PGT 402 Mobile Computing

Mini Project

STUDENT MANAGEMENT AND LEARNING SYSTEM

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Introduction

1.1 Project Overview

With the advent of Information Technology in the last decade, the major focus has shifted from manual systems to computerized systems. Student GPA calculation process in manually is very laborious and time consuming. A Student Management and Learning application has been developed to simplify the current GPA calculation procedure. This project has been developed by using Android Studio and SQLite.

This system is more secured due to authority access to update course by staff only. It is user-friendly and less time-consuming for student and staff by using a portable device (smartphone) to get the information that they needed. Keeping all these positive points in mind, we have developed a Student Management and Learning application for easily managing the semester calculation GPA and course view process for the student in an institution and also easier for the lecturers to update the latest course information. The reference list also enable students to encounter with more reference source easily during learning process.

1.2 Problem statement

The problem encountered by both lecturer and student are less convenience of suitable and proper platform for learning process at anytime and anywhere. Therefore mobile

device is very important during online learning at anytime and anywhere as it is convenience and portable. The major problem are shown below.

1. It is not convenient for the staff to manage students via a desktop-based application.

1.3 Objectives

1. To develop a systematic and user-friendly apps to student and staff.
2. To develop an authority access system for only staff to update information.

1.4 Scope of Project

The designed system is aim to used by the staffs and students in UniMAP. The development of the system is done by using Android Studio, which is an open-source to develop application that runnable on android operating system. Java is the domain programming language that applied to write the coding of the system. On the other hand, XML is another programming language that used to design the layout of the system.

Methodology

2.1 Introduction

The purpose to develop Student Management and Learning application is to provide a user friendly application to student and staff in universities or colleges. To develop this application, a program is written by using Android Studio to calculate the grade point average (GPA) of the student. Students are required to enter the course and the grade of the subjects taken and the next program will calculate GPA received by students.

For each semester, show the calculation of the overall grade obtained meanwhile they can view their own result in eventually. Other than that, the student can view latest course which updated by lecturer (staff). The figure below had showed a Use Case diagram and the flowchart during the development of Student Management and Learning application.

2.2 Use-Case diagram

Figure 2.1: Use Case: Student Management and learning System

The use case diagram in figure 2.1 shows an interaction for student and admin with the Student Management and Learning System. The functionality of student's module is login, logout, calculate GPA, view subject and vie reference source. While the functionality for adminstractor's module is login, logout, view student, register student and delete student. For the view subject, it has included two function which is search video and download lecturer's note.

