Software Engineering (CS- 310)
BSCS- Section: B

Project-Phase No: 1
College Tracking System
(Software Requirements Specification)

Submitted By

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1. Introduction

Helping student process is one of the management processes on computer science college and they are working hard to improve it. In the meantime, students have some difficulties on searching for a certain classroom or faculty staff office, as well as searching for an exam's classroom and time. College tracking system will help college management, staff, student and visitors on the previous difficulties. College tracking system is a standalone mobile application and it will not be associated with other external systems on the computer science college.

1.1 Purpose

In this SRS document, the project plan is described. The target of this project is also explained. In addition, the tasks of each team member of this project are presented. Moreover, the specifications and requirements of the project are presented.

1.2 Scope

The "college tracking system" is an application designed to help students and faculty staff to follow their schedule as well as their examination by offering a set of properties that include: classes location identification, teaching faculties schedules, emails, method of communications as well as office identification, also student's examination schedule. This application also provides university map and GPS to help students tracking their classes. It will be free to download and use by people belong to college of computer science. College tracking system will not have access to

student's marks and will not be connected to university website. In addition to that, this application just operates within the university local area network (LAN).

1.3 Definitions, Acronyms, and Abbreviations

Term	Definition
SRS	Software Requirement Specification
GPS	Global Positioning System
LAN	Local Area Network
CTS	College Tracking System
User	Anyone uses the application

1.4 Overview

This document contains the system requirements specifications of the project and it is divided into sections. Section 2 provides a general description of the product in addition to the assumptions made and dependencies. Section 3 describes the specific requirements of the product which includes the external interface requirements and functional/ non-functional requirements. The contributions of each team member are given in section 5. Finally, section 6 concludes the document.

2. General Description

This section will give a general description about the product. Here the system will be described how it's interconnect with GPS system, in order to facilitate its functionality. In addition, it will describe the consumer base and what functionality will be used to them. Lastly, the user characteristics will be presented as well.

2.1 Product Perspective

CTS is a mobile software that will cooperates with GPS system. CTS mobile application will be used to locate and show real-time status of the desired classrooms or offices. Furthermore, our application will connect with the GPS to provide directions for the users to the designated room. CTS mobile application should present the contact information for the faculty staff along with the student's schedule information.

2.2 Product Functions

The CTS is a tracking system as well as service system. Using the application interface, it will help the faculty staff and student to direct them to their classroom. It allows faculty staff and student adding or removing a course from schedule, also faculty staff can add or remove their exams. Students will be directed to the scheduled classroom using their schedule. In addition, available classrooms will be colored differently than occupied or unavailable rooms. Furthermore, office rooms will display the office number and the staff information. Lastly, students and faculty staff can see a news list, which includes for example last uploaded exams or courses.

2.3 User Characteristics

There are three types of users that interact with the system: faculty staff, students and guests. For each of these three types of users have their different use of the system.

Faculty staff can use the application to add contact information, office number and classes schedule. Also, they can declare where the exams will be.

Students can use the application to add their classes schedule, they can receive alerts from the staff faculty, and they can search for classes, faculty staff and their information's.

Visitors can use only the application to search for classes and faculty staff.

2.4 General Constraints

Some limitations of using "Android studio" application, no previous experience on database designing and querying.

3. Specific Requirements

In this section we will define in detail the functional and non-functional requirements for the system.

3.1 External Interface Requirements

The following subsections will examine the various pages that will represent the CTS.

3.1.1 User interfaces

The first-time user of the application will see the role pick page. The user should select his role by one of the roles, see Figure 1.

After selecting the role, the user will see the log-in page. User can log-in to this page, see Figure 2.

