

**ZEALOUS ANDROID'S SOPHISTICATED TIMETABLE REMINDER AND
ORGANIZER (ZASTRO) SYSTEM**

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ZEALOUS ANDROID'S SOPHISTICATED TIMETABLE REMINDER AND
ORGANIZER (ZASTRO) SYSTEM

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A thesis submitted in partial fulfillment of the requirements for the award of the
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AND ORGANIZER (ZASTRO) SYSTEM

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*To my beloved parents, family, and friends, and those who have encouraged me
throughout my journey of education.*

A warm thanks to all.

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ABSTRACT

This thesis presents the development of an Android based application with the integration to the web server. Zealous Android Sophisticated Timetable Reminder and Organizer System, or knowingly as ZASTRO SYSTEM, is implemented as a student's organizer through mobile phone. It is an effective tool that is developed with various features standing all in one application. The functionalities of Zastro System included timetable, to-do-list, calendar, and notification for class reminder. It is developed based on client-server model which present an Android device as a client that communicates with the web server of administrator. The main function of Zastro System is depended on the functions of its timetable. The data of timetable that display in the Android device is directly retrieved from the administrator's web server. This web server system is used by the administrator in managing and updating student's timetable. Apart from helping students in organizing timetables, Zastro System also presents an easy way for the administrator to deliver timetables to the students. This project may have a marketability potential to be commercialized for the use of any level of educational institution. In overall, this project had introduced an innovative way in managing students timetable which give benefits to both side of students and administrator. This is the application to make student's life easier and well organized.

ABSTRAK

Tesis ini membentangkan pembangunan aplikasi yang berasaskan platform Android dengan integrasi kepada web server. Zealous Android Sophisticated Timetable Reminder and Organizer System, atau lebih dikenali sebagai ZASTRO SYSTEM, dibina sebagai satu pengurus jadual pelajar melalui telefon bimbit. Ia merupakan satu alat efektif yang dibangunkan dengan pelbagai fungsi lengkap di dalam satu aplikasi. Fungsi Zastro System termasuk jadual, senarai perlu buat, kalendar, dan juga notifikasi untuk peringatan kelas. Ia dibangunkan dengan berasaskan model 'client-server', yang mengutarakan peranti Android sebagai 'client' yang berkomunikasi dengan web server oleh pihak pentadbiran. Fungsi utama Zastro System dilihat kepada fungsi jadualnya. Data jadual yang dipaparkan di peranti Android diterima secara terus daripada web pihak pentadbiran. Sistem web ini digunakan oleh pihak pentadbir untuk mengurus dan mengemaskini jadual pelajar. Selain daripada membantu pelajar menguruskan jadual, Zastro System juga memperkenalkan cara yang mudah untuk pihak pentadbir menyampaikan jadual kepada pelajar. Projek ini mungkin mempunyai potensi untuk dipasarkan bagi kegunaan institusi pendidikan. Secara keseluruhan, projek ini telah memperkenalkan cara yang inovatif dalam menguruskan jadual pelajar, yang memberi kelebihan kepada kedua-dua belah pihak iaitu pelajar dan pihak pentadbir. Ini adalah aplikasi untuk memudahkan dan mengurus urusan pelajar dengan lebih teratur.

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CHAPTER 1

INTRODUCTION

This project is discussing about the development of Android Application and web-based system. Both is depended on open source software and open source development environment. The background of the project is thoroughly elaborated. This chapter also outlined on the objectives and scope of the project.

1.1 Background

In the last decades, world had witnessed an enormous increased in the acceptance of mobile communication all around the world. The usage of mobile communication had become one of the most important devices that merged to every angle of human's life. They are used not only for communication, but also to help people manage or organize everything.

Looking into this last few years, Android Operating System had rapidly increased in the use of platform for various devices, especially mobile phone. Since the first release of entering the mobile space until today, Android is going through a very fast development and giving no sign of slowing down.

The appearance of mobile platform based on the open source software has rapidly increased the interest into mobile application development. Android is Google's open source mobile software environment that consists of Linux based operating system. The application development is using Java programming language

and the virtual machine that optimizes the usage of memory and resources [1]. This project is about the development of Android application and web-based system that is based on an open source software and open source development environment.