2.3 Flowchart

2.3.1 Login Access

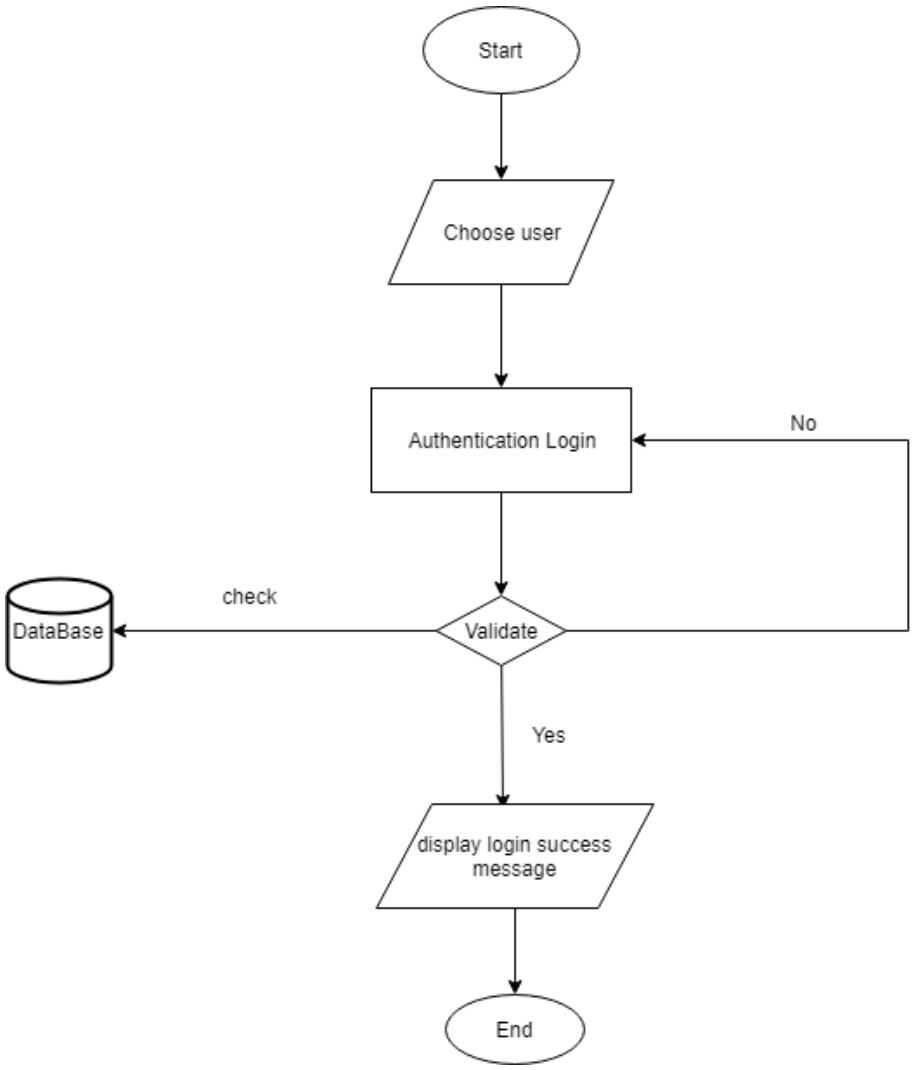

Figure 2.2: Flowchart for Authentication Access

The flowchart for authentication access has shown in figure 2.2. First, the user of this application can select to login as staff or as student. Next, it will go to the login authentication to let user to key in their user's name and password. The system will check the list of email address and password from the database. if the the data exist in database, it will shows login successful and proceed to next process. Else, the system will return to the authentication login.

2.3.2 GPA Calculator

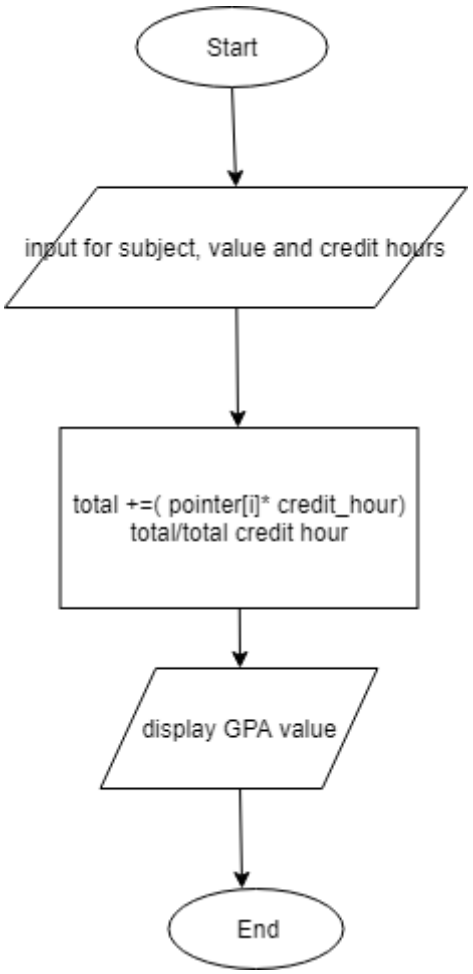

Figure 2.3: Flowchart of GPA Calculator

The figure 2.3 shows flowchart of GPA calculator. First, the system required the user to key in the subject, value of subject and credit hour of subject. After that, all the key in value will use to calculate the GPA of the semester by using formula total+=(pointer[i]*credit hour) then divide by total credit hour. The result will display to the user.