If the user doesn't have an account, the user can sign-up by clicking the sign-up button. After that will open the sign-up page, see Figure 3.
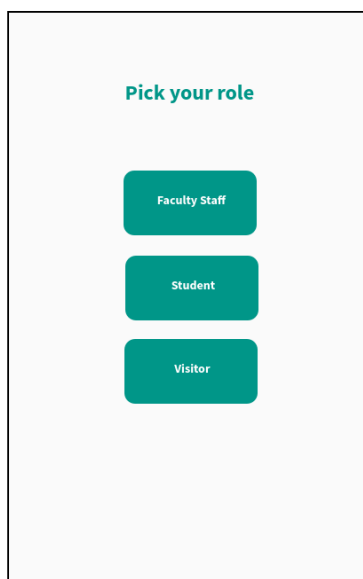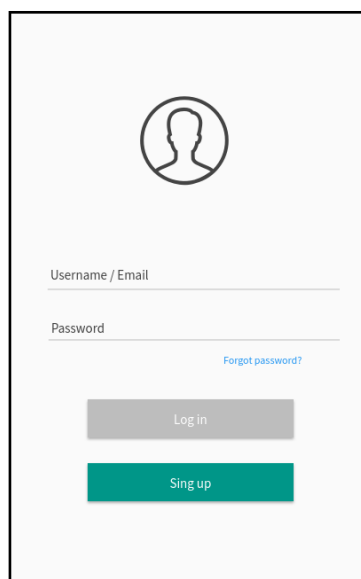

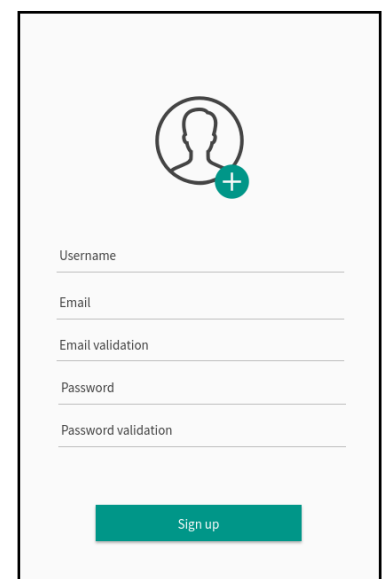**Figure 1 – Role pick**   **Figure 2 – Log-in**   **Figure 3 – Sign-up page**

If the user can't remember the password, he can click "Forgot password?" on the sign-in page. It 'll lead the user to a page that asks the user to enter username and email, See figure 4

After the user entered his account, the home page will appear. It contains buttons that represent classrooms, faculty staff, exams, schedule, home, and me (user profile). See figure 5.

The classroom button opens a page that enables the user to search for classrooms. As a result of using the search bar, it 'll appear information about the classroom that have been searched like, the class number, floor number, and direction button that leads the user to its location, See Figure 6.
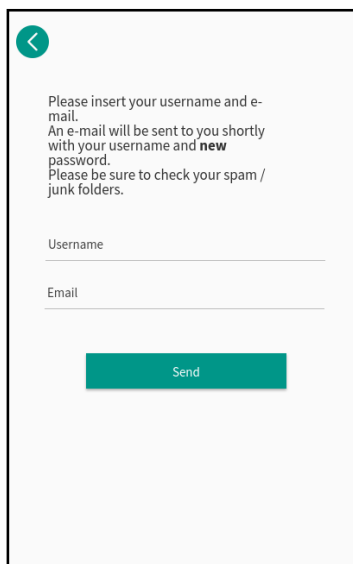

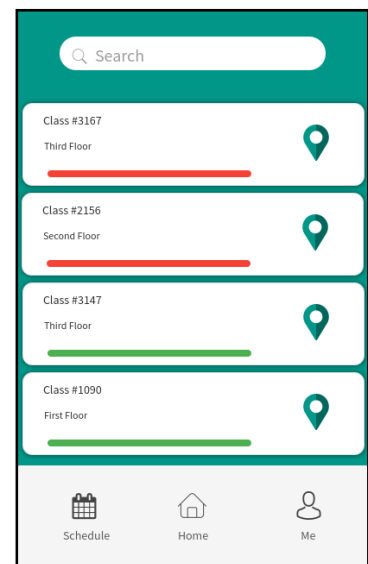**Figure 4 – Forget password page**

Figure 5 – Home page

Figure 6 – Classrooms page

The faculty staff button will open a page that enables the user to search for faculty staff and their information. By using the search bar, it'll provide the result of faculty information that has been searched for, See figure 7.

