DRUGS TENDENCY DETECTION SYSTEM (DTDS)

NUR SYAZANNA BINTI JAMALUDIN

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ABSTRACT

DTDS is build to overcome those problems such as a lot of documentation and piles of paper about detail information of each officer in the police station may consume spaces and money. But the major purpose of this system is for supervisor to recognize their officer that is suspicious with drug abuse and make the environment of drug awareness in working place.

Besides, this will strengthen the secure of data storage. DTDS is a web-based Drugs Tendency Detection System (DTDS). It is developed using Adobe Dreamweaver and PHP SQL ; key in data using insert and delete function, relocate required items using search function and update of progress are acknowledge faster. DTDS consist of 4 main modules which are 'Log Masuk', 'Senarai Anggota', 'Penilaian', 'Laporan' and another 3 extra modules that display general information. In this project, rule-based expert system is applied.

ABSTRAK

DTDS dibina untuk mengatasi masalah banyak dokumentasi dan penggunaan kertas tentang maklumat peribadi pegawai polis di mana ia hanya akan menghabiskan ruang dan wang. Namun demikian, tujuan utama sistem ini adalah khas buat penyelia untuk mengenalpasti pegawai mereka yang mencurigakan dengan penyalahgunaan dadah dan mewujudkan persekitaran bebas dadah di tempat kerja.

Selain itu, ini akan menguatkan sistem keselamatan simpanan data. DTDS, Sistem Pengesanan Kecenderungan Dadah adalah sistem berasaskan web Sistem ini dibangunkan menggunakan Adobe Dreamweaver dan PHP SQL, dengan menggunakan fungsi 'tambah', 'hapus', 'cari', dan 'kemaskini'. DTDS terdiri daripada 4 modul utama iaitu 'Log Masuk', 'Senarai Anggota', 'Ujian Kecenderungan Dadah', dan 'Laporan' dan 3 modul tambahan lain yang memaparkan maklumat umum. Dalam projek ini, sistem pakar 'rule-based' telah diimplementasikan .

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LIST OF ABBREVIATIONS

CASE	-	Computer-Aided Software Engineering
CD – ROM	-	Writable & Permanent Compact Disc
CFS#	-	Call for service number
CLIPS	-	C Language Integrated Production System
COBOL	-	Common Business Oriented Language
DTDS	-	Drugs Tendency Detection System
DVD – ROM	-	Writable & Permanent Digital Video Disc
DVD – RAM	-	Writable & Rewritable Digital Video Disc
HTML	-	Hypertext Markup Language
JAD	-	Joint Application Development
OPS5	-	Official Production System 5
PDRM	-	Royal Malaysian Police
PHP	-	Hypertext Preporocessor
PMP	-	Project Management Plan
PRDM	-	Police Record Management
RAD	-	Rapid Application Development
SPL	-	Standard PHP Library
SWAT	-	Skilled Workers with Advanced Tools
WIT	-	Word In Text

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Drugs Tendency Detection System (DTDS) is intended to control and having an effective supervision over police officers under the supervisor. DTDS is a preventive measure that can be taken by the supervisor to subordinate officers to refrain from activities that are not well characterized as drug abuse. It is also one of strategy for PDRM to maintain high level of discipline as a law enforcement organization leading and respected and trusted by the public.

On the other side, technology is the knowledge of using tools and machines to do tasks efficiently. It is very important to help us to ease our daily routine and conserve our energy. Today, people use technology to improve their ability to do work. In this new era, it is said that efficiency, speed and effectiveness are three significant issues especially in telecommunication, management, and etc. That is why computer usage is essential nowadays and the evolution of IT (information technology) has cause the management system and information delivery with computer-based being designed and improved from time to time.

As an aid to the above requirement, the new invention of DTDS that is based on web and computer literally, it would be more effective and easy to manage. This system enables either the supervisor or the police officer itself key in the required information using technology, no paper is needed anymore. Besides, the head officer of close police station can view the previous details of drug usage or addiction any of his/her subordinate officers. In this implementation of web-based DTDS also, a little bit of artificial intelligence knowledge is applied on the drugs issues and give them informative knowledge about how dangerous are drugs in community.