2.3.3 Student Management

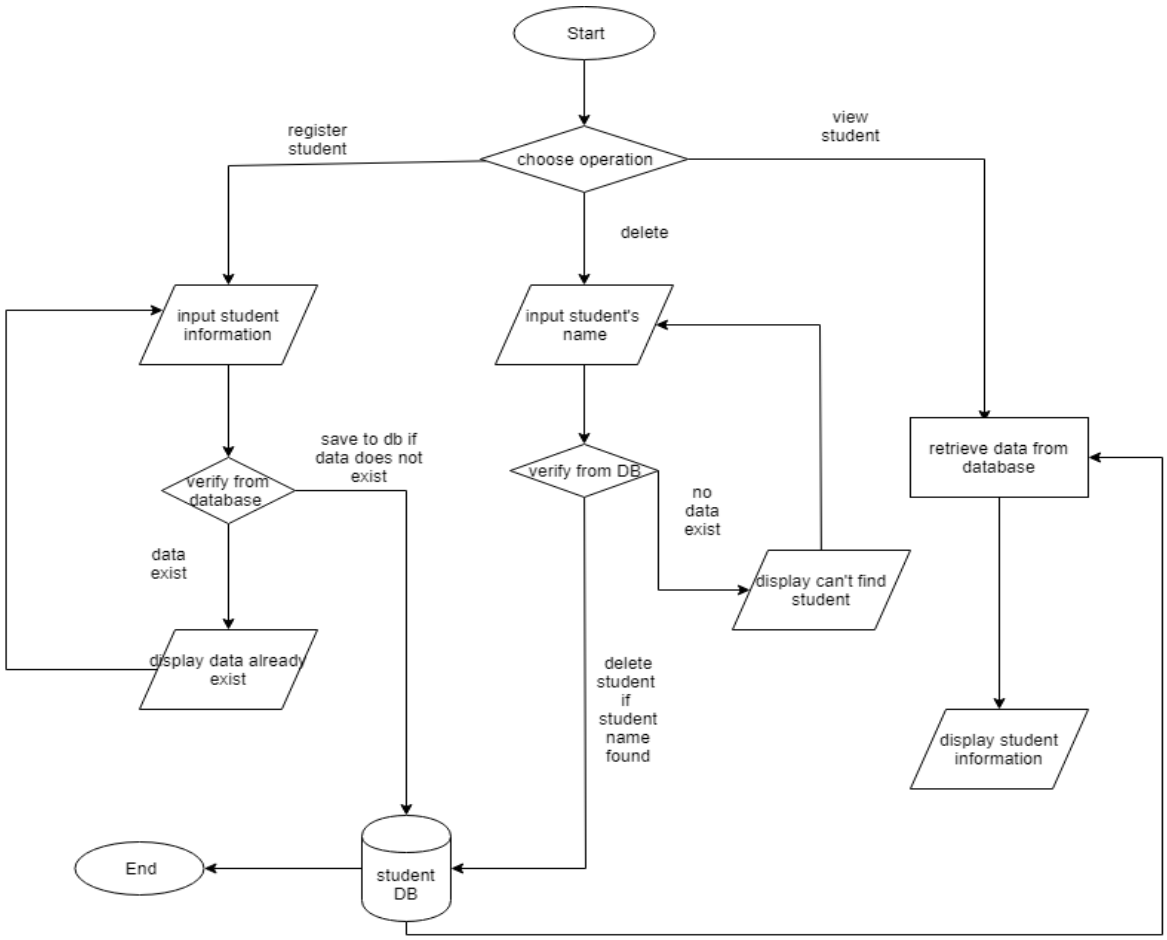

Figure 2.4 :flowchart of student management for staff

Figure 2.4 show flowchart of student management. The staff has three selection which are register student, delete student and view student. When the staff chooses register student, the system will request the staff to enter student information and the system will check whether the student data was exist in database or not. If exist, the system will display data already exist to the staff and staff need to key in new data. If the student data does not exist, the data will save to database. Next, when the staff select delete student, the system will ask for the staff to key in student name and check the student name in database one the staff has key in the student name. If the student does not exist in database, it will display can not find student message. If the student name entered by the staff has found, the system will delete the student from the database. Last is the view student function. When the staff request to view student, the system will retrieve all the student data from the database and display to the staff.