The Exams button will open the page that can let the user see and search for exams. On the exams page, there is two buttons that can add and remove exams. Faculty staff user is the only user that can add and delete exams, See figure 8.
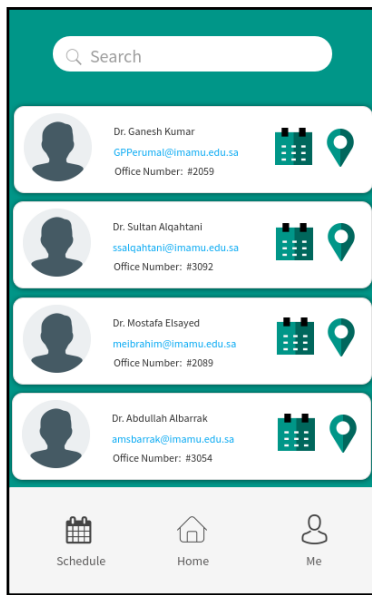
Figure 7 – Faculty Staff page
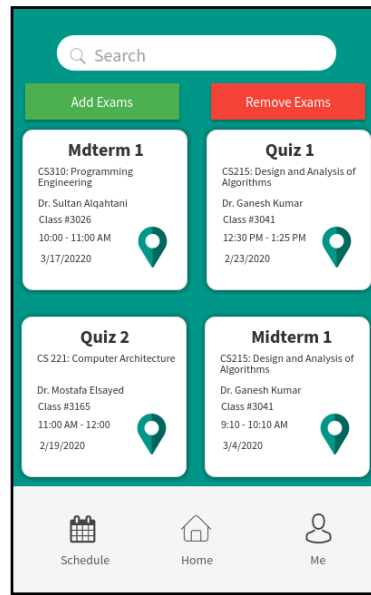
Figure 8– Exams page

The add exam button opens a page that lets the user add exams and its information, See figure 9.

The remove exam button opens a page that lets the user remove exams, See figure 10.

The News button on the home page opens a page that lets the user see the news, See figure 11.
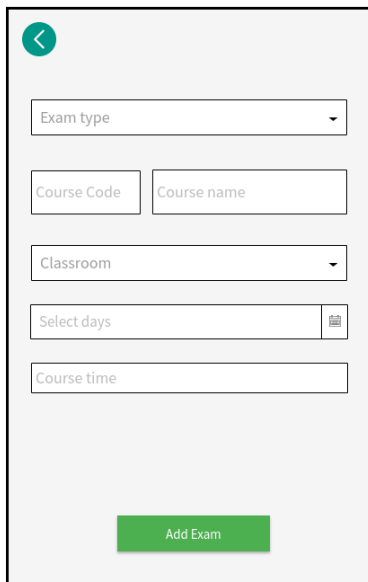
Figure 9 – Add exam
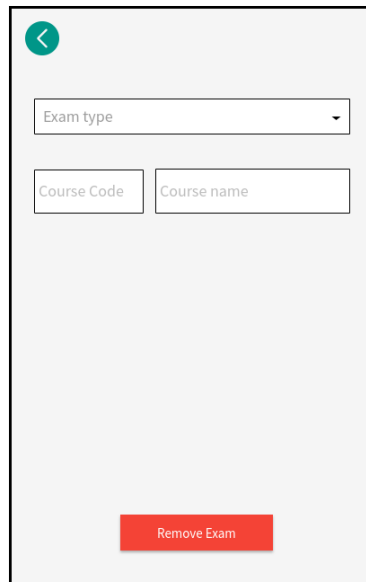
Figure 10 – Remove exam page
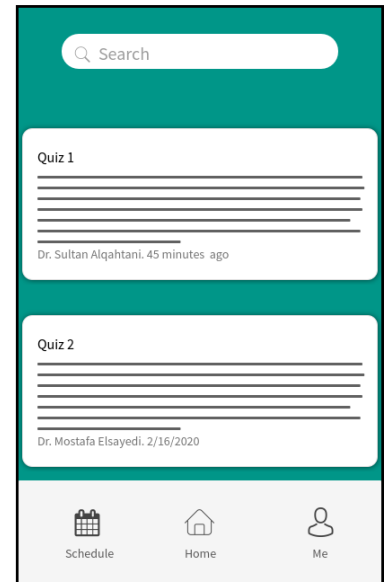
Figure 11 – News page

Schedule button opens a page that lets the user add, remove and see schedule courses. There are two buttons on this page, See figure 12.

The first button is the add button. It enables the user to add course information and add it to schedule slut, See figure 13.

