting refers to a scheme of a short duration perpetrated against a bank. Beginning with one chequing account, the suspect makes an initial deposit and a number of withdrawals which are subsequently deposited to other accounts. The funds in the second set accounts are then withdrawn and deposited into another set of accounts. Each withdrawal is for a larger sum until all accounts are emptied into one account for final withdrawal.

employee expense report fraud, transportation or credit fraud, and mail fraud.

The task of gathering evidence is dependent on the scheme involved. For example, when investigating an NSF cheque, signature cards from the bank may be required while property deeds would be required for a real estate case. During the investigation, relationships between each piece of evidence and the suspected criminal offenses have to be determined. In addition, the officer must determine the degree of the relationship between the evidence and the offenses. For example, a letter may determine the motive and demonstrate the suspect's knowledge of the misrepresentation; however, if the letter was a form letter and signed by rubber stamp, its degree of relationship is weak.

In the course of the investigation the officer must decide when enough evidence has been gathered. This decision is based upon the officer's or supervisor's experience, and the analysis of the case by the Crown Prosecutor's office.

While the investigation may never be truly complete, the law enforcement agencies "close the file" upon transfer of the case to the Crown Prosecutor's office, or when the officer is unable to provide to the Crown Prosecutor conclusive evidence supporting the charges. For the purpose of this thesis, it is assumed that the investigation is complete when the investigator is able to reach one or more final

conclusions regarding the probable state of events e.g. that fraud has been committed whereas false pretenses has not.

2.5 The Need To Support Police Investigators

Police investigations of criminal acts involve understanding substantial quantities of data, determining which event(s) have occurred, and generating a more detailed investigative procedure to prove that the particular events have actually occurred. A police agency has estimated that the quality of an investigation has a crucial impact on the success of a prosecution. In addition, most mistakes are made during the investigation, rather than other aspects of the prosecution such as the trial, gathering and managing of evidence. It often takes years of training and experience before a police investigator becomes competent in translating the requirements imposed by the criminal code, the courts, and case law into a successful investigative approach.

The successful investigator must develop capabilities:

- 1) To handle changing, conflicting, and possibly false data;
- 2) To classify evidence in terms of proof of the offenses and case laws;

- 3) To deal with the quantity of data;
- 4) To derive the relationships between the data items and the offenses;
- 5) To solve a semi-structured problem by tailoring the investigation to the particulars of the case and laws;
- 6) To determine if the investigation is complete.

The investigator uses these capabilities to classify the evidence, to generate plans, to follow established investigative procedures, and for data management. These activities are knowledge intensive and require significant processing and reasoning capabilities on the part of an investigator. These are also the problems for which there exists a large body of available knowledge; however, this information is scattered throughout old files, literature, and between numerous investigators.

Expert systems were developed to support knowledge-intensive decision support problems; the knowledge required must be available (Winston and Shellard, 1990). Thus, an expert system could be used to augment an investigator's capabilities because of the capability to model semi-structured problems, and, develop symbolic relationships between concepts. An expert system supporting an

investigation could result in potential savings by: increasing the number of successful prosecutions; providing training for inexperienced investigators; and, standardizing the investigative procedure so that various investigators could work on the same case.

Police officers have expressed a need for the design of support tools to aid in investigations. This is because the investigative processes are becoming more and more difficult due to large and ever increasing quantities of data, conflicting and changing case law or statute law, overlapping statutes, the number of investigative approaches, deliberate attempts to frustrate the investigation, etc.

Significant amounts of resources used in unsuccessful investigations has prompted one police agency to determine the amount of time and effort an investigator spends analyzing the data of an alleged fraud. With the large number of cases being investigated per year, a significant labour and material savings is possible, although the range of saving will depend on the type of case being investigated. Both the significant cost and the social weight assigned to the successful completion of investigations justify research on improving the effectiveness of the investigative process.

3.0 METHODOLOGY AND TOOLS FOR DECISION SUPPORT

The following section discusses the knowledge engineering methodology developed by Hayes-Roth, Waterman and Lenat (1983). The methodology is considered appropriate for the development of systems to support knowledge intensive decision problems. This thesis will apply the methodology to the development of a system to support the investigation of fraud and false pretences.

The methodology developed by Hayes-Roth, Waterman and Lenat (1983) can encompass a number of different representation and structuring approaches. In this section, three such approaches will be examined for the design and development of a fraud investigation support system. The rule-based approach attempts to model the symbolic reasoning of humans. The object-oriented approach provides a method to group processing and data requirements. The functional decomposition approach models algorithmic processing requirements.

3.1 The Hayes-Roth, Waterman and Lenat Knowledge Engineering Methodology

The following briefly describes the knowledge engineering methodology developed by Hayes-Roth, Waterman and Lenat (1983).

The term "knowledge engineering" is defined as the approach of bringing "the principles and tools of AI research to bear on difficult applications problems requiring experts' knowledge for their solutions" (Feigenbaum and McCorduck, 1983). Hayes-Roth, Waterman and Lenat (1983) five stage methodology for knowledge engineering is presented below:

- 1) The first stage is entitled Identification. During this stage the decision problem and its major characteristics are identified. If the decision problem is complex, then it is broken down into component problems (Turban 1992). The scope of the decision problem, and, the goals and the objectives of the project must be narrowed down into a manageable size. Finally, in this stage the experts/participants and the project's required resources are identified.

- 2) The next stage is entitled Conceptualization. The key concepts, relations and information flow which are necessary to describe the decision problem are identified. This includes subtasks, strategies and constraints related to the decision problem.
- 3) The third stage is entitled Formalization. In this stage, the key concepts and relations are mapped into a formal representation. The knowledge-base contains the expertise of the domain experts and available published knowledge. The knowledge-base is examined to determine optimal representation (Turban 1992). The knowledge-base is organized and structured in sufficient detail to examine implementation mechanisms and control structures. Issues examined include grouping of concepts, sequencing of knowledge, the type of reasoning required and the relationships between inputs and outputs. In addition, representation approaches such as production rules, procedural code, semantic nets and frames are examined.
- 4) The fourth stage is entitled Implementation. Alternate hardware and software platforms are examined and the most appropriate is chosen. As well, the working prototype is constructed.

- 5) The final stage is entitled Testing. The system is subjected to technical tests (verification) such as ensuring all outputs could be achieved from required inputs and unit tests on individual code modules. As well, the knowledge-base is validated for such issues as accuracy and adaptability. This validation can be performed through the use of test-cases.

3.2 Rule-Based Expert Systems

In general, there are two ways to computerize semi-structured decisions. Expert systems are primarily designed to capture the domain expertise of an expert (Harmon and King, 1985; Waterman, 1985). A relatively new approach called intelligent decision systems tries to maintain a balance between domain knowledge, preferences, and circumstances (Holtzman, 1989). In addition, intelligent decision systems are designed on the basis of decision theory. The choice of an appropriate approach depends upon the requirement for uncertainty and the likelihood of the occurrence of unforeseen decisions.

In contrast to an expert system, an intelligent decision system uses probability theory to handle uncertainties. However, both systems share a common approach to symbolic reasoning. An expert system helps to bring together diverse knowledge (experience, heuristics, academic knowledge, etc.) from many possible sources to a coherent usable form. A rule-based expert system is an attempt to derive decision recommendations (Turban, 1988) based on the application of rules. A rule-based approach is most suited for knowledge-intensive decision problems (Laudon and Laudon, 1991). Rules are typically in the form (Laudon and Laudon, 1991):

IF condition is true

THEN draw conclusion or perform action.

A typical expert system is divided into the following four interacting parts: the knowledge-base, which contains the problem's facts or other static information possibly in the form of rules; the working memory, which contains relevant data for the current problem being solved; the reasoning method or inference engine, which controls the organization of the problem data and the route to be followed through the knowledge-base; and, the interface module, which interacts with the user or databases.

In general, there are two kinds of reasoning methods used in expert systems. The first type works from hypothesized conclusions toward known facts and is called "backward chaining" (Winston and

Prendergast, 1984). Backward chaining reasoning is commonly used in diagnostic situations. Reasoning which starts from a known fact(s) to prove a conclusion is called "forward chaining" (Waterman, 1985).

3.3 Objects

The object-oriented approach provides the basis for representing data and the appropriate information processing as a collection of self-contained entities called "objects." An object is an abstract representation of a set of data and processing elements which make up a complete entity in the problem domain. For example, a cup is an object with many data descriptors (shape, size, height, volume, material, type of liquid in it, etc.), and many processing elements (filling, emptying, moving, cleaning, etc.). This data modelling approach processes data for the decision problem based upon the manipulations of the objects.

The concepts related to objects consist of the following: classes; instances; messages and dynamic binding; methods; inheritance; and, polymorphism (Gomsi and Desanti, 1987). An object can be part of a hierarchy of abstraction. For example, a blue Ford Mustang belongs to a class of cars which in turn is part of a larger class of vehicles. Each layer in the class has similar properties. For example, if we stipulate that all vehicles use fuel, then through inheritance all blue Ford Mustangs use fuel as well.

A class describes the properties of its objects. Classes can be created by determining if objects or classes have overlapping sets of properties. These common properties can be factored out to create a new higher level class (Korson and McGregor, 1990). Thus, all objects in a class are similar because they share the same structure and methods and they respond to the same class messages (Hu, 1989).

A message is a request for an object to execute its procedures or processing abilities (Hu, 1989). The message usually contains the required service/procedure. While the messages must follow a uniform protocol, the content of the message will determine which procedure is to be executed (Yonezawa and Tokoro, 1987). This ability to allow the actual contents of the message to be different each time a particular message is sent, is referred to as "dynamic binding" (Korson and McGregor 1990). Thus, an object can send a variety of messages depending on its current requirements.

Inheritance represents the linkage of an existing class definition to objects. Inheritance allows each object to receive the characteristics, methods, message passing, and even the data of the class. The object can become different from other objects by the addition of its own methods, etc. Thus, the model incorporating object representation of the decision problem can be reused and extended when modifications are necessary. Inheritance allows objects to be compact since common forms or processes are derived from a higher

class. This ability to capture and encapsulate abstraction directly into a model represents a major breakthrough in computer science modelling approaches (Korson and McGregor, 1990).

Finally, inheritance also encompasses polymorphism (Korson and McGregor, 1990). Polymorphism allows each object to communicate with and receive communications from many other objects. Since the communication is through a standard protocol, this allows the development of classes and objects as a type of module which can be inserted, deleted, and changed without a major restructuring of the model. For example, the system can easily delete the Mustang object that uses diesel and replace it with one that uses alcohol.

3.4 Functional Decomposition

The functional decomposition approach (Sellers and Edwards, 1990) views the decision to be made as a functional process which changes the inputs into the required outputs.

The functional process is perceived as a composite of many functions or tasks which are executed in an algorithmic procedure. The process, at an abstract or "top" level can be modelled as a series of functions (Wirth, 1971). Each function can then be described as a series of component modules (Korson and McGregor, 1990; Meyer, 1990). These component modules are linked in a sequence and form

the foundation of the system architecture (Korson and McGregor, 1990).

In general, using functional decomposition the problem is modelled in terms of:

- 1) "What" the system should do, which is often referred to as the "logical design" (Sellers and Edwards, 1990; Hawryskiewicz, 1988);
- 2) "How" the function is performed, which is often referred to as the "physical design" (Hawryskiewicz, 1988).

3.5 Decision Support

Decision Support System (DSS) is an analytical data handling approach for semi-structured decision problems and is based on selective use of data contained within a database (Turban, 1988; Henderson, 1987).

It consists of three parts:

- 1) The first component is a modelling system; in general a model is a representation of a reality.

There are several kinds of DSS models: data; analytic; and graphic. Data models group all the data which represents an entity, etc. An analytic model refers to a set of mathematical formulas that represent, or emulate, the behaviour of an organization or situation that is subject to investigation and decision making. A graphic model is a visual image of the entity.

- 2) The second component of DSS is the interface which provides the user with access to the model in order to effect changes in assumptions or presentation of results.
- 3) The third component is the database itself.

The fraud problem, while involving a great deal of data, is not solely an analytical problem. The data contains information which must be conceptually understood and applied to rules derived from various sources. The investigator's decisions are based upon the symbolic relationships inherent in the data and the criminal code. While DSS would be able to support the development of the data models of the investigation, such as the relationships between people and documents, it would not support modelling the thinking process of the investigator.

Thus, in order to support fraud investigators, a hybrid system is required. This hybrid support system needs to combine elements of DSS and ES. The hybrid approach would use: rules to represent the symbolic reasoning of the investigator; functional processes to model strength assessment of the evidence; and, objects or data models to group criminal code components with appropriate processing and reasoning capabilities.

4.0 PROTOTYPE FRAUD EXPERT SYSTEM ASSISTANT

This section discusses the computerized prototype fraud expert system assistant. It begins by reviewing previous computerized law enforcement systems and proceeds to the description of the computerized fraud investigator's assistant by outlining its design, implementation, a sample session, and the assessment of the prototype expert system.

This section covers the remainder of the conceptualization stage of the methodology developed by Hayes-Roth, Waterman and Lenat (1983). The identification stage was discussed in Section 2.0. At that point, the scope of the decision problem of economic crimes was narrowed to two representative problems: fraud and false pretenses. Since the selected offenses are considered representative of the economic crimes more generally, the research results derived from this thesis can be generalized to economic crimes. In this section, the key concepts, relations and information flows are determined.

This section also addresses the formalization stage and the implementation stage of the methodology developed by Hayes-Roth, Waterman and Lenat (1983). The knowledge-base is examined to determine optimal representation (Turban 1992). Issues to examine

include grouping of concepts, sequencing of knowledge, the type of reasoning required and the relationships between evidence and case-law. In addition, representation approaches such as production rules and procedural code are examined. The rules are organized and structured into clusters called objects. Rules relating to each offense are organized as separate objects. As well, rules which concern corporate fraud and kiting are organized as separate objects. Moreover, each object contains its appropriate procedural code. As part of the implementation stage, the software tools are examined, for their ability to represent such knowledge and the required inferencing capabilities. The examination of the software tools are presented in Appendix A.

The fraud investigators expert system assistant (FIESA) prototype was developed and refined. Refinements include adding functionality such as the ability of FIESA to question an investigator's negative response to a question, the order in which the offenses are investigated, and, the presentation to the investigator of the most likely scheme based on the evidence.

4.1 Law Enforcement Support Systems

Most attempts in automating the law enforcement procedure have been in the area of automated data tracking (Stonebaker, 1985), fingerprinting (Newing, 1987), profile matching (Moses, 1987) or

evidence database management (Barrington, 1985). An example of evidence database management is the Home Office Large Major Enquiry System (HOLMES), which was designed for auto indexing and rapid automated retrieval of information normally kept on index cards (Barrington, 1985). However, such systems do not have reasoning abilities.

AI is slowly being recognized as a possible tool to assist the investigation due to its ability to model knowledge intensive activities such as police investigations (Paledge and Jacoby, 1989). There is a small number of law enforcement systems designed to aid the actual investigation, e.g., tracking serial killers, burglary investigation, and racketeering (Newquist, 1988). However, most AI applications have tended to focus on a specific subset of the overall investigative procedure. This focus is aimed at relieving the investigator of the data analysis portion of the investigation rather than assisting in the actual conduct of the investigation.

The Armed Robbery Eidetic Suspect Typing (AREST) ES supports the suspect's identification by trying to match a profile generated from various sources of information against a known database (Badiru, Karasz and Holloway, 1988). The AREST rule base derives a list of probable suspects by eliminating from consideration previously convicted criminals who do not match the profile of the suspect in terms of method of operation, physical description, etc.

The expert system developed by the Internal Revenue Service (IRS) Internal Security Division deals with the evidence and criminal charge components (Moses, 1987). The expert system attempts to establish links between the suspects and the people or businesses who have profiles contained in a database. For example, a search of phone records may indicate that suspect "A" made several calls to a company owned by suspect "B" who is a relative of convicted criminal "C."

The Computer Aided Criminal Trial Evidence Admissibility Heuristic (CACTUS) is a rule-based expert system to support the arrest procedure (Weiker and Shelton, 1989). This system is designed to compare the search and arrest procedure conducted to gather evidence against a checklist derived from known legal facts. The system also verifies whether evidence obtained by search or confession may be admitted to a criminal trial.

Most of the law enforcement support systems either deal with a part of the overall investigation or they support particular investigative functions. For example, the existing systems are used to support the arrest procedure, the data-base management, fingerprinting, or profile matching. There is, however, a need for investigative assistance tools which aid the overall investigative process, as opposed to supporting particular investigative functions.

4.2 The Fraud Investigator's Expert System Assistant Prototype

A prototype expert system called the Fraud Investigator's Expert System Assistant (FIESA) was developed for this thesis to encapsulate all the necessary characteristics of the investigative problem. This prototype combines rules and objects to support the investigation of fraud and false pretenses.

Police investigation is a knowledge intensive process in both breadth and depth. For example, the investigator must have detailed knowledge about a broad range of subjects such as different charges, criminal schemes, case law, etc. Therefore, an unstructured rule-based approach would result in an exponential growth in searching time (to find the right rules) as the rule-base grows (Firdman, 1986). The literature suggests that there are two control strategies to handle this problem (Firdman, 1986):

- 1) Each rule can have a confidence value assigned to it which determines its ability to be useful in resolving a current investigation.
- 2) Rules can be grouped in sets with the inference engine looking for the rules from an applicable set.

In FIESA, areas and components of fraud and false pretenses are represented as objects. An object contains rules and domain knowledge describing one component or its element, and it has processing requirements associated with the applicable offense. Using objects to group rules rectifies the problem of search time. In addition, this approach allows FIESA to determine the applicability of each offense by first examining the evidence to prove each component of a change. Thus, the strength of evidence can be measured for each component before determining whether an offense has been committed.

FIESA provides support by first identifying which components of each offense are applicable, and then examining an investigative area of fraud or false pretenses. Figure 4.1 illustrates the top down flow from components to areas, and then schemes such as planned bankruptcy. In addition, FIESA has heuristics for investigations in which the applicability of the fraud components cannot be resolved. For corporate fraud, the heuristics are used to determine whether the corporation's management had opportunities and pressures to commit fraud.

Figure 4.1: FIESA's Economic Crimes Knowledge

4.2.1 The Prototype's Design

Objects that represent the components of a charge are linked to the objects that represent either fraud or false pretenses. The following example shows, in simple pseudo-code, the object representing the concept of fraud. This object contains the description of the criminal code offense. The description consists of components like deprivation, dishonesty, etc. To determine if the conclusion about fraud can be reached, FIESA must determine if each component of fraud is applicable. In the following example, each component is examined separately to ensure its applicability.

OBJECT - FRAUD

IF Deprivation Component IS yes

AND Dishonesty Component IS yes

AND victim is Canadian citizen Component IS yes

AND Monetary Unit of Canada Component IS yes

OR Monetary Unit of other Countries Component IS yes

OR Security Component IS yes

OR Deed Component IS yes

THEN OBJECT - FRAUD output IS Yes

In order to determine a charge's component, the available evidence must be applied to the latest case law. Case law is the court's interpretation of the criminal code. Each case in the case law has

attributes or characteristics and a summary interpreting a component of an offense. The matching process involves matching the characteristics of the current case under investigation to those in the case law. A close match allows the investigator to apply the case law summary to the current case. This allows the classification of the evidence as proof or disproof. If only a partial match occurs then the investigator will be uncertain as to whether that component is proven by the available evidence necessitating the classification of the evidence by a higher authority e.g. Crown Prosecutor.

Each piece of evidence gathered by an investigator and introduced into FIESA is judged as to its significance (strength). In the prototype version, knowledge of the type and existence of the evidence rather than the evidence itself, is entered in FIESA. The investigator matches the court rulings of the applicable case law to the evidence in order that FIESA can determine the strength of the component. An overall score that reflects the strength of the charge is then updated and kept. The score is based on the relative strength of the evidence in proving an applicable component of a charge. The actual scoring system reflects the judgment of the investigating officers, whose knowledge is captured in FIESA's knowledge-base.

For example, a document with a supporting official statement is worth 5 points, an unsupported document is worth 2 points, while a verbal statement is worth 3 points. The total possible score for a charge is 65 points. This score captures the strength of all the gathered evidence to prove the charge of fraud. A score less than 65

points indicates a weaker case and the interpretation of the strength of evidence is left to the experience of the investigating officer or his/her supervisor. If FIESA determines that an offense was committed but the officer judges that the strength of evidence is too low, then the charge is dropped. The scoring system is designed in such a way that several pieces of evidence can support the same component of the charge. For example, the officer may have verbal accounts together with written documents to support the component of fraud called dishonesty.

The example below models the intent of the suspect which is a component of the charge of false pretenses. It is represented as the object "intention". In order to prove the suspect's intention, it is necessary to gather the evidence and to match it against the applicable case law. The investigator would examine the current case to determine if the transactions, evidence, etc. were similar to those described by case law. In the example below, the case law indicates that the investigator should examine contracts or evidence to determine whether the suspect intended to pay. For example, the suspect may have agreed to buy two pieces of property but has, prior to the agreement, filed for personal bankruptcy.

OBJECT COMPONENT - INTENTION**GATHER EVIDENCE**

CASE LAW (INTENTION) "In a non-payment case the onus is on the Crown to prove that at the time the accused entered into the contract he did not intend to pay for the property. Furthermore the Court may on each count consider evidence of other similar contracts, some of which are the subject of other counts on the indictment, in order to ascertain the accused state of mind and to rebut a defense of innocent intent: R. vs. GREGG, (1965) 3 C.C.C.203, 44 C.R. 341 (Sask. C.A.)."

IF EVIDENCE MATCHES CASE LAW (INTENTION)

THEN OBJECT COMPONENT - INTENTION output IS yes

Due to the mass of evidence and other information to be analyzed, there is a need to check for consistency of the responses generated by the objects representing the components. This consistency check must operate across all phases of the investigation. For example, some of the components of the criminal offenses are very similar in nature. Thus, it is necessary to ensure that the information given to the components of false pretenses match that given later to the similar components of fraud. A simple check may question information which indicates that the suspect was dishonest and exaggerated at the same time. As presented below, such a checking operation is performed by daemon objects. They are used to monitor

for inconsistencies in the information entered to FIESA by the investigator. These daemon objects are also useful when several investigators handle different portions of the case, or when the investigative team contains different people over time. An example of a daemon object is:

DAEMON - DISHONESTY VS EXAGGERATION
CONSISTENCY CHECK ACROSS OBJECT COMPONENTS
GATHER RESPONSES
IF Dishonesty AND Exaggeration
THEN DAEMON - DISHONESTY VS EXAGGERATION output
IS immediate warning

The offenses of fraud and false pretenses can be committed in many different ways, however, FIESA currently contains knowledge to deal only with NSF cheques and corporate fraud. Each of these two areas can be further divided. For example, the corporate fraud includes employee expense reports, suppliers' invoices, cash sales situations, and planned bankruptcy, while NSF cheques include both a kiting and a regular scheme. The two examples below give representations of the schemes of planned bankruptcy and of regular NSF cheques. Each object has a number of rules to guide the investigator. For example, in the case of NSF cheques, the investigator must determine that the individual had a prior knowledge of the NSF cheques. One way of proving this is to determine whether the bank sent registered letters to the individual about the overdrawn account.

OBJECT AREA - CORPORATE FRAUD planned bankruptcy

FURTHER INVESTIGATION

GATHER INPUTS

IF new person been recently introduced in a senior position

CHECK INPUT recently introduced people could be 'scapegoats' in a complex manner.

AND not been financial success.

AND reputation for trustworthiness.

AND sells tangible, highly salable items.

AND has little net worth.

AND has departed from normal credit terms with suppliers or customers.

THEN OBJECT AREA - CORPORATE FRAUD planned bankruptcy output IS yes

OBJECT AREA - INDIVIDUALS nsf

FURTHER INVESTIGATION

GATHER INPUTS

IF the individual knew about the NSFs

CHECK INPUT Examine the bank statements 2-3 months prior to the start of the NSFs to show the individual knew NSFs would happen. See if the bank sent notices of NSFs.

AND the individual had signing authority

Check both husband and wife

AND insufficient deposits

Check the dates with withdraws to ensure no errors

AND overdraft agreement

Check the agreement was enforced and understood

AND wrongful patterns

Check previous history and if checks were used for consumables.

THEN OBJECT AREA - INDIVIDUALS nsf output IS yes

If the conclusion reached by an object representing the charge component is 'unknown' (this could mean that the evidence is not available to prove this component of a charge, or applicable case law can not be found), the appropriate fraud or false pretense's object will then be unable to conclude as to whether the offense was committed. However, an investigation cannot conclude with an 'uncertain' result. In order to resolve this ambiguity, investigator's heuristics (represented as objects) are used to examine information the investigator may have, but is not necessarily able to prove, or is not able to accept as evidence. An example of such an object below deals with corporate fraud and assists in determining if the investigation should continue. This example requires the investigator to examine the structure of the corporation, its products, earnings, and industry in order to determine if previous experience

can be used in deciding about a charge. It helps to determine if the inconclusive response is a result of the suspect's manipulation of evidence, simply because no offense was committed.

OBJECT AREA - CORPORATE FRAUD uncertain

FURTHER INVESTIGATION

GATHER INPUTS

IF Urgent need for favorable earnings

**CHECK INPUT to support the high price of stock, to
meet earning forecasts**

INCREASE SCORE VALUE OF FRAUD

IF Dependence on only one or two products

INCREASE SCORE VALUE OF FRAUD

**IF Significant reduction in sales backlog indicating
future sales decline**

INCREASE SCORE VALUE OF FRAUD

**IF Sizable inventory increase without comparable sales
increases**

INCREASE SCORE VALUE OF FRAUD

**IF The use of several different banks or legal firms or
frequent switching of firms, so that none see the
entire picture**

INCREASE SCORE VALUE OF FRAUD

IF A complex business structure

INCREASE SCORE VALUE OF FRAUD

IF No effective accounting staff

INCREASE SCORE VALUE OF FRAUD

IF Involvement in atypical or 'hot' industries e.g. mining, real estate, insurance, etc.

INCREASE SCORE VALUE OF FRAUD

IF related party transactions.

INCREASE SCORE VALUE OF FRAUD

IF several different auditing firms.

INCREASE SCORE VALUE OF FRAUD

IF reluctance to give investigators data.

INCREASE SCORE VALUE OF FRAUD

IF continuous problems with regulatory agencies.

INCREASE SCORE VALUE OF FRAUD

IF high degree of computerization in the firm.

INCREASE SCORE VALUE OF FRAUD

IF rapid turnover of key employees.

INCREASE SCORE VALUE OF FRAUD

IF large/unusual year end transactions.

INCREASE SCORE VALUE OF FRAUD

IF unduly liberal accounting practices.

INCREASE SCORE VALUE OF FRAUD

IF poor accounting records.