The aim is to provide students a sophisticated tool in managing their timetable easily through mobile phone. Zealous Android's Sophisticated Timetable Reminder & Organizer (ZASTRO) System, is an Android-based Application that will allow students to view their timetable easily and also set a reminder of the next coming class. Through this application, student will always have all useful information about their class, (subjects, time of classes, classroom) and keep themselves organize and ready for class.

The advantage of this system is it provides specific web based platform for administrator to upload the student's timetable in a simple way. The ZASTRO System will repeal all the appropriate skills required for administrator to create a particular tool as a way in delivering timetable to students. This system will let the administrator to input details of the timetable in the most easy and fast way into the Android database. The implementation of this project will benefit both sides of users (student and administrator) in completing each other's need.

1.2 Problem Statement

Nowadays, the phenomenon of student's life which always full of dizzying mix of class and personal activities make students sometimes unorganized. They missed class, late to lecture or lab session, and mistakenly enter a wrong class. Some of the students are always depending on others to know which class to enter. Other than that, they also forget to submit assignment on the submission date and much more. All of this proves the messy management in a life of students.

On the other hand, the current method of delivering a new timetable to students is using a very classic way. Once there is a new timetable for new semester, the administrator will paste the copies of printed timetable sheet all around the campus

on the notice board. Later, students will copy the timetable by hand or by taking pictures. This method is very tedious, inefficient, and very classic to be used with today's technology.

No	Masa	Subject / Course		Room / Code	Time Slot
		Subject	Course		
3	HALAM	BENE2323	DB	3	
	PAGI	BENH2262	DB	BENE2413 KS 145-146	BENC3173 DB 316-377
	PETANG	75-94		BLHC4072 DB 157-221	
4	HALAM	BENE2323	DB	5	
	PAGI	BENH2262	DB	95-131	BENC3173 DB 378-381
	PETANG		BENH4123 DB 431-490		

Figure 1: Sample of student's timetable taken as pictures from the notice board

Not only that, the existed system of SMP for students timetable in not well functioning. This can be interpreting as the difficulties in maintaining heavy system as in SMP, which allowed only dedicated administrator with expertise to maintain the system. As a result, it is left ignored.

Masa	Senin	Selasa	Rabu	Khamis	Jumaat	Sabtu
08:00-09:30						
09:00-10:30						
10:30-12:00						
11:00-11:30						
12:00-12:30						
01:00-01:30						
02:00-02:30						
03:00-03:30						
03:00-03:30						
04:00-04:30						
05:00-05:30						
06:00-06:30						
07:00-07:30						
08:00-08:30						
09:00-09:30						
10:00-10:30						

Figure 2: Existed system in SMP that is not functioning

Therefore, ZASTRO System is implemented to eliminate all the problems that come in a way of students and administrator work. The ZASTRO System helps both users in the most efficient way; for students to organize timetable efficiently and also

for administrator to easily deliver timetable for student's needs without the requirement of skills and knowledge in maintaining system.

1.3 Objectives

The general and specific objectives of this project can be summarized as below:

- i. To develop an Android application which help students in organizing timetable through mobile phone.
- ii. To develop a platform that can be easily used by administrator in delivering student's timetable.
- iii. To integrate between Android device and application, with the web-based server for administrator use.

1.4 Scope of Work

This project consists of three parts, which is Android Application, web-based system, and integration of the whole system.

1.4.1 Android Application:

The Android Application is designed by using Eclipse SDK software. Throughout the development process, the application is tested on Android Emulator as the Android Virtual Device (AVD) and also ported to the real device to test the integration of application with the device. This application is connected with the server to retrieve the data of timetable.

1.4.2 Web-based system:

The platform for administrator's use is developed as a web-based system. This system will receive input of timetable from the administrator and store data in the server. The system will return data to the Android application whenever there is a request.

1.4.3 Communication and Integration

The integration of the whole system is implemented with server-client model. Android acts as the client that request and retrieve data from the server, while the web server will receive request and parse data into the Android application.