2.3.4 Subject List

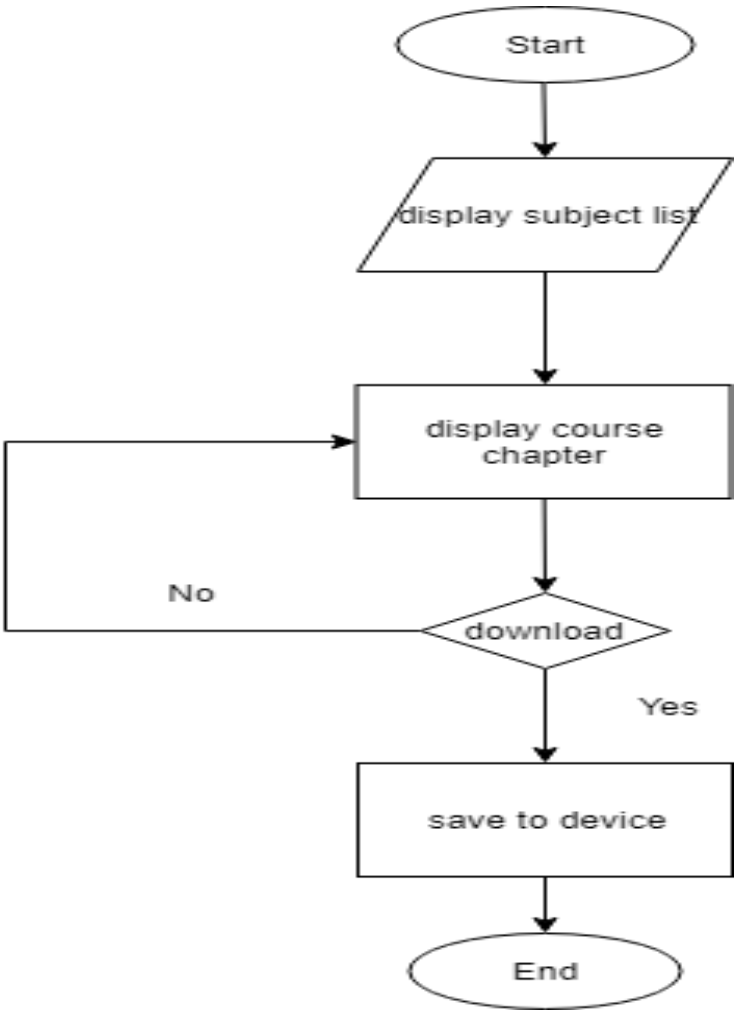

Figure 2.5 : flowchart for student subject list

The figure 2.5 shows flowchart of student subject list. When the select subject list function, the system will display a list of subject for the student. Once the student has choose a subject, the system will display all the chapter for the subject. Student is able to download the subject and the downloaded subject will save to student's mobile device

2.1.1 Function requirement

This system is developed based on some functional requirement. First of all, it is very important to enable access authorization by adding login page before the users can gain full access to the function of the system. Moreover, the available functions should based on the identity of the users. For instance, if the user are a student, he or she will has limited authority on management function, while it is open accessed by the staff or admin of the system.

On the other hand, a database is an essential part to enable the login function to perform well and outstanding. Within the use of database, the system can register much more users to enable login access validation. Furthermore, the admin of the system can delete the redundant data that he think that is undesired. Beside, the information of the users can also be viewed by the admin to know who are the users of the system.

The admin of the system can upload lecture notes to the system then the users can download the notes through the system. The lecture notes are classified based on the related subjects and chapters. The admin and users may not confuse where to upload and download the lecture notes according to the classification.

In addition, GPA calculator is one of the useful function to the users. They can calculate their GPA for each semester by entering their subjects' name, credit hour as well as value of the subject. The calculator will generate the result and provide some suggestion based on the provided users' input.

2.1.2 Development tools

2.1.2.1 Android Studio

Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA. On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps, such as:

1. Visual layout editor

Create complex layouts with ConstraintLayout by adding constraints from each view to other views and guidelines. Then preview your layout on any screen size by selecting one of various device configurations or by simply resizing the preview window.

2. APK analyzer

Find opportunities to reduce your Android app size by inspecting the contents of your app APK file, even if it wasn't built with Android Studio. Inspect the manifest file, resources, and DEX files. Compare two APKs to see how your app size changed between app versions.

3. Fast emulator

Install and run your apps faster than with a physical device and simulate different configurations and features, including ARCore, Google's platform for building augmented reality experiences.

4. Intelligent code editor

Write better code, work faster, and be more productive with an intelligent code editor that provides code completion for Kotlin, Java, and C/C++ languages.

5. Flexible build system

Powered by Gradle, Android Studio's build system allows you to customize your build to generate multiple build variants for different devices from a single project.