The second button is the remove button. It enables the user to remove a course by providing course code and course name, See figure 14.
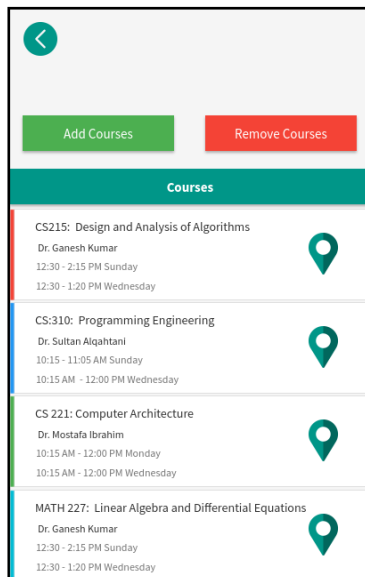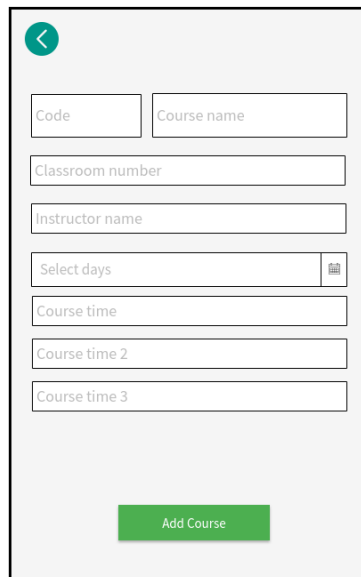
| Figure 12 – Schedule | Figure 13 – add course page | Figure 14 – remove course page |
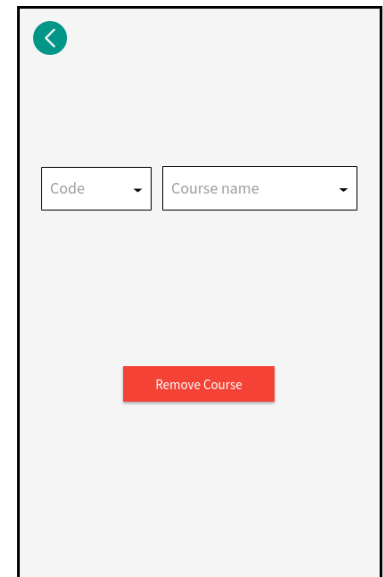
The Me button on the home page opens the profile page. The page contains user information. The user can edit the information by clicking the edit button and he can log-out by clicking the log-out button, See figure 15. Edit button opens a page

that enables the user to edit his information, See figure 16.

Figure 15 – Me page   **Figure 16 – Edit me page**

3.1.2 Hardware interfaces

This application works on Android mobiles and Android tablets. No other hardware is required.

3.1.2 Software interfaces

Since this application is a mobile application, it will only need an Android version 8.0 or higher in order to perform probably.

3.1.3 Communication interfaces

The application communicates with the GPS application to provide a geographical information about the user location and to direct user to it destination.

3.2 Functional Requirements
This section includes the functional requirements of the system.

FR1: Choose role

Feature	Value
Function	Choose role.
Description	System allows user to choose his role (faculty staff, student and visitor).
Inputs	Role name.
Source	Click "Role name" button.
Outputs	none.
Destination	Log in page.
Action	User will directly to home page without sign in if his role is visitor, if he "Faculty staff" or "Student" role he will be directed to sign in page.
Requirements	none.
Pre-condition	none.
Post-condition	Role have been chosen.
User Interface	Figure 1.

FR2: Log in

Feature	Value
Function	Log in.
Description	By entering username and password system will logged in the user based on his role which selected previously.
Inputs	Username, password.
Source	Entered by the user.
Outputs	none.
Destination	Home page.
Action	If he entered his username and password correctly he will be directed to his home page, if he entered wrong username or wrong password or both of them he will get an error message "Make sure the username or password is correct".
Requirements	Chosen role.
Pre-condition	The role chosen should be "Faculty staff" or "Student" role.
Post-condition	The user has logged on to the system.
User Interface	Figure 2.

FR3: Classroom for search

Feature	Value
Function	Classroom search.
Description	By entering classroom number the system will present a map to direct the user to the classroom.
Inputs	Classroom number.
Source	Entered by the user.
Outputs	Map.
Destination	Map page.
Action	If he entered correct number of classrooms, he will go directly to map page, if he entered wrong classroom number, he will get an error message "Make sure number of classroom is correct".
Requirements	Classroom number.
Pre-condition	none.
Post-condition	The way to classroom is now known.
User Interface	Figure 6.