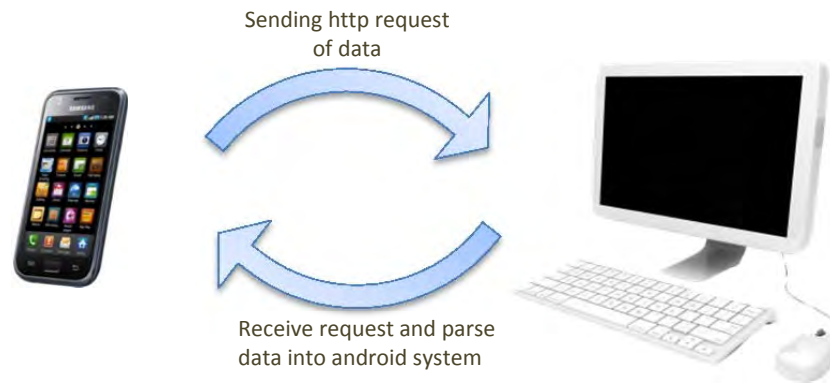


Figure 3: Communication and integration of the system

1.5 Thesis Outline

This thesis consists of five chapters. The first chapter discussed about the introduction of the project. This includes the background, problem statement, objectives of the projects, scopes of work, and thesis outline.

The second chapter contain the literature review, theories of related topics, and information about relevant structure for this project.

The process and methods employed in this project will be discussed in detail in Chapter 3, which is methodology. This chapter explain the flow of this project from the very beginning of the data collection until how the results is obtained.

The fourth chapter will discussed about the result and discussion. This is where the output of the project is presented and thoroughly analyzed. All the screenshot of the Android application is inserted along with the related explanation.

The last chapter will be about the overall conclusion and future recommendation. Some suggestion for the future development of the project is made. The last part includes the project references and appendixes.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will explain about the overview and structured of Android, including its architecture, versions in Android Application, and Android Emulator. Also the explanations about few other importance parts in the project are thoroughly elaborated; that is Eclipse SDK Software, components in the development of Android application, and existing application with similarity to the project.

2.2 Overview of Android

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language [2]. It has a set of API libraries for writing mobile applications that can shape the look, feel, and function of mobile phone.

Generally, the Android platform is a device-independent platform, which means that the application that was developed can be used for various devices. These devices are not just limited to phones, but also e-book readers, netbooks, and GPS devices. However, this thesis is specifically about the development of android application on mobile device.

Android is Google's open source mobile software that consists of Linux based operating system. The application uses Java Programming language and the virtual machine that optimizes the usage of memory and resource. Among the variety of

mobile platform, the number of developed applications that are based on the Android operating system is increasing.

One of the reasons of increased interest into android development lies in the existence of free of charge and open source development environment, such as Eclipse, with rich toolset and a number of interacting possibilities [1]. In the other words, Android represents an exciting new opportunity to write innovative applications for mobile devices.

In fact, Android has a wide range of advantages. For example, it allows full multitasking, provides better interfaces with widgets and notifications and gives more freedom to user. Users can have their own personalized interfaces, choose carriers and install custom ROMs in their phones.

It is also well-equipped with mature Google and Social applications. Most importantly, Android applications are easy to develop and manage. This contributes to a rapid growth in the completely open Android application market. Because of these advantages, more mobile users are fascinated by the speed, freedom and diversity of services provided by Android mobile device. [3]

2.2.1 Android Architecture

Android internal architecture is relies on Linux kernel version 2.6 for core system services such as security, memory management, process management, network stack, and driver model. The kernel also acts as an abstraction layer between the hardware and the rest of the software stack.

