Software Requirements Specification

for

BRACU Gate Entry System

Version 1.0 approved

Prepared by

Junaid Iqbal 17101286

Afia Fahmida Rahman 17101240

Hamim Hassan Kadir 16101031

Samiu Mostafa Ishan 18101452

BRAC University

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The purpose of this document is to make a proper documentation of the BRACU Gate entry system Software. This will present the detail information about the software. This document will explain the features of the system, how this system will work, how would the interfaces look like. This document will discuss about how the software will work practically. Also the constrains under which the software will operate.

This document is intend for both the stakeholders and the developers as a complete documentation and proposal for the project.

1.2 Document Conventions

This document follows the IEEE Software Requirement Specification template

1.3 Intended Audience and Reading Suggestions

This document here is for both the stakeholders and developers. This document contains all the information about the software. It has the requirements where it is discussed what this software is about to deliver. It contains user manual so that that the user can understand how this software will work. All description about the codes, models and diagrams are included in this document to help them understand the system easily. This will help the developer team to improve the system easily in future.

1.4 Product Scope

This software system will be used as an automated gate entry system for BRAC University. The system has designed to make the gate entry system in BRAC University easier, efficient and less time consuming.

This system is design from the demand of making the gate entry system of BRAC University efficient. This system will make a relation between the students, faculty and staffs with the guards and the supervisor where the entry can be properly monitored. In every stage, the security of the university will be ensured. Unauthorized entry can be detected and proper action can be taken. This system will facilitate the record of every student, faculty and staff's entry which can help in any emergency situation and University can get proper information.

This system will overcome the existing system's flaws where it is time consuming while a student enters into the buildings. This will make the student entry more efficient and easy.

1.5 References

IEEE Template for System Requirement Specification Documents:
https://goo.gl/nsUFwy

2. Overall Description

2.1 Product Perspective

The BRAC University Gate entry system is developed for every person who are authorized to enter into the university building easily. This system is designed from the need to make a better gate entry system where everything is automated.

The existing model of the University gate system is manual. For this reason, more manpower is needed to regulate the security system. To stop unauthorized entry in the university the guards need to check every person's ID card to make sure the security. It is not possible always to make sure this security efficiently. Sometimes this process takes longer time to execute.

This new gate entry system can overcome the flaws of the previous system. This system is fully automated. All the information of Students, Faculty and Staffs are already in the BRACU server. The system can access the information and can check whether the authorized persons are entering or not. While the student will punch his/her ID card in the scanner, it will scan the code in the card and match the information with the server if it exists in the server. The system will instantly show the information about the student on the screen which will be in front of the guard. This will record the entrance time of the student. When a student will leave the building, they need to scan the ID card to record the exit time.

The same process is applicable for the Faculty and Staffs.

For the guests who are invited in the university on different purpose and occasions the system can also keep track. The guests can entry themselves in the reception and will be provided a card for their entry. This will keep track of their entry and exit time. Also other information about their entry.

If any student is unable to show their ID card, the system can also take care of that situation. There will be fingerprint scanner for the student to enter into the university. This process can only be executed maximum thrice in a month so that the students always carry their ID card that is a compulsory requirement of the University authority. This will prevent the student to use fingerprint-checking entry frequently.

The guards in every entrance can only access the basic information of a student. For example name, ID, Expired Date of the ID card, Session. The Supervisor will have the access to see the entry and exit time and any further information about the entry of any specific person. The supervisor can check the validation of the ID by searching the information directly through the software. If the alternate options failed to validate a student's information this will work to verify the student and let them enter in the university.

2.2 Product Functions

The products Functions are given below with the Use Case and Activity Diagram:

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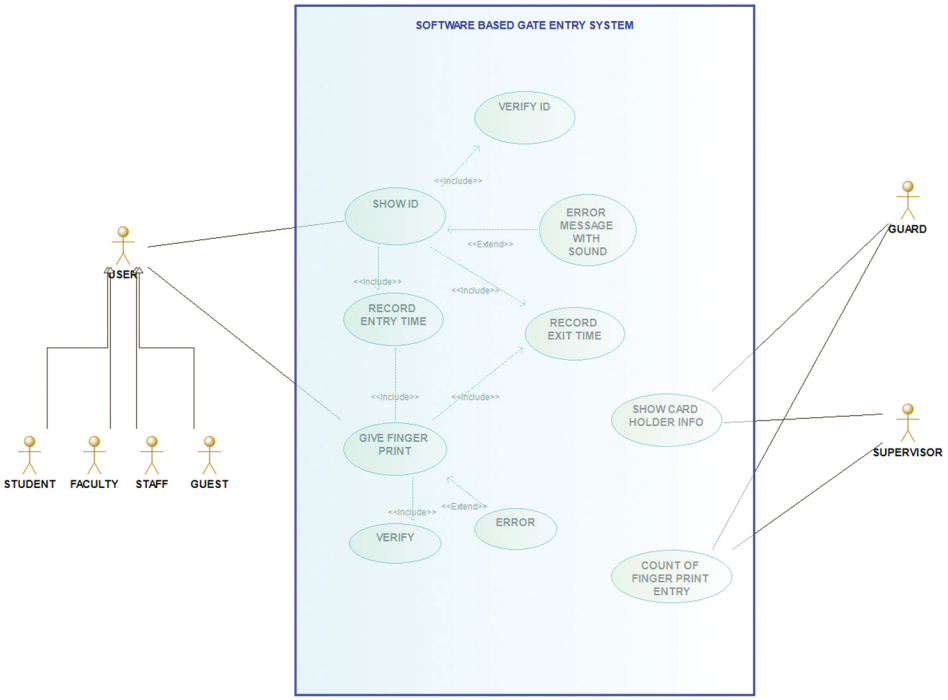