INCREASE SCORE VALUE OF FRAUD

IF SCORE VALUE OF FRAUD IS HIGH ENOUGH

**THEN OBJECT AREA - CORPORATE FRAUD uncertain IS
continue investigation**

4.3 Prototype Implementation

Before implementing FIESA, a number of expert system shells were reviewed against a predetermined criteria list (see Appendix A for more detail). FIESA was implemented using Level 5 Object (Information Builders Inc., 1990) which is briefly described in Appendix B. In the current version of the system, the investigator is assumed to be a beginner level investigator who has completed the Police College investigator's course.

FIESA begins a session by asking the investigator to indicate which charge components are applicable based on the available evidence. In order to assist the investigator to determine if the charge component is applicable, FIESA presents relevant case law.

When the type of charge is established, FIESA continues an examination of a fraud area in more detail by asking for more information and guiding the investigator to the final conclusions. The system's final conclusions state the strength of the charge, and the most likely area of the offense. These conclusions are reached on the basis of the evidence submitted by the investigator.

The actual investigative process can take a variety of forms. For example, the investigator may have sufficient evidence at the onset to make all conclusions and therefore can lay the appropriate charges

after one session. Otherwise, the investigator may need to begin a detailed investigation in which he/she might wish to gather further evidence. In addition, upon determining that a given charge is not applicable, the investigator may pursue the next possible charge. This ability is modelled within FIESA by further analyzing negative responses obtained while attempting to prove appropriate components of a charge.

For example, in the component "intent" describing false pretenses, FIESA can query if the evidence indicates that the suspect misunderstood the complainant, or if the complainant was trying to cause the suspect trouble. At this point, an insufficient rationale provided in response to a query causes FIESA to modify the "no" response given by the investigator to "unknown," and the system continues the reasoning. However, if the rationale is sufficient FIESA recommends that the entire investigation be terminated.

The prototype uses objects, rules, and functional modules to represent in a computerized form, the two criminal code offenses of fraud and false pretenses. The technical description of the processing and reasoning functions of objects is provided in Appendix C.

The object representing fraud is linked by rules to its six components represented as Object Components (OC'). The related OC's are deprivation, dishonesty, property, securities, money, and the victim.

Each fraud OC is of a similar form and has various processing abilities attached. Each OC queries the investigator about the applicability of the OC to the current case and some OC's query concerning the generic evidence available. Each OC query gives the latest case law and other information, in order for the investigator to determine the applicability of the current case's evidence to accepted evidence. For each fraud OC there are two or more possible responses. For example, with deprivation and dishonesty there are three possible responses: 'yes', 'no', or 'unknown.'

In general, evidence can be grouped into documents, verbal statements and documents with appropriate supporting officials testifying to the document's correctness. A procedural module keeps a score of the answers about the evidence. This procedural module simply increases the evidence score as more evidence is accumulated.

The scoring scheme described in section 4.2.1 is applicable for evaluating the strength of evidence for the offenses of fraud and false pretences. The scoring scheme could be used in evaluating the applicability of the various schemes in corporate fraud and NSF cheques. However, in the FIESA prototype, the scoring scheme is only implemented for the offense of fraud and for determining the applicability of corporate management's pressure and opportunity to commit fraud. Limiting the implementation of the scheme was justified due to the scope of this thesis; however, for a complete

computerized support system a scoring scheme should be implemented for all applicable offenses.

The completion of the procedural module activates another set of rules. These rules assist in determining which scheme is involved based on the evidence, e.g., real estate, corporations, etc. Another procedural module then keeps a frequency count of the responses. This frequency count will be later presented to the investigator to indicate the most likely scheme.

Two sample OC's of false pretenses have each been linked to separate rule-based knowledge-bases. If the user indicates that the suspect either had 'intent' or knew of the misrepresentation, the knowledge-base presents the user with the relevant case law and is designed to query the user concerning the applicable case.

Due to the mass of information involved and the need to have consistent evidence, particularly when several investigators are involved, the fraud and false pretenses objects are linked to consistency checking daemons. These particular daemons compare answers given to the false pretenses' objects to those of the fraud's objects for inconsistencies. For example, can the suspect be dishonest and exaggerate at the same time? Currently, an alert is given; however, the design could be modified to activate a separate knowledge-base.

Once the false pretenses and fraud conclusions have been reached, the user is asked which scheme the charge is related to. As an aid to the user, FIESA presents which scheme was most often mentioned when the user was entering information about the evidence. The user then selects which scheme to pursue further. Currently two schemes are programmed: NSF cheques; and, corporate fraud.

The corporate fraud scheme is broken down into employee expense reports, suppliers, front end, sales invoices, and planned bankruptcy. The NSF cheque scheme is broken down into a kiting scheme and regular scheme. Each scheme is represented in a separate knowledge-base.

Since each component of an offense must be proven, a response of 'unknown' to a component will force the response of 'uncertain' to the offense. In the case of fraud, the system will begin a separate knowledge-base module derived from police experience which concerns the suspected firm's procedures and environment. FIESA will ask the investigator a set of questions, which are to be answered based upon information the investigator may have, but may not necessarily be able to prove. Procedural modules keep track of the number of appropriate responses. If a predetermined number is answered 'yes', then the system concludes that the company's management has the pressure and/or the opportunity to commit fraud.

Finally, although FIESA is a prototype it contains 36 screens which contain either information for the investigator such as applicable case law, or queries such as the applicability of a component. The screens were developed using Windows 3.0. Screens have been constructed to allow the user to scroll through the text.

FIESA contains 34 rules such as those given in Section 4.3.1. FIESA contains 20 objects which group rules, screens, and functional modules into one unit. The 20 functional modules are attached to some of the objects. These modules are of two types: some of the modules update the strength of evidence score, which is computed when FIESA is examining each offense's component; the remaining modules are used to compute such scores as the opportunity or pressure for management to commit corporate fraud. The entire prototype was written using 5,000 lines of code. Appendix D is a printout of the source code and contains details about the rules, objects and modules. The source code also contains the information and appropriate commands for Windows 3.0 to generate the screens.

5.0 EXPERIMENTS WITH FIESA

In this section, the testing stage of the methodology developed by Hayes-Roth, Waterman and Lenat (1983) is addressed. The prototype was subjected to technical tests (verification) such as ensuring that all outputs could be achieved from required inputs and unit tests on individual code modules. As well, the knowledge-base was validated for such issues as accuracy and adaptability. This validation occurred through the use of test-trials guided by the experts, a formal test-case that was developed, and an actual case.

5.1 Overview Of A Session

The system begins a session by examining each offense component in turn and requiring the investigator to indicate which offense components are applicable, based upon the available evidence. The system allows the investigator to save the session and adjourn to gather more evidence. In order to assist the investigator in determining if the component is applicable, the system presents relevant case law. Each piece of evidence entered into the system is assigned a value related to its significance. The score is based upon the "value" or ability of the evidence to prove the applicable offense component. This ability is determined from previous case law and an understanding of the court system. The total score for the

evidence is used to determine the strength of the charge and the possible area. The investigator may override the system's conclusions regarding the area of the charge.

When the type of offense is established, the system requires the investigator to examine a scheme in more detail. The system's final conclusions state the strength of the charge, and the most likely area of the offense. These conclusions are reached on the basis of the evidence submitted by the investigator. Figures 5.1 to 5.4 represent four screens which the user sees during the session. Figure 5.1 presents the screen for the fraud component of 'dishonesty'. The user is able to indicate if the component is applicable to the current case, the type of generic evidence available and can view relevant case law. Figure 5.2 presents the screen which is displayed when the response for the fraud component 'dishonesty' and the false pretenses component 'exaggeration' are inconsistent. Figure 5.3 displays some of the questions related to the planned bankruptcy object. This screen is displayed after the system has concluded that fraud may exist and the user has indicated that corporate fraud is the area of concern in the particular case. Figure 5.4 displays the final screen, which summarizes the results of the session by indicating the charges possible e. g. fraud or false pretenses and the area the case is involved e. g. planned bankruptcy.

The screenshot shows a window titled "Prototype Fraud Expert System" with a menu bar containing "File" and "OKI". The main area contains the question "Was the suspect dishonest?" with three radio button options: "Yes" (selected), "No", and "Unknown". To the right, there are three checkboxes: "Verbal statement", "Documents", and "Witness for documents". Below the question, there are two definitions: "Matter of Fact - thing that is true, truth, reality" and "False - not genuine - intentionally untrue - tending to mislead". At the bottom, a definition states: "- Deceit or intention to deceive - Victim believes as true what is false;". A vertical scrollbar is visible on the right side of the window.

Prototype Fraud Expert System

File OKI

Was the suspect dishonest?

☒ Yes
☐ No
☐ Unknown

☐ Verbal statement
☐ Documents
☐ Witness for documents

Matter of Fact - thing that is true, truth, reality

False - not genuine
- intentionally untrue
- tending to mislead

- Deceit or intention to deceive - Victim believes as true what is false;

Figure 5.1: Fraud Component - Dishonesty

Figure 5.2: Daemon - Dishonesty vs. Exaggeration

Display Editor - customer

Displays Edit Tools Character Attributes

Planned fraud by customers

Do you wish to proceed?

Has the customer business established a reputation for trustworthiness?

Does it sell tangible and highly saleable products such as furniture?

Figure 5.3: Sample Planned Bankruptcy Screen

Prototype Fraud Expert System

File OKI

10 **Fraud score out of 65**

☐ Yes
☐ No
☒ Uncertain

☐ Exaggeration
☐ Attempted False P
☐ False P
☐ UFalse Pretences
☐ Unattempted False P

☐ employee expense reports
☐ accomplice
☐ Supplier fraud
☐ supplier fraud accomplice
☐ Front end fraud
☐ false sales invoice
☐ False Sales Invoice accomplice
☐ planned bankruptcy
☐ NSF cheques
☐ NSF cheques reexamine fraud
☐ False Sales Invoice accomplice

☐ Management Pressure for fraud 12
☐ Management Opportunity for fraud 2

Figure 5.4 Sample Conclusion Screen

The next subsection briefly describes a sample case to illustrate the type of information an investigator may gather and the system's conclusions about it. The following part describes the dialogue between the investigator and FIESA about the same case.

5.2 A Simple Example

In order to illustrate the operation of FIESA, a simple case will be examined. In this case, the initial information from the alleged victim's complaint indicates that Supplier A of computer components has not been paid for a large order to Company X (a PC clone manufacturer). Company X has recently gone out of business and Supplier A feels it has been cheated since it was not paid but assured that it would be. The investigator, in a more detailed discussion with Supplier A, determines the following. Company X and Supplier A have had a history of good transactions; the order in question is large and unusual; Supplier A received Company X's Purchase Order in Canadian funds marked "urgent"; Supplier A had heard informally that Company X was having financial problems but was assured by Company X officials that these problems were temporary and payment would be made after the usual 30 days; the order was delivered to Company X with the bill of sale; and finally, Company X has since gone bankrupt and that particular shipment of computer parts was used in computers which were sold prior to bankruptcy.

Some of the above information is immediately required by FIESA for determining which offense should be investigated and some will be required later for examining particular schemes in more detail. Since false pretenses is the most frequent case investigated by the OPP, FIESA begins by attempting to determine if the charge of false pretenses is applicable. As the session progresses, many of the components are proved to be applicable such as the fact that the purchase order induced the victim to act. However, FIESA drops this line of reasoning since one of the components of false pretenses cannot be proven. The charge of false pretenses must relate to a promise to be fulfilled in the past or present. Since the date of payment is in the future this excludes the component concerning the time of the transaction and consequently eliminates the charge of false pretenses as a possibility. FIESA now proceeds to examine the possibility of fraud. It queries for information such as that concerning the suspect's honesty, as illustrated in the sample rules in Section 4.3. Figure 5.5 presents the format of the interaction between the investigator and FIESA for gathering relevant evidence.

The screenshot shows a window titled "Prototype Fraud Expert System". Inside the window, there is a menu bar with "File" and "OKI". The main content area has the question "Was the suspect dishonest?". Below this question are three radio buttons: "Yes", "No", and "Unknown", with "Unknown" being selected. To the right of these are three checkboxes: "Verbal statement", "Documents", and "Witness for documents", all of which are currently unchecked. Below the radio buttons, there is a definition for "Matter of Fact - thing that is true, truth, reality". To the right of this, there is a definition for "False - not genuine", which includes sub-points: "- intentionally untrue" and "- tending to mislead". At the bottom left, there is a definition for "Deceit or intention to deceive - Victim believes as true what is false;". On the bottom right, there is a vertical scrollbar.

Prototype Fraud Expert System

File OKI

Was the suspect dishonest?

☐ Yes
☐ No
☒ Unknown

☐ Verbal statement
☐ Documents
☐ Witness for documents

Matter of Fact - thing that is true, truth, reality

False - not genuine
- intentionally untrue
- tending to mislead

- Deceit or intention to deceive - Victim believes as true what is false;

Figure 5.5: Fraud Component - Dishonesty

In this stage of the investigation, the investigator does not have evidence from the suspect; the only evidence is in the form of the victim's verbal statements. Thus, the investigator's response to a query is "unknown". For this particular case, we will assume that the suspect's honesty will remain "unknown". After analyzing all the evidence for each component of fraud, FIESA cannot conclude that fraud was committed since the suspect's honesty is unknown.

FIESA now begins a more detailed investigation designed to increase the likelihood of the applicability of the charge of fraud, as illustrated in the sample rules in Section 4.3. It suggests that several pieces of information be collected by the investigator from Company X. At this point, using the new information, FIESA attempts to apply rules to determine if the management of Company X had the

pressure or opportunity to commit fraud. Figure 5.6 presents the format of the interaction between the investigator and FIEISA for gathering additional information which might not be considered as evidence but is useful.

It would suggest examining Company X's books and holding discussions with the company's former employees. Upon completing an on-site investigation, the following points are determined by the investigator: the accounting staff of the company are competent; there appears to be substantial competition in the computer market; the company has suffered from heavy losses with a high debt load; profits are low; and, the other activities of the company are normal.

The screenshot shows a window titled "Prototype Fraud Expert System". Below the title bar is a menu bar with "File" and "OK!". The main area contains five questions, each with two radio button options: "yes" and "no".

Question	yes	no
Heavy investments or losses?	☒	☐
Insufficient working capital?	☒	☐
High debt?	☒	☐
Reduced ability to acquire credit?	☒	☐
Profit squeeze (costs and expenses rising higher and faster than sales)	☒	☐

Figure 5.6: Management: Pressure and Opportunity

With this information, FIESA is able to determine that the opportunity and pressure to commit fraud seems to be low, thus the earlier conclusion about the low possibility of fraud is maintained.

The FIESA conclusions presented in Figure 5.7 indicate that:

- 1) The offense of false pretenses was not committed;
- 2) FIESA is uncertain whether fraud was committed;
- 3) The strength of supporting evidence is low;
- 4) Management pressure and opportunity to commit a corporate fraud crime was low.

Prototyp Fraud Expert System

File OK

10 Fraud score out of 65

☐ Yes
☐ No
☒ Uncertain

☐ Exaggeration
☐ Attempted False P
☐ False P
☐ UFalse Pretences
☐ Uetempted False P

☐ employee expense reports
☐ accomplice
☐ Supplier fraud
☐ supplier fraud accomplice
☐ Front end fraud
☐ false sales invoice
☐ False Sales Invoice accomplice
☐ planned bankruptcy
☐ NSF cheques
☐ NSF cheques reexamine fraud
☐ False Sales Invoice accomplice

☐ Management Pressure for fraud 12
☐ Management Opportunity for fraud 2

Figure 5.7: Sample Case Conclusion Screen

At this point, the investigator must determine whether continuation of the investigation is likely to be worthwhile.

This next part describes, in pseudo-code, the interaction or dialogue between the investigator and FIESA, as well as conclusions throughout the session.

5.3 Dialog With FIESA

As outlined in Figure 2.1, FIESA contains knowledge of all 10 components of false pretenses; each component is represented as an object. A session begins by examining false pretenses. As shown below, the first component examined is the one concerning the timing of the transaction(s).

Object - Misrepresentation

IF Past/Present IS Yes

AND Words, Writing, conduct IS yes

AND Suspect Knew IS yes

AND Suspect Intent IS yes

AND Induce Victim IS yes

AND Directly, Indirectly Contract IS yes

AND Capable of Being Stolen IS yes

AND Believe Suspect IS yes

AND Obtained Anything IS yes
AND Exaggeration IS no
THEN Object - Misrepresentation IS yes
IF Past/Present IS no
AND Words, Writing, conduct IS no
AND Suspect Knew IS no
AND Suspect Intent IS no
AND Induce Victim IS no
AND Directly, Indirectly Contract IS no
AND Capable of Being Stolen IS no
AND Believe Suspect IS no
AND Obtained Anything IS no
OR Exaggeration IS no
THEN Object - Misrepresentation IS no
IF Past/Present IS unknown
OR Words, Writing, conduct IS unknown
OR Suspect Knew IS unknown
OR Suspect Intent IS unknown
OR Induce Victim IS unknown
OR Directly, Indirectly Contract IS unknown
OR Capable of Being Stolen IS unknown
OR Believe Suspect IS unknown
OR Obtained Anything IS unknown
OR Exaggeration IS unknown
THEN Object - Misrepresentation IS unknown

FIESA: *Was the representation made in the
Past or Present?*

INVESTIGATOR: *No*

From the following rule, it can be then determined that the component of false pretenses concerning timing of the transactions is false, e.g., not applicable. As such it can be concluded that the charge of false pretenses is not possible.

Object Component - past/present
IF representation was past or present IS yes
THEN Object Component - past/present IS yes
IF representation was past or present IS no
THEN Object Component - past/present IS no
IF representation was past or present IS unknown
THEN Object Component - past/present IS unknown

The investigation of the charge of fraud can now begin. As shown in Figure 2.1 FIESA contains all six components of fraud. All six components are represented in the object-fraud as shown below:

Object - Fraud
IF Deprivation Component IS yes
AND Dishonesty Component IS yes
AND victim is Canadian citizen Component IS yes

AND Monetary Unit of Canada Component IS yes
OR Monetary Unit of other Countries Component IS yes
OR Security Component IS yes
OR Deed Component IS yes
THEN Object - Fraud IS Yes
IF Deprivation Component IS no
OR Dishonesty Component IS no
OR victim is Canadian citizen Component IS no
OR Monetary Unit of Canada Component IS no
OR Monetary Unit of other Countries Component IS no
OR Security Component IS no
OR Deed Component IS no
THEN Object - Fraud IS no
IF Deprivation Component IS no
OR Dishonesty Component IS unknown
OR victim is Canadian citizen Component IS unknown
OR Monetary Unit of Canada Component IS unknown
OR Monetary Unit of other Countries Component IS unknown
OR Security Component IS unknown
OR Deed Component IS unknown
THEN Object - Fraud IS unknown

Each component must be true for the offense of fraud to have been committed. Each of the components is represented as an object. As shown in Appendix C, most of the components display applicable case

law and attempt to determine if the component is applicable, as well as the type of the evidence available and the area indicated. The first component of the charge of fraud to examine is the one concerning the suspect's honesty. This particular component is attached to the daemon - dishonesty vs. exaggeration shown in Section 4.3.1. However, since the offense of false pretenses was dismissed, before the investigator was queried about the possibility of the victim having exaggerated, this daemon will not become active.

FIESA: *Was the suspect dishonest?*

INVESTIGATOR: *Unknown*

From the investigator's response, it can be determined that fraud is a possibility but the investigation should continue to examine the other components of the charge of fraud. The system continues and it queries the investigator about the next component of object-fraud including questions about the type of evidence and scheme.

FIESA: *Was the victim deprived by the suspect?*

INVESTIGATOR: *Yes*

FIESA: *What type of evidence is available to support your response: Verbal statements, documents or documents supported by official?*

INVESTIGATOR: *Documents*

FIESA: *What type of scheme does the evidence appear to involve: non disclosure, obtaining credit, financial statements, false statements in writing, forgery, credit cards, personation, mail, NSF, obtaining transportation, corporate fraud, real estate, or stock market manipulation?*

INVESTIGATOR: *Obtaining credit and corporate fraud*

It can be determined, as shown below, that the component of fraud dealing with deprivation is applicable and thus the investigation should continue.

Object Component - Deprivation

IF Deprivation IS yes

AND ASK What type of Evidence?

AND ASK What kind of Scheme?

AND ACTIVE Evidence Score Module

AND ACTIVE Scheme Score Module

THEN Object Component - Deprivation IS yes

IF Deprivation IS no

THEN Object Component - Deprivation IS no

IF Deprivation IS unknown

THEN Object Component - Deprivation IS unknown

As well, it can be determined that score measuring the strength of the evidence to support the charge of fraud is three points, due to the fact that the evidence available is "documents". Thus, the functional module is used to increase the strength of charge score. Moreover, it can be determined whether the scheme involves corporate fraud or obtaining credit. Each of the components of fraud have a similar structure to Object Component - Deprivation including the component dealing with dishonesty. With the exception of the one dealing with the victim, it does not have any scoring modules attached.

FIESA: *What type of money was involved: Canadian, other countries, or cheques?*

INVESTIGATOR: *Cheques*

FIESA: *What type of evidence is available to support your response: Verbal statements, documents or documents supported by official?*

INVESTIGATOR: *Documents supported by official.*

FIESA: *What type of scheme does the evidence appear to involve: non disclosure, obtaining credit, financial statements, false statements in writing, forgery, credit cards, personation, mail, NSF, obtaining transportation, corporate fraud, real estate, or stock market manipulation?*

INVESTIGATOR: *Corporate fraud*

It can now be determined that the component of fraud dealing with payment is applicable and thus the investigation should continue. As well, the fraud score raises to eight points since the evidence available is documents supported by officials. The belief that the scheme involves corporate fraud is now sustainable since it has been mentioned more times than obtaining credit.

FIESA: *What types of properties were involved: real + personal, property in possession, postage + stamps or deeds + instruments of title?*

INVESTIGATOR: *Property in possession*

FIESA: *What type of evidence is available to support your response: Verbal statements, documents or documents supported by official?*

INVESTIGATOR: *Verbal*

FIESA: *What type of scheme does the evidence appear to involve: non disclosure, obtaining credit, financial statements, false statements in writing, forgery, credit cards, personation, mail, NSF, obtaining transportation, corporate fraud, real estate, or stock market manipulation?*

INVESTIGATOR: *Corporate fraud*

It can now be determined that the component of fraud dealing with properties exchanged is applicable and thus the investigation should continue. As well, the fraud score raises to ten points since the evidence available is verbal. The belief that the scheme involves corporate fraud, since it has been mentioned more times than obtaining credit, is still valid.

FIESA: *Was the victim Canadian, from another country or the general public?*

INVESTIGATOR: *Canadian*

It can now be determined that the component of fraud dealing with the identity of the victim, is applicable and thus the investigation should continue.

FIESA: *What securities were involved: stocks, deposits, debentures, bonds, bills, notes, other security, lands, good, or interest in property?*

INVESTIGATOR: *Unknown*

It can now be determined that the applicability of the component of fraud dealing with security is unknown and thus the charge of fraud is still possible. A more detailed investigation to resolve the uncertainty involving the charge of fraud must now begin. Before continuing on, FIESA queries the investigator concerning the type of scheme that should be pursued.

FIESA: *It appears that the charge of fraud may be applicable and it may be corporate fraud. Should the investigation continue looking at corporate fraud?*

INVESTIGATOR: *Yes*

FIESA: *Corporate fraud seems to be likely. However, since some components of fraud are unknown,*

the next phase of the investigation will examine management's pressure and opportunity to commit fraud. The following questions can be answered by an on-site visit or interview of the suspect company's management. The information to be gathered might not be considered as evidence but will help resolve the question if fraud was committed.

As seen in Figure 2.1, FIESA contains two separate objects which are activated when the conclusion to the fraud object is "unknown" and the area involved is corporate fraud. In this sample case, this conclusion was the result of the investigator indicating that it is unknown if the suspect is dishonest and if securities are involved in the present case. As seen in Appendix C, FIESA continues with a series of questions aimed at discovering if management had the pressure and opportunity to commit fraud. These objects present a "checklist" of questions and the functional modules measure the number of applicable responses. If a threshold of applicable responses is crossed then the object is applicable. If the objects are applicable then the investigation should continue.

FIESA: *Having completed an on-site interview, was the suspect corporation suffering heavy losses or doing large investments?*

INVESTIGATOR: *Yes*

After each positive response a functional module is activated to increase the score value for management having the pressure to commit fraud.

FIESA: *Was there insufficient working capital?*

INVESTIGATOR: *Yes*

FIESA: *Was there high debt?*

INVESTIGATOR: *Yes*

FIESA: *Was there a reduced ability to acquire credit?*

INVESTIGATOR: *Yes*

FIESA: *Was there a profit squeeze (costs rising faster than sales)?*

INVESTIGATOR: *Yes*

FIESA: *Was there a progressive deterioration in the quality of corporate earnings?*

INVESTIGATOR: *Yes*

FIESA: *Was there an urgent need for favorable earnings, e.g., need to gloss over a temporary bad situation to maintain management position or prestige?*

INVESTIGATOR: *Yes*

FIESA: *Was there unmarketable collateral?*

INVESTIGATOR: *No*

FIESA: *Was there excess capacity?*

INVESTIGATOR: *No*

FIESA: *Was there the existence of revocable and possibly imperiled necessary licenses?*

INVESTIGATOR: *No*

FIESA: *Was there extremely rapid expansion?*

INVESTIGATOR: *Yes*

FIESA: *Were there unfavourable economic conditions
with the industry?*

INVESTIGATOR: *Yes*

FIESA: *Did the company have difficulty collecting
receivable?*

INVESTIGATOR: *Yes*

FIESA: *Was there unusually heavy competition?*

INVESTIGATOR: *Yes*

FIESA: *Were there significant reduction in sales
backlog indicating future sales decline?*

INVESTIGATOR: *No*

FIESA: *Was there a sizable inventory increase
without comparable sales increases?*

INVESTIGATOR: *No*

FIESA: *Was there pressures to merge?*

INVESTIGATOR: *No*

FIESA: *Were there significant tax adjustments or changes?*

INVESTIGATOR: *No*

FIESA: *Was there significant litigation (especially between stockholders and management)?*

INVESTIGATOR: *No*

FIESA: *Was the company suspended or delisted from the stock exchange?*

INVESTIGATOR: *No*

FIESA: *Does the company depend on only one or two products?*

Investigator: *Yes*

FIESA: *Were there restrictive loan agreements?*

INVESTIGATOR: *No*

After examining the possibility that management faced pressure to commit fraud, the possibility of management having the opportunity to commit fraud must now be examined.

FIESA: *Were there related party transactions?*

INVESTIGATOR: *No*

The score value that measures management's opportunity to commit fraud is increased after each positive response.

