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JUDUL: TRAIN DRIVER RESCHEDULING SYSTEM USING MULTI AGENT
SYSTEM (TDRSMAS)

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INTELLIGENT MOBILE ASSISTANT (IMA)
USING
MOBILE AGENT MODELING

MUHAMMAD AL'HAFIZ BIN BAHARUDIN

This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Artificial Intelligent).

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
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is written by me and is my own effort and that no part has been plagiarized without
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DEDICATION

Special thanks I dedicated to my parents who giving me full support and motivation throughout my project. To my respectful Final Year Project (PSM) supervisor, Miss Nuzulha Khilwani Binti Ibrahim, a lot thanks I would like to dedicate to her for the consultation, advices, comments and support in order to make sure that I can finish this PSM successfully. Not forgotten, thanks to all my friends that always by my side as I working on this project.

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I also would like to thank Mr Aminurrashid Bin Noordin lecturer of Faculty of Engineering Technology for spending his precious time for giving me this idea and also for helping me during this project.

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ABSTRACT

The aim of this project is to develop an Android application using Mobile Agent modeling called Intelligent Mobile Assistant (IMA). This application is intended to help lecturers to handle or administer their student's related information in efficient manner. Among the main functionality of the system are managing records such as student details, add/drop subjects and progress of student who were taking Workshop 2 or Final Year Project. It also enables the lecturer to view necessary information such as subject list, directly access related website, sending email or text message to the student or direct call from the application. Software engineering methodology and agent has been applied for entire development of the system. This includes adopting Waterfall Model as a software process and using Artificial Intelligent approach (Mobile Agent Modeling) as a software technique. Ultimately, this application has been implemented using sophisticated Java programming (Eclipse), Android SDK and SQLite database. It is also focus more on internal activity that not requiring internet connection.

ABSTRAK

Matlamat project ini adalah untuk membangunkan applikasi Android menggunakan Mobile Agent Modeling yang dinamakan Intelligent Mobile Assistant(IMA). Applikasi ini bertujuan untuk membantu para pensyarah dalam menguruskan dan menyelia maklumat yang berkaitan dengan para pelajar mereka dengan lebih effisen. Antara fungsi utama system ini adalah menguruskan rekod-rekod seperti maklumat pelajar, menambah/menolak mata pelajaran dan progress pelajar yang mengambil bengkel2 atau projek sarjana muda. Ia juga membolehkan pensyarah untuk melihat maklumat yang diperlukan seperti senarai mata pelajaran, melayari secara terus ke website, menghantar email atau text pesanan ringkas kepada pelajar atau membuat panggilan telefon secara terus dari applikasi. Methodology Kejuruteraan Perisian dan agent telah di lakukan kepada keseluruhan pembangunan system ini. Ini termasuklah menggunakan Model Waterfall sebagai process perisian dan menggunakan pendekatan Kepintaran Buatan(Mobile Agent Modeling) sebagai teknik perisian. Lebih hebat lagi, applikasi ini telah di implemenkan menggunakan kesempurnaan pengaturcaraan Java(Eclipse), Android SDK, dan pangkalan data SQLite. Ia juga member perhatian penuh pada aktiviti dalaman yang tidak melibatkan internet.

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LIST OF ABBREVIATIONS

TERMS	-	DESCRIPTION
IMA	-	Intelligent Mobile Assistant
UTeM	-	Universiti Teknikal Malaysia Melaka

CHAPTER 1

INTRODUCTION

Mobile application development is the process by which application software is developed for low-power handheld devices such as personal digital assistants, enterprise digital assistants or mobile phones. These applications are either pre-installed on phones during manufacture, can be downloaded by customers from various mobile software distribution platforms, or web applications delivered over HTTP which use server-side or client-side processing (e.g. JavaScript) to provide an "application-like" experience within a Web browser.

Android Mobile is a mobile operating system that is based on a modified version of linux. It was originally developed by a startup group of the same name; Android Inc. Google purchased Android and took over its development work. Most of Android code was release under the open-source Apache License.

Mobile Agent is a computer system that is capable of independent action on behalf of its user or owner (figuring out what needs to be done to satisfy design objectives, rather than constantly being told). Mobile agent promotes a lot of great advantages and unique capability such as highly dynamic and flexible systems that enabled my mobile code. It can download new capabilities / services, remove old / unused capabilities, send an executable program that does your bidding on someone else's computer. It is very powerful but can be dangerous, only one step removed from a virus.

In this chapter, we will discuss on project background, problem statements, objectives, scopes, project significant and expected output for this project.

1.1. Project Background

Intelligent Mobile Assistant (IMA) is intending to help user (lecturers) to manage their students more efficiently.

Lecturers have a lot of work to handle besides teaching their students during class. They need to manage students who assign to them as advisor and a group of students for academic purpose such as PSM and workshop as supervisor.