1.2 Problem Statement

Problem statement tells about the problems that arise until Drugs Tendency Detection System (DTDS) is decided and had to be developed. The problem statements are:

- Supervisor is having difficulties in choosing the right officer that has to undergo drugs test.
- There is such quite wasting time, energy for supervisors to register their subordinate officer manually.

1.3 Objectives

Objectives are goal and purpose of the DTDS that will overcome most of the constraints and problems in the old management system. The objectives are to:

- To help supervisor determines suspected drug addicts with some guidance.
- To develop a web-based Drugs Tendency Detection System (DTDS); which save time and ease supervisors to update the list of their subordinate officers.

1.4 Scope

Scope is the range for the system and it will preview the boundaries of system requirement and data involved in creating the system. DTDS is a web-based application. Target user for this system is the Police Officer (Supervisor) and the area of study is at Nusajaya Police Station. Below are the modules in DTDS:

- Login (Log Masuk): Username and password must be entered in order to access, edit or update data.
- Officer List (Senarai Anggota): Supervisor can add, delete and update the list of their officers.
- Drugs Tendency Survey (Ujian Kecenderungan Dadah): This module is named as 'Penilaian'. The supervisor has to do this survey if any of their officers is suspected using drugs.
- Report (Laporan): The supervisor can view the full result each of their officer's on the answered drugs survey.
- Type of Drugs (Jenis-jenis Dadah): This module display information about type of drugs.
- Drugs Addiction Signs (Tanda- Tanda Penagihan Dadah): This module display information about the way to prevent people from drug addiction.
- Laws and Acts of Drugs (Akta & Undang-Undang Dadah): This module display information about the law that had been enacted on drugs.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the literature review on the topic of this study. The aim of this literature review is to acquire a greater understanding of the supervising system that have been implemented and already in used manually. A detail and comprehensive understanding on the topic of the research would help to ensure that the project would be on the correct path towards realizing the research objectives.

2.2 Existing System

Existing system will act as a reference and a guide to design the new system. It will also be able to point out missing functions that exist in it. Lacks in the existing system will be studied and repaired in the proposed one. This is to ensure that the new system has less and minimum error and failure compared to the previous. This will help in enhancing DTDS to be a better, compatible system and has a market value.

2.2.1 Police Records Management by WinOcular

Tracking accident reports, arrest reports, citations, depositions, summons and organizing all correspondence can overwhelm even the most police departments. Combined Computer Resources, Inc.'s Polices Records Document Management system (PRDM) centrally organizes, manages and consolidates all information and records related to accidents, arrests and offenses. Everyone from officers, clerical workers, supervisors, even Judges will benefit from the on-line, instant access to information provided by the WinOcular PRDM.

i. The PRDM is organized into three sections:

- **Accident Records:** This section tracks the name(s) associated with the accident, reporting officer, date of accident, Call For Service number (CFS #), and accident location.
- **Arrest Records:** Details the person's name, alias, date of birth, juvenile status, arrest location, date of arrest, associated persons in the arrest, Call For Service Number (CFS #), arrest number, and local police department number, if appropriate.
- **Offense Records:** Tracks the name of the offender, offense location, associated persons in the offense, type of offense, date of the offense, Call For Service Number (CFS#), and Offense Number.