FIESA: *Were several different auditing firms used or frequent changing of auditors?*

INVESTIGATOR: *No*

FIESA: *Was there a reluctance to give the investigator needed data?*

INVESTIGATOR: *Yes*

FIESA: *Was there the use of several different banks or legal firms or frequent switching of firms so none could see the entire company's situation?*

INVESTIGATOR: *No*

FIESA: *Does the company have continuous problems with regulatory agencies?*

INVESTIGATOR: *No*

FIESA: *Does the company have a complex business structure?*

INVESTIGATOR: *No*

FIESA: *Is there an ineffective accounting staff?*

INVESTIGATOR: *No*

FIESA: *Is there a high degree of computerization with the company?*

INVESTIGATOR: *Yes*

FIESA: *Is there an inadequate internal control system and failure to enforce it?*

INVESTIGATOR: *No*

FIESA: *Is there rapid turnover of key employees?*

INVESTIGATOR: *No*

FIESA: *Is the company in the area of "hot" industries, e.g., mining, real estate, insurance, etc.*

INVESTIGATOR: *No*

FIESA: *Were there large year end transactions?*

INVESTIGATOR: *No*

FIESA: *Were there unduly liberal accounting practices?*

INVESTIGATOR: *No*

FIESA: *Was there an inadequate accounting staff?*

INVESTIGATOR: *No*

FIESA: *Was there inadequate disclosure of questionable or unusual accounting practices?*

INVESTIGATOR: *No*

At this point FIESA has received all necessary inputs and displays shown on the conclusion screen shown in Figure 5.4. The conclusion screen summarizes the facts that:

- 1) The charge of false pretenses was not committed.
- 2) It appears that the charge of fraud was committed, however, the evidence score of ten out of a possible sixty five indicates a very weak case.
- 3) There was uncertainty involving the applicability of certain components of the charge of fraud.
- 4) After an on-site interview it appears management did not have the pressure to commit fraud (score of twelve out of a possible twenty three) or the opportunity to commit fraud (score of two out of sixteen).
- 5) It appears that continuing the investigation is not worthwhile, e.g., likely to result in a successful prosecution.

6.0 DIRECTIONS FOR GENERALIZABILITY AND FUTURE RESEARCH

6.1 Assessment Of FIESA

The success of the assessment of the expert system demonstrates that fraud investigation can be modelled and supported with AI, functional processing, and objects.

Upon first analysis, it appears that a police investigator relies heavily upon experience and heuristics to develop a successful investigation style. This suggests that an AI approach such as a rule-based expert system would be sufficient to model this domain. However, police investigators use more than heuristics or rules. Upon developing and computerizing a successful model of their reasoning process, it was demonstrated that other types of reasoning were necessary. The introduction of object concepts allowed the model to organize large amounts and different kinds of data into entities which were more easily analyzed than a rule-based approach would allow. For example, the objects allowed each offense to be treated as having several components, with each component containing its own data (evidence), rules, and functional modules unique to the component. This not only closely matches the way in which investigators must handle offense but allowed the system to reason about each

component of a charge separately before determining an overall assessment of the case. The functional modules modelled processing abilities which the investigators intuitively perform, but are difficult to articulate as rules. The system was able to use procedural functional modules to determine the value of the evidence to the investigator. The police heuristics were used to link and reason about different modules and objects. The modelling approach allowed new modules to be easily added without necessitating extensive reworking of the system. This is a useful feature as the growth of police experience and case law continues.

The police investigators stated that a system incorporating other charges and schemes could be very useful in their investigative work. The anticipated benefits would be due to the labour savings by processing a case more quickly and allowing experienced investigators to devote more time to the more difficult cases. In addition, the dissemination of knowledge to less experienced investigators would free up experienced investigators.

FIESA as presently designed could be used as a training tool, as a "supervisor" for new investigators, or as an information organizer. As a training tool it will assist the inexperienced investigator in matching the complaint to case law and establishing the appropriate investigation procedure. As a "supervisor", the system will assist the investigator in assessing the strength of the case, in identifying the specific area of fraud and its investigation procedures, and finally, in

helping to determine when to close the case. Finally, as an information organizer, it frees the investigator from remembering each aspect of the case.

For the fraud investigation expert system, further research could examine a process to automatically examine and access the data. For example, if documents were imaged, e.g., stored on magnetic media, a natural language processing module could interpret the evidence and then a case-base reasoning module could assess the usefulness of the evidence in relation to the case law.

Future enhancements to FIESA may include an automated case-based reasoning module (Salzberg, 1988 and Carbonell, 1990), which would match current evidence to case law. In addition, an uncertainty measurement could be generated based on how closely the case law fits the current evidence and to assist in reasoning about incomplete data or distorted evidence. Functional decomposition could be combined with rules to represent task oriented activities of the investigation process such as analyzing financial statements. Finally, a fully developed FIESA could take on the role of information organizer. As such, it could allow the actual evidence to be entered in an image form and, once the significance of the evidence had been established, it could automatically determine if other, possibly multiple offenses are applicable that are based on the same piece of evidence.

6.2 Future Research

Preliminary research has indicated that a generalized architecture of FIESA could be applied to model other decision areas which require similar reasoning capabilities as fraud investigation. A sample list of decision areas with similar attributes is outlined in Figure 6.1. Possible examples include a robot's reaction to a factory floor incidence (Engel, 1990), and intelligent building control for building complexes, negotiation (Matwin et al., 1989), new product introduction (Rogers, 1983), marketing (Kotler and McDougall, 1983), and mergers and acquisitions.

2

PM-1 3½"x4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1910a ANSI/ISO #2 EQUIVALENT

PRECISIONSM RESOLUTION TARGETS

PIONEERS IN METHYLENE BLUE TESTING SINCE 1974

Microl
INTERNATIONAL

15000 CANTY ROAD • BURNING WOOD, MINN 55337 USA
TEL: (612) 425-7867 FAX: (612) 425-7867 TLX: 5100000000

Attributes	Negotiations	Technology Adoption	Manufacturing Robot	Marketing
Semi-structured	X	X	X	X
Sequential	X	X	X	X
Symbolic reasoning: qualitative	X	X	X	X
Functional processing: quantitative	X	X	X	X
Knowledge intensive	X	X	X	X
Dynamic and responsive environment	X		X	
Represented as self contained modules	X	X	X	X
Process involves examining components of problem then detailed analysis	X	X	X	X

Figure 6.1: Similar Decision Problems

While marketing is divided into many fields (industrial, consumer, etc.) and many areas of concern (promotion, price, etc.), the following attempts to give a few generic characteristics which should apply in some part to most fields and areas. Marketing can involve collecting and interpreting data (Goslar, 1986; Lilien, 1983), as well as theorizing of casual relationships in the marketplace (Charnes et al., 1986). Marketing people must handle data unreliability, noisy data channels and fragmented market structures (Lilien, 1987; Little, 1975). Marketing solutions must be robust (Little, 1975). Results must be valid (face, replication of literature results, and test for extreme conditions) due to the substantial amounts of money involved (Lilien and Kotler, 1983).

For example, marketing tends to be a semi-structured and sequential problem involving decisions about the components of price, distribution, promotion, etc. (Kotler and McDougall, 1983). Classification of multiple types of information is extremely important for such problems as establishing target markets or interpreting market surveys. In general, reasoning about market surveys and the results of quantitative marketing analysis tend to be symbolic. As knowledge about the environment is often incomplete or situations are new, heuristics are often applied (Rangaswamy et al., 1987). In marketing, a new product is described by various tangible and intangible components such as price, functionality, appearance, packaging, maintenance needs, and ease of use. Based upon potential customer inputs, the system could pass judgment on the new

product's superiority and then investigate each area for possible improvements.

In a semi-structured merger or acquisition decisions, a similar system could take a sequential look at the components of the proposed deal such as the mission statements and profitability of the two companies. If the merger or acquisition was to proceed, it could examine components such as legal, personnel and other issues. There are many different ways to examine the feasibility of a merger or acquisition. One approach is as follows: the principals involved must first determine if the merger or acquisition is strategically a good move for the two companies. The principals may examine how such a move could open new markets or strengthen each company's competitive advantage in existing ones. They may also examine the viability of the working relation, for example, information flows between the two groups. After passing this stage the principals would want to examine their assumptions in more detail; for example, components such marketing and technical/product plans would be further analyzed. Finally, a joint business plan could be constructed. At this point, it would be fairly clear what each company's role would be in the new enterprise and what the gain would be for each company. This would be a knowledge-intensive exercise.

Finally, one area of possible research is in devising a procedure/methodology for identifying and modelling decision

problems outlined in this thesis which is more detailed than the Hayes-Roth, Waterman and Lenat method (Denning, 1986; Lirov, 1990; Rauch-Hindin, 1988). Further research should focus on developing a structured approach (Kowalski and Stipp, 1990; Manola, 1990; Pedersen, 1989; Rolandi, 1988; Thuraisingham, 1989), for combining symbolic reasoning and functional processing (Bowen and Brown, 1985) or object-oriented approaches (Sellers, 1990; Edwards, 1990; Coad and Yourdon, 1990; Wirfs-Brock and Johnson, 1990). Figure 6.2 contains the beginning steps in such a process, which were derived from analyzing fraud investigation.

1. Decision problem definition including desired outputs.
2. Divide decision into separate logical units. Each unit addresses a subdecision and contains own knowledge, data and processing.
3. Knowledge acquisition.
4. Model the domain knowledge and decision process. Including all information decisions, transformations and outputs.
5. Determine scoring scheme for evidence supporting subproblems.
6. Implementation and testing

Figure 6.2: The Modelling Process

7.0 SUMMARY AND CONCLUSIONS

Summary

Humans face a variety of decision problems which require abilities ranging from reasoning with symbolic concepts to processing of data using algorithmic routines. Examples of such decisions are common in the business environment, for example, marketing, negotiations, and mergers. Such decision problems are semi-structured, knowledge-intensive and sequential, which require both qualitative and quantitative capabilities. This thesis has proposed and shown that in order to more accurately model such decision problems, so that they can be supported with computerized decision support tools, symbolic reasoning must be coupled with functional processing.

Economic crime investigation was chosen as an example of a decision problem which has the necessary characteristics to require both symbolic reasoning and functional processing. This decision problem requires investigators to use their expertise to reason about data entities, devise investigative strategies and draw conclusions concerning evidence, case-law and offenses.

Within the area of economic crime, the decision problems of investigating fraud and false pretense were chosen as representative.

These investigative decision problems were modelled and a working computerized prototype was constructed. The working prototype contains the case law concerning fraud or false pretenses. With the user's assistance, the prototype can emulate the process of fraud and false pretences investigation by determining if offenses exist, if the supporting evidence is sufficient, and can suggest detailed investigative actions to strengthen the charges. The prototype can assist during the entire investigative portion of a case, for example, by ensuring that responses are consistent, suggesting which scheme is being perpetrated and examining the appropriateness of negative responses.

The prototype uses a rule-based to represent the required symbolic reasoning abilities, objects to provide the ability to group rules and data, and, functional modules to represent the qualitative aspects of the investigators' thinking process. The working prototype was examined by experts from the Ontario Provincial Police and was deemed a realistic representation of an investigator's decision process and knowledge-base.

The prototype established a proof of concept of the representation needs and the implementation mechanisms which could be the beginning of a fraud and false pretenses investigation system. Such a system provides a useful computer-based decision support role for complex investigations. For example, an expanded version of the prototype could serve the valuable function of transferring both the

knowledge and the decision process of investigations to new investigators. As well, an expanded version could serve as a supervisor or information organizer.

Conclusions

Several conclusions can be drawn from the research:

- 1) According to the OPP domain experts, the model and computer representation of fraud and false pretenses is accurate. Thus, fraud and false pretences investigation can be effectively represented.
- 2) The knowledge engineering methodology is appropriate for the development and computerized implementation of the model of fraud and false pretences investigation. The methodology provided the necessary structured approach to accomplish the research and development of FIESA.
- 3) The development of FIESA would not have been possible without the assessment and reorganization of the evidence provided by the functional components and objects. The advantage of having functional components was realized in the scoring

scheme. The scoring scheme was implemented using procedural code. The applicability of the object-oriented approach proved to be limited. This limited applicability was due to the reduction in the scope of the decision problem during the identification stage. As a result, the prototype did not require such concepts as inheritance and polymorphism. Instead, the focus was on efficiently organizing rules and procedural code.

- 4) Fraud and false pretences are considered typical economic crime offenses. Thus, the methodology and the representation approach would be useful to support other types of investigations.
- 5) The methodology and representation approach might be applicable to other decision problems which have similar attributes as the decision problem of investigating economic crimes. Such decision problems would be semi-structured, require sequential reasoning from effect to cause and require a substantial amount of an expert's knowledge to solve.

Further Research

Several interesting topics remain for future research which would enhance the functionality of the prototype. For example, an automated case law matcher could examine each piece of evidence in the current case, determine its significance, and match it to the case law. If close matches could not be found, then such an approach would need a "closeness" measurement.

Another area for further research could be modelling and computerizing other economic crimes, along with adding more heuristics for the existing ones. Finally, the issues of distorted evidence, evidence applying to more than one offense and incorporating digitized images of the data could be addressed.

This thesis identified several research areas on a more abstract level. If using symbolic reasoning with functional and object components allows for a more accurate model of human decision processes, two questions arise:

- 1) What kind of problems should such an approach be used for?

This thesis briefly outlined several similar decision problems. However, in order to be of use in other problems, further research should focus on

developing the characteristics or generic problem description for decision problems where such an approach is used.

2) How should problems be modelled?

This thesis suggested the requirement for development of a more detailed modelling methodology for understanding problems, developing models, and computerizing decision problems similar to fraud investigation.

Upon answering the two research questions, several significant results become apparent. This new modelling approach and its methodology could:

- 1) More closely map the decision abilities of humans;**
- 2) Allow a great range of decision problems, in terms of complexity, to be tackled than the traditional AI approaches.**
- 3) Provide a mechanism for developing a reliable and intelligent decision support tool for decision problems in which human capabilities are modeled and technically feasible portions of the process**

executed by the machine. Such a situation would enhance the decision process of humans and, in co-operation with the machine, deliver more consistent and reliable results.

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APPENDIX A: EXPERT SYSTEM SHELL SELECTION

This appendix provides an overview of several currently available commercial expert shells. Part I provides a list of 22 expert system shells, some will be dropped from further consideration due to either cost, size of shell, interface ability, memory requirements, computer language required, or computer system required. Part II provides an analysis of the remaining shells.

Part I

The following criteria in the selection of an expert system shell will be used: available for under \$5000; does not require excessive memory; has a good interface (such as graphical capabilities); pull down menus; etc., is written in a conventional language; and, is available on MS-DOS computers.

1. Product: ART

Vendor: Inference Corp., 5300 W. Century Blvd., Los Angeles CA, 90045, (213) 417-7997.

Type of Tool: Object-oriented rule-based expert system programming environment.

Evaluation: Not considered further as it is too expensive and requires 1 to 2 MB of extended memory.

2. Product: COMDALE/X

Vendor: Comdale Technologies, 833 The Queensway, Suite 202, Toronto, Ontario, M8Z 5Z1, (416) 252-9794.

Type of Tool: For developing consultant-type expert systems. Consists of a graphical interface, open architecture, with debugging and explanatory capabilities.

Evaluation: Consider further

3. Product: CxPERT

Vendor: Software Plus, 1652 Albermarle Dr. Crofton, MD, 21114, (301) 261-0264

Type of Tool: Expert system shell and hypertext tool. For embedding knowledge bases in C programs. Knowledge base is translated into C source code.

Evaluation: Consider further.

4. Product: Epitool

Vendor: Epitec AB/Digital Equipment Corp., DEC, AI Information Center, 290 Donald Lynch Blvd., Marlborough MA, 01752, (508) 490-8256.

Type of Tool: Object Oriented rule-based expert system tool. Has a browser and debugger. Written in LISP.

Evaluation: Not considered further as only available on VAX and requires LISP.

5. Product: EXSYS Professional

Vendor: Exsys Inc., P.O. Box 11247, Albuquerque, NM, 87192, (505) 256-8356.

Type of Tool: Rule and frame-based.

Evaluation: Not considered further due to interface limitations.

6. Product: Goldworks II

Vendor: Goldhill Computer, 26 Lansdowne St. Cambridge, MA, 02139, (617) 621-3399.

Type of Tool: Object-oriented, rule-based expert system programming environment in LISP.

Evaluation: Not considered further as it needs high resolution monitor and programming in LISP.

7. Product: G2

Vendor: Gensym Corp, 125 Cambridge Park Dr., Cambridge MA, 02140, (617) 547-9606.

Type of Tool: Object-oriented rule-based for large real-time systems.

Evaluation: Not considered further as very expensive, \$24,000 US for developer licence.

8. Product: GURU

Vendor: MDBS Inc., Box 248, Lafayette, IN, 47902, (317) 447-1122.

Type of Tool: Rule-based language with integrated database management tool.

Evaluation: Consider further.

9. Product: Kappa

Vendor: Intellicorp, 1975 El Camino Real West, Mountain View CA, 94040, (415) 965-5700.

Type of Tool: Object-oriented, Rule-based capabilities.

Evaluation: Consider further.

10. Product: KBMS (Knowledge Base Management System)

Vendor: AI Corp Inc., 138 Technology Drive, Waltham, MA, 02154, (617) 891-6500.

Type of Tool: Object-oriented, rule-based expert system, backward and forward chaining. Provides hypothetical reasoning, it explores several alternatives simultaneously, natural language interface.

Evaluation: Not considered further as it requires 4 MB RAM.

11. Product: KEE

Vendor: Intellicorp, 1975 El Camino Real West, Mountain View, CA, 94040, (416) 965-5700.

Type of Tool: Object-Oriented rule-based capabilities.

Evaluation: Not considered further as the 386 version has a great deal of problems and costs \$15,000.

12. Product: KES 3.0

Vendor: Software A&E, 1600 Wilson Blvd., Suite 500, Arlington, VA, 22209, (703) 276-7910.

Type of Tool: Object-oriented rule-based capabilities.

Evaluation: Not considered further due to primitive screen interface ability.

13. Product: KnowledgePro

Vendor: Knowledge Garden Inc., 473A Malden Bridge Rd., Nassau, NY, 12123, (518) 766-3000.

Type of Tool: Simple PC based hypertext and inferencing system

Evaluation: Not considered further as not powerful enough e.g. limited functionality.

14. Product: Laser 2.0

Vendor: Bell Atlantic Knowledge Systems Inc., P.O. Box 3528, Princeton, NJ, 08543-352, (609) 936-2834.

Type of Tool: C-based expert system development and delivery tool. Open architecture, multiple reasoning paradigms (object oriented, pattern matching, forward and backward).

Evaluation: Not considered further as requires 2 MB RAM.

15. Product: Level 5 Object

Vendor: Information Builders Inc., 1250 Broadway, New York, NY, 10001, (212) 736-4433.

Type of Tool: Backward and forward chaining expert system. Object oriented with editor, visual windowing system, with relational database models, and CASE tools.

Evaluation: Consider further.

16. Product: Level 5 PC

Vendor: Information Builders Inc., 1250 Broadway, New York, NY, 10001, (212) 736-4433.

Type of Tool: Backward and forward chaining expert system.

Evaluation: Consider further.

17. Product: Mercury KBE

Vendor: AI Technologies, 40 Saw Mill River Rd., Hawthorne, NY, 10532 (914) 347-6860.

Type of Tool: Object-oriented, rule-based, open architecture, can partition rule sets.

Evaluation: Not considered further as it costs \$40,000 and is only on VAX workstations.

18. Product: NEMO

Vendor: S20 Development, 14 Rue du Theatre, 75015, Paris, France.

Type of Tool: Real-time expert system shell.

Evaluation: Not considered further due to no need for real-time functionality.

19. Product: Nexpert Object

Vendor: Neuron Data, 444 High Street, Palo Alto, CA, 94301, (415) 321-4488.

Type of Tool: Object-oriented rule-based capabilities.

Evaluation: Not considered further as it does not support OR clause, needs 1MB RAM, and 1 MB extended memory.

21. Product: OP/83

Vendor: Production System Technologies, 5001 Baum Blvd.,
Pittsburgh, PA, 15213, (412) 683-4000.

Type of Tool: Rule-based programming language.

Evaluation: Not considered further as too much time required to
create proper user interface.

22. Product: Personal Consultant

Vendor: Texas Instruments, 12501 Research Blvd., MS 2244, P.O. Box
2909, Austin, TX, 78769, (512) 250-6315.

Type of Tool: Rule-based programming language.

Evaluation: Not considered further as it requires extended memory.

Part II

This part will evaluate the remaining tools based upon their appropriateness in terms of the implementation of a computer-based representation of fraud and false pretenses. We need a tool that has object-oriented capabilities, as well as, forward and backward chaining features. For this reason, Level 5 PC and EXPERT are not considered further. While GURU is a rule based system, its extensive database interface ability should keep it in the group of expert system shells to be considered further.

The final list of potential tools includes: COMDALE/X; Kappa; Level 5 Object, and GURU. Since FIESA is only a prototype, no further evaluation of the remaining shells will be done. The makers of Level 5 Object have agreed to supply a copy of their product for 6 months, thus, it will be the shell used for the purposes of this thesis.

APPENDIX B: LEVEL 5 OBJECT

Vendor: Information Builders Inc., 1250 Broadway, New York, NY, 10001, (212) 736-4433.

Level 5 Object is an expert system shell which requires Microsoft Windows 2.1 or better and MS-DOS 3.0 or higher. The shell provides the developer with both a backward and forward chaining inference engine, and the ability to incorporate procedural code. The shell has object-oriented concepts, such as class and inheritance. The shell has various editors for rules, displays, objects, etc. The display abilities include multiple pop-up windows, scrollable windows, and hyper regions. Hyper regions allow the user to access multiple windows of information within the current operating window. Case tools facilitate the rapid creation of displays and code. Level 5 Object will display the rules in a form Information Builders Inc. refer to as a knowledge tree. The knowledge tree diagrams the knowledge-base and its logical relationships. The shell can access external programs and databases. The debugging functions allow the developer to examine rules and variables when running; as well, Level 5 Object's on-line compiler checks each rule for syntax during development. Level 5 Object can generate the application as a text file. The shell uses certainty factors and allows both the developer and user to input certainty.

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APPENDIX C:**System's Description FIESA'S Economic Crimes Objects C - 1**

<u>Economic Crimes</u>	
Offense: Component - Prototype Object Description	
Fraud: Dishonesty -	Describes component (also gives applicable case law), asks if applicable (yes, no, unknown), and type of evidence (verbal, documents, documents with supporting official), if evidence then asks if related to the following schemes: non-disclosure; obtaining credit; financial statements; false statement in writing; forgery; credit cards, personation; personation; mail fraud, NSF cheques; obtaining transportation; corporate fraud; real estate; stock market; indicates similar acts. Procedure module updates frequency count of most likely scheme, consistency check with exaggeration of false pretences.
Deprivation -	Describes component (also gives applicable case law), asks if applicable (yes, no, unknown), and type of evidence (verbal, documents, documents with supporting official), if evidence then asks if related to the following schemes: non-disclosure; obtaining credit; financial statements; false statement in writing; forgery; credit cards, personation; personation; mail fraud, NSF cheques; obtaining transportation; corporate fraud; real estate; stock market; indicates similar acts. Procedure module updates frequency count of most likely scheme.
Money -	Describes component (also gives applicable case law), asks if applicable (Canadian, other country, cheque and unknown), and type of evidence (verbal, documents, documents with supporting official), if evidence then asks if related to the following schemes: non-disclosure; obtaining credit; financial statements; false statement in writing; forgery; credit cards, personation; personation; mail fraud, NSF cheques; obtaining transportation; corporate fraud; real estate; stock market; indicates similar acts. Procedure module updates frequency count of most likely scheme.

Economic Crimes

Offense: Component - Prototype Object Description

- Fraud:** Describes component (also gives applicable case law), asks if applicable (real & personal, property in possession, postage stamps, deeds & instruments of title, unknown), and type of evidence (verbal, documents, documents with supporting official), if evidence then asks if related to the following schemes: non-disclosure; obtaining credit; financial statements; false statement in writing; forgery; credit cards; personation; personation; mail fraud, NSF cheques; obtaining transportation; corporate fraud; real estate; stock market; indicates similar acts. Procedure module updates frequency count of most likely scheme.
- Property -**
- Security -** Describes component (also gives applicable case law), asks if applicable (stock, deposits, debentures, deeds, bonds, bills, notes, other security, goods, land, interest in property, unknown), and type of evidence (verbal, documents, documents with supporting official), if evidence then asks if related to the following schemes: non-disclosure; obtaining credit; financial statements; false statement in writing; forgery; credit cards; personation; personation; mail fraud, NSF cheques; obtaining transportation; corporate fraud; real estate; stock market; indicates similar acts. Procedure module updates frequency count of most likely scheme.
- Victim -** asks if applicable (Canadian, other, public, unknown).

<u>Economic Crimes</u>	
Offense: Component - Prototype Object Description	
False Pretenses:	
Past/ present representation -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Words, writing, -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Suspect knew -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Suspect intent-	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Induce victim -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Directly, Indirectly, Contract -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Capable of being stolen -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Believe suspect -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Obtained anything -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).
Exaggeration -	Describes component (including applicable case law), asks if applicable (yes, no, unknown).

<u>Economic Crimes</u>	
Offense: Component - Prototype Object Description	
Fraud:	
Corporate	
Fraud: Planned bankruptcy -	Asks if heuristics concerning this domain are applicable (yes, no), procedural module computes frequency of yes responses and if high enough determines this event has occurred.
Front end (cash) -	Asks if heuristics concerning this domain are applicable (yes, no), procedural module computes frequency of yes responses and if high enough determines this event has occurred.
Supplier -	Asks if heuristics concerning this domain are applicable (yes, no), procedural module computes frequency of yes responses and if high enough determines this event has occurred.
Employee Expenses -	Asks if heuristics concerning this domain are applicable (yes, no), procedural module computes frequency of yes responses and if high enough determines this event has occurred.
Management opportunity -	Asks if heuristics concerning this domain are applicable (yes, no), procedural module computes frequency of yes responses and if high enough determines this event has occurred.
Management pressure -	Asks if heuristics concerning this domain are applicable (yes, no), procedural module computes frequency of yes responses and if high enough determines this event has occurred.

Economic Crimes

Offense: Component - Prototype Object Description

False Pretenses: NSF	Kiting	- Asks if heuristics concerning this domain are applicable (yes, no) procedural module computes frequency of yes responses and if high enough determines this event has occurred.
	Regular	- Asks if heuristics concerning this domain are applicable (yes, no) procedural module computes frequency of yes responses and if high enough determines this event has occurred.