Fig: Use Case Diagram

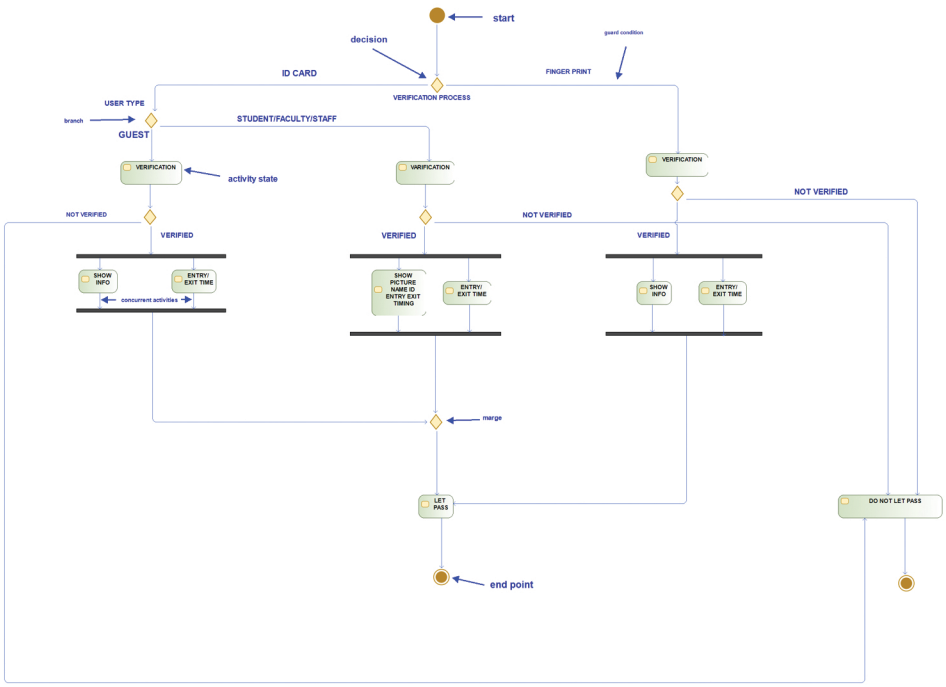

Fig: Activity Diagram

From the Guard's view the software has a Interface where the guard can see the information about the student or faculty or staff. There will be a photo of the student visible to verify. Guards and Supervisors re the secondary user. Whenever a student pass only then they see the software working and monitor it.

2.4 Operating Environment

- Windows 7
- Windows 8
- Windows 10
- Mac OS X
- Linux

2.5 Design and Implementation Constraints

BRAC University Gate Entry System is Written in Java. In Netbeans Platform. The database has been made with MySql. The model which applied in this project is Agile method. The reason of using this method is to provide a friendly environment for the programmers to work on this project. Several plug-ins have been used in this project to make the system efficient.

2.6 User Documentation

The Software system is very easy to operate. As there is no user side interface so it is less complicated.

Login: there is a log in system for the authority. Both guard and supervisor has the same window. Supervisor has some extra power on the information about an entry.

In The Authority End There is only One option for Security Guards to control which is:
Check Fingerprint: It allows the security guard to open the option for user to enter into the building using the fingerprint match. If the security guard do not allow student faculty or Staff can not use fingerprint scanner.

Another option in the Supervisor window is:

Student ID: This allows the supervisor to see any students information about the entry in the university which contains Student Name, Id, Department, Session. The more facility it has is, it can show the supervisor when a student entered and leaved the university.

2.7 Assumptions and Dependencies

This system is developed in Java and therefore requires Java to be installed on the user's system. It requires Java version 7 or higher. This applies to Windows and Linux users. On Mac OS X, Java is bundles with the application.