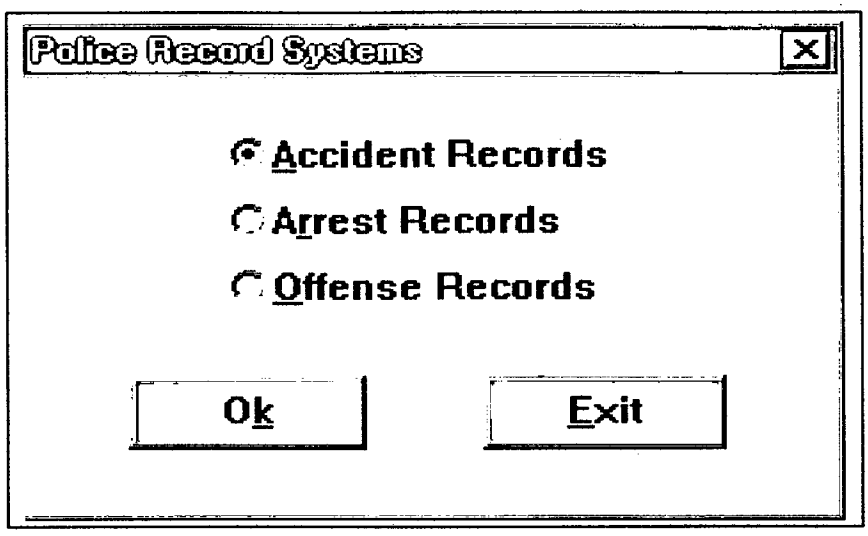

Figure 2.1: Section choices in WinOcular Police Records Management

WinOcular combines scanned documents, electronic correspondence, MS-Office documents – ALL data types, into objects that are filed, organized and stored in the PRDM system. This means that you can retrieve and view all documents and information in seconds. Whether the document is an image of the arrest record, ticket, citation, legal document, or correspondence such as letters or faxes, all of the information can be centrally organized and managed within the WinOcular system. The status of any arrest, offense, case, or cause, is just a mouse click away. Simply enter the Accident/Arrest/Offense number, Name, Offense Date, Birth date or Defendant juvenile status (or whatever criteria is appropriate to your search!) to retrieve a list of all documents and related information about the case. You'll instantly receive a list of all images and documents associated with the issue and then can view or print document as appropriate. All the facts and documents are at your fingertips and you never need to refer back to the original files and the Attachments feature allows you to add electronic post-it notes to each file. This makes it easy to keep others updated regarding details pertaining to the document, file or image.

ii. **Features:**

- Variable user-defined index fields by subject type
- Field validation for critical index fields
- User-defined Subject & Document types
- Powerful queries using index fields with Word-In-Text (WIT) searching
- Save queries for use at a later time
- Record storage in standard Image File Formats along with Word Processing & text formats
- Microsoft Windows NT, 2000 and XP operating environment
- SQL compliant database
- High Speed Image printing
- Document archival to File Server, Tape, CD-ROM, DVD-ROM, DVD-RAM or other optical media

iii. **Benefits:**

- All Police records and documents are collected into one database easily accessed by multiple users
- Simplifies the search and retrieval of all records and associated files and documents
- Advanced search technology allows field-based and context-based searches that actually read the text of OCR/ICR's documents.
- Clerical time required to scan and index items is less than half of that required to manually file and retrieve folders of information
- Folders cannot be lost or misfiled
- Guards against losing or misplacing individual documents
- Enhanced security levels protect documents from unauthorized users
- Eliminates the burden of paper storage
- Integrates with all other WinOcular products

2.2.2 An Expert System for Car Failure Diagnosis by Ahmad T. Al-Taani

Car failure detection is a complicated process and requires high level of expertise. Any attempts of developing an expert system dealing with car failure detection have to overcome various difficulties. The proposed system divides car the car) and movement-state (while the car is moving).

i. Factors

- Bad fuel mix, lack of compressions and spark
- If the battery is dead, the engine cannot turn over
- If the bearings that allow the crankshaft to turn freely are worn out, the crankshaft cannot turn so the engine cannot run.
- If the valves do not open and close at the right time or at all, air cannot get in and exhaust cannot get out, so the engine cannot run.
- If someone sticks a potato up your tailpipe, exhaust cannot exit the cylinder so the engine will not run.
- If you run out of oil, the piston cannot move up and down freely in the cylinder, and the engine will seize.