The following diagram shows the major components of the Android operating system. Each section is described in more detail below [2]:

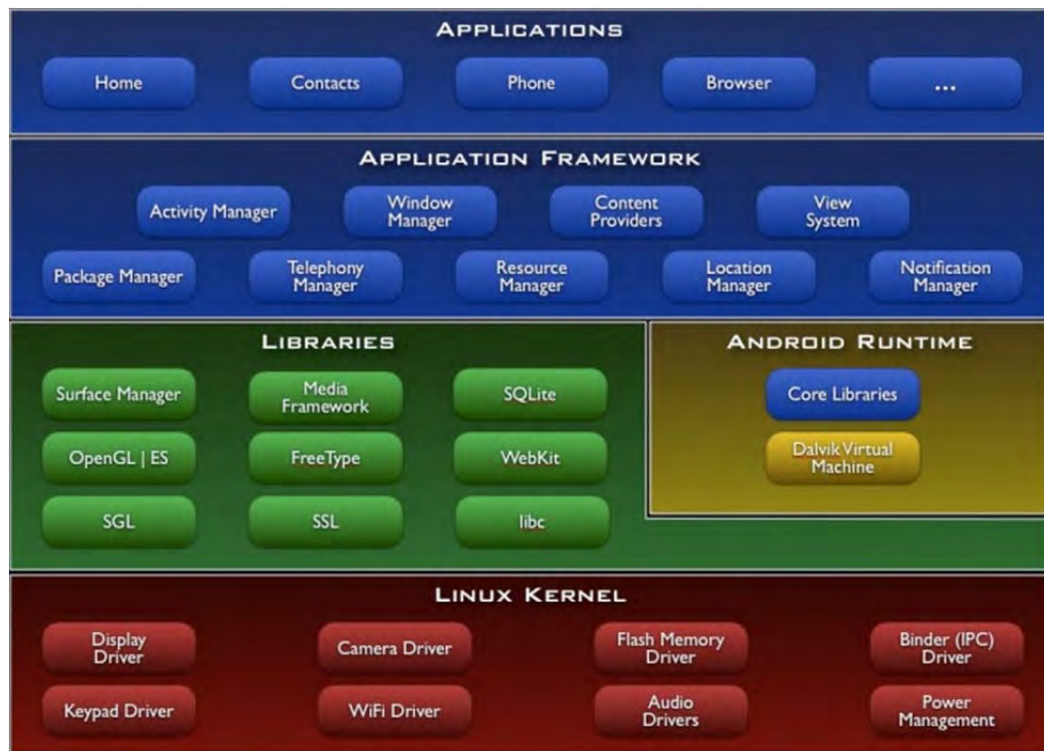


Figure 4: Android Architecture

The explanation of each section is as follows:

1. **Applications:** Android will ship with a set of core applications including an email client, SMS program, calendar, maps, browser, contacts, and others. All applications are written using the Java programming language.
2. **Application Framework:** By providing an open development platform, Android offers developers the ability to build extremely rich and innovative applications. Developers are free to take advantage of the device hardware, access location information, run background services, set alarms, add notifications to the status bar, and many more.
3. **Libraries:** Android includes a set of C/C++ libraries used by various components of the Android system. These capabilities are exposed to developers through the Android application framework. Some of the core

libraries as examples are SQLite, System C Library, media libraries, and free type.

4. **Android Runtime:** Android includes a set of core libraries that provides most of the functionality available in the core libraries of the Java programming language. Every Android application runs in its own process, with its own instance of the Dalvik virtual machine. Dalvik has been written so that a device can run multiple VMs efficiently.

2.2.2 Android Platform Version

Android has been updated many times since it is released. These updates were to fix bugs and add new functionalities. Each Android update has a name of a dessert. Figure below are the feature overviews of the various Android platform versions:

PLATFORM VERSIONS	DETAILS
<i>Android 1.0</i>	The first release of Android, and has an API level of 1. Since it was the first released version of Android, no platform highlights were prepared for this release.
<i>Android 1.1</i>	Android 1.1 has an API level of 2. Android 1.1 was known as "Petit Four" internally, though this name was not used officially.
<i>Android 1.5</i>	Android 1.5 corresponded to the "Cupcake" milestone branch, and has an API level of 3.
<i>Android 1.6</i>	Android 1.6 corresponded to the "Donut" milestone branch, and has an API level of 4.
<i>Android 2.1</i>	Android 2.1 corresponded to the "Eclair" milestone branch, and has an API level of 7.
<i>Android 2.2</i>	Android 2.2 corresponded to the "FroYo" milestone branch, and has an API level of 8.