QuicklySign, A Mobile Application

Supervised by: Dr. Mhammed Chraibi

October 2017
QUICKLYSIGN, A MOBILE APPLICATION

Interim Report

Student Statement:
The designer has applied ethics to the design process and in the selection of the final proposed design. And that, the designer has held the safety of the public to be paramount and has addressed this in the presented design wherever may be applicable

[Signature] 20/10/2017
Idriss Said Alaoui

Approved by the Supervisor(s)

[Signature] 20/10/2017
Dr. Mhammed Chraibi
## CONTENTS

<table>
<thead>
<tr>
<th></th>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Feasibility Study</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>STEEPLE analyses</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Technology Enablers</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Software Analysis</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>5.1 Functional Requirement</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>5.2 Non-functional Requirement</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>5.3 Use Case Diagram</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>5.4 Sequence Diagram</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>5.5 UML</td>
<td>10</td>
</tr>
</tbody>
</table>
ABSTRACT

Automation is present in almost every industry. The labor performed in these industries known to be very repetitive and redundant. The creation of automated machinery will improve the efficiency into completing tasks and will prevent time wasted on finishing some tasks. The following project aim to spare university professor from doing the redundant tasks of marking attendance of the students in each class session. Also, it will provide them the ability to ask question to the class and receive feedback on how well students are understanding the lecture materials.
1 INTRODUCTION

In Al Akhawayn University, Professors mark the attendance of each student at the beginning or at the end of each class. The following tasks is done at each lecture session, during the whole semester. In addition, especially in the computer science lecture, it is hard for student to follow along with the professor when s/he introduces us to a new concept. For example, most student will get lost understanding pointers in CSC 1401. It is unfortunate that there is no opportunity for students to provide feedback to the professor on how well they are understanding the concept. In fact, short programming exercise or question might solve this problem and give professors insight on how well the students are following along the lecture materials.

The aim of my application is to automate the process of marking attendance, and collect students feedback about the lecture. QuicklySign, the mobile application, will be in charge to set up a room. The room will be available for students to join by providing their full name and a special code. Once this information inserted, their full name will be listed in a google spreadsheet. Also, they will be part of the room as it is the same for other students. Finally, the Lecturer might send questions to students to answer which will be collected and stored in a google spreadsheet. At the end of each lecture, the professor might consult the dedicated google spreadsheet and note the students who were present, their answers and feedbacks.

The application will be developed using android studio, the official IDE for android. The IDE provides the most efficient tools to build apps on every device. The mobile application will be connected to firebase which will be responsible to keep track of Realtime
updates done in the room. Finally, the mobile application will be connected to a google script which will be responsible to connect to google spreadsheet using the available APIs.

By eliminating the redundant work done by professors in class, they could afford to have more time for teaching the class. Also, the feedback provided by students will give them the opportunity to have an idea on the course materials that needs to be focused on. Hence, the professors will succeed to provide students the Intended learning outcomes more efficiently.
2 Feasibility Study

The goal of this capstone is to develop a mobile application system that will offer users the opportunity to sign up or a class lecture without a signup sheet or a roll call through jenzabar. In fact, the process of signing up will be digitalized and every present student will be able to sign up at the same time.

The mobile application will be connected to a real-time database that will offer the technology to display the opened rooms on a real-time basis. Also, the professor should have a list of users who signed up in the class lecture on a Google Spreadsheet.

Economic Feasibility

The development cost of this project will be minimal at early stage. We will be required to pay used services and APIs once we have many users. The mobile application would be free to download on Google Play Store.

Technical Feasibility

This application is technically feasible as it will be developed with existing technologies that have plenty of source materials.

Technological Analysis

The mobile application will be developed with the widely used Integrated Development Environment (IDE) for Android: Android Studio. The following IDE supports AVA and Kotlin but I will be using JAVA because I am familiar with it since my Object-Oriented Programming class.
My real-time database will be firebase, a technology offered by Google. It is free to use for a limited number of users and requests; however, it should not limit the number of users I target for the duration of my capstone project.