APPENDIX D: FIESA SOURCE CODE

```
CLASS cycl
WITH whatcycl COMPOUND
  Deprivation responses,
  Dishonest responses,
  Money responses,
  Property responses,
  Victim,
  Security responses,
  False Pretence Past,
  Words used,
  Knowledge,
  Intent,
  Directy or contract,
  Capable of being stolen,
  Induced,
  Delivered,
  Obtained,
  Believe,
  Exaggerated,
  Choice of Domain,
  Employee expense reports,
  Supplier fraud,
  Front end,
  Sales Invoice,
  Planned bankruptcy,
  NSF cheques,
  Management opportunity,
  Management pressure
QUERY FROM cyclescreen
SEARCH ORDER QUERY
```

```
CLASS Deprivation
WITH Deprive COMPOUND
  Yes,
  No,
  Unknown
```



```
QUERY FROM deprive1
WITH Deproof MULTICOMPOUND
  Verbal statement,
  Documents,
  Witness for documents
WHEN CHANGED
BEGIN
  IF Deproof OF Deprivation IS Verbal statement THEN
    BEGIN
      Score := Score + 1
      count7 := TRUE
    END
  IF Deproof OF Deprivation IS Documents THEN
    BEGIN
      Score := Score + 1
      count7 := TRUE
    END
  IF Deproof OF Deprivation IS Witness for documents THEN
    BEGIN
      Score := Score + 5
      count7 := TRUE
    END
  END
QUERY FROM deprive1
SEARCH ORDER QUERY RULES CONTEXT
```

```
CLASS Dishonesty
WITH Dishonest COMPOUND
  Yes,
  No,
  Unknown
QUERY FROM Dishonest 1
WITH Diproof MULTICOMPOUND
  Verbal statement,
  Documents,
  Witness for documents
WHEN CHANGED
BEGIN
  IF Diproof OF Dishonesty IS Verbal statement THEN
    BEGIN
      Score := Score + 1
```

```
        count7 := TRUE
    END
    IF Diproof OF Dishonesty IS Documents THEN
    BEGIN
        Score := Score + 1
        count7 := TRUE
    END
    IF Diproof OF Dishonesty IS Witness for documents THEN
    BEGIN
        Score := Score + 5
        count7 := TRUE
    END
    END
    QUERY FROM Dishonest 1
    SEARCH ORDER QUERY RULES CONTEXT
```

```
CLASS False Pretenc
WITH FP1 MULTICOMPOUND
    Exaggeration,
    Attempted False P,
    False P,
    UFalse Pretences,
    Uattempted False P
EXHAUSTIVE
SEARCH ORDER CONTEXT RULES DEFAULT
```

```
CLASS False Pretences
WITH Past2 COMPOUND
    Yes,
    Unknown,
    No
    QUERY FROM Past1
WITH Words2 COMPOUND
    Yes,
    Unknown,
    No
    QUERY FROM words1
WITH Known2 COMPOUND
    Yes,
    Unknown,
    No
```

```
QUERY FROM Known1
WITH Intent2 COMPOUND
  Yes,
  No,
  Unknown
WHEN CHANGED)
BEGIN
  IF Intent2 OF False Pretences IS No THEN
    BEGIN
      ASK reasons
      reasons := TRUE
      reasons := TRUE
    END
  END
QUERY FROM Intent1
WITH Induce2 COMPOUND
  Yes,
  Unknown,
  No
QUERY FROM Induce 1
WITH DirectlyContract2 COMPOUND)
  Yes,
  Unknown,
  No
QUERY FROM directlycontract
WITH Capable2 COMPOUND)
  Yes,
  Unknown,
  No
QUERY FROM capable1
WITH Delivered2 COMPOUND
  Yes,
  Unknown,
  No
QUERY FROM Delivered1
WITH Believe2 COMPOUND
  No,
  Yes,
  Unknown
QUERY FROM Believed 1
WITH Exaggeration2 COMPOUND
```

No,
Yes,
Unknown
QUERY FROM Exaggeration1
WITH Obtained2 COMPOUND
No,
Yes,
Unknown
QUERY FROM obtained 1
WITH caselaw MULTICOMPOUND
Yes,
Applies,
Apply
EXHAUSTIVE
QUERY FROM knownextra
WITH intentcaselaw MULTICOMPOUND
Yes,
Applies,
Apply
EXHAUSTIVE
QUERY FROM intentextra
WITH Question1 COMPOUND
Yes,
No
QUERY FROM reasons
WITH Question2 COMPOUND
Yes,
No
QUERY FROM reasons
WITH Question3 COMPOUND
Yes,
No
QUERY FROM reasons
WITH Question4 COMPOUND
Yes,
No
QUERY FROM reasons

CLASS Fraud
WITH fraud3 MULTICOMPOUND
Yes,

No,
Uncertain
SEARCH ORDER CONTEXT RULES

```
CLASS Money
WITH ListM COMPOUND
  Monetary Unit Of Canada,
  Monetary Unit of other Countries,
  Unknown,
  Cheque
QUERY FROM ListM1
WITH Mproof MULTICOMPOUND
  Verbal statements,
  Documents,
  Witness for document
WHEN CHANGED
  BEGIN
    IF Mproof OF Money IS Verbal statements THEN
      BEGIN
        Score := Score + 1
        count7 := TRUE
      END
    IF Mproof OF Money IS Documents THEN
      BEGIN
        Score := Score + 1
        count7 := TRUE
      END
    IF Mproof OF Money is Witness for document THEN
      BEGIN
        Score := Score + 5
        count7 := TRUE
      END
    END
  QUERY FROM ListM1
  SEARCH ORDER QUERY CONTEXT
```

```
CLASS Property
WITH ListP COMPOUND
  Real and Personal,
  Property in possession,
  Postage Stamps,
```

```
Deeds and Instruments of Title,  
Unknown  
QUERY FROM ListP1  
WITH Pproof MULTICOMPOUND  
Verbal statements,  
Documents,  
Witness for document  
WHEN CHANGED  
BEGIN  
  IF Pproof OF Property IS Verbal statements THEN  
    BEGIN  
      Score := Score + 1  
      count7 := TRUE  
    END  
  IF Pproof OF Property IS Documents THEN  
    BEGIN  
      Score := Score + 1  
      count7 := TRUE  
    END  
  IF Pproof OF Property IS Witness for document THEN  
    BEGIN  
      Score := Score + 5  
      count7 := TRUE  
    END  
  END  
QUERY FROM ListP1  
SEARCH ORDER QUERY CONTEXT
```

```
CLASS PublicPerson  
WITH ListPP COMPOUND  
Canadian,  
Other Country,  
The Public,  
Unknown  
QUERY FROM public
```

```
CLASS reports  
WITH question1 COMPOUND  
yes,  
no  
QUERY FROM Expense R
```

WITH question2 COMPOUND
yes,
no
QUERY FROM Expense R
WITH question3 COMPOUND
yes,
no
QUERY FROM Expense R
WITH question4 COMPOUND
yes,
no
QUERY FROM Expense R
WITH question5 COMPOUND
yes,
no
QUERY FROM Expense R
WITH question6 COMPOUND
yes,
no
QUERY FROM Expense R
WITH question7 COMPOUND
yes,
no
QUERY FROM Expense R
WITH question8 COMPOUND
yes,
no
QUERY FROM Expense R
WITH charge MULTICOMPOUND
employee expense reports,
accomplice,
Supplier fraud,
supplier fraud accomplice,
Front end fraud,
false sales invoice,
False Sales Invoice accomplice,
planned bankruptcy,
NSF cheques,
NSF cheques reexamine fraud,
False Sales Invoice accompliceFraud,
NSF kiting

EXHAUSTIVE
SEARCH ORDER CONTEXT RULES DEFAULT
WITH question9 COMPOUND
yes,
no
QUERY FROM supplier
WITH question10 COMPOUND
yes,
no
QUERY FROM supplier
WITH question11 COMPOUND
yes,
no
QUERY FROM supplier
WITH question12 COMPOUND
yes,
no
QUERY FROM supplier
WITH question13 COMPOUND
yes,
no
QUERY FROM frontend
WITH question14 COMPOUND
yes,
no
QUERY FROM frontend
WITH question15 COMPOUND
yes,
no
QUERY FROM frontend
WITH question16 COMPOUND
yes,
no
QUERY FROM frontend
WITH question17 COMPOUND
yes,
no
QUERY FROM frontend
WITH question18 COMPOUND
yes,
no

QUERY FROM frontend
WITH question19 COMPOUND
yes,
no
QUERY FROM frontend
WITH question20 COMPOUND
yes,
no
QUERY FROM Fsales
WITH question21 COMPOUND
yes,
no
QUERY FROM Fsales
WITH question22 COMPOUND
yes,
no
QUERY FROM frontend
WITH question23 COMPOUND
yes,
no
QUERY FROM Fsales
WITH question24 COMPOUND
yes,
no
QUERY FROM Fsales
WITH question25 COMPOUND
yes,
no
QUERY FROM customer
WITH question26 COMPOUND
yes,
no
QUERY FROM customer
WITH question27 COMPOUND
yes,
no
QUERY FROM customer
WITH question28 COMPOUND
yes,
no
QUERY FROM customer

WITH question29 COMPOUND
no,
yes
QUERY FROM customer
WITH question30 COMPOUND
yes,
no
QUERY FROM customer
WITH question31 COMPOUND
yes,
no
QUERY FROM customer
WITH question32 COMPOUND
yes,
no
QUERY FROM NSF
WITH question33 COMPOUND
yes,
no
QUERY FROM NSF
WITH question34 COMPOUND
yes,
no
QUERY FROM NSF
WITH question35 COMPOUND
yes,
no
QUERY FROM NSF
WITH question36 COMPOUND
no,
yes
QUERY FROM NSF
WITH question37 COMPOUND
yes,
no
QUERY FROM NSF
WITH question38 COMPOUND
yes,
no
QUERY FROM NSF
WITH Question40 COMPOUND

Yes,
No
QUERY FROM NSFkiting
WITH Question41 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question42 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question43 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question44 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question45 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question46 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question47 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question48 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question49 COMPOUND
Yes,
No
QUERY FROM NSFkiting
WITH Question50 COMPOUND
Yes,

No
QUERY FROM NS1 kiting

CLASS Security
WITH ListS COMPOUND
Stock deposit,
Debenture deed bond bill note or other security,
Lands goods,
interest in property,
Unknown
QUERY FROM ListS1
WITH Sproof MULTICOMPOUND
Verbal statements,
Documents,
Witness for documents
WHEN CHANGED
BEGIN
IF Sproof OF Security IS Verbal statements THEN
BEGIN
Score := Score + 1
count7 := TRUE
END
IF Sproof OF Security IS Documents THEN
BEGIN
Score := Score + 1
count7 := TRUE
END
IF Sproof OF Security IS Witness for documents THEN
BEGIN
Score := Score + 5
count7 := TRUE
END
END
QUERY FROM ListS1
SEARCH ORDER QUERY CONTEXT

CLASS type
WITH frauds MULTICOMPOUND
Non disclosure,
Obtaining credit,
Financial Statements,

False Statements in writing,
Forgery,
Theft,
Credit card,
Personation,
Mails,
Misrepresentation NSF cheques,
Obtaining transportation,
Evidence of similar acts,
Corporate fraud,
Stock market manipulation,
Real Estate Swindle,
Real Estate Swindle evidence
QUERY FROM fraud1
WITH evidence MULTICOMPOUND
Non disclosure,
Obtaining credit,
Financial Statements,
False Statements in writing,
Forgery,
Theft,
Credit card,
Personation,
Mails,
Misrepresentation NSF cheques,
Obtaining transportation,
Evidence of similar acts,
Corporate fraud,
Stock market manipulation,
Real Estate Swindle
QUERY FROM evidencescreen
SEARCH ORDER QUERY CONTEXT RULES

CLASS uncertain2
WITH Question1 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
IF Question1 OF uncertain2 IS yes THEN
score2 := score2 + 1

```
END
QUERY FROM uncertain1
SEARCH ORDER QUERY CONTEXT
WITH Question2 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question2 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
QUERY FROM uncertain1
SEARCH ORDER QUERY CONTEXT
WITH Question3 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question3 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
QUERY FROM uncertain1
SEARCH ORDER QUERY CONTEXT
WITH Question4 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question4 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
QUERY FROM uncertain1
SEARCH ORDER QUERY CONTEXT
WITH Question5 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question5 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
```

```
QUERY FROM uncertain1
SEARCH ORDER QUERY CONTEXT
WITH Question6 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question6 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
QUERY FROM uncertain1
SEARCH ORDER QUERY CONTEXT
WITH Question7 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question7 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
QUERY FROM uncertain1
SEARCH ORDER QUERY CONTEXT
WITH Question8 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question8 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
QUERY FROM uncertain1
SEARCH ORDER QUERY CONTEXT
WITH Question9 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question9 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
QUERY FROM uncertain1
```

```
SEARCH ORDER QUERY CONTEXT
WITH Question10 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question10 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
  QUERY FROM uncertain1
  SEARCH ORDER QUERY CONTEXT
WITH Question11 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question11 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
  QUERY FROM uncertain1
  SEARCH ORDER QUERY CONTEXT
WITH Question12 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question12 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
  QUERY FROM uncertain1
  SEARCH ORDER QUERY CONTEXT
WITH Question13 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question13 OF uncertain2 IS yes THEN
    score2 := score2 + 1
  END
  QUERY FROM uncertain1
  SEARCH ORDER QUERY CONTEXT
```



```
WITH Question14 COMPOUND
  yes,
  no
  WHEN CHANGED
    BEGIN
      IF Question14 OF uncertain2 IS yes THEN
        score2 := score2 + 1
      END
    QUERY FROM uncertain1
    SEARCH ORDER QUERY CONTEXT
WITH Question15 COMPOUND
  yes,
  no
  WHEN CHANGED
    BEGIN
      IF Question15 OF uncertain2 IS yes THEN
        score2 := score2 + 1
      END
    QUERY FROM uncertain1
    SEARCH ORDER QUERY CONTEXT
WITH Question16 COMPOUND
  yes,
  no
  WHEN CHANGED
    BEGIN
      IF Question16 OF uncertain2 IS yes THEN
        score2 := score2 + 1
      END
    QUERY FROM uncertain1
    SEARCH ORDER QUERY CONTEXT
WITH Question17 COMPOUND
  yes,
  no
  WHEN CHANGED
    BEGIN
      IF Question17 OF uncertain2 IS yes THEN
        score2 := score2 + 1
      END
    QUERY FROM uncertain1
    SEARCH ORDER QUERY CONTEXT
WITH Question18 COMPOUND
```

```
yes,  
no  
WHEN CHANGED  
BEGIN  
  IF Question18 OF uncertain2 IS yes THEN  
    score2 := score2 + 1  
  END  
  QUERY FROM uncertain1  
  SEARCH ORDER QUERY CONTEXT  
WITH Question19 COMPOUND  
yes,  
no  
WHEN CHANGED  
BEGIN  
  IF Question19 OF uncertain2 IS yes THEN  
    score2 := score2 + 1  
  END  
  QUERY FROM uncertain1  
  SEARCH ORDER QUERY CONTEXT  
WITH Question20 COMPOUND  
yes,  
no  
WHEN CHANGED  
BEGIN  
  IF Question20 OF uncertain2 IS yes THEN  
    score2 := score2 + 1  
  END  
  QUERY FROM uncertain1  
  SEARCH ORDER QUERY CONTEXT  
WITH Question21 COMPOUND  
yes,  
no  
WHEN CHANGED  
BEGIN  
  IF Question21 OF uncertain2 IS yes THEN  
    score2 := score2 + 1  
  END  
  QUERY FROM uncertain1  
  SEARCH ORDER QUERY CONTEXT  
WITH Question22 COMPOUND  
yes,
```

```
no
WHEN CHANGED
  BEGIN
    IF Question22 OF uncertain2 IS yes THEN
      score2 := score2 + 1
    END
  QUERY FROM uncertain1
  SEARCH ORDER QUERY CONTEXT
  WITH Question23 COMPOUND
  yes,
  no
  WHEN CHANGED
    BEGIN
      IF Question23 OF uncertain2 IS yes THEN
        score2 := score2 + 1
      END
    QUERY FROM uncertain1
    SEARCH ORDER QUERY CONTEXT
    WITH Question24 COMPOUND
    yes,
    no
    WHEN CHANGED
      BEGIN
        IF Question24 OF uncertain2 IS yes THEN
          score2 := score2 + 1
        END
      QUERY FROM uncertain1
      SEARCH ORDER QUERY CONTEXT
      WITH Question25 COMPOUND
      yes,
      no
      WHEN CHANGED
        BEGIN
          IF Question25 OF uncertain2 IS yes THEN
            score2 := score2 + 1
          END
        QUERY FROM uncertain1
        SEARCH ORDER QUERY CONTEXT
        WITH maybe MULTICOMPOUND
        Management Pressure for fraud,
        Management Opportunity for fraud
```

```
EXHAUSTIVE
SEARCH ORDER CONTEXT RULES DEFAULT
WITH Question26 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question26 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
QUERY FROM oport
WITH Question27 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question27 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
QUERY FROM oport
WITH Question28 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question28 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
QUERY FROM oport
WITH Question29 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question29 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
QUERY FROM oport
WITH Question30 COMPOUND
yes,
no
```

```
WHEN CHANGED
BEGIN
  IF Question30 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
  QUERY FROM oport
WITH Question31 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question31 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
  QUERY FROM oport
WITH Question32 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question32 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
  QUERY FROM oport
WITH Question33 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question33 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
  QUERY FROM oport
WITH Question34 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question34 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
```

```
QUERY FROM oport
WITH Question35 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question35 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
QUERY FROM oport
WITH Question36 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question36 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
QUERY FROM oport
WITH Question37 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question37 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
QUERY FROM oport
WITH Question38 COMPOUND
yes,
no
WHEN CHANGED
BEGIN
  IF Question38 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
QUERY FROM oport
WITH Question39 COMPOUND
yes,
no
WHEN CHANGED
```

```
BEGIN
  IF Question39 OF uncertain2 IS yes THEN
    score3 := score3 + 1
  END
  QUERY FROM oport
WITH Question40 COMPOUND
  yes,
  no
  WHEN CHANGED
  BEGIN
    IF Question40 OF uncertain2 IS yes THEN
      score3 := score3 + 1
    END
    QUERY FROM oport
WITH Question41 COMPOUND
  yes,
  no
  WHEN CHANGED
  BEGIN
    IF Question41 OF uncertain2 IS yes THEN
      score3 := score3 + 1
    END
    QUERY FROM oport
WITH Question42 COMPOUND
  yes,
  no
  WHEN CHANGED
  BEGIN
    IF Question42 OF uncertain2 IS yes THEN
      score3 := score3 + 1
    END
  QUERY FROM oport

ATTRIBUTE Score NUMERIC
INIT 0
REINIT 0
ATTRIBUTE count2 COMPOUND
three
EXHAUSTIVE
SEARCH ORDER RULES
ATTRIBUTE count5 COMPOUND
```

```
five
EXHAUSTIVE
SEARCH ORDER CONTEXT RULES DEFAULT
ATTRIBUTE score2 NUMERIC
EXHAUSTIVE
INIT 0
ATTRIBUTE score3 NUMERIC
INIT 0
ATTRIBUTE count6 SIMPLE
WHEN CHANGED
BEGIN
  IF evidence OF type IS Non disclosure THEN
    BEGIN
      scorea[ 1] := scorea[ 1] + 1
      FORGET evidence OF type IS Non disclosure
    END
  IF evidence OF type IS Obtaining credit THEN
    BEGIN
      scorea[ 2] := scorea[ 2] + 1
      FORGET evidence OF type IS Obtaining credit
    END
  IF evidence OF type IS Financial Statements THEN
    BEGIN
      scorea[ 3] := scorea[ 3] + 1
      FORGET evidence OF type IS Financial Statements
    END
  IF evidence OF type IS False Statements in writing THEN
    BEGIN
      scorea[ 4] := scorea[ 4] + 1
      FORGET evidence OF type IS False Statements in writing
    END
  IF evidence OF type IS Forgery THEN
    BEGIN
      scorea[ 5] := scorea[ 5] + 1
      FORGET evidence OF type IS Forgery
    END
  IF evidence OF type IS Theft THEN
    BEGIN
      scorea[ 6] := scorea[ 6] + 1
      FORGET evidence OF type IS Theft
    END
  END
```



```
IF evidence OF type IS Credit card THEN
  BEGIN
    scorea[ 7] := scorea[ 7] + 1
    FORGET evidence OF type IS Credit card
  END
IF evidence OF type IS Personation THEN
  BEGIN
    scorea[ 8] := scorea[ 8] + 1
    FORGET evidence OF type IS Personation
  END
IF evidence OF type IS Mails THEN
  BEGIN
    scorea[ 9] := scorea[ 9] + 1
    FORGET evidence OF type IS Mails
  END
IF evidence OF type IS Misrepresentation NSF cheques THEN
  BEGIN
    scorea[ 10] := scorea[ 10] + 1
    FORGET evidence OF type IS Misrepresentation NSF cheques
  END
IF evidence OF type IS Obtaining transportation THEN
  BEGIN
    scorea[ 11] := scorea[ 11] + 1
    FORGET evidence OF type IS Obtaining transportation
  END
IF evidence OF type IS Evidence of similar acts THEN
  BEGIN
    scorea[ 12] := scorea[ 12] + 1
    FORGET evidence OF type IS Evidence of similar acts
  END
IF evidence OF type IS Corporate fraud THEN
  BEGIN
    scorea[ 13] := scorea[ 13] + 1
    FORGET evidence OF type IS Corporate fraud
  END
IF evidence OF type IS Stock market manipulation THEN
  BEGIN
    scorea[ 14] := scorea[ 14] + 1
    FORGET evidence OF type IS Stock market manipulation
  END
IF evidence OF type IS Real Estate Swindle THEN
```

```
BEGIN
  scorea[ 15] := scorea[ 15] + 1
  FORGET evidence OF type IS Real Estate Swindle
END
FORGET count7
END
SEARCH ORDER CONTEXT RULES
ATTRIBUTE count7 SIMPLE
ATTRIBUTE count1 SIMPLE
WHEN CHANGED
BEGIN
  IF count1 = TRUE THEN
    BEGIN
      WHILE (count11 < 15)
        BEGIN
          WHILE (count10 < 15)
            BEGIN
              IF scorea[ count10] <= scorea[ count10 + 1] THEN
                BEGIN
                  scorea1[ count10] := scorea[ count10]
                  words2[ count10] := words[ count10]
                  scorea[ count10] := scorea[ count10 + 1]
                  words[ count10] := words[ count10 + 1]
                  scorea[ count10 + 1] := scorea1[ count10]
                  words[ count10 + 1] := words2[ count10]
                  count10 := count10 + 1
                END
              ELSE
                count10 := count10 + 1
              END
            count10 := 1
            count11 := count11 + 1
          END
        END
      END
    END
  SEARCH ORDER RULES CONTEXT QUERY
  ATTRIBUTE words STRING
  ARRAY SIZE 15
  INIT [1] "Non disclosure"
  INIT [2] "Obtaining credit"
  INIT [3] "Financial Statements"
```

INIT [4] "False Statements in writing"
INIT [5] "Forgery"
INIT [6] "Theft"
INIT [7] "Credit card"
INIT [8] "Personation"
INIT [9] "Mails"
INIT [10] "Misrepresentation NSF cheques"
INIT [11] "Obtaining transportation"
INIT [12] "Evidence of similar acts"
INIT [13] "Corporate fraud"
INIT [14] "Stock market manipulation"
INIT [15] "Real Estate Swindle"

ATTRIBUTE words2 STRING

ARRAY SIZE 15

ATTRIBUTE scorea1 NUMERIC

ARRAY SIZE 15

INIT [1] 0
INIT [2] 0
INIT [3] 0
INIT [4] 0
INIT [5] 0
INIT [6] 0
INIT [7] 0
INIT [8] 0
INIT [9] 0
INIT [10] 0
INIT [11] 0
INIT [12] 0
INIT [13] 0
INIT [14] 0
INIT [15] 0

ATTRIBUTE scorea NUMERIC

ARRAY SIZE 15

INIT [1] 0
INIT [2] 0
INIT [3] 0
INIT [4] 0
INIT [5] 0
INIT [6] 0
INIT [7] 0
INIT [8] 0

```
INIT [9] 0
INIT [10] 0
INIT [11] 0
INIT [12] 0
INIT [13] 0
INIT [14] 0
INIT [15] 0
ATTRIBUTE count10 NUMERIC
INIT 1
ATTRIBUTE count11 NUMERIC
INIT 1
ATTRIBUTE cyclecount SIMPLE
WHEN CHANGED
BEGIN
  ASK cyclescreen
  IF whatcycl OF cycl IS Dishonest responses THEN
    BEGIN
      Dishonest OF Dishonesty IS Yes
      Dishonest OF Dishonesty IS No
      Dishonest OF Dishonesty IS Unknown
      FORGET fraud3 OF Fraud IS Yes
      FORGET fraud3 OF Fraud IS No
      FORGET fraud3 OF Fraud IS Uncertain
    END
  IF whatcycl OF cycl IS Money responses THEN
    BEGIN
      FORGET ListM OF Money IS Monetary Unit Of Canada
      FORGET ListM OF Money IS Monetary Unit of other Countries
      FORGET ListM OF Money IS Unknown
      FORGET ListM OF Money IS Cheque
      FORGET fraud3 OF Fraud IS Yes
      FORGET fraud3 OF Fraud IS No
      FORGET fraud3 OF Fraud IS Uncertain
    END
  FORGET frauds OF type IS Non disclosure
  FORGET frauds OF type IS Obtaining credit
  FORGET frauds OF type IS Financial Statements
  FORGET frauds OF type IS False Statements in writing
  FORGET frauds OF type IS Forgery
  FORGET frauds OF type IS Theft
  FORGET frauds OF type IS Credit card
```