FR4: Search for faculty staff

Feature	Value
Function	Search for faculty staff.
Description	By entering faculty staff name or e-mail address the system will present the faculty staff schedule for today, which contains the classroom number and the time.
Inputs	Faculty staff name or faculty staff e-mail address.
Source	Entered by the user.
Outputs	Faculty staff schedule.
Destination	To anther page, which includes faculty staff today schedule.
Action	If he entered correct faculty staff name or e-mail address he will get the schedule of the faculty member he is looking for, if he entered wrong faculty staff name or e-mail address he will get an error message "Make sure faculty staff name or e-mail address is correct".
Requirements	Faculty staff name or faculty staff e-mail address.
Pre-condition	User must be logged in.
Post-condition	Faculty staff today's schedule have been viewed.
User Interface	Figure 7.

FR5: Search for exam

Feature	Value
Function	Search for exam.
Description	By entering the course name or course code the system will present a map to direct the student to the required exam classroom.
Inputs	Course name or course code.
Source	Entered by the user.
Outputs	Map.
Destination	Map page.
Action	If he entered correct Course name or course code he will go directly to "Map" page to get the direction to class he is looking for, if he entered wrong Course name or course code he will get an error message "Make sure course name or course code is correct".
Requirements	Course name or course code.
Pre-condition	User must be logged in.
Post-condition	the way to exam classroom is presented.
User Interface	Figure 8.

FR6: Add course

Feature	Value
Function	Add course.
Description	By entering the classroom number, course code, course name, instructor name, time and date the system will add this course slut to the schedule.
Inputs	classroom number, course code, course name, instructor name, time and date.
Source	Entered by the user.
Outputs	Confirmation message (Course added successfully).
Destination	Schedule page.
Action	If he entered correct classroom number, course code, course name, instructor name, time and date he will get a confirmation message then he will be directed to "schedule" page.
Requirements	Have course information.
Pre-condition	User must be logged in.
Post-condition	Course added.
User Interface	Figure 13.

FR7: View schedule

Feature	Value
Function	View schedule.
Description	By clicking "view schedule" button, student and faculty staff schedule will be displayed.
Inputs	Click "View schedule" button.
Source	Entered by the user.
Outputs	Schedule.
Destination	"View schedule" page.
Action	When he clicks "View schedule" button he will be go directly to "View schedule" page.
Requirements	none.
Pre-condition	User must be logged in.
Post-condition	Schedule viewed.
User Interface	Figure 12.

FR8: Add exam

Feature	Value
Function	Add exam.
Description	By entering course name, course code, instructor name time, date and classroom number system will add this exam on exams list.
Inputs	Course name, course code, time, instructor name, date and classroom number.
Source	Entered by faculty member.
Outputs	Confirmation message (Exam added successfully).
Destination	"Exams" page.
Action	If he entered correct Course name, course code, time, instructor name, date and classroom number and there is no exam in the same time in the same class the exam will be added, if there is time conflict with another exam in the same class he will get an error message "Please change time or class for your exam", if he entered wrong course code or wrong classroom number he will get an error message "Make sure course code or classroom number is correct".
Requirements	Exam information.
Pre-condition	User must be logged in.
Post-condition	Exam added.
User Interface	Figure 9.

FR9: View news

Feature	Value
Function	View news.
Description	By clicking "News" button a list of news will be displayed.
Inputs	Clicking "News" button.
Source	none.
Outputs	News list.
Destination	"News" page.
Action	If he clicked "News" button and there is news he will go directly to "News" page, If he clicked "News" button and there is no news he will get message "News page is empty".
Requirements	none.
Pre-condition	User must be logged in.
Post-condition	News list viewed.
User Interface	Figure 11.

FR10: Reset password

Feature	Value
Function	Reset password.
Description	By entering e-mail address system will send a mail to that e-mail address containing a link to reset the password.
Inputs	E-mail address.
Source	Entered by "student "or "faculty staff" user.
Outputs	Confirmation message, message (password reset successfully).
Destination	"Log in" page.
Action	If he entered correct E-mail address system directly will send a mail to that e-mail address containing a link to reset the password, if he entered wrong e-mail he will get an error message "Make sure e-mail address is correct".
Requirements	E-mail address.
Pre-condition	You must have an account.
Post-condition	Know the password.
User Interface	Figure 4.