IMA will be developing as Android application to help them manage their students more efficiently and make it easier to handle students' data.

1.2 Problem Statements

Research problems for this project are stated as follows:

Difficulties for lecturers to manage their students' that involve tedious paper works and restriction for lecturer to go any other places beside their rooms because of default system in their PC and files.

Research questions for this project are stated as follows:

Is there any practical approach of application development to manage students' data without using default system and files, Is it possible to develop application to manage students' data in simple devices that allow them manage from a far at anytime, anywhere and any place?.

1.3 Objectives

The main objective of this project is to develop an Android application using Agent modeling. Following is the details of the project objective to archive:

1. To develop an application that manage students' data without using tedious paperwork and default system
2. To develop an application on simple device that can manage students' data anywhere, anytime and anyplace.
3. To develop an application that can manage academic advisor and supervisor using mobile (Android App)

1.4 Scopes

The scope of this project is focusing on developing an application for lecturers to manage their task as a advisor for a group of students and as supervisor for academic purpose (PSM and workshop) without constraint and restriction.

1.5 Project Significance

Intelligent Mobile Assistant (IMA) is intended to help UTeM lecturers in managing their student more efficiently without any difficulties anytime and anywhere. Lecturer only needed simple device such as android mobile to use this application which will give them a lot of spaces to move around. This project will be very handy to lecturers at UTeM, by implementing the integrated system. Time and energy can be saved due to some of the task has been done by the system, it surely eases the students management process.

1.6 Expected Output

The application will be able to manage student data more efficiently based on student information, subject list, progress, access to specific website, sending email or text message and direct call from application.

1.7 Conclusion

As a summary, this Android Application is develop to help lecturers to handle their student's data without using default system and files. It is also possible to increase the performance of lecturers regarding their students' without any delay appointment

CHAPTER 2

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

This literature review indicates the research innovative and interesting exploration of the research idea that related to the project. It is important element that covers the relevant knowledge to help in project implementation. The literature review begins with the project understanding, followed by development methodology, software process and AI approach. Software technique, tools and related software will also be discuss.

2.2 Facts and Findings

The project idea comes from Mr Aminurrashid Bin Noordin lecturer of Faculty of Engineering Technology, and Miss Nuzulha Khilwani Binti Ibrahim lecturer of Faculty of Information Communication Technology, which also plays a role as academic advisor and subject supervisor. The needs of simple student management application using mobile/simple devices arise based on two research problems:

1. Difficulties for lecturers to manage their students' that involve tedious paper works.
2. Restriction for lecturer to go any other places beside their rooms because of default system in their PC and files

This brings two research questions:

1. Is there any practical approach of application development to manage students' data without using default system and files?.
2. Is it possible to develop application to manage students' data in simple devices that allow them manage from a far at anytime, anywhere and any place?

Previously, there is no proper system to manage the student information using mobile. The program documentation and record has been compiled in spread sheet format or in specific server. The information is not easily accessible either by the lecturer if they were away from their office. The records become difficult to manage as it involve a lot of paperwork. Among the data that need to manage properly are student records, subject list, student grades and program/progress schedule. From this requirement, the system should be built in mobile based environment. For the sake of better understanding on the whole system requirement the following section will discuss a brief about Intelligent Mobile Assistant (IMA), Android and agent modeling for mobile application.

2.3 Project Methodology

2.3.1 Intelligent Mobile Assistant

IMA is an Android application that focuses more on offline activity for managing student information, subjects and progress using Mobile agent modelling. The application should be able to manage student information, manages subject, direct access to particular website, sending an email or text message to student and direct call from the application. The system should be accessible by lecturer anytime and anywhere without additional software to install on their Mobile device.

2.3.2 Android

Android is a mobile operating system developed by Google. It is used by several smartphones, such as the Motorola Droid, the Samsung Galaxy, and Google's own Nexus One. The Android operating system (OS) is based on the open Linux kernel. Unlike the iPhone OS, Android is open source, meaning developers can modify and customize the OS for each phone. Therefore, different Android-based phones may have different graphical user interfaces GUIs even though they use the same OS.

Android phones typically come with several built-in applications and also support third-party programs. Developers can create programs for Android using the free Android SDK (Software Developer Kit). Android programs are written in Java and run through Google's "Davlik" virtual machine, which is optimized for mobile devices. Users can download Android "apps" from the online Android Market.

Since several manufacturers make Android-based phones, it is not always easy to tell if a phone is running the Android operating system. If you are unsure what operating system a phone uses, you can often find the system information by selecting "About" in the Settings menu. The name "Android" comes from the term android, which refers to a robot designed to look and act like a human.

2.3.3 Android SDK

A software development kit that enables developers to create applications for android platform. The Android SDK includes sample projects with source code, development tools, an emulator, and required libraries to build Android applications. Applications are written using the Java programming language and run on Dalvik, a custom virtual machine designed for embedded use which runs on top of a Linux kernel.