FORGET frauds OF type IS Personation
FORGET frauds OF type IS Mails
FORGET frauds OF type IS Misrepresentation NSF cheques
FORGET frauds OF type IS Obtaining transportation
FORGET frauds OF type IS Evidence of similar acts
FORGET frauds OF type IS Corporate fraud
FORGET frauds OF type IS Stock market manipulation
FORGET frauds OF type IS Real Estate Swindle
FORGET evidence OF type IS Non disclosure
FORGET evidence OF type IS Obtaining credit
FORGET evidence OF type IS Financial Statements
FORGET evidence OF type IS False Statements in writing
FORGET evidence OF type IS Forgery
FORGET evidence OF type IS Theft
FORGET evidence OF type IS Credit card
FORGET evidence OF type IS Personation
FORGET evidence OF type IS Mails
FORGET evidence OF type IS Misrepresentation NSF cheques
FORGET evidence OF type IS Obtaining transportation
FORGET evidence OF type IS Evidence of similar acts
FORGET evidence OF type IS Corporate fraud
FORGET evidence OF type IS Stock market manipulation
FORGET evidence OF type IS Real Estate Swindle
FORGET charge OF reports IS employee expense reports
FORGET charge OF reports IS accomplice
FORGET charge OF reports IS Supplier fraud
FORGET charge OF reports IS supplier fraud accomplice
FORGET charge OF reports IS Front end fraud
FORGET charge OF reports IS false sales invoice
FORGET charge OF reports IS False Sales Invoice accompliceFraud
FORGET charge OF reports IS planned bankruptcy
FORGET charge OF reports IS NSF cheques
FORGET charge OF reports IS NSF cheques reexamine fraud
FORGET Score
FORGET score2
FORGET score3
FORGET scorea1
FORGET scorea
FORGET count10
FORGET count11
FORGET count1

```
FORGET count2 IS three
FORGET count5 IS five
FORGET count7
FORGET count6
cycle OF application := TRUE
END
ATTRIBUTE dummy SIMPLE
INIT TRUE
ATTRIBUTE reasonss SIMPLE
ATTRIBUTE reasonsss SIMPLE
ATTRIBUTE count27 SIMPLE
SEARCH ORDER CONTEXT RULES DEFAULT

INSTANCE the application ISA application
  WITH unknowns fail := TRUE
  WITH threshold := 50
  WITH title display := sample title display
  WITH conclusion display := conclusion
  WITH ignore breakpoints := FALSE
  WITH reasoning on := FALSE
  WITH numeric precision := 8
  WITH simple query text := "Is it true that:
  *
is
  *"
  WITH numeric query text := "What is(are):
  *
of
  *"
  WITH string query text := "What is(are):
  *
of
  *"
  WITH time query text := "What is(are):
  *
of
  *"
  WITH interval query text := "What is(are):
  *
of
  *"
```

```
WITH compound query text := "What is(are):  
*  
of  
*"  
WITH multicomponent query text := "What is(are):  
*  
of  
*"  
WITH demon strategy IS fire all  
WITH save context := TRUE  
WITH restore context := TRUE  
WITH context filename := "fraud5.ctx  
"
```

```
INSTANCE checkbox group 2 ISA checkbox group  
WITH location := 299,60,506,143  
WITH frame := FALSE  
WITH group label := "Mproof"  
WITH show current := TRUE  
WITH attachment := Mproof OF Money
```

```
INSTANCE checkbox group 3 ISA checkbox group  
WITH location := 383,47,635,134  
WITH frame := FALSE  
WITH group label := "Sproof"  
WITH show current := TRUE  
WITH attachment := Sproof OF Security
```

```
INSTANCE checkbox group 4 ISA checkbox group  
WITH location := 295,32,514,136  
WITH frame := FALSE  
WITH group label := "Pproof"  
WITH show current := TRUE  
WITH attachment := Pproof OF Property
```

```
INSTANCE checkbox group 5 ISA checkbox group  
WITH location := 44,143,233,277  
WITH frame := FALSE  
WITH group label := "FP1"  
WITH show current := TRUE  
WITH attachment := FP1 OF False Pretence
```

INSTANCE checkbox group 6 ISA checkbox group
WITH location := 11,65,124,133
WITH frame := FALSE
WITH group label := "frauds"
WITH show current := TRUE
WITH attachment := fraud3 OF Fraud

INSTANCE checkbox group 7 ISA checkbox group
WITH location := 287,35,485,108
WITH frame := FALSE
WITH group label := "Deproof"
WITH show current := TRUE
WITH attachment := Deproof OF Deprivation

INSTANCE checkbox group 8 ISA checkbox group
WITH location := 263,22,469,91
WITH frame := FALSE
WITH group label := "Diproof"
WITH show current := TRUE
WITH attachment := Diproof OF Dishonesty

INSTANCE checkbox group 9 ISA checkbox group
WITH location := 297,26,581,219
WITH frame := FALSE
WITH group label := "charge"
WITH show current := TRUE
WITH attachment := charge OF reports

INSTANCE checkbox group 10 ISA checkbox group
WITH location := 33,155,338,390
WITH frame := FALSE
WITH group label := "frauds"
WITH show current := TRUE
WITH attachment := frauds OF type

INSTANCE checkbox group 11 ISA checkbox group
WITH location := 270,221,579,277
WITH frame := FALSE
WITH group label := "maybe"
WITH show current := TRUE

WITH attachment := maybe OF uncertain?

INSTANCE checkbox group 12 ISA checkbox group

WITH location := 117,84,398,300

WITH frame := FALSE

WITH group label := "evidence"

WITH show current := TRUE

WITH attachment := evidence OF type

INSTANCE checkbox group 13 ISA checkbox group

WITH location := 460,47,570,249

WITH frame := FALSE

WITH group label := "caselaw"

WITH show current := TRUE

WITH attachment := caselaw OF False Pretences

INSTANCE checkbox group 14 ISA checkbox group

WITH location := 468,47,656,233

WITH frame := FALSE

WITH group label := "intentcaselaw"

WITH show current := TRUE

WITH attachment := intentcaselaw OF False Pretences

INSTANCE ListM1 ISA display

WITH wait := TRUE

WITH delay changes := TRUE

WITH items [1] := textbox 10

WITH items [2] := textbox 44

WITH items [3] := textbox 45

WITH items [4] := radiobutton group 2

WITH items [5] := checkbox group 2

INSTANCE public ISA display

WITH wait := TRUE

WITH delay changes := TRUE

WITH items [1] := textbox 11

WITH items [2] := textbox 52

WITH items [3] := radiobutton group 3

INSTANCE sample title display ISA display

WITH wait := TRUE

WITH delay changes := TRUE
WITH items [1] := textbox 13
WITH items [2] := textbox 19

INSTANCE conclusion ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 14
WITH items [2] := checkbox group 6
WITH items [3] := checkbox group 5
WITH items [4] := valuebox 1
WITH items [5] := textbox 68
WITH items [6] := checkbox group 9
WITH items [7] := checkbox group 11
WITH items [8] := valuebox 2
WITH items [9] := valuebox 3

INSTANCE capable1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 16
WITH items [2] := textbox 63
WITH items [4] := radiobutton group 20

INSTANCE Past1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 12
WITH items [2] := textbox 50
WITH items [3] := textbox 61
WITH items [4] := radiobutton group 17
WITH items [5] := textbox 65

INSTANCE words1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 25
WITH items [2] := textbox 60
WITH items [3] := radiobutton group 16

INSTANCE Known1 ISA display

WITH wait := TRUE;
WITH delay changes := TRUE
WITH items [2] := radiobutton group 15
WITH items [3] := textbox 59

INSTANCE Intent1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [2] := textbox 58
WITH items [3] := radiobutton group 14

INSTANCE Induce 1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 28
WITH items [2] := textbox 49
WITH items [3] := radiobutton group 13
WITH items [4] := textbox 66

INSTANCE Exaggeration1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [2] := textbox 51
WITH items [3] := textbox 57
WITH items [4] := radiobutton group 12

INSTANCE directlycontract ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 30
WITH items [2] := textbox 56
WITH items [3] := radiobutton group 11

INSTANCE Delivered1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 31
WITH items [2] := textbox 55
WITH items [3] := radiobutton group 10

INSTANCE ExaggerationFP1 ISA display

WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 33

INSTANCE Believed 1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 37
WITH items [2] := radiobutton group 9

INSTANCE obtained 1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 38
WITH items [2] := radiobutton group 8
WITH items [3] := textbox 62

INSTANCE deprive 1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 39
WITH items [2] := textbox 54
WITH items [3] := radiobutton group 7
WITH items [5] := checkbox group 7

INSTANCE Dishonest 1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 40
WITH items [2] := radiobutton group 6
WITH items [3] := textbox 53
WITH items [4] := textbox 64
WITH items [5] := textbox 67
WITH items [6] := checkbox group 8
WITH items [7] := pushbutton 1

INSTANCE ListP1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 42
WITH items [2] := textbox 43

WITH items [3] := radiobutton group 5
WITH items [4] := checkbox group 4
WITH items [5] := textbox 18

INSTANCE ListS1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 47
WITH items [2] := textbox 48
WITH items [4] := checkbox group 3
WITH items [5] := radiobutton group 18

INSTANCE fraud1 ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 69
WITH items [2] := checkbox group 10
WITH items [3] := textbox 151
WITH items [4] := textbox 150
WITH items [5] := valuebox 4
WITH items [6] := pushbutton 2

INSTANCE Expense R ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 70
WITH items [2] := textbox 71
WITH items [3] := textbox 72
WITH items [4] := textbox 73
WITH items [5] := textbox 74
WITH items [6] := textbox 75
WITH items [7] := textbox 76
WITH items [8] := radiobutton group 21
WITH items [9] := textbox 78
WITH items [10] := radiobutton group 22
WITH items [11] := radiobutton group 23
WITH items [12] := radiobutton group 24
WITH items [13] := radiobutton group 25
WITH items [14] := radiobutton group 26
WITH items [15] := radiobutton group 27
WITH items [16] := radiobutton group 28

INSTANCE supplier ISA display

WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 77
WITH items [2] := textbox 79
WITH items [3] := textbox 80
WITH items [4] := textbox 81
WITH items [5] := radiobutton group 29
WITH items [6] := radiobutton group 30
WITH items [7] := radiobutton group 31
WITH items [8] := radiobutton group 32

INSTANCE frontend ISA display

WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 82
WITH items [2] := textbox 83
WITH items [3] := textbox 84
WITH items [4] := textbox 81
WITH items [5] := radiobutton group 33
WITH items [6] := radiobutton group 34
WITH items [7] := radiobutton group 35
WITH items [8] := radiobutton group 36

INSTANCE Fsales ISA display

WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 85
WITH items [2] := textbox 86
WITH items [3] := textbox 87
WITH items [4] := textbox 88
WITH items [5] := textbox 89
WITH items [6] := radiobutton group 37
WITH items [7] := radiobutton group 38
WITH items [8] := radiobutton group 39
WITH items [9] := radiobutton group 40
WITH items [10] := radiobutton group 41

INSTANCE customer ISA display

WITH wait := TRUE

WITH delay changes := TRUE
WITH items [1] := textbox 90
WITH items [2] := textbox 91
WITH items [3] := textbox 92
WITH items [4] := textbox 93
WITH items [5] := textbox 94
WITH items [6] := textbox 95
WITH items [7] := textbox 96
WITH items [8] := radiobutton group 42
WITH items [9] := radiobutton group 43
WITH items [10] := radiobutton group 44
WITH items [11] := radiobutton group 45
WITH items [12] := radiobutton group 46
WITH items [13] := radiobutton group 47
WITH items [14] := radiobutton group 48

INSTANCE others ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 97

INSTANCE NSF ISA display
WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 99
WITH items [2] := textbox 100
WITH items [3] := textbox 101
WITH items [4] := textbox 102
WITH items [5] := textbox 103
WITH items [6] := textbox 104
WITH items [7] := textbox 105
WITH items [8] := radiobutton group 49
WITH items [9] := radiobutton group 50
WITH items [10] := radiobutton group 51
WITH items [11] := radiobutton group 52
WITH items [12] := radiobutton group 53
WITH items [13] := radiobutton group 54
WITH items [14] := radiobutton group 55

INSTANCE uncertain1 ISA display
WITH wait := TRUE

WITH delay changes := TRUE
WITH items [1] := textbox 106
WITH items [2] := textbox 107
WITH items [3] := textbox 108
WITH items [4] := textbox 109
WITH items [5] := textbox 110
WITH items [6] := textbox 111
WITH items [7] := textbox 112
WITH items [8] := textbox 113
WITH items [9] := textbox 114
WITH items [10] := textbox 115
WITH items [11] := textbox 116
WITH items [12] := textbox 117
WITH items [13] := textbox 118
WITH items [14] := textbox 119
WITH items [15] := textbox 120
WITH items [16] := textbox 121
WITH items [17] := textbox 122
WITH items [18] := textbox 123
WITH items [19] := textbox 124
WITH items [20] := textbox 125
WITH items [21] := textbox 126
WITH items [22] := textbox 127
WITH items [23] := textbox 128
WITH items [24] := textbox 129
WITH items [25] := textbox 130
WITH items [26] := textbox 131
WITH items [27] := radiobutton group 56
WITH items [28] := radiobutton group 57
WITH items [29] := radiobutton group 58
WITH items [30] := radiobutton group 59
WITH items [31] := radiobutton group 60
WITH items [32] := radiobutton group 61
WITH items [33] := radiobutton group 62
WITH items [34] := radiobutton group 63
WITH items [35] := radiobutton group 64
WITH items [36] := radiobutton group 65
WITH items [37] := radiobutton group 66
WITH items [38] := radiobutton group 67
WITH items [39] := radiobutton group 68
WITH items [40] := radiobutton group 69

WITH items [41] := radiobutton group 70
WITH items [42] := radiobutton group 71
WITH items [43] := radiobutton group 72
WITH items [44] := radiobutton group 73
WITH items [45] := radiobutton group 74
WITH items [46] := radiobutton group 75
WITH items [47] := radiobutton group 76
WITH items [48] := radiobutton group 77
WITH items [49] := radiobutton group 78
WITH items [50] := radiobutton group 79
WITH items [51] := radiobutton group 80

INSTANCE opport ISA display

WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 132
WITH items [2] := textbox 133
WITH items [3] := textbox 134
WITH items [4] := textbox 135
WITH items [5] := textbox 136
WITH items [6] := textbox 137
WITH items [7] := textbox 138
WITH items [8] := textbox 139
WITH items [9] := textbox 140
WITH items [10] := textbox 141
WITH items [11] := textbox 142
WITH items [12] := textbox 143
WITH items [13] := textbox 144
WITH items [14] := textbox 145
WITH items [15] := textbox 146
WITH items [16] := textbox 147
WITH items [17] := textbox 148
WITH items [18] := radiobutton group 81
WITH items [19] := radiobutton group 82
WITH items [20] := radiobutton group 83
WITH items [21] := radiobutton group 84
WITH items [22] := radiobutton group 85
WITH items [23] := radiobutton group 86
WITH items [24] := radiobutton group 87
WITH items [25] := radiobutton group 88
WITH items [26] := radiobutton group 89

WITH items [27] := radiobutton group 90
WITH items [28] := radiobutton group 91
WITH items [29] := radiobutton group 92
WITH items [30] := radiobutton group 93
WITH items [31] := radiobutton group 94
WITH items [32] := radiobutton group 95
WITH items [33] := radiobutton group 96
WITH items [34] := radiobutton group 97

INSTANCE evidencescreen ISA display

WITH wait := TRUE
WITH delay changes := FALSE
WITH items [1] := textbox 149
WITH items [2] := checkbox group 12

INSTANCE cyclescreen ISA display

WITH wait := TRUE
WITH delay changes := FALSE
WITH items [1] := textbox 152
WITH items [2] := radiobutton group 98

INSTANCE knownextra ISA display

WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 153
WITH items [2] := textbox 154
WITH items [3] := textbox 155
WITH items [4] := textbox 156
WITH items [5] := checkbox group 13

INSTANCE intentextra ISA display

WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 157
WITH items [2] := textbox 158
WITH items [3] := textbox 159
WITH items [4] := textbox 160
WITH items [5] := checkbox group 14

INSTANCE NSFkiting ISA display

WITH wait := TRUE

WITH delay changes := TRUE
WITH items [1] := textbox 161
WITH items [2] := textbox 162
WITH items [3] := textbox 163
WITH items [4] := textbox 164
WITH items [5] := textbox 165
WITH items [6] := textbox 166
WITH items [7] := textbox 167
WITH items [8] := textbox 168
WITH items [9] := textbox 169
WITH items [10] := textbox 170
WITH items [11] := textbox 171
WITH items [12] := radiobutton group 99
WITH items [13] := radiobutton group 100
WITH items [14] := radiobutton group 101
WITH items [15] := radiobutton group 102
WITH items [16] := radiobutton group 103
WITH items [17] := radiobutton group 104
WITH items [18] := radiobutton group 105
WITH items [19] := radiobutton group 106
WITH items [20] := radiobutton group 107
WITH items [21] := radiobutton group 108
WITH items [22] := radiobutton group 109

INSTANCE reasons ISA display

WITH wait := TRUE
WITH delay changes := TRUE
WITH items [1] := textbox 172
WITH items [2] := textbox 173
WITH items [3] := textbox 174
WITH items [4] := textbox 175
WITH items [5] := textbox 176
WITH items [6] := radiobutton group 110
WITH items [7] := radiobutton group 111
WITH items [8] := radiobutton group 112
WITH items [9] := radiobutton group 113

INSTANCE warning ISA message

WITH title := "No Option"
WITH text := "Sorry. This option has not been programmed."

INSTANCE warning2 ISA message
WITH title := "Inconsistent facts"
WITH text := "you have stated that the suspect
was dishonest and exaggerated."

INSTANCE DepriObta ISA message
WITH title := "Warning"
WITH text := "Deprived and Obtained
contrict each other e.g. yes and no"

INSTANCE PSMandC ISA message
WITH title := "WARNING"
WITH text := "Property or Security or Money answers
contradict Capable answer"

INSTANCE pushbutton 1 ISA pushbutton
WITH location := 271,223,471,248
WITH label := "Change previous answers"
WITH attribute attachment := cyclecount

INSTANCE pushbutton 2 ISA pushbutton
WITH location := 357,315,557,340
WITH label := "Change Previous Answers"
WITH attribute attachment := cyclecount

INSTANCE radiobutton group 2 ISA radiobutton group
WITH location := 9,62,297,156
WITH frame := FALSE
WITH group label := "ListM"
WITH show current := TRUE
WITH attachment := ListM OF Money

INSTANCE radiobutton group 3 ISA radiobutton group
WITH location := 17,43,189,125
WITH frame := FALSE
WITH group label := "ListPP"
WITH show current := TRUE
WITH attachment := ListPP OF PublicPerson

INSTANCE radiobutton group 5 ISA radiobutton group
WITH location := -5,41,249,155

WITH frame := FALSE
WITH group label := "ListP"
WITH show current := TRUE
WITH attachment := ListP OF Property

INSTANCE radiobutton group 6 ISA radiobutton group
WITH location := 18,38,217,100
WITH frame := FALSE
WITH group label := "Dishonest"
WITH show current := TRUE
WITH attachment := Dishonest OF Dishonesty

INSTANCE radiobutton group 7 ISA radiobutton group
WITH location := 7,36,196,108
WITH frame := FALSE
WITH group label := "Deprive"
WITH show current := TRUE
WITH attachment := Deprive OF Deprivation

INSTANCE radiobutton group 8 ISA radiobutton group
WITH location := 40,53,200,132
WITH frame := FALSE
WITH group label := "Obtained2"
WITH show current := TRUE
WITH attachment := Obtained2 OF False Pretences

INSTANCE radiobutton group 9 ISA radiobutton group
WITH location := 144,78,338,148
WITH frame := FALSE
WITH group label := "Believe2"
WITH show current := TRUE
WITH attachment := Believe2 OF False Pretences

INSTANCE radiobutton group 10 ISA radiobutton group
WITH location := 24,37,173,105
WITH frame := FALSE
WITH group label := "Delivered2"
WITH show current := TRUE
WITH attachment := Delivered2 OF False Pretences

INSTANCE radiobutton group 11 ISA radiobutton group

WITH location := 27,70,218,134
WITH frame := FALSE
WITH group label := "DirectlyContract2"
WITH show current := TRUE
WITH attachment := DirectlyContract2 OF False Pretences

INSTANCE radiobutton group 12 ISA radiobutton group
WITH location := 53,36,240,104
WITH frame := FALSE
WITH group label := "Exaggeration2"
WITH show current := TRUE
WITH attachment := Exaggeration2 OF False Pretences

INSTANCE radiobutton group 13 ISA radiobutton group
WITH location := 37,60,144,129
WITH frame := FALSE
WITH group label := "Induce2"
WITH show current := TRUE
WITH attachment := Induce2 OF False Pretences

INSTANCE radiobutton group 14 ISA radiobutton group
WITH location := 27,57,155,117
WITH frame := FALSE
WITH group label := "Intent2"
WITH show current := TRUE
WITH attachment := Intent2 OF False Pretences

INSTANCE radiobutton group 15 ISA radiobutton group
WITH location := 40,64,154,134
WITH frame := FALSE
WITH group label := "Known2"
WITH show current := TRUE
WITH attachment := Known2 OF False Pretences

INSTANCE radiobutton group 16 ISA radiobutton group
WITH location := 21,47,163,106
WITH frame := FALSE
WITH group label := "Words2"
WITH show current := TRUE
WITH attachment := Words2 OF False Pretences

INSTANCE radiobutton group 17 ISA radiobutton group
WITH location := 10,118,206,186
WITH frame := FALSE
WITH group label := "Past2"
WITH show current := TRUE
WITH attachment := Past2 OF False Pretences

INSTANCE radiobutton group 18 ISA radiobutton group
WITH location := 3,51,383,145
WITH frame := FALSE
WITH group label := "ListS"
WITH show current := TRUE
WITH attachment := ListS OF Security

INSTANCE radiobutton group 20 ISA radiobutton group
WITH location := 28,38,210,116
WITH frame := FALSE
WITH group label := "Capable2"
WITH show current := TRUE
WITH attachment := Capable2 OF False Pretences

INSTANCE radiobutton group 21 ISA radiobutton group
WITH location := 401,15,485,68
WITH frame := FALSE
WITH group label := "question1"
WITH show current := TRUE
WITH attachment := question1 OF reports

INSTANCE radiobutton group 22 ISA radiobutton group
WITH location := 279,77,380,125
WITH frame := FALSE
WITH group label := "question2"
WITH show current := TRUE
WITH attachment := question2 OF reports

INSTANCE radiobutton group 23 ISA radiobutton group
WITH location := 280,122,366,178
WITH frame := FALSE
WITH group label := "question3"
WITH show current := TRUE
WITH attachment := question3 OF reports

INSTANCE radiobutton group 24 ISA radiobutton group
WITH location := 280,181,478,227
WITH frame := FALSE
WITH group label := "question4"
WITH show current := TRUE
WITH attachment := question4 OF reports

INSTANCE radiobutton group 25 ISA radiobutton group
WITH location := 281,237,381,298
WITH frame := FALSE
WITH group label := "question5"
WITH show current := TRUE
WITH attachment := question5 OF reports

INSTANCE radiobutton group 26 ISA radiobutton group
WITH location := 286,318,379,367
WITH frame := FALSE
WITH group label := "question6"
WITH show current := TRUE
WITH attachment := question6 OF reports

INSTANCE radiobutton group 27 ISA radiobutton group
WITH location := 285,383,425,434
WITH frame := FALSE
WITH group label := "question7"
WITH show current := TRUE
WITH attachment := question7 OF reports

INSTANCE radiobutton group 28 ISA radiobutton group
WITH location := 288,447,378,496
WITH frame := FALSE
WITH group label := "question8"
WITH show current := TRUE
WITH attachment := question8 OF reports

INSTANCE radiobutton group 29 ISA radiobutton group
WITH location := 337,17,427,67
WITH frame := FALSE
WITH group label := "question9"
WITH show current := TRUE

WITH attachment := question9 OF reports

INSTANCE radiobutton group 30 ISA radiobutton group
WITH location := 328,93,421,144
WITH frame := FALSE
WITH group label := "question10"
WITH show current := TRUE
WITH attachment := question10 OF reports

INSTANCE radiobutton group 31 ISA radiobutton group
WITH location := 298,146,405,203
WITH frame := FALSE
WITH group label := "question11"
WITH show current := TRUE
WITH attachment := question11 OF reports

INSTANCE radiobutton group 32 ISA radiobutton group
WITH location := 295,232,394,289
WITH frame := FALSE
WITH group label := "question12"
WITH show current := TRUE
WITH attachment := question12 OF reports

INSTANCE radiobutton group 33 ISA radiobutton group
WITH location := 371,28,462,82
WITH frame := FALSE
WITH group label := "question13"
WITH show current := TRUE
WITH attachment := question13 OF reports

INSTANCE radiobutton group 34 ISA radiobutton group
WITH location := 358,120,466,167
WITH frame := FALSE
WITH group label := "question14"
WITH show current := TRUE
WITH attachmer := question14 OF reports

INSTANCE radiobutton group 35 ISA radiobutton group
WITH location := 350,170,461,227
WITH frame := FALSE
WITH group label := "question15"

WITH show current := TRUE
WITH attachment := question15 Of reports

INSTANCE radiobutton group 36 ISA radiobutton group
WITH location := 319,231,420,282
WITH frame := FALSE
WITH group label := "question16"
WITH show current := TRUE
WITH attachment := question16 Of reports

INSTANCE radiobutton group 37 ISA radiobutton group
WITH location := 369,16,441,66
WITH frame := FALSE
WITH group label := "question20"
WITH show current := TRUE
WITH attachment := question20 Of reports

INSTANCE radiobutton group 38 ISA radiobutton group
WITH location := 346,73,427,127
WITH frame := FALSE
WITH group label := "question21"
WITH show current := TRUE
WITH attachment := question21 Of reports

INSTANCE radiobutton group 39 ISA radiobutton group
WITH location := 270,124,368,174
WITH frame := FALSE
WITH group label := "question22"
WITH show current := TRUE
WITH attachment := question22 Of reports

INSTANCE radiobutton group 40 ISA radiobutton group
WITH location := 288,177,369,228
WITH frame := FALSE
WITH group label := "question23"
WITH show current := TRUE
WITH attachment := question23 Of reports

INSTANCE radiobutton group 41 ISA radiobutton group
WITH location := 299,230,384,285
WITH frame := FALSE

WITH group label := "question24"
WITH show current := TRUE
WITH attachment := question24 Of reports

INSTANCE radiobutton group 42 ISA radiobutton group
WITH location := 332,19,432,74
WITH frame := FALSE
WITH group label := "question25"
WITH show current := TRUE
WITH attachment := question25 Of reports

INSTANCE radiobutton group 43 ISA radiobutton group
WITH location := 276,85,375,132
WITH frame := FALSE
WITH group label := "question26"
WITH show current := TRUE
WITH attachment := question26 Of reports

INSTANCE radiobutton group 44 ISA radiobutton group
WITH location := 258,140,349,193
WITH frame := FALSE
WITH group label := "question27"
WITH show current := TRUE
WITH attachment := question27 Of reports

INSTANCE radiobutton group 45 ISA radiobutton group
WITH location := 229,201,331,251
WITH frame := FALSE
WITH group label := "question28"
WITH show current := TRUE
WITH attachment := question28 Of reports

INSTANCE radiobutton group 46 ISA radiobutton group
WITH location := 172,242,246,290
WITH frame := FALSE
WITH group label := "question29"
WITH show current := TRUE
WITH attachment := question29 Of reports