6. Real-time profiler

The built-in profiling tools provide real-time statistics for your app's CPU, memory, and network activity. Identify performance bottlenecks by recording method traces, inspecting the heap and allocations, and see incoming and outgoing network payloads.

2.1.2.2 XML

XML is stand for eXtensible Markup Language. It was designed to store and transfer data. It is a simple and very flexible text format derived from SGML. Furthermore, XML is a markup language similar to HTML, which means XML is not predefined. Hence, it must be defined by the developers' tags. The primary purpose of this language is to share data across different systems, such as the Internet. In this project, XML is used as the language to design the User Interface layouts of the system and the screen elements contain.

2.1.2.3 SQLite

SQLite is an in-process library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine. It is an embedded SQL database engine that implement into mobile platform. Unlike most other SQL databases, SQLite does not have a separate server process. SQLite reads and writes directly to ordinary disk files. . Furthermore, SQLite are high compatible with other programming language as it binding to many programming language like java, C, C++ , Haskell and many more. It was chosen for this project because it was very fast processing of retrieve and store data within the mobile device and database itself.

Result

3.1 Result of project

Figure 2.6: Interface for student and staff selection

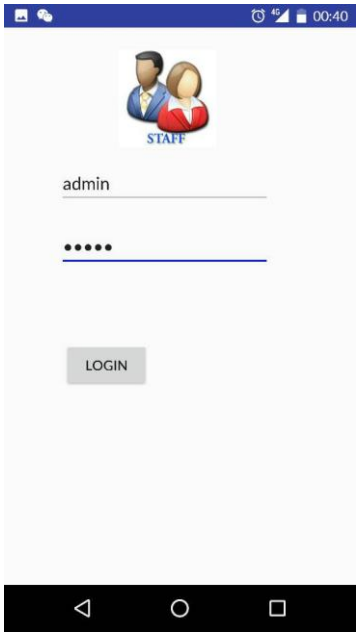

Figure 2.7: Login interface for staff

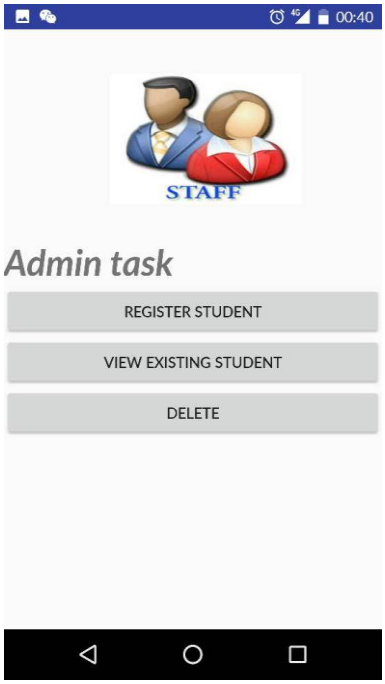

figure 2.8: Interface for admin task