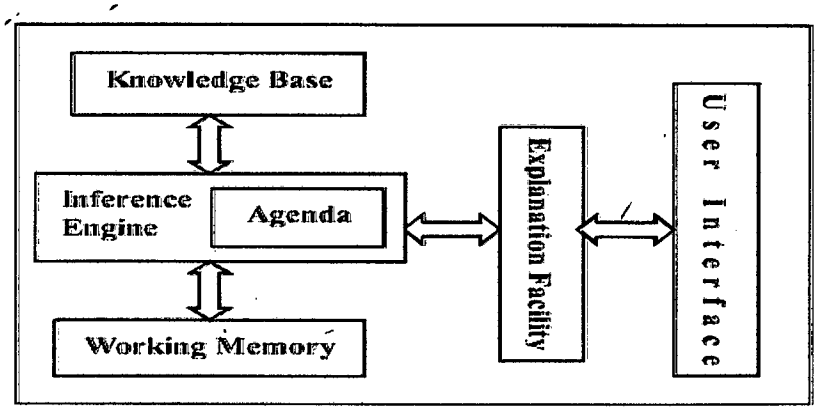

Figure 2.2: Structure of the car failure diagnosis system

ii. User Interface

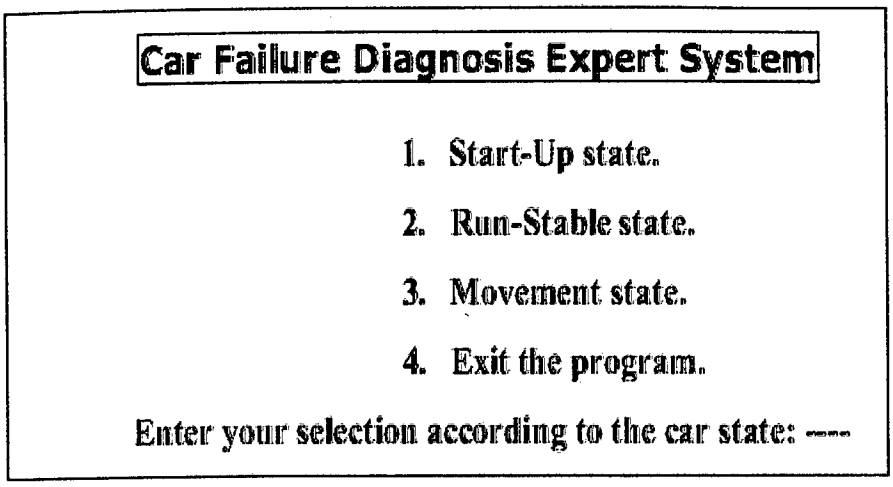

Figure 2.3: Start-up menu for the system

iii. Explanation Facility

Illustrates to the user how and why the system gave a certain cause for the failure, explains the reasoning of the system to user.

iv. Inference Engine

When abnormal situations arises in the car, they makes inferences by deciding which rules are satisfied by facts stored in the working memory and executes the rule with highest priority and propose proper correcting solution. The rules whose patterns are satisfied by facts in the working memory are stored in the agenda part of the inference engine. Figure below explains the inference process of the system using rules listed.

```
Rule 1:  IF  the engine is getting gas,
         ANDthe engine will turn over,
         THEN  the problem is spark plugs.

Rule 2:  IF  the engine does not turn over,
         ANDthe lights do not come on,
         THEN  the problem is battery or cables.

Rule 3:  IF  the engine does not turn over,
         ANDthe lights do not come on,
         THEN  the problem is the starter motor.

Rule 4:  IF  there is gas in the fuel tank,
         AND  there is gas in the carburetor,
         THEN  the engine is getting gas.
```