INSTANCE radiobutton group 47 ISA radiobutton group
WITH location := 317,271,404,322

WITH frame := FALSE
WITH group label := "question30"
WITH show current := TRUE
WITH attachment := question30 Of reports

INSTANCE radiobutton group 48 ISA radiobutton group
WITH location := 434,346,517,396
WITH frame := FALSE
WITH group label := "question31"
WITH show current := TRUE
WITH attachment := question31 Of reports

INSTANCE radiobutton group 49 ISA radiobutton group
WITH location := 336,10,413,62
WITH frame := FALSE
WITH group label := "question32"
WITH show current := TRUE
WITH attachment := question32 Of reports

INSTANCE radiobutton group 50 ISA radiobutton group
WITH location := 323,69,402,122
WITH frame := FALSE
WITH group label := "question33"
WITH show current := TRUE
WITH attachment := question33 Of reports

INSTANCE radiobutton group 51 ISA radiobutton group
WITH location := 279,120,350,173
WITH frame := FALSE
WITH group label := "question34"
WITH show current := TRUE
WITH attachment := question34 Of reports

INSTANCE radiobutton group 52 ISA radiobutton group
WITH location := 315,177,406,227
WITH frame := FALSE
WITH group label := "question35"
WITH show current := TRUE
WITH attachment := question35 Of reports

INSTANCE radiobutton group 53 ISA radiobutton group

WITH location := 322,230,412,277
WITH frame := FALSE
WITH group label := "question36"
WITH show current := TRUE
WITH attachment := question36 OF reports

INSTANCE radiobutton group 54 ISA radiobutton group
WITH location := 366,283,450,333
WITH frame := FALSE
WITH group label := "question37"
WITH show current := TRUE
WITH attachment := question37 OF reports

INSTANCE radiobutton group 55 ISA radiobutton group
WITH location := 359,338,443,392
WITH frame := FALSE
WITH group label := "question38"
WITH show current := TRUE
WITH attachment := question38 OF reports

INSTANCE radiobutton group 56 ISA radiobutton group
WITH location := 337,11,411,59
WITH frame := FALSE
WITH group label := "Question1"
WITH show current := TRUE
WITH attachment := Question1 OF uncertain2

INSTANCE radiobutton group 57 ISA radiobutton group
WITH location := 215,56,285,104
WITH frame := FALSE
WITH group label := "Question2"
WITH show current := TRUE
WITH attachment := Question2 OF uncertain2

INSTANCE radiobutton group 58 ISA radiobutton group
WITH location := 210,101,288,150
WITH frame := FALSE
WITH group label := "Question3"
WITH show current := TRUE
WITH attachment := Question3 OF uncertain2

INSTANCE radiobutton group 59 ISA radiobutton group
WITH location := 136,123,212,169
WITH frame := FALSE
WITH group label := "Question4"
WITH show current := TRUE
WITH attachment := Question4 OF uncertain2

INSTANCE radiobutton group 60 ISA radiobutton group
WITH location := 202,160,275,206
WITH frame := FALSE
WITH group label := "Question5"
WITH show current := TRUE
WITH attachment := Question5 OF uncertain2

INSTANCE radiobutton group 61 ISA radiobutton group
WITH location := 222,210,310,266
WITH frame := FALSE
WITH group label := "Question6"
WITH show current := TRUE
WITH attachment := Question6 OF uncertain2

INSTANCE radiobutton group 62 ISA radiobutton group
WITH location := 252,263,340,312
WITH frame := FALSE
WITH group label := "Question7"
WITH show current := TRUE
WITH attachment := Question7 OF uncertain2

INSTANCE radiobutton group 63 ISA radiobutton group
WITH location := 287,301,385,349
WITH frame := FALSE
WITH group label := "Question8"
WITH show current := TRUE
WITH attachment := Question8 OF uncertain2

INSTANCE radiobutton group 64 ISA radiobutton group
WITH location := 296,364,395,411
WITH frame := FALSE
WITH group label := "Question9"
WITH show current := TRUE
WITH attachment := Question9 OF uncertain2

INSTANCE radiobutton group 65 ISA radiobutton group
WITH location := 202,414,292,464
WITH frame := FALSE
WITH group label := "Question9"
WITH show current := TRUE
WITH attachment := Question9 OF uncertain2

INSTANCE radiobutton group 66 ISA radiobutton group
WITH location := 150,458,236,506
WITH frame := FALSE
WITH group label := "Question11"
WITH show current := TRUE
WITH attachment := Question11 OF uncertain2

INSTANCE radiobutton group 67 ISA radiobutton group
WITH location := 186,503,297,545
WITH frame := FALSE
WITH group label := "Question11"
WITH show current := TRUE
WITH attachment := Question11 OF uncertain2

INSTANCE radiobutton group 68 ISA radiobutton group
WITH location := 264,536,334,592
WITH frame := FALSE
WITH group label := "Question12"
WITH show current := TRUE
WITH attachment := Question12 OF uncertain2

INSTANCE radiobutton group 69 ISA radiobutton group
WITH location := 193,583,301,633
WITH frame := FALSE
WITH group label := "Question13"
WITH show current := TRUE
WITH attachment := Question13 OF uncertain2

INSTANCE radiobutton group 70 ISA radiobutton group
WITH location := 220,639,300,680
WITH frame := FALSE
WITH group label := "Question14"
WITH show current := TRUE

WITH attachment := Question14 Of uncertain2

INSTANCE radiobutton group 71 ISA radiobutton group

WITH location := 165,679,243,726

WITH frame := FALSE

WITH group label := "Question15"

WITH show current := TRUE

WITH attachment := Question15 Of uncertain2

INSTANCE radiobutton group 72 ISA radiobutton group

WITH location := 231,722,307,769

WITH frame := FALSE

WITH group label := "Question16"

WITH show current := TRUE

WITH attachment := Question16 Of uncertain2

INSTANCE radiobutton group 73 ISA radiobutton group

WITH location := 202,775,293,829

WITH frame := FALSE

WITH group label := "Question17"

WITH show current := TRUE

WITH attachment := Question17 Of uncertain2

INSTANCE radiobutton group 74 ISA radiobutton group

WITH location := 198,824,270,872

WITH frame := FALSE

WITH group label := "Question18"

WITH show current := TRUE

WITH attachment := Question18 Of uncertain2

INSTANCE radiobutton group 75 ISA radiobutton group

WITH location := 154,870,242,921

WITH frame := FALSE

WITH group label := "Question19"

WITH show current := TRUE

WITH attachment := Question19 Of uncertain2

INSTANCE radiobutton group 76 ISA radiobutton group

WITH location := 237,902,311,957

WITH frame := FALSE

WITH group label := "Question21"

WITH show current := TRUE
WITH attachment := Question21 OF uncertain2

INSTANCE radiobutton group 77 ISA radiobutton group
WITH location := 224,967,328,1021
WITH frame := FALSE
WITH group label := "Question22"
WITH show current := TRUE
WITH attachment := Question22 OF uncertain2

INSTANCE radiobutton group 78 ISA radiobutton group
WITH location := 235,1034,306,1082
WITH frame := FALSE
WITH group label := "Question23"
WITH show current := TRUE
WITH attachment := Question23 OF uncertain2

INSTANCE radiobutton group 79 ISA radiobutton group
WITH location := 213,1089,291,1144
WITH frame := FALSE
WITH group label := "Question24"
WITH show current := TRUE
WITH attachment := Question24 OF uncertain2

INSTANCE radiobutton group 80 ISA radiobutton group
WITH location := 224,1142,358,1199
WITH frame := FALSE
WITH group label := "Question25"
WITH show current := TRUE
WITH attachment := Question25 OF uncertain2

INSTANCE radiobutton group 81 ISA radiobutton group
WITH location := 331,9,429,63
WITH frame := FALSE
WITH group label := "Question26"
WITH show current := TRUE
WITH attachment := Question26 OF uncertain2

INSTANCE radiobutton group 82 ISA radiobutton group
WITH location := 232,81,320,126
WITH frame := FALSE

WITH group label := "Question27"
WITH show current := TRUE
WITH attachment := Question27 OF uncertain2

INSTANCE radiobutton group 83 ISA radiobutton group
WITH location := 300,139,398,187
WITH frame := FALSE
WITH group label := "Question28"
WITH show current := TRUE
WITH attachment := Question28 OF uncertain2

INSTANCE radiobutton group 84 ISA radiobutton group
WITH location := 259,211,330,260
WITH frame := FALSE
WITH group label := "Question29"
WITH show current := TRUE
WITH attachment := Question29 OF uncertain2

INSTANCE radiobutton group 85 ISA radiobutton group
WITH location := 291,278,368,328
WITH frame := FALSE
WITH group label := "Question30"
WITH show current := TRUE
WITH attachment := Question30 OF uncertain2

INSTANCE radiobutton group 86 ISA radiobutton group
WITH location := 217,333,300,384
WITH frame := FALSE
WITH group label := "Question31"
WITH show current := TRUE
WITH attachment := Question31 OF uncertain2

INSTANCE radiobutton group 87 ISA radiobutton group
WITH location := 249,376,346,427
WITH frame := FALSE
WITH group label := "Question32"
WITH show current := TRUE
WITH attachment := Question32 OF uncertain2

INSTANCE radiobutton group 88 ISA radiobutton group
WITH location := 256,428,354,472

WITH frame := FALSE
WITH group label := "Question33"
WITH show current := TRUE
WITH attachment := Question33 Of uncertain2

INSTANCE radiobutton group 89 ISA radiobutton group
WITH location := 246,467,324,513
WITH frame := FALSE
WITH group label := "Question34"
WITH show current := TRUE
WITH attachment := Question34 Of uncertain2

INSTANCE radiobutton group 90 ISA radiobutton group
WITH location := 264,512,379,564
WITH frame := FALSE
WITH group label := "Question35"
WITH show current := TRUE
WITH attachment := Question35 Of uncertain2

INSTANCE radiobutton group 91 ISA radiobutton group
WITH location := 226,559,325,609
WITH frame := FALSE
WITH group label := "Question36"
WITH show current := TRUE
WITH attachment := Question36 Of uncertain2

INSTANCE radiobutton group 92 ISA radiobutton group
WITH location := 247,611,348,652
WITH frame := FALSE
WITH group label := "Question37"
WITH show current := TRUE
WITH attachment := Question37 Of uncertain2

INSTANCE radiobutton group 93 ISA radiobutton group
WITH location := 253,659,360,712
WITH frame := FALSE
WITH group label := "Question38"
WITH show current := TRUE
WITH attachment := Question38 Of uncertain2

INSTANCE radiobutton group 94 ISA radiobutton group

WITH location := 220,707,321,749
WITH frame := FALSE
WITH group label := "Question39"
WITH show current := TRUE
WITH attachment := Question39 Of uncertain2

INSTANCE radiobutton group 95 ISA radiobutton group
WITH location := 223,756,344,797
WITH frame := FALSE
WITH group label := "Question40"
WITH show current := TRUE
WITH attachment := Question40 Of uncertain2

INSTANCE radiobutton group 96 ISA radiobutton group
WITH location := 231,803,359,852
WITH frame := FALSE
WITH group label := "Question41"
WITH show current := TRUE
WITH attachment := Question41 Of uncertain2

INSTANCE radiobutton group 97 ISA radiobutton group
WITH location := 281,853,418,906
WITH frame := FALSE
WITH group label := "Question42"
WITH show current := TRUE
WITH attachment := Question42 Of uncertain2

INSTANCE radiobutton group 98 ISA radiobutton group
WITH location := 118,66,336,614
WITH frame := FALSE
WITH group label := "whatecycl"
WITH show default := FALSE
WITH show current := TRUE
WITH attachment := whatecycl OF cycl

INSTANCE radiobutton group 99 ISA radiobutton group
WITH location := 298,19,390,63
WITH frame := FALSE
WITH group label := "Question40"
WITH show current := TRUE
WITH attachment := Question40 Of reports

3

PIONEERS IN METHYLENE BLUE TESTING SINCE 1974

19009 COUNTY ROAD 9, ELPHINSTON, NEW SOUTH WALES
TEL 012 436 7007 FAX 012 436 7007 TLE 012 436 7007

INSTANCE radiobutton group 100 ISA radiobutton group
WITH location := 336,95,425,145
WITH frame := FALSE
WITH group label := "Question41"
WITH show current := TRUE
WITH attachment := Question41 OF reports

INSTANCE radiobutton group 101 ISA radiobutton group
WITH location := 304,160,391,208
WITH frame := FALSE
WITH group label := "Question42"
WITH show current := TRUE
WITH attachment := Question42 OF reports

INSTANCE radiobutton group 102 ISA radiobutton group
WITH location := 326,213,402,268
WITH frame := FALSE
WITH group label := "Question43"
WITH show current := TRUE
WITH attachment := Question43 OF reports

INSTANCE radiobutton group 103 ISA radiobutton group
WITH location := 345,285,436,329
WITH frame := FALSE
WITH group label := "Question44"
WITH show current := TRUE
WITH attachment := Question44 OF reports

INSTANCE radiobutton group 104 ISA radiobutton group
WITH location := 350,341,439,383
WITH frame := FALSE
WITH group label := "Question45"
WITH show current := TRUE
WITH attachment := Question45 OF reports

INSTANCE radiobutton group 105 ISA radiobutton group
WITH location := 348,387,444,435
WITH frame := FALSE
WITH group label := "Question46"
WITH show current := TRUE

WITH attachment := Question46 OF reports

INSTANCE radiobutton group 106 ISA radiobutton group

WITH location := 305,452,387,496

WITH frame := FALSE

WITH group label := "Question47"

WITH show current := TRUE

WITH attachment := Question47 OF reports

INSTANCE radiobutton group 107 ISA radiobutton group

WITH location := 281,534,358,572

WITH frame := FALSE

WITH group label := "Question48"

WITH show current := TRUE

WITH attachment := Question48 OF reports

INSTANCE radiobutton group 108 ISA radiobutton group

WITH location := 315,588,407,633

WITH frame := FALSE

WITH group label := "Question49"

WITH show current := TRUE

WITH attachment := Question49 OF reports

INSTANCE radiobutton group 109 ISA radiobutton group

WITH location := 362,641,437,691

WITH frame := FALSE

WITH group label := "Question50"

WITH show current := TRUE

WITH attachment := Question50 OF reports

INSTANCE radiobutton group 110 ISA radiobutton group

WITH location := 360,180,446,228

WITH frame := FALSE

WITH group label := "Question1"

WITH show current := TRUE

WITH attachment := Question1 OF False Pretences

INSTANCE radiobutton group 111 ISA radiobutton group

WITH location := 331,233,447,283

WITH frame := FALSE

WITH group label := "Question2"

WITH show current := TRUE
WITH attachment := Question2 OF False Pretences

INSTANCE radiobutton group 112 ISA radiobutton group
WITH location := 302,293,376,342
WITH frame := FALSE
WITH group label := "Question3"
WITH show current := TRUE
WITH attachment := Question3 OF False Pretences

INSTANCE radiobutton group 113 ISA radiobutton group
WITH location := 260,368,342,420
WITH frame := FALSE
WITH group label := "Question4"
WITH show current := TRUE
WITH attachment := Question4 OF False Pretences

INSTANCE textbox 10 ISA textbox
WITH location := 243,309,244,310
WITH justify IS left
WITH font := "System"
WITH text := "textbox 10"

INSTANCE textbox 11 ISA textbox
WITH location := 82,154,475,192
WITH justify IS left
WITH font := "System"
WITH frame := FALSE
WITH scroll := TRUE
WITH text := "1. If one Canadian citizen, Landed imigrant or other person who lawfully entered Canada answer 'Canadian'.

2. If Many Canadian citizens, landed imigrants or other persons who lawfully entered Canada answer 'The Public'.

NOTE: that R. vs Anderson Ex. p. Cul 2 C.C.C. 18 (1970) states that the person defraud should not be named in the information or indictment but can be called upon in court.

3. If person(s) of other countries R. vs Chapnan
5. C.C.C. 46 (1970) states that although 'The Public'

were American Citizens the offence was committed and the fruits were received in Canada."

INSTANCE textbox 12 ISA textbox

WITH location := 13,10,425,46

WITH justify IS left

WITH font := "System"

WITH scroll := TRUE

WITH text := "This section looks at False Pretence as a component of Fraud and a charge by itself.

1. This means that is a person defrauds another by means of 'False Pretence' (section 319-320) then he may be charged with 'Fraud' rather than 'False Pretence'.
2. This may be done in a case where a number of false pretence offences have taken place and the Crown wishes to proceed under one blanket charge of fraud. However, a conviction for fraud under one set of facts would generally bar a further conviction for false pretences on the same issue or vice versa.

R. vs. Gagnon 110 C.C.C. 350 (1953)

R. vs. Lavoie 5 C.C.C. 331 (1970)

Kienapple vs The Queen (1974) 15 C.C.C (2nd) 524

Dore vs The A.G. of Canada (no. 2) 1974 17 C.C.C. (2nd) 359

"

INSTANCE textbox 13 ISA textbox

WITH location := 239,83,241,83

WITH justify IS left

WITH font := "System"

WITH text := "textbox 13"

INSTANCE textbox 14 ISA textbox

WITH location := 287,61,288,63

WITH justify IS left

WITH font := "System"
WITH text := "textbox 14"

INSTANCE textbox 16 ISA textbox
WITH location := 69,132,453,201
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Obtained Anything Capable of Being Stolen - The item obtained by the offence of False Pretences must be capable of being stolen. If it can not be stolen, then the act would not be a false pretence. Some of the things that are incapable of being stolen are as follows:

(a) Rent

A person pays rent for occupancy of space in a house or an apartment. This space cannot be stolen and remains in the possession of the owner. Therefore, if a person pays rent with a cheque that is subsequently returned marked N.S.F. or NO ACCOUNT the owner cannot resort to laying a charge under the False Pretences section. He would have to proceed under the Landlord and Tenant Act. R.S.O. 1970 Chapter 236. If the Occupancy of a hotel or motel room is paid for by a false cheque, then Section 322 Obtain Lodging by Fraud would apply. In either case, he could also resort to civil process.

(b) Labour of Work

Providing a workman renders labour only, and is paid with a false cheque, it is not a False Pretence as labour is not capable of being stolen. Therefore, the workman would have to recover his wages by one of the following methods:

(i) The Master & Servants Act. R.S.O. 1970 Chapter 263 (up to the amount of \$500 only).

(ii) The Employment Standards Act 1974.

(iii) The Small Claims Court Act R.S.O. 1970 Chapter 439 (up to the amount of \$1,000 only).

(iv) Or resort to civil process.

(c) Debts

If a debt is paid by a bad cheque it again is not a False Pretence as a debt is not capable of being stolen. In this case, the debt still exists and can be recovered in the normal manner through Small Claims Court or Civil process.

Remember that paying a utilities bill, such as gas, hydro or telephone is generally paying an account, or debt, with the company for the gas, hydro or telephone service.

Even though Section 287 C.C. provides for the theft of these things the individual paying an account by N.S.F. cheque is NOT stealing them. He had then with consent of the company some weeks previously, this purely is a debt and therefore is not capable of being stolen.

(d) Real Property

With some minor expectations, real property is not capable of being stolen. A large building or 200 acres of land obviously cannot be picked up and taken away, therefore, they can not be obtained by the offence of False Pretences. However, the offence of Fraud probably would apply, depending upon the circumstances.

**INSTANCE textbox 18 ISA textbox
WITH location := 15,161,440,234
WITH justify IS left
WITH font := "System"**

WITH scroll := TRUE

WITH text := "R. vs. Vallillee. 15 C.C.C. (2nd) 409 (1974)

The word 'property' does not mean ownership, but is only descriptive of the thing of the thing of which one is defrauded and the offence completed once there

is a passing over of possession under deceitful circumstances.

R. vs. Falconi. 21 C.C.C (2nd) 144 (1976)

This case is an interesting review of the case law relating to 'property'. In it the Judge decided that a doctors prescription was not property.

Includes bank credits or proprietary knowledge.

Where the 'Owner' of certain confidential information had no intention of dealing with it in a commercial way it could not be said that a person who obtains that information has committed fraud, since there was no risk of economic loss amounting to deprivation

R. vs. STEWART (1988) 41 C.C.C. (3rd) 481, 63 C.R. (3rd) 305, (1988 1 S.C.R. 963 (6:0))

On a charge under this section it is not necessary for the Crown to prove the accused actually obtained the property which was the subject of the charge, only that the victim was deprived of the property as a result of the accused's dishonest act.

R. vs. HUGGETT (1978), 42 C.C.C. (2d) 198 (Ont. C.A.)."

INSTANCE textbox 19 ISA textbox

WITH location := 68,32,418,147

WITH justify IS left

WITH font := "System"

WITH scroll := TRUE

**WITH text := "This system does not:
give definitions of fraud;**

**deal with jurisdiction;
state the code or penalties;
deal with non-disclosure;
value of cheque or related matters;
obtaining credit;
financial statements;
false statement in writing
Forgery false documents;
theft;
deciding when charges;
Credit Cards;
Personation;
Mails;
Falsifying;
Obtaining transportation;
Procedure for laying charges;
Evidence of similar acts;**

To Date:

- Classifies Fraud and False Pretences;**
- provides an estimate of value of evidence (still needs work);**
- looks at specific corporate frauds including misrepresentations (NSF cheques);**
- warning messages for exaggeration and dishonest, fraud areas programmed, Depri and Obtain, and PSM and Cap;**
- Fraud uncertain pressures&opportunities management;**
- When evidence is entered asks which area it concerns then add up score then displays choice list;**
- Will cycle if answers are to be changed from 2 places to 2 places**
- looks at case law applicability.**

Next:

- value of evidence**
- maybe point out where more evidence is needed**
- real estate rules and listing of case law**
- print out**
- hardwiring of questions in investigation**

modules ;

"

INSTANCE textbox 25 ISA textbox
WITH location := 58,139,463,197
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "The representation may be made by words, or in writing or by conduct that in some way would influence the victim to believe that the False representation was true."

R. vs. Letang. 2 C.C.C. 505 (1899)
R. vs Holdernan 23 C.C.C. 369 (1914)"

INSTANCE textbox 28 ISA textbox
WITH location := 295,124,532,244
WITH justify IS left
WITH font := "System"
WITH text := "Not only must it be shown that a false representation took place but also that a person acted upon it. If no one acted upon the representation it would constitute an attempted offence."

R. vs. Staggs. 20 C.C.C. 310 (1912)"

INSTANCE textbox 30 ISA textbox
WITH location := 271,87,495,248
WITH justify IS left
WITH font := "System"
WITH text := "Directly - A direct encounter - verbally or otherwise."

Contract - Though the medium of a contract.
For example: a person gives false information upon an application for a conditional sales contract and obtains merchandise through that false contract."

INSTANCE textbox 31 ISA textbox

WITH location := 57,158,466,206
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Causes it to be delivered to another person-

The fact that a person does not take actual possession of the item obtained by false pretence is immaterial. For example: a person purchases a car, paying for it with a 'no account' cheque, and arranges for it to be delivered to another person, the offence is complete."

INSTANCE textbox 32 ISA textbox
WITH location := 197,30,411,125
WITH justify IS left
WITH font := "System"
WITH text := "Since either the suspect did not obtain anything from the attempt or the victim did not believe the suspect the charge of Attempted False Pretence could be used"

INSTANCE textbox 33 ISA textbox
WITH location := 231,44,392,97
WITH justify IS left
WITH font := "System"
WITH text := "Since the suspect only exaggerated, there were no False Pretences."

INSTANCE textbox 34 ISA textbox
WITH location := 251,50,482,152
WITH justify IS left
WITH font := "System"
WITH text := "It appears the False Pretences were used and such a charge could be used if the greater charge of Fraud is not usable."

INSTANCE textbox 35 ISA textbox
WITH location := 196,47,367,151
WITH justify IS left

WITH font := "System"
WITH text := "Too many unknowns were
entered to determine if
False Pretences or Attempted
False Pretences."

INSTANCE textbox 36 ISA textbox
WITH location := 289,66,469,105
WITH justify IS left
WITH font := "System"
WITH text := "Uncertain if Fraud has
been committed."

INSTANCE textbox 37 ISA textbox
WITH location := 137,25,327,68
WITH justify IS left
WITH font := "System"
WITH text := "Did the victim believe the suspect?"

INSTANCE textbox 38 ISA textbox
WITH location := 48,9,201,62
WITH justify IS left
WITH font := "System"
WITH text := "Did the suspect obtain anything from the
victim?"

INSTANCE textbox 39 ISA textbox
WITH location := 78,139,453,194
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "- Detriment, prejudice or risk of prejudice
to economic interest of victim;

- Put victim in worse position than if no deceit
e.g. economic interest at risk;

- Advantage to accused need not be realized only
intended e.g. even if accused loses money and
victim gains.

However, while there need not be actual economic loss there must be an actual risk of prejudice in the transactions so that there was no actual risk of prejudice to her economic interests the charge was not made out:

t. vs. CAMPBELL and KOTLER
(1986), 29 C.C.C. (3d) 97, (1986)
2 S.C.R. 376, 32 D.L.R. (4th) 363 (5:0).

Economic loss does not have to be proven by the Crown and fraud is complete when money is paid for corporate shares to which the accused falsely ascribed certain attributes:
R. vs. KNELSON AND DARAN (1962), 133 C.C.C. 210, 38 c.r. 181 (B.C.C.A.).

It is not essential that there be actual economic loss as the outcome of the fraud
R.v. Olan Supra at 150. Proof of detriment, prejudice or risk of prejudice to economic interests of the victim is all that is necessary"

INSTANCE textbox 40 ISA textbox
WITH location := 71,164,467,199
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "- Deceit or intention to deceive - Victim believes as true what is false;

Falsehood - falsity, untruth, lies;

It is a falsehood for a person to promise to pay cash for the purchase of an item without any intention of honouring the promise:
R. vs. STANLEY (1957), 119 C.C.C. 220, 26 C.R. 180 (B.C.C.A.).

- Other fraudulent means - covers other means what ordinary people stigmatized as dishonest;

In COX and PATON vs. THE QUEEN, (1963) 2 C.C.C. 148, (1963) S.C.R. 500 (5:0), although no exhaustive definition of 'other fraudulent means' was given it was held that if all the directors of a company were to join together to purchase a worthless asset with company funds in order to enrich themselves then even 'supposing it could be said that the directors being the 'mind of the company' and well knowing the true facts, the company was not deceived....it is clear thatthe directors would have defrauded the company, if not by deceit or falsehood, by 'other fraudulent means'.

It was held in R. vs. CHARTERS (1975), 119 C.C.C. 223 (Ont. C.A.), that mere failure to disclose a material fact did not constitute the obtaining of property by 'deceit, falsehood or other fraudulent means'.