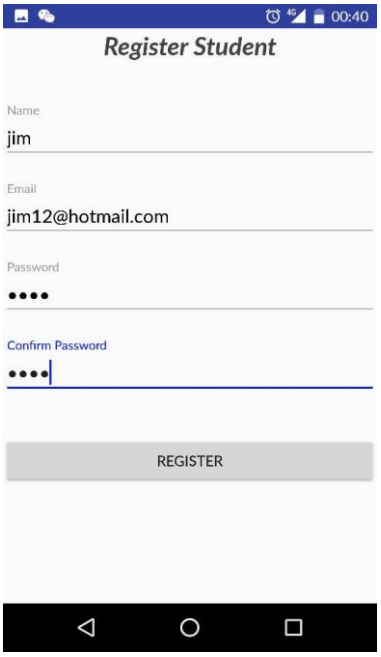

Figure 2.9: Interface for staff to register student

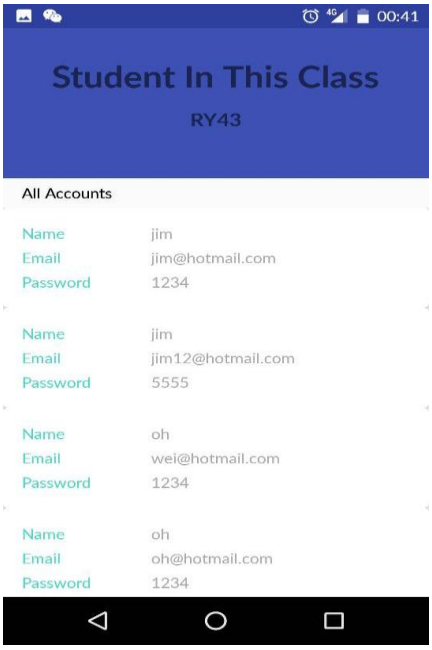

Figure 2.10: Interface for viewing all the students in class

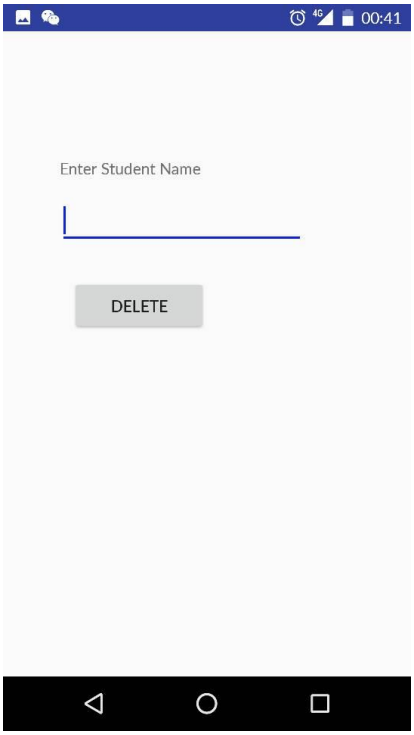

Figure 2.11: Interface of eliminate student by entering student name

Figure 2.12: Interface of student login

Figure 2.13: Interface of student task

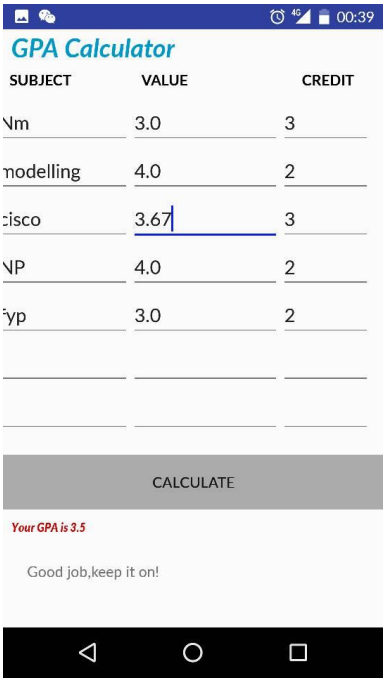

Figure 2.14: Interface of GPA calculator

Figure 2.15: Interface of selecting subject

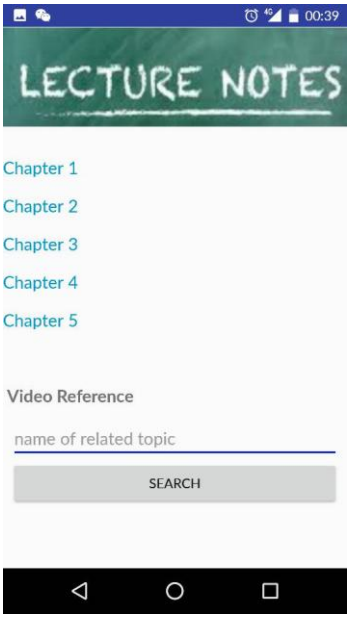

Figure 2.16: Interface for display of chapter and video reference

Figure 2.17: Interface of reference list

Conclusion

There’s almost an app for everything nowadays, this can make student life easier, cheaper, safer and more fun. In this project, a Student Management and Learning System is developed to help students with taking notes and revising the lecture notes that uploaded by lecturer in less time consuming. Besides, this system provides a systematic and user-friendly apps to student and staff compared with desktop-based application as they can use this system with portable devices anywhere and any time. A smart and digital learning experiences to students powered by technology to increase their digital literacy and enable them to create compelling learning activities that improve learning, assessment, and instruction practices. To revise practices, policies, and regulations, this system is also ensure privacy and information protection therefore an authority access function such as view or remove student registered and update course information are only used by staff.