FR11: Sign up

Feature	Value
Function	Sign up.
Description	By entering username, e-mail address, password and their validations system will create an account with the previous credentials.
Inputs	Username, e-mail address, password and their validations.
Source	Entered by the user.
Outputs	Confirmation message, message (Account created successfully).
Destination	"Log in" page.
Action	If he entered unduplicated name and unused e-mail in our system and write it correct in validations space system will create a new account, if he entered duplicated name in our system he will get an error message "Your username already exist", if he entered used e-mail in our system he will get an error message "Your e-mail is already exist", if he entered wrong user name or e-mail in validations space he will get an error message "Make sure validations are correct".
Requirements	User information.
Pre-condition	Chosen role.
Post-condition	account is created.
User Interface	Figure 3.

FR12: Log out

Feature	Value
Function	Log out.
Description	By clicking "Log out" button the student and faculty staff account will be logged out.
Inputs	Click "Log out" button.
Source	Clicked by the user.
Outputs	Confirmation message, message (Logged out successfully)
Destination	"Role" page.
Action	If he clicked "Log out" button account will be logged out, then the system will forward the user to the role page.
Requirements	none.
Pre-condition	Logged in.
Post-condition	Logged out.
User Interface	Figure 15.

FR13: Remove course

Feature	Value
Function	Remove course.
Description	By entering the course name and course code system will allows student and faculty staff to remove a specific course.
Inputs	Course name and course code.
Source	Entered by "student" or "faculty staff" user.
Outputs	Confirmation message, message (Course removed successfully).
Destination	"View schedule" page.
Action	If he entered correct course name and course code the course will be removed, if he entered wrong course code or wrong course name, he will get an error message "Make sure course name or course code is correct".
Requirements	Course information.
Pre-condition	Logged in.
Post-condition	Course removed.
User Interface	Figure 14.

FR14: Remove exam

Feature	Value
Function	Remove exam.
Description	By entering the course name and course code system will allows faculty staff to remove a specific exam.
Inputs	Course name and course code.
Source	Entered by "faculty staff" member.
Outputs	Confirmation message, message (Exam removed successfully).
Destination	"Exams" page.
Action	If he entered correct course name and course code the exam will be removed, if he entered wrong course code or wrong course name, he will get an error message "Make sure course name or course code is correct".
Requirements	Exam information.
Pre-condition	Logged in with "faculty staff" role.
Post-condition	Exam removed.
User Interface	Figure 10.

FR15: View direction

Feature	Value
Function	View direction.
Description	By clicking the location icon on the view schedule page, system will direct the student and faculty staff to their classrooms.
Inputs	Clicking "Location" icon.
Source	Entered by the user.
Outputs	Direction map.
Destination	"Map" page.
Action	If he clicked "Location" icon he will directly get the direction to the class.
Requirements	none.
Pre-condition	User must be logged in and had at least one course in the schedule.
Post-condition	The way to classroom is now known.
User Interface	Figure 12.

FR16: Edit info

Feature	Value
Function	Edit info.
Description	By Clicking "Edit" button "information label" will appear so student and faculty staff can edit their information.
Inputs	Click "Edit" button.
Source	Entered by "student" or "faculty staff" user.
Outputs	Confirmation message, message (Info updated successfully).
Destination	"Me" page.
Action	If he click edit after he add his information he will get a confirmation message "Info updated successfully".
Requirements	User information.
Pre-condition	User must be logged in.
Post-condition	information updated.
User Interface	Figure 16.

3.3 Non-Functional Requirements

- **High availability:** (no frequent down time)
- **Response time:** (less than 3 seconds for responding time)
- **Ease of use:** (simple screens, clear functionality buttons and color presentation).
- **Secure information:** (by encrypting the login information)

4. Team Members Contribution

https://github.com/AhmedMaj/CollegeTrackingSystem.git

5. Conclusion

In terms of helping the students, faculty staff and visitors of computer science college, we are developing a mobile application called "College Tracking System" which helps them on classrooms direction, schedules and exams. In the first stage of this document we had a brief scope of the project and its purpose. In advantage to that, we explained in detail the product functionality and the user Characteristics. Furthermore, Specific Requirements section consists of three important subsections which are External Interface Requirements, functional requirements as well as non-functional requirements. External Interface Requirements refers to users, hardware and software interfaces, such as the layout design as well as the operating system that is used. Functional requirements section defines in detail the functions on our system such as the processing way, input, output also the error handling. Similarly, we describe the non-functional requirements with some particular examples. In conclusion, a table of Team Members Contribution will present the role besides the Contribution for each team members.