This case was referred to in MACKROW vs. THE QUEEN, (1976) 1 C.C.C. 289, (1976), S.C.R. 22 (5:0) but without comment as to whether to 'fraudulently' withhold information could constitute the offence.

In R. vs. RENARD (1974), 17 C.C.C. (2d) 355 (Ont. C.A.), the Court considering COX and PATON vs. THE QUEEN, supra, held that 'other fraudulent means' are not restricted to means which are in a nature of falsehood or deceit. Further, a victim may be defrauded by being deprived of something and he may be deprived of something either by being fraudulently induced to part with it or by having that to which he is entitled fraudulently diverted or withheld from him.

At least where the Crown relies on

'other fraudulent means' rather than deceit or falsehood there need not be some form of relationship or nexus between the accused and the victim. Thus, the infringement of copyright by 'counterfeiting' of video tapes may constitute fraud, whether or not it would also amount to theft, notwithstanding there is no relationship between the accused and the victim, the holder of the copyright or distribution rights to the tapes:

R. vs. KIRKWOOD (1935), 5 C.C.C. (3d) 393, 35 C.R. (3d) (Ont. C.A.), relying on SCOTT vs. METROPOLITAN POLICE COMMISSIONER, *supra*.
Followed: R. vs. FITZPATRICK (1984), 11 C.C.C. (3d) 46 (B.C.C.A.).

In R. vs. OLAN, HUDSON and HARTNETT (1978), 41 C.C.C. (2d) 145, 86 D.L.R. (3d) 212, (1978) 2 S.C.R. 1175 (9:0) the court considered the application of COX and PATON vs. THE QUEEN, *supra*, in a situation where the accused has caused a company over which they had control to divest its holdings in 'blue chip' securities and to purchase shares in a company whose major asset was a debt owed to it by a company controlled by two of the accused. It was held that where it is alleged a corporation was defrauded by its directors' deception of the corporation is not an essential element of the offence, the words 'other fraudulent means' include not only means which can properly be stigmatized as dishonest. Further, while no exhaustive definition of 'defraud' was attempted the Crown at least must prove dishonesty and deprivation. The element of deprivation is satisfied on proof of detriment, prejudice, or risk of prejudice to the economic interest of the victims. The issue in this case was whether the use of the victim's assets in this manner was in

furtherance of a bona fide business interest of the victim or was it expended in advancing the personal interests of the accused and whether the victim suffered deprivation as a result.

The Court disagreed with the Ontario Court of Appeal view that there was no evidence of fraud and ordered a new trial. It was not necessary for the Crown to prove the new investment was worthless or negligible.

- Partial conduct involves element of dishonestly if misrepresentations are effective to cause loss of property;

Susceptibility of victim not a fact e.g. not judge what reasonable person would believe;

High profits acceptable if not dishonestly obtained;

Non disclosure-victim must rely on information, accused has willful blindness negligence is not dishonest

It was held, referring to TARLING (No.1) vs. GOVERNMENT OF REPUBLIC OF SINGAPORE et. al. (1978), 70 Cr. App. R. 77 (H.L.) that conduct in business falling short of being in the highest standard of straightforward or honourable dealings will not always constitute the requisite dishonest so as to attract liability under this section.
R. vs. DOREN (1982), 66 C.C.C. (2D) 448, 135 D.L.R., (3d) 258 (Ont. C.A.).

Proof of deceit is not essential to support a conviction for fraud under s. 338(1). R. v. Olan supra."

INSTANCE textbox 41 ISA textbox
WITH location := 236,62,480,83
WITH justify IS left

WITH font := "System"
WITH text := "textbox 41"

INSTANCE textbox 42 ISA textbox
WITH location := 9,9,209,34
WITH justify IS left
WITH font := "System"
WITH text := "Which of the following
properties were involved?"

INSTANCE textbox 43 ISA textbox
WITH location := 296,5,516,39
WITH justify IS left
WITH font := "System"
WITH text := "Which of the following evidence
is available?"

INSTANCE textbox 44 ISA textbox
WITH location := 25,28,225,53
WITH justify IS left
WITH font := "System"
WITH text := "Which type of money was involved?"

INSTANCE textbox 45 ISA textbox
WITH location := 335,28,535,53
WITH justify IS left
WITH font := "System"
WITH text := "What type of proof is available?"

INSTANCE textbox 46 ISA textbox
WITH location := 95,36,295,61
WITH justify IS left
WITH font := "System"
WITH text := "Who were the alleged victims?"

INSTANCE textbox 47 ISA textbox
WITH location := 14,12,214,37
WITH justify IS left
WITH font := "System"
WITH text := "What type of security
is involved?"

INSTANCE textbox 48 ISA textbox
WITH location := 388,9,588,34
WITH justify IS left
WITH font := "System"
WITH text := "What type of proof is
available?"

INSTANCE textbox 49 ISA textbox
WITH location := 19,15,208,86
WITH justify IS left
WITH font := "System"
WITH text := "Did the suspects statements induce
the victim to action?"

INSTANCE textbox 50 ISA textbox
WITH location := 266,72,528,159
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "This is a most important issue.

The representation must be
made in the PAST or PRESENT.
Not the FUTURE.

Example: A man writes a cheque
on a bank savings account.
When presented for payment
it is found that there is no such
account in his name.
Therefore, at the time
(present) he wrote the cheque
he falsely pretended that an
account existed. If he had said
'I will pay you next payday' that
is a promise in the future
and would not be a false pretence.

R. vs. Reid. 74 C.C.C. 156 (1940)
R. vs. Wilson 1. C.L.Q. 494 (1958)

'A mere representation as to some

future fact, or means to do a particular act, will not suffice to constitute false pretence."

INSTANCE textbox 51 ISA textbox

WITH location := 42,131,440,192

WITH justify IS left

WITH font := "System"

WITH scroll := TRUE

WITH text := "This sub-section tells that the exaggeration of the quality of an article is not necessarily a False Pretence unless it is carried out to such an extent that it amounts to fraudulent misrepresentation."

Example:

1. A used car salesman tells a prospective buyer that the vehicle that he is interested in will probably get about 30 miles to the gallon. Actually it would only get 20 miles to the gallon.
2. Another salesman tells a buyer that the vehicle in question is five years old when actually it is nine years old. He goes on to say that it has a rebuilt engine and transmission which it does not have.

The first salesman would be exaggerating but not to such a degree as to be considered fraudulent. On the other hand the second salesman carried out the exaggeration to such a degree as to amount to a fraudulent misrepresentation.

Sub-section (3) points out that the exaggeration mentioned in sub-section (2) is a question of fact. Therefore, in a Judge and Jury trial it would be up to the Jury to decide whether or not the exaggerated commendation was a fraudulent misrepresentation. In trials where there was no jury, the Judge would decide the issue."

INSTANCE textbox 52 ISA textbox

WITH location := 11,13,211,38
WITH justify IS left
WITH font := "System"
WITH text := "Who is the victim?"

INSTANCE textbox 53 ISA textbox
WITH location := 7,13,207,38
WITH justify IS left
WITH font := "System"
WITH text := "Was the suspect dishonest?"

INSTANCE textbox 54 ISA textbox
WITH location := 6,15,206,40
WITH justify IS left
WITH font := "System"
WITH text := "Was the victim deprived?"

INSTANCE textbox 55 ISA textbox
WITH location := 28,17,228,42
WITH justify IS left
WITH font := "System"
WITH text := "Was the item delivered?"

INSTANCE textbox 56 ISA textbox
WITH location := 32,17,222,88
WITH justify IS left
WITH font := "System"
WITH text := "Was the form of interaction
either directly or
a contract?"

INSTANCE textbox 57 ISA textbox
WITH location := 44,11,244,36
WITH justify IS left
WITH font := "System"
WITH text := "Was exaggeration used?"

INSTANCE textbox 58 ISA textbox
WITH location := 14,8,193,68
WITH justify IS left
WITH font := "System"

WITH text := "Did the suspect intent to commit the crime?"

INSTANCE textbox 59 ISA textbox
WITH location := 26,11,222,58
WITH justify IS left
WITH font := "System"
WITH text := "Did the suspect know the representations were false?"

INSTANCE textbox 60 ISA textbox
WITH location := 15,9,270,38
WITH justify IS left
WITH font := "System"
WITH text := "Was the representation made by words, writing, conduct ?"

INSTANCE textbox 61 ISA textbox
WITH location := 10,69,226,112
WITH justify IS left
WITH font := "System"
WITH text := "Was the representation made in the past or present?"

INSTANCE textbox 62 ISA textbox
WITH location := 82,155,434,190
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "It is not necessary for the Crown to prove the accused actually obtained the property ; only that the victim was deprived of it. R. v. Huggert (1978), 4 C.R. (3d) 208, 42 C.C.C. (2d) 198 (Ont. C.A.)"

INSTANCE textbox 63 ISA textbox
WITH location := 25,5,225,30
WITH justify IS left
WITH font := "System"
WITH text := "Was the object capable of being stolen?"

INSTANCE textbox 64 ISA textbox
WITH location := 246,104,463,144
WITH justify IS left
WITH font := "System"
WITH text := "False - not genuine
- intentionally untrue
- tending to mislead"

INSTANCE textbox 65 ISA textbox
WITH location := 88,186,378,216
WITH justify IS left
WITH font := "System"
WITH text := "Pretence - a claim made or implied but not
supported by a fact-false show."

INSTANCE textbox 66 ISA textbox
WITH location := 5,139,261,202
WITH justify IS left
WITH font := "System"
WITH text := "Representation - Urge that something
should be done
- call attention to something"

INSTANCE textbox 67 ISA textbox
WITH location := 4,105,204,130
WITH justify IS left
WITH font := "System"
WITH text := "Matter of Fact - thing that is true, truth, reality"

INSTANCE textbox 68 ISA textbox
WITH location := 13,6,183,30
WITH justify IS left
WITH font := "System"
WITH text := "fraud score out of 65"

INSTANCE textbox 69 ISA textbox
WITH location := 7,3,423,41
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE

WITH text := "In the following section we determined that a fraud and/or misrepresentation had been committed.

The next section would be to concentrate on the particular domain the fraud was committed in. For example, the stock market, real estate, NSF cheques, etc. Here the expert system would focus on specific aspects.

One domain has been programmed. The assumption is the fraud is being committed against a company, the investigator wishes to find where the fraud is occurring, and by who (in general). The investigator must have access to the company records. It is assumed that the proper officials can attest to the records e.g. the questions of the first section concerning evidence will not be re-asked.

The program will proceed by trying to determine where the fraud is committed. Please note that multiple frauds could be happening by unrelated groups. "

INSTANCE textbox 70 ISA textbox

WITH location := 68,8,378,57

WITH justify IS left

WITH font := "System"

WITH scroll := TRUE

WITH text := "This series of questions is to analyze employee fraud on expenses.

Do you wish to proceed?

Please obtain employee expense reports and answer the following questions."

INSTANCE textbox 71 ISA textbox

WITH location := 21,82,267,105
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Can the company credit card
be used for personnal expenses?

Does the company always paid the
entire credit card bill?
"

INSTANCE textbox 72 ISA textbox
WITH location := 17,130,264,153
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Are expenses allowable business
expenses?

It is neccessary to determine
the company's policy regarding
allowable expenses."

INSTANCE textbox 73 ISA textbox
WITH location := 16,189,265,212
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Is the expense the actual
amount occured?

It is neccessary to obtain
the suppliers's copies of
the original expense
vouchers and compare
them to those submitted in
support of the expense report.
It is also neccessary to understand
the approval and payment system
of the company."

INSTANCE textbox 74 ISA textbox
WITH location := 12,252,262,299
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "If the expense amount
was charged to the company,
did the employee re-imburse
the company?
"

INSTANCE textbox 75 ISA textbox
WITH location := 12,333,249,377
WITH justify IS left
WITH font := "System"
WITH scroll := FALSE
WITH text := "Is the approval person for such
expenses different than the
employee?"

INSTANCE textbox 76 ISA textbox
WITH location := 7,391,261,422
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Was there any pattern in the
submission of the expenses?

e.g. all material relating to
office supplies or expensed
from a certain geographic area."

INSTANCE textbox 78 ISA textbox
WITH location := 8,448,274,507
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Was the approval always granted
by the same person?
OR
Was an unusual procedure followed

to grant approval?

e.g. senior manager

**These questions assume more
than one person may grant
approval."**

**INSTANCE textbox 77 ISA textbox
WITH location := 58,8,327,59
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "This section deals with fraud
by suppliers.**

Do you wish to proceed?

**It will be necessary to obtain
company records and other documents"**

**INSTANCE textbox 79 ISA textbox
WITH location := 7,85,307,121
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Were the goods or services
actually provided?**

**The delivery of goods or services
to a location other than a business
location (for the use and benefit of
the suspect) is a common technique,
as is the payment to a 'friendly' supplier
when no goods or services were actually
provided.**

**Payments of inflated amounts
to suppliers may reflect secret commissions
or bribes."**

INSTANCE textbox 80 ISA textbox
WITH location := 9,150,276,168
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Did the company receive the benefit?"

It may be necessary to obtain bills of lading, freight companies proof of delivery slips to confirm the location where goods or services were delivered.

Ensure neutrality by the shipper e.g talk to receiving clerks, or warehouse employees"

INSTANCE textbox 81 ISA textbox
WITH location := 19,239,280,264
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Was the normal approval process completed?"

e.g. did one person approval all purchases from the shipper; did a company person deviate from normal procedures to approve payment. e.g. President approving only certain invoices.

Benefit may be established through a review of personal bank accounts if they reveal unexplained cash deposits. Otherwise the net worth approach may be necessary to establish benefit."

INSTANCE textbox 82 ISA textbox
WITH location := 10,27,343,66

WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "This section looks for a front-end fraud
in the sales receivable system.
Do you wish to continue?"

Company revenue may be
diverted before it ever reaches the sales,
receivables and receipts system, thus
circumventing the accounting system entirely.
This is commonly called a 'front-end' fraud.
It
occurs when the company's products are
sold for cash, the sale and the receipt of cash
are not recorded and the cash diverted -
usually directed into the pocket of the
perpetrator. A front end fraud occurs when a
company's customers are improperly
directed to take their business elsewhere,
thus depriving the company of business
and profits it could otherwise have earned.
It occurs when special or unusual revenues
and cost reductions such as purchase rebates
are received.
unusual
"

INSTANCE textbox 83 ISA textbox
WITH location := 16,123,317,151
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Do recorded sales represent
all company sales?"

In situations of cash sales, examine
inventory records e.g. freight bills
for inputs, inventory records for

current amounts and waste or production records for items in production and wastage records.

Service businesses e.g. ferry, movie theater are difficult to detect fraud."

INSTANCE textbox 84 ISA textbox
WITH location := 13,173,328,209
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Has the company unexpectedly experienced reduced sales from some of its oldest and best customers?"

the sales records of the customers should be analyzed for the period before the occurrence of the fraud to determine normal business amounts."

INSTANCE textbox 85 ISA textbox
WITH location := 44,24,343,59
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "This section looks at the recorded sales.
Do you wish to proceed?"

A company sales invoice can be altered to show a lower sale amount than was actually the case. The difference can be misappropriated without the accounting system noticing."

INSTANCE textbox 86 ISA textbox
WITH location := 38,89,342,108
WITH justify IS left

WITH font := "System"
WITH scroll := TRUE
WITH text := "Are the recorded sales the actual sales?"

Obtain and examine the original copies
of an invoice and related accounting
books.

The supplier (assuming not part of scheme)
may even have notes of the original receipts
to indicate shipping directions, et.c"

INSTANCE textbox 87 ISA textbox
WITH location := 14,139,268,168
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Can sales be confirmed with
customers?"

If documents have been altered e.g.
erasures it indicates intent to defraud
and may also indicate the beginning
point of the fraud since the scheme
would be refined with time."

INSTANCE textbox 88 ISA textbox
WITH location := 44,185,291,222
WITH justify IS left
WITH font := "System"
WITH text := "Are sales amounts reasonable
and normal amounts?"

INSTANCE textbox 89 ISA textbox
WITH location := 28,234,295,268
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Did the person have the necessary
authority and opportunity?"

Did the suspect also carry on personal purchases with the supplier e.g. construction material for the new office building and suspect's personal home."

INSTANCE textbox 90 ISA textbox
WITH location := 23,18,317,58
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Planned fraud by customers

Do you wish to proceed?

Planned bankruptcy occurs when management has converted the assets of a business to its own benefit and tries to conceal the conversion through bankruptcy.
"

INSTANCE textbox 91 ISA textbox
WITH location := 25,86,264,130
WITH justify IS left
WITH font := "System"
WITH text := "Has the customer business established a reputation for trustworthiness?
"

INSTANCE textbox 92 ISA textbox
WITH location := 19,147,221,185
WITH justify IS left
WITH font := "System"
WITH text := "Does it sell tangible and highly salable products such as furniture?"

INSTANCE textbox 93 ISA textbox
WITH location := 17,208,217,233
WITH justify IS left
WITH font := "System"
WITH text := "Does it have little net worth?"

INSTANCE textbox 94 ISA textbox
WITH location := 11,246,211,271
WITH justify IS left
WITH font := "System"
WITH text := "Has it been a financial success?"
"

INSTANCE textbox 95 ISA textbox
WITH location := 16,288,295,314
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Has a new person been recently
introduced in a senior position?"

Caution is urged; in that recently
introduced people could be 'scapegoats'
in a complex manner."

INSTANCE textbox 96 ISA textbox
WITH location := 23,344,377,409
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Has the business departed from its
normal business practices with regard
to purchasing, payments to suppliers,
sales and the granting of credit
to customers?"

The volume of inventory should
increase.

The credit terms from suppliers should increase.

The company may only sell COD but
lower price to at or below supplier
invoices."

INSTANCE textbox 97 ISA textbox

WITH location := 144,87,344,112
WITH justify IS left
WITH font := "System"
WITH text := "These types have not been programmed."

INSTANCE textbox 98 ISA textbox
WITH location := 77,58,277,83
WITH justify IS left
WITH font := "System"
WITH text := "Sorry. This option has not been programed"

INSTANCE textbox 99 ISA textbox
WITH location := 12,22,320,58
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Misrepresentations involving NSF cheques.

Do you wish to proceed?

Since most misrepresentations
involve NSF cheques this section
examines this area."

INSTANCE textbox 100 ISA textbox
WITH location := 11,80,280,104
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Did the person have signing
authority?

Examine the bank account's
signature cards to see if the person
could sign cheques on the
particular account.

Check other signing authority's
pervious history as well."

INSTANCE textbox 101 ISA textbox

WITH location := 15,130,251,167
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Did the individual know about the
NSFs?"

- Examine the bank statements 2-3
months prior to the start of the
NSFs to show the individual
knew NSFs would happen.

- See if the bank sent notices of
NSFs."

INSTANCE textbox 102 ISA textbox
WITH location := 19,192,301,215
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Were there insufficient deposits?"

Ensure that deposits were not sufficient
and that they werenot dated appropriately
e.g. days after the cheque's due date.

Ensure that insufficient deposits
did not come from NSF cheques
the individual received e.g. from
a bankrupt corporation."

INSTANCE textbox 103 ISA textbox
WITH location := 26,247,317,266
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Was there any overdraft agreement?"

e.g. protection insurance or other
agreements from overdraft?"

INSTANCE textbox 104 ISA textbox
WITH location := 25,297,344,323
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Was there a wrongful pattern in the NSF's?"

Ensure that two signing authority did not
simply mix up the account.

Look for certain type of purchases
or if the goods are nonreturnable e.g.
consumable.

In joint accounts ensure parties
did not suffer from miscommunication.

Has there been a prior history of NSF
or is this an unexplainable sudden occurrence.
Explainable could come from innocent
money problems after losing a job.
"

INSTANCE textbox 105 ISA textbox
WITH location := 36,346,313,392
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Did the bank sent a registered
letter closing the account
and further cheques were issued?"

check that the signature is the
correct person other wise get
witnesses to verify the letter
arrived?

If the answer to this question
is yes then reexamine evidence
for fraud."

INSTANCE textbox 106 ISA textbox
WITH location := 18,6,327,62
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "In the following section you answered
'Unknown' to at least one question.
This section examines the uncertainty.
Do you wish to continue?"

When answering 'Unknown', it
could be for a variety of reasons:
a) lack of understanding of what is
happening in this particular case
e.g. 'need the big picture';
b) evidence is not readily
available to prove what the
investigator believes is happening.

Therefore, this section takes an
abstract look at what is happening
to try and determine if the investigator's
'big picture' is correct and evidence should
therefore be available if more effort were
spending investigating.

Each question has been posed to be
answered as yes or no e.g.
'Are there.....'

The questions assume access to the
company records, an understanding
of accounting terms, and ability
to understand the corporate records."

INSTANCE textbox 107 ISA textbox
WITH location := 17,74,217,99
WITH justify IS left
WITH font := "System"
WITH text := "Heavy investments or losses?"

INSTANCE textbox 108 ISA textbox
WITH location := 12,109,212,134
WITH justify IS left
WITH font := "System"
WITH text := "Insufficient working capital?"

INSTANCE textbox 109 ISA textbox
WITH location := 21,136,113,153
WITH justify IS left
WITH font := "System"
WITH text := "High debt?"

INSTANCE textbox 110 ISA textbox
WITH location := 12,167,212,192
WITH justify IS left
WITH font := "System"
WITH text := "Reduced ability to acquire credit?"

INSTANCE textbox 111 ISA textbox
WITH location := 12,204,212,256
WITH justify IS left
WITH font := "System"
WITH text := "Profit squeeze (costs and expenses
rising higher and faster than sales
and revenues)?"

INSTANCE textbox 112 ISA textbox
WITH location := 12,1159,212,1184
WITH justify IS left
WITH font := "System"
WITH text := "Restrictive loan agreements?"

INSTANCE textbox 113 ISA textbox
WITH location := 12,266,213,309
WITH justify IS left
WITH font := "System"
WITH scroll := FALSE
WITH text := "Progressive deterioration
in the quality of corporate earnings?"

INSTANCE textbox 114 ISA textbox

WITH location := 11,315,261,340
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Urgent need for favourable
earnings?
(to support the high price of stock,
to meet earnings forecasts)"

INSTANCE textbox 115 ISA textbox
WITH location := 15,353,285,406
WITH justify IS left
WITH font := "System"
WITH text := "Need to gloss over a temporarily bad
situation (in order to maintain
management position and
prestige)?"

INSTANCE textbox 116 ISA textbox
WITH location := 8,428,208,453
WITH justify IS left
WITH font := "System"
WITH text := "Unmarketable collateral?"

INSTANCE textbox 117 ISA textbox
WITH location := 14,1097,214,1122
WITH justify IS left
WITH font := "System"
WITH text := "Dependence on only one
or two products?"

INSTANCE textbox 118 ISA textbox
WITH location := 14,473,142,497
WITH justify IS left
WITH font := "System"
WITH text := "Excess capacity"

INSTANCE textbox 119 ISA textbox
WITH location := 6,515,164,534
WITH justify IS left
WITH font := "System"

WITH text := "Long business cycle?"

INSTANCE textbox 120 ISA textbox
WITH location := 10,557,186,559
WITH justify IS left
WITH font := "System"
WITH text := "textbox 120"

INSTANCE textbox 121 ISA textbox
WITH location := 11,553,255,580
WITH justify IS left
WITH font := "System"
WITH text := "Existence or revocable and possibly
impeiled necessary licenses?"

INSTANCE textbox 122 ISA textbox
WITH location := 8,591,200,612
WITH justify IS left
WITH font := "System"
WITH text := "Extremely rapid expansion?"

INSTANCE textbox 123 ISA textbox
WITH location := 9,633,215,673
WITH justify IS left
WITH font := "System"
WITH text := "Unfavourable economic conditions
within an industry?"

INSTANCE textbox 124 ISA textbox
WITH location := 3,687,160,712
WITH justify IS left
WITH font := "System"
WITH text := "Difficulty in collecting
receivables?"

INSTANCE textbox 125 ISA textbox
WITH location := 4,728,201,749
WITH justify IS left
WITH font := "System"
WITH text := "Unusually heavy competition?"

INSTANCE textbox 126 ISA textbox
WITH location := 3,776,231,816
WITH justify IS left
WITH font := "System"
WITH text := "Significant reduction in sales backlog indicating future sales decline?"

INSTANCE textbox 127 ISA textbox
WITH location := 7,887,147,912
WITH justify IS left
WITH font := "System"
WITH text := "Pressure to merge?"

INSTANCE textbox 128 ISA textbox
WITH location := 7,830,205,872
WITH justify IS left
WITH font := "System"
WITH text := "Sizable inventory increase without comparable sales increases?"

INSTANCE textbox 129 ISA textbox
WITH location := 9,921,209,946
WITH justify IS left
WITH font := "System"
WITH text := "Significant tax adjustments or changes?"

INSTANCE textbox 130 ISA textbox
WITH location := 0,977,232,1019
WITH justify IS left
WITH font := "System"
WITH text := "Significant litigation (especially between stockholders and management)?"

INSTANCE textbox 131 ISA textbox
WITH location := 2,1042,202,1067
WITH justify IS left
WITH font := "System"
WITH text := "Suspension or delisting from a stock exchange?"

INSTANCE textbox 132 ISA textbox
WITH location := 14,13,314,63
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Having indicated uncertainty in some of the questions about fraud, this section looks at opportunities to commit fraud. Do you wish to proceed?"

In some organizations opportunities to committ fraud may exist. This situation may cause a case to look like fraud but merely be a reflection of the corporate structure.

In the following questions take an abstract view of the organization and answer based upon evidence and 'gut-feel'."

INSTANCE textbox 133 ISA textbox
WITH location := 22,94,222,119
WITH justify IS left
WITH font := "System"
WITH text := "Related party transactions?"
"

INSTANCE textbox 134 ISA textbox
WITH location := 24,146,281,187
WITH justify IS left
WITH font := "System"
WITH text := "The use of several different auditing firms or the frequent changing of auditors?"

INSTANCE textbox 135 ISA textbox
WITH location := 25,230,225,255
WITH justify IS left
WITH font := "System"

WITH text := "Reluctance to give investigator needed data?"

INSTANCE textbox 136 ISA textbox
WITH location := 21,284,263,336
WITH justify IS left
WITH font := "System"
WITH text := "The use of several different banks or legal firms or frequent switching of firms, so that none see the entire picture?"

INSTANCE textbox 137 ISA textbox
WITH location := 16,352,217,381
WITH justify IS left
WITH font := "System"
WITH text := "Continuous problems with regulatory agencies?"

INSTANCE textbox 138 ISA textbox
WITH location := 11,399,211,424
WITH justify IS left
WITH font := "System"
WITH text := "A complex business structure?"

INSTANCE textbox 139 ISA textbox
WITH location := 11,437,211,462
WITH justify IS left
WITH font := "System"
WITH text := "No effective accounting staff?"