3. External Interface Requirements

3.1 User Interfaces

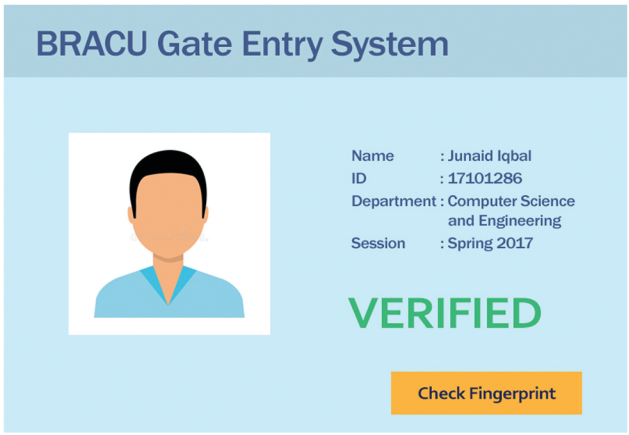

Fig: Security Guard view

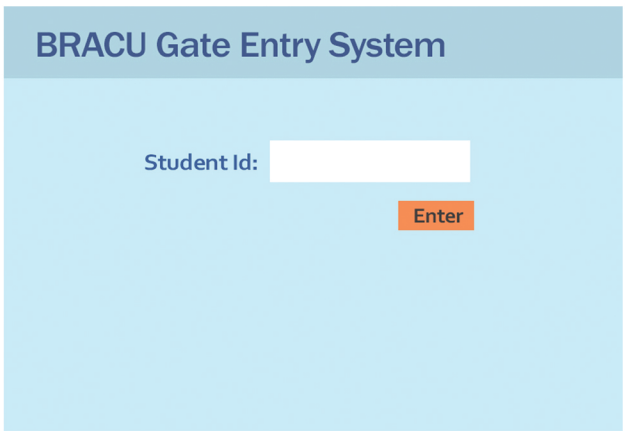

Fig: Supervisor view

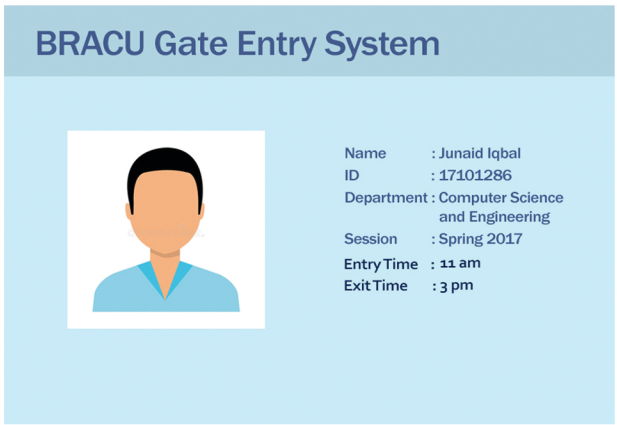

Fig: Supervisor view

3.2 Hardware Interfaces

There are some component which will use to construct this system. At first in the entrance the would be a ID Card scanner which will scan the QR code from the scanner and verify the student. We need a database to connect in this system to hold the student, faculty and Staff information. Also if a student fails to show his/her id there would be a fingerprint scanner to identify the student. So that the student can enter in the building.

3.3 Software Interfaces

BRAC University gate entry system requires Java to be installed on the system, more specifically Java version 7 or 8 for its latest release. Additional information can be found on section 2.7 of this document. The system can be connected with a MySQL, SQLite database to identify student and verify information.

3.4 Communications Interfaces

This System requires internet connection to get connected to the BRACU server.

4. System Features

Here is the features the system is providing the user which makes this system efficient.

4.1 Efficient and Automated Entry System

4.1.1 Description and Priority

The Student or Faculty or the staffs will punch their id card in the scanner. Scanner will match the cards information with the information in the Server. If the information matches, system will verify the student and give the guard signal to let the student go in.

4.1.2 Stimulus/Response Sequences

At first the Qr code will be scanned. It will match the student's Name, Id and other attributes with the existing information from the server. If the information match it will show the Guard verified. Otherwise, not verified sign will be shown.

4.1.3 Functional Requirements

The Funcitional Requirement of this systems are:

REQ-1: Must ID Card Carry
REQ-2: Automated System
REQ-3: Time efficient system
REQ-4: Security Assurance
REQ-5: Control over fingerprint scan entry
REQ-6: Less Manpower required

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The performance of the system is a major non functional requirement. Based on that there are four criteria which will determined the performance of this system:

i. Response Time: The response time of this system is at max 2 seconds. Which means the total verification of a student can not exceed 2 seconds. The reason is the total number of the student enters in the peak time when the class starts is too high which may cause a mess if the response time exceed this limit.

ii. Workload: At the peak hour the system can take entry of 16 entries at once. The reason is The University has 8 building so at a time at max 8 students or faculty or staffs can enter the building. As the software will be run in every other building of the university it should be able to take the load of atleast 8 entries. But to be safe and to make sure that the system will not crash the system has the ability to take the load of verifying 16 entries at a time at it's peak hour.

5.2 Safety Requirements

BRAC University Gate entry system has it's safety backup. The system can retrieve data if the system crash at any point. If the system crashes the software can start working from where it last worked on. It has safety backup server to retrieve the data.

5.3 Security Requirements

This system will work using the internet and students data would be in the server. There is no safety risk for students for identity theft. This system can encrypt the information while working so if any of the computer get hacked the hacker can not retrieve any data from the server.

5.4 Software Quality Attributes

There are few attributes for software quality they are: Correctness, Reliability, Robustness, Maintainability, Readability, Extensibility, Testability, Efficiency, Portability. In every sectors the software can ensure this quality as per the clients requiremets.

6. Other Requirements

Appendix A: Glossary

Appendix B: Analysis Models

Appendix C: To Be Determined List