Finally, professors who create rooms should have a reliable technology to store their acquired list of students. Hence, I will be using Google Script that is based on JavaScript. Google script allows me to have access to Google Drive technologies such as Google Spreadsheet and use it to my advantage. So, users who sign up to the room will be displayed on a Google Spreadsheet shared with the user who created the hotspot.
3 STEEPLE analyses

Social
The mobile application will facilitate the process to register present student names. It would save the time and effort for professors.

Technological
There would be no need for need to go to jenzabar and do the roll call. Students might mark their attendance through only one click.

Economic
There is no cost to the development of this project, the technologies used offer free access to a limited usage. The technologies usage will not be higher than the specified limited during the capstone duration

Environmental
There is no negative impact on the environment.

Political
No politics are involved into the creation, implementation and maintenance of this project

Legal
We would need to agree with the university whether we are allowed to collect student information in google spreadsheet.

Ethical
There will two types of users in our application: professors and students. Both categories having a set of tasks that are allowed to do.
## Technology Enablers

<table>
<thead>
<tr>
<th>Technology</th>
<th>Advantages</th>
<th>Its usage in the capstone</th>
</tr>
</thead>
</table>
| Google Apps Script                   | • It provides apis to have access to google drive products  
• It supports Javascript  
• Free to host the scripts  
• Offers a library to connect the android app to the hosted script  
• Host capacity is the google drive | • The following technology will be used to create a google spreadsheet for every hotspot created.  
• User registered in the hotspot might be registered in the google spreadsheet.  
• The ability to register users in a Google Spreadsheet allows us to compute data for other Google Drive products, e.g., Google Doc |
| Firebase                             | • It provides a real-time database  
• It provides Authentication services  
• Remove the need to program the backend  
• Free to use for limited cloud functions  
• Offers storage | It is needed to have a real time database so to display changes due to a hotspot on a real time basis.  
We will have access to email authentication services needed for the project |
| Android Studio                       | • Provides fastest tools to develop android application  
• Support Java  
• Support Firebase API  
• Support Google script API |                                                                                                                                                                                                 |

https://youtu.be/JJgmU_JUsug

https://youtu.be/iosNuIdQoy8
## 5  Software Analysis

### 5.1 FUNCTIONAL REQUIREMENT

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Requirement Statement</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR01</td>
<td>The user should be able to update his Personal information</td>
<td>Student Id, Phone number, Email, Full Name</td>
</tr>
<tr>
<td>FR02</td>
<td>The user should be able to login to the app</td>
<td></td>
</tr>
<tr>
<td>FR03</td>
<td>The user should be able to register to the app</td>
<td></td>
</tr>
</tbody>
</table>
| FR04           | The user should be able to create a hotspot (a signup opportunity to an event) | Hotspot appears when near to the users  
• Distance still to be defined |
| FR05           | The user should be able to sign in a hotspot               |                                                  |
| FR06           | The user email should be verified                           |                                                  |

### 5.2 NON-FUNCTIONAL REQUIREMENT

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Requirement Statement</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>NF01</td>
<td>The application may only be on android</td>
<td>Version +4.4</td>
</tr>
<tr>
<td>NF02</td>
<td>Localization: the application should display data in both English and French language.</td>
<td></td>
</tr>
<tr>
<td>NF03</td>
<td>The mobile should have GPS &amp; internet access</td>
<td></td>
</tr>
<tr>
<td>NF04</td>
<td>Ad free</td>
<td></td>
</tr>
<tr>
<td>NF05</td>
<td>The application should be using a real time database</td>
<td></td>
</tr>
<tr>
<td>NF06</td>
<td>Scalability: the data should not corrupt memory and make the application crash.</td>
<td></td>
</tr>
<tr>
<td>NF08</td>
<td>Usability: the user should be able to sign in to a roo, by a single swipe. The application should require minimum actions from the user</td>
<td></td>
</tr>
</tbody>
</table>
5.3 USE CASE DIAGRAM
5.4 SEQUENCE DIAGRAM
5.4 UML