INSTANCE textbox 140 ISA textbox
WITH location := 9,469,266,496
WITH justify IS left
WITH font := "System"
WITH text := "High degree of computerization in the firm?"

INSTANCE textbox 141 ISA textbox
WITH location := 11,515,258,558
WITH justify IS left

WITH font := "System"
WITH text := "Inadequate internal control system,
or failure to enforce existing
internal control systems?"

INSTANCE textbox 142 ISA textbox
WITH location := 15,568,215,593
WITH justify IS left
WITH font := "System"
WITH text := "Rapid turnover of key employees?"

INSTANCE textbox 143 ISA textbox
WITH location := 11,608,277,644
WITH justify IS left
WITH font := "System"
WITH text := "Involvement in atypical or
'hot' industries e.g. mining, real
estate, insurance, etc."

INSTANCE textbox 144 ISA textbox
WITH location := 13,665,213,690
WITH justify IS left
WITH font := "System"
WITH text := "Large year-end and/or unusual
transactions?"

INSTANCE textbox 145 ISA textbox
WITH location := 17,714,217,739
WITH justify IS left
WITH font := "System"
WITH text := "Unduly liberal accounting practices?"

INSTANCE textbox 146 ISA textbox
WITH location := 19,762,219,787
WITH justify IS left
WITH font := "System"
WITH text := "Poor accounting records?"

INSTANCE textbox 147 ISA textbox
WITH location := 15,813,184,850
WITH justify IS left

WITH font := "System"
WITH text := "Inadequately staffed accounting
department?"

INSTANCE textbox 148 ISA textbox
WITH location := 7,864,264,912
WITH justify IS left
WITH font := "System"
WITH text := "Inadequate disclosure of questionable
or unusual accounting practices?"

INSTANCE textbox 149 ISA textbox
WITH location := 85,15,376,70
WITH justify IS left
WITH font := "System"
WITH text := "Please indicate to which area the evidence
you have (in order to answer the last
question) belongs?"

INSTANCE textbox 150 ISA textbox
WITH location := 4,60,234,107
WITH justify IS left
WITH font := "System"
WITH text := "According to the answers about
the evidence available it would
seem that the case is about:"

INSTANCE textbox 151 ISA textbox
WITH location := 295,104,296,105
WITH justify IS left
WITH font := "System"
WITH text := "textbox 151"

INSTANCE textbox 152 ISA textbox
WITH location := 73,15,364,55
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "This module allows the user
to change previous answers to observe
the effect or if new information arises."

In the following indicate which module to change.

Note that it will erase the old answers to the module which is to be corrected."

INSTANCE textbox 153 ISA textbox
WITH location := 10,74,436,99
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "The person making the representation must know that it is false."

Example: If at the time of writing a cheque a person knows he has no bank account then there is no doubt that it is a false pretence. However, if a person wrote a cheque for \$100 believing that at the time there was \$100 in the account, even though there was only \$75, it probably could not be substantiated as an offence. Section (320)4 the Presumption concerning insufficient funds deals with this type of situation.

R. vs. Jones & Manlove. 63 C.C.C. 145 (1935)
R. vs. Martel 27 C.C.C. 316 (1916)

"

INSTANCE textbox 154 ISA textbox
WITH location := 27,112,427,162
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Where the Crown relies on 'other fraudulent means', it must be shown that on an objective basis the means were dishonest and that the accused knew that the acts were dishonest:

R. vs. SEBE (1987), 35 C.C.C. (3d) 97, 57 C.R.
(3d) 348, 57 Sask. R. 256 (C.A.)

"

INSTANCE textbox 155 ISA textbox

WITH location := 29,178,406,226

WITH justify IS left

WITH font := "System"

WITH scroll := TRUE

WITH text := "Proof of dishonesty requires not only proof that the acts be judged objectively dishonest but also proof that the accused knew that the act was dishonest and intended to act dishonestly. Further, it puts the standard of conduct too high to consider whether the conduct involved was that which ordinary decent people would feel was discreditable as being clearly at variance with straightforward or honourable dealings:

R. vs. BOBBIE (1988), 43 C.C.C. (3d) 187, 65 C.R.
(3d) 284 (Ont. C.A.) leave to appeal to refused
loc. cit. C.C.C. vi."

INSTANCE textbox 156 ISA textbox

WITH location := 33,12,386,37

WITH justify IS left

WITH font := "System"

WITH scroll := TRUE

WITH text := "You have indicated that the suspect knew of that he/she was being dishonest.
The following questions try to find the appropriate case law.
Please indicate which cases are appropriate."

INSTANCE textbox 157 ISA textbox

WITH location := 35,10,392,40

WITH justify IS left

WITH font := "System"

WITH scroll := TRUE

WITH text := "In order to obtain a conviction, the crown must be able to show 'Fraudulent intent' or 'Mens Rea'.

The following questions attempt to find the
revelant case law for this case.
Indicate which case fits.

"

INSTANCE textbox 158 ISA textbox
WITH location := 40,118,423,153
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "In a non-payment case the onus in on the Crown to
prove
that at the time the accused entered into the contract he
did not intend to pay for the property. Furthermore the
Court may on each count consider evidence of other
similar contracts, some of which are the subject
of other counts on the indictment, in order to
ascertain the accused's state of mind
and to rebut a defence of innocent inten:
R. vs. GREGG, (1965) 3 C.C.C.203, 44 C.R. 341 (Sask. C.A.)
"

INSTANCE textbox 159 ISA textbox
WITH location := 39,65,424,102
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Where pursuant to the suggestion of his superior,
who approved but would not authorize a salary
increase, the accused submitted fictitious expense
accounts to the Quebec government, it was held (4:3)
that such a direction was not a valid defence to a
charge of defrauding the public in general and the
Government of the Province of Quebec in particular,
and that the accused's expectation that such a
practice would ultimately be
validated was also not a proper defence in law:
THE QUEEN vs. LEMIRE, (1965 4C.C.C.II,
45 C.R.16(S.C.C.).

"

INSTANCE textbox 160 ISA textbox
WITH location := 44,171,403,204
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Even if honest motives to repay is irrelevant."

R. vs. Asselin. 25 C.R. 57 (1957)
R. vs. Buckle. 87 C.C.C. 130 (1946)
R. vs. Macdonald. 88 C.C.C. 358 (1946)
R. vs. Powell. 4 C.C.C. 349 (1965)

"

INSTANCE textbox 161 ISA textbox
WITH location := 24,11,263,63
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "This section examines a rare NSF scheme referred to as KITING."

Do you wish to continue ?"

INSTANCE textbox 162 ISA textbox
WITH location := 21,116,285,141
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Were many bank accounts used?"

This scheme is designed to pass
non-existent money between accounts.

Examine the back of all cheques to
trace accounts."

INSTANCE textbox 163 ISA textbox

WITH location := 25,167,266,190
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Were the cheques all drawn
on personnel accounts?"

INSTANCE textbox 164 ISA textbox
WITH location := 21,222,286,246
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Did this occur in a major city?"

Usually this scheme works best
when the banks are situated close
together and teller donot personally
know customers."

INSTANCE textbox 165 ISA textbox
WITH location := 18,285,297,310
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Where the personnal
accounts increasing?"

Follow the chronological path
of the deposits to see if the more
recent accounts are increasing
in size."

INSTANCE textbox 166 ISA textbox
WITH location := 23,338,302,363
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Has the last withdraw taken place?"

Usually one account ends up with
all the money and is emptied.

perhaps to the account closing point."

INSTANCE textbox 167 ISA textbox
WITH location := 29,390,302,416
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE
WITH text := "Was the cheques aimed at
the bank and not a business?"

Usually a NSF situation is aimed
at obtaining goods or services
from a business. Kiting is aimed
at obtaining money from a bank."

INSTANCE textbox 168 ISA textbox
WITH location := 28,459,301,491
WITH justify IS left
WITH font := "System"
WITH text := "Did the account open and operate
normally for a month or so?"

INSTANCE textbox 169 ISA textbox
WITH location := 27,539,227,564
WITH justify IS left
WITH font := "System"
WITH text := "Were the accounts in one
name (possibly fake)?"

INSTANCE textbox 170 ISA textbox
WITH location := 35,599,280,631
WITH justify IS left
WITH font := "System"
WITH text := "Were the accounts at different banks?"

INSTANCE textbox 171 ISA textbox
WITH location := 13,658,323,681
WITH justify IS left
WITH font := "System"
WITH scroll := TRUE

WITH text := "Did the situation take less then 3-4 days?"

From the first suspect KITE cheque to the final withdraw should take less than 3-4 days and possibly 1 day due to the computer processing of the banks and its ability to notice such a situation."

INSTANCE textbox 172 ISA textbox

WITH location := 49,5,406,176

WITH justify IS left

WITH font := "System"

WITH text := "You indicated that the answer to the last question is NO. Before continuing it is worth explaining the rationale for that response."

In addition, if the answer is NO to this question then the question about dishonesty in discussing fraud should also be NO.

Therefore, if the answer is NO to this question the system will assume that the answer is NO in the fraud section concerning dishonesty.
"

INSTANCE textbox 173 ISA textbox

WITH location := 29,183,320,224

WITH justify IS left

WITH font := "System"

WITH text := "Do you have evidence in the form of written documents to support No as an answer to this question?"

INSTANCE textbox 174 ISA textbox

WITH location := 29,256,330,286

WITH justify IS left

WITH font := "System"

WITH text := "Is this a situation where suspect and alleged victim misunderstood each other?"

INSTANCE textbox 175 ISA textbox
WITH location := 31,302,304,353
WITH justify IS left
WITH font := "System"
WITH text := "Is this a situation which occurred
because of events beyond the suspect's
control?"

INSTANCE textbox 176 ISA textbox
WITH location := 36,367,280,405
WITH justify IS left
WITH font := "System"
WITH text := "Is the victim trying to
get the suspect in trouble?"

INSTANCE valuebox 1 ISA valuebox
WITH location := 34,30,127,57
WITH justify IS left
WITH font := "System"
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := Score

INSTANCE valuebox 2 ISA valuebox
WITH location := 551,230,674,250
WITH justify IS left
WITH font := "System"
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := score2

INSTANCE valuebox 3 ISA valuebox
WITH location := 329,290,529,315
WITH justify IS left
WITH font := "System"
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := score3

INSTANCE valuebox 4 ISA valuebox
WITH location := 239,71,439,96

WITH justify IS left
WITH font := "System"
WITH frame := TRUE
WITH clipped := TRUE
WITH attachment := words [1]

INSTANCE main window ISA window
WITH location := -1,-1,-1,-1
WITH style IS moveable, sizeable, closeable
WITH title := "Prototype Fraud Expert System"
WITH visible := TRUE
WITH continue display := TRUE
WITH visible OK button := TRUE

AGENDA

1. count2 OF domain IS three

DEMON depriandobtain

IF (Deprive OF Deprivation IS Yes AND Obtained2 OF False Pretences IS No)

OR (Deprive OF Deprivation IS No AND Obtained2 OF False Pretences IS Yes)

THEN ASK DepriObta

DEMON evidencedeprive

IF count7 = TRUE

AND (Deproof OF Deprivation IS Verbal statement OR Deproof OF Deprivation IS Documents OR Deproof OF Deprivation IS Witness for documents)

THEN ASK evidencescreen

AND count6

DEMON Eanddish

IF Dishonest OF Dishonesty IS Yes

AND Exaggeration2 OF False Pretences IS Yes

THEN ASK warning2

DEMON evidencedishonest

IF count7 = TRUE

AND (Diproof OF Dishonesty IS Verbal statement OR Diproof OF Dishonesty IS Documents OR Diproof OF Dishonesty IS Witness for documents)
THEN ASK evidencescreen
AND count6

DEMON evidenceproperty
IF count7 = TRUE
AND (Pproof OF Property IS Verbal statements OR Pproof OF Property IS Documents OR Pproof OF Property IS Witness for document)
THEN ASK evidencescreen
AND count6

DEMON evidencesecurity
IF count7 = TRUE
AND (Sproof OF Security IS Verbal statements OR Sproof OF Security IS Documents OR Sproof OF Security IS Witness for documents)
THEN ASK evidencescreen
AND count6

DEMON evidencemoney
IF count7 = TRUE
AND (Mproof OF Money IS Verbal statements OR Mproof OF Money IS Documents OR Mproof OF Money IS Witness for document)
THEN ASK evidencescreen
AND count6

DEMON nodishonesty
IF reasonss
AND Question1 OF False Pretences IS No
AND (Question2 OF False Pretences IS No OR Question3 OF False Pretences IS No OR Question4 OF False Pretences IS No)
THEN Intent2 OF False Pretences IS Unknown
AND Dishonest OF Dishonesty IS Unknown

DEMON nointent
IF reasonsss
AND Question1 OF False Pretences IS Yes
AND (Question2 OF False Pretences IS Yes OR Question3 OF False Pretences IS Yes OR Question4 OF False Pretences IS Yes)

THEN Dishonest Of Dishonesty IS No

DEMON knowncaselaw

IF Known2 OF False Pretences IS Yes

THEN ASK knownextra

DEMON Intentcase

IF Intent2 OF False Pretences IS Yes

THEN ASK intentextra

DEMON PSMaC

IF (Capable2 OF False Pretences IS No OR Capable2 OF False Pretences IS Unknown)

AND (ListM OF Money IS Monetary Unit Of Canada OR ListM OF Money IS Monetary Unit of other Countries)

OR (ListP OF Property IS Real and Personal OR ListP OF Property IS Deeds and Instruments of Title OR ListP OF Property IS Property in possession OR ListP OF Property IS Postage Stamps)

OR (ListPP OF PublicPerson IS Canadian OR ListPP OF PublicPerson IS Other Country OR ListPP OF PublicPerson IS The Public)

OR (ListS OF Security IS Stock deposit OR ListS OF Security IS Debenture deed bond bill note or other security OR ListS OF Security IS Lands goods OR ListS OF Security IS interest in property)

THEN ASK PSMandC

DEMON Exaggeration FP

IF Exaggeration2 OF False Pretences IS Yes

THEN FP1 OF False Pretenc IS Exaggeration

ELSE NOT FP1 OF False Pretenc IS Exaggeration

RULE false reports

IF count1 = TRUE

AND fraud3 OF Fraud IS Yes

AND frauds OF type IS Corporate fraud

AND question1 OF reports IS yes

AND question2 OF reports IS yes

AND question3 OF reports IS no

AND question4 OF reports IS no

AND question5 OF reports IS no

AND question6 OF reports IS yes

AND question7 OF reports IS yes

AND question8 OF reports IS yes
THEN charge OF reports IS employee expense reports
AND charge OF reports IS accomplice
AND count2 IS three

RULE false reports1
IF count1 = TRUE
AND fraud3 OF Fraud IS Yes
AND frauds OF type IS Corporate fraud
AND question1 OF reports IS yes
AND question2 OF reports IS yes
AND question3 OF reports IS no
AND question4 OF reports IS no
AND question5 OF reports IS no
AND question6 OF reports IS yes
AND question7 OF reports IS yes
AND question8 OF reports IS no
THEN charge OF reports IS employee expense reports
AND count2 IS three

RULE cash
IF count1 = TRUE
AND fraud3 OF Fraud IS Yes
AND frauds OF type IS Corporate fraud
AND question13 OF reports IS yes
AND question14 OF reports IS no
AND question15 OF reports IS yes
AND question16 OF reports IS no
THEN charge OF reports IS Front end fraud
AND count2 IS three

RULE supplier2
IF count1 = TRUE
AND fraud3 OF Fraud IS Yes
AND frauds OF type IS Corporate fraud
AND question9 OF reports IS yes
AND question10 OF reports IS no
AND question11 OF reports IS no
AND question12 OF reports IS no
THEN charge OF reports IS Supplier fraud
AND count2 IS three

RULE FsalesI

IF count1 = TRUE
AND fraud3 OF Fraud IS Yes
AND frauds OF type IS Corporate fraud
AND question20 OF reports IS yes
AND question21 OF reports IS no
AND question22 OF reports IS no
AND question23 OF reports IS no
AND question24 OF reports IS yes
THEN charge OF reports IS false sales invoice
AND count2 IS three

RULE FsalesI2

IF count1 = TRUE
AND fraud3 OF Fraud IS Yes
AND frauds OF type IS Corporate fraud
AND question20 OF reports IS yes
AND question21 OF reports IS no
AND question22 OF reports IS no
AND question23 OF reports IS no
AND question24 OF reports IS no
THEN charge OF reports IS false sales invoice
AND charge OF reports IS False Sales Invoice accomplice
AND count2 IS three

RULE bankrupt

IF count1 = TRUE
AND fraud3 OF Fraud IS Yes
AND frauds OF type IS Corporate fraud
AND question25 OF reports IS yes
AND question26 OF reports IS yes
AND question27 OF reports IS yes
AND question28 OF reports IS yes
AND question29 OF reports IS no
AND question30 OF reports IS yes
AND question31 OF reports IS yes
THEN charge OF reports IS planned bankruptcy
AND count2 IS three

RULE othertypes

IF count1 = TRUE
AND fraud3 OF Fraud IS Yes
AND frauds OF type IS Non disclosure
OR frauds OF type IS Obtaining credit
OR frauds OF type IS Financial Statements
OR frauds OF type IS False Statements in writing
OR frauds OF type IS Forgery
OR frauds OF type IS Theft
OR frauds OF type IS Credit card
OR frauds OF type IS Personation
OR frauds OF type IS Mails
OR frauds OF type IS Obtaining transportation
OR frauds OF type IS Evidence of similar acts
OR frauds OF type IS Stock market manipulation
OR frauds OF type IS Real Estate Swindle
THEN count2 IS three
AND ASK warning

RULE NSFkite

IF count1 = TRUE
AND (FP1 OF False Pretenc IS Attempted False P OR FP1 OF False
Pretenc IS False P OR FP1 OF False Pretenc IS UFalse Pretences OR
FP1 OF False Pretenc IS Uattempted False P)
AND frauds OF type IS Misrepresentation NSF cheques
AND Question40 OF reports IS Yes
AND Question41 OF reports IS Yes
AND Question42 OF reports IS Yes
AND Question43 OF reports IS Yes
AND Question44 OF reports IS Yes
AND Question45 OF reports IS Yes
AND Question46 OF reports IS Yes
AND Question47 OF reports IS Yes
AND Question48 OF reports IS Yes
AND Question49 OF reports IS Yes
AND Question50 OF reports IS Yes
THEN charge OF reports IS NSF kiting
AND count2 IS three
AND count27
ELSE NOT count27

RULE NSFF

IF count1 = TRUE
AND (FP1 OF False Pretenc IS Attempted False P OR FP1 OF False
Pretenc IS False P OR FP1 OF False Pretenc IS UFalse Pretences OR
FP1 OF False Pretenc IS Uattempted False P)
AND frauds OF type IS Misrepresentation NSF cheques
AND NOT count27
AND question32 OF reports IS yes
AND question33 OF reports IS no
AND question34 OF reports IS yes
AND question35 OF reports IS yes
AND question36 OF reports IS no
AND question37 OF reports IS yes
AND question38 OF reports IS yes
THEN charge OF reports IS NSF cheques
AND charge OF reports IS NSF cheques reexamine fraud
AND count2 IS three

RULE Umanagefraud

IF count5 IS five
AND score2 > 15
THEN count2 IS three
AND maybe OF uncertain2 IS Management Pressure for fraud

RULE manoppfraud

IF count5 IS five
AND score3 > 10
THEN count2 IS three
AND maybe OF uncertain2 IS Management Opportunity for fraud

RULE last

IF (dummy OR FP1 OF False Pretenc IS False P OR FP1 OF False
Pretenc IS UFalse Pretences OR FP1 OF False Pretenc IS Attempted
False P OR FP1 OF False Pretenc IS Uattempted False P)
AND (fraud3 OF Fraud IS Yes OR fraud3 OF Fraud IS Uncertain OR
fraud3 OF Fraud IS No)
THEN count1 := TRUE
ELSE count1 := TRUE

RULE nofraud

IF Dishonest OF Dishonesty IS No
OR Deprive OF Deprivation IS No

THEN fraud3 OF Fraud IS No
ELSE NOT fraud3 OF Fraud IS No

RULE Foundfraud

IF Dishonest OF Dishonesty IS Yes
AND Deprive OF Deprivation IS Yes
AND (ListM OF Money IS Monetary Unit Of Canada OR ListM OF
Money IS Monetary Unit of other Countries)
AND (ListP OF Property IS Real and Personal OR ListP OF Property IS
Deeds and Instruments of Title OR ListP OF Property IS Property in
possession OR ListP OF Property IS Postage Stamps)
AND (ListPP OF PublicPerson IS Canadian OR ListPP OF PublicPerson
IS Other Country OR ListPP OF PublicPerson IS The Public)
AND (ListS OF Security IS Stock deposit OR ListS OF Security IS
Debenture deed bond bill note or other security OR ListS OF Security
IS Lands goods OR ListS OF Security IS interest in property)
THEN fraud3 OF Fraud IS Yes
ELSE NOT fraud3 OF Fraud IS Yes

RULE Uncertainfraud

IF NOT fraud3 OF Fraud IS Yes
AND (Dishonest OF Dishonesty IS Yes OR Dishonest OF Dishonesty IS
Unknown)
AND (ListM OF Money IS Monetary Unit Of Canada OR ListM OF
Money IS Monetary Unit of other Countries OR ListM OF Money IS
Unknown)
AND (Deprive OF Deprivation IS Yes OR Deprive OF Deprivation IS
Unknown)
AND (ListP OF Property IS Real and Personal OR ListP OF Property IS
Deeds and Instruments of Title OR ListP OF Property IS Property in
possession OR ListP OF Property IS Postage Stamps OR ListP OF
Property IS Unknown)
AND (ListS OF Security IS Stock deposit OR ListS OF Security IS
Debenture deed bond bill note or other security OR ListS OF Security
IS Lands goods OR ListS OF Security IS interest in property OR ListS
OF Security IS Unknown)
AND (ListPP OF PublicPerson IS Canadian OR ListPP OF PublicPerson
IS Other Country OR ListPP OF PublicPerson IS Other Country OR
ListPP OF PublicPerson IS The Public OR ListPP OF PublicPerson IS
Unknown)
THEN fraud3 OF Fraud IS Uncertain

ELSE NOT fraud3 OF Fraud IS Uncertain

RULE AttemptedFalse pretences

IF Past2 OF False Pretences IS Yes

AND Words2 OF False Pretences IS Yes

AND Known2 OF False Pretences IS Yes

AND Intent2 OF False Pretences IS Yes

AND Induce2 OF False Pretences IS Yes

AND DirectlyContract2 OF False Pretences IS Yes

AND Capable2 OF False Pretences IS Yes

AND Delivered2 OF False Pretences IS Yes

AND Believe2 OF False Pretences IS No OR Obtained2 OF False Pretences IS No

AND Exaggeration2 OF False Pretences IS No

THEN FP1 OF False Pretenc IS Attempted False P

ELSE NOT FP1 OF False Pretenc IS Attempted False P

RULE Falsepretences

IF Past2 OF False Pretences IS Yes

AND Words2 OF False Pretences IS Yes

AND Known2 OF False Pretences IS Yes

AND Intent2 OF False Pretences IS Yes

AND Induce2 OF False Pretences IS Yes

AND DirectlyContract2 OF False Pretences IS Yes

AND Capable2 OF False Pretences IS Yes

AND Induce2 OF False Pretences IS Yes

AND Delivered2 OF False Pretences IS Yes

AND Believe2 OF False Pretences IS Yes

AND Obtained2 OF False Pretences IS Yes

AND Exaggeration2 OF False Pretences IS No

THEN FP1 OF False Pretenc IS False P

ELSE NOT FP1 OF False Pretenc IS False P

RULE UncertainAttemptedFP

IF NOT FP1 OF False Pretenc IS Attempted False P

AND (Past2 OF False Pretences IS Yes OR Past2 OF False Pretences IS Unknown)

AND (Words2 OF False Pretences IS Yes OR Words2 OF False Pretences IS Unknown)

AND (Known2 OF False Pretences IS Yes OR Known2 OF False Pretences IS Unknown)

AND (Intent2 OF False Pretences IS Yes OR Intent2 OF False Pretences IS Unknown)
AND (DirectlyContract2 OF False Pretences IS Yes OR DirectlyContract2 OF False Pretences IS Unknown)
AND (Capable2 OF False Pretences IS Yes OR Capable2 OF False Pretences IS Unknown)
AND (Delivered2 OF False Pretences IS Yes OR Delivered2 OF False Pretences IS Unknown)
AND (Induce2 OF False Pretences IS Yes OR Induce2 OF False Pretences IS Unknown)
AND (Obtained2 OF False Pretences IS No OR Obtained2 OF False Pretences IS Unknown OR Believe2 OF False Pretences IS No OR Believe2 OF False Pretences IS Unknown)
AND (Exaggeration2 OF False Pretences IS No OR Exaggeration2 OF False Pretences IS Unknown)
THEN FP1 OF False Pretenc IS Uattempted False P
ELSE NOT FP1 OF False Pretenc IS Uattempted False P

RULE UncertainFP

IF NOT FP1 OF False Pretenc IS False P
AND (Past2 OF False Pretences IS Yes OR Past2 OF False Pretences IS Unknown)
AND (Words2 OF False Pretences IS Yes OR Words2 OF False Pretences IS Unknown)
AND (Known2 OF False Pretences IS Yes OR Known2 OF False Pretences IS Unknown)
AND (Intent2 OF False Pretences IS Yes OR Intent2 OF False Pretences IS Unknown)
AND (DirectlyContract2 OF False Pretences IS Yes OR DirectlyContract2 OF False Pretences IS Unknown)
AND (Capable2 OF False Pretences IS Yes OR Capable2 OF False Pretences IS Unknown)
AND (Induce2 OF False Pretences IS Yes OR Induce2 OF False Pretences IS Unknown)
AND (Delivered2 OF False Pretences IS Yes OR Delivered2 OF False Pretences IS Unknown)
AND (Obtained2 OF False Pretences IS Yes OR Obtained2 OF False Pretences IS Unknown)
AND (Believe2 OF False Pretences IS Yes OR Believe2 OF False Pretences IS Unknown)

AND (Exaggeration2 OF False Pretences IS No OR Exaggeration2 OF
False Pretences IS Unknown)
THEN FP1 OF False Pretenc IS UFalse Pretences
ELSE NOT FP1 OF False Pretenc IS UFalse Pretences

RULE uncertain3
IF count1 = TRUE
AND fraud3 OF Fraud IS Uncertain
AND frauds OF type IS Corporate fraud
THEN ASK uncertain1
AND count5 IS five

RULE mangopp
IF count1 = TRUE
AND fraud3 OF Fraud IS Uncertain
AND frauds OF type IS Corporate fraud
THEN ASK opport
AND count5 IS five

END

END

24.12.92

FIN