Figure 2.4: Four assumes rules in the agenda

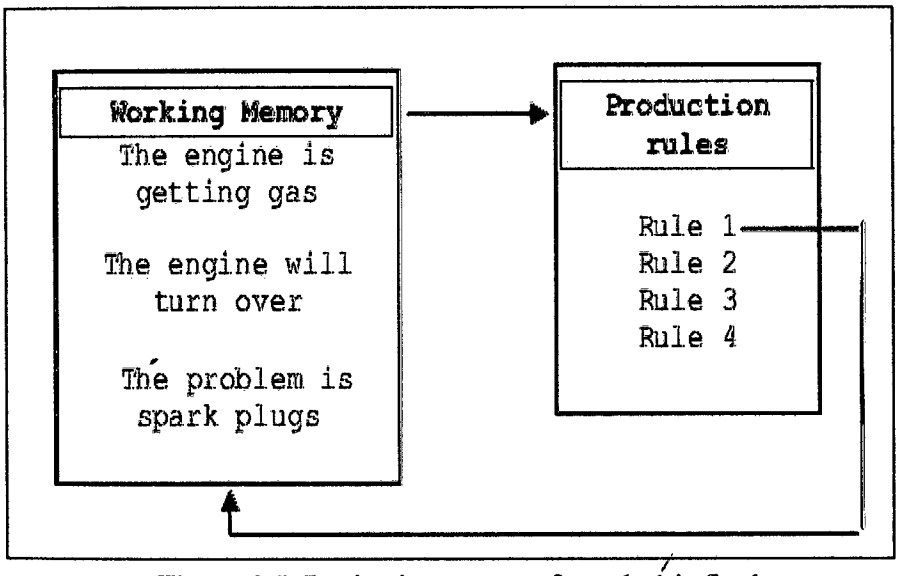

Figure 2.5: Production system after rule 1 is fired

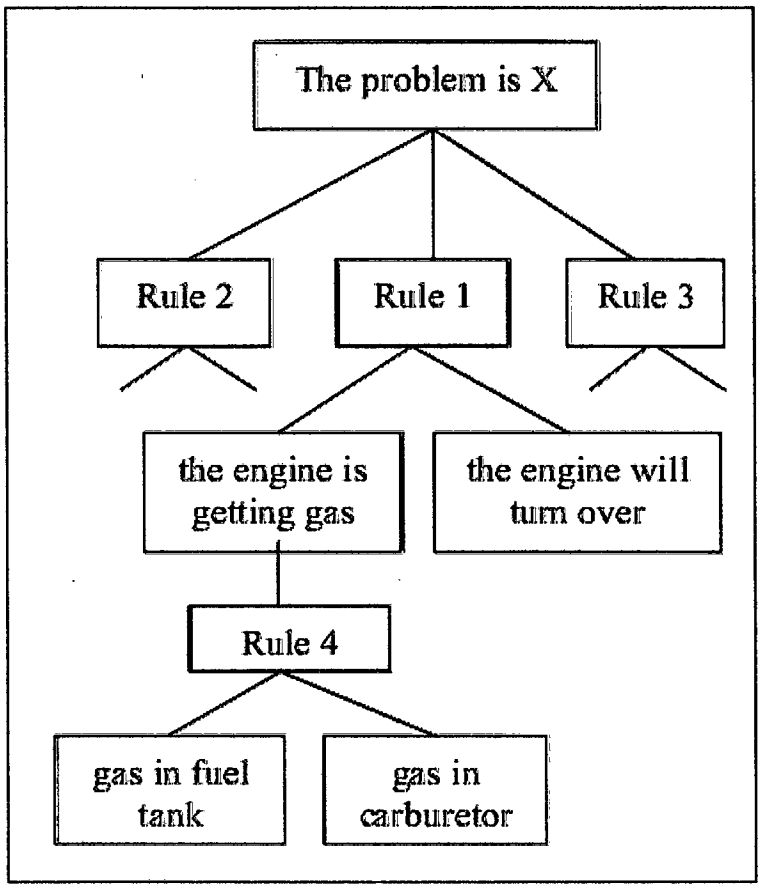

Figure 2.6: Example show the relationship among the rules

v. Language Selection

The proposed knowledge-based system is implemented using the CLIPS expert system tool. CLIPS is a forward chaining rule-based language that resembles OPS5 and ART, two other widely known expert system tools. CLIPS is used because the data driven nature of the domain suggest the use of a forward-chaining inference engine, it runs in Windows environment which is platform of choice among end-user, availability of CLIPS source code and it provides the ability to construct production rules which rely on pattern-matching.

2.3 Techniques

Technique that has been used in creating the rules of this system is rule-based expert system, which is a branch of artificial intelligence.

2.3.1 Artificial Intelligence

Artificial intelligence is the intelligence of machines and the branch of computer science that aims to create it. It is an experimental science whose goal is to understand the nature of intelligent thought and action (Jim Howe, 2007). This knowledge also can be defines as the science and engineering of making intelligent machines (John McCarthy, 1956).

2.3.1.1 Expert System

Expert Systems (ES) are a branch of applied artificial intelligence. The basic idea behind ES is simply that expertise, which is the vast body of task-specific knowledge, is transferred from a human to a computer. This knowledge is then stored in the computer and users call upon the computer for specific advice as needed. The computer can make inferences and arrive at a specific conclusion. Then like a human consultant, it gives advices and explains, if necessary, then logic behind the advice (Turban & Aronson, 2001). ES have provided solutions to different problems in companies, from strategic planning of marketing (Li, 2005) to consulting in process reengineering (Hvam, Malis, Hansen & Riis, 2004).