UNIVERSITY OF ESWATINI

Software Engineering
Software Requirements Specification For Uneswa Residential Billing System

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
Final Draft	Sakhile Dlamini **(Analyst)**	All sections being Filled	09/16/2022

Contents

1. Introduction

1.1 Introduction

The purpose of this document is to define and describe the requirements of the project and to spell out the system's functionality and its constraints.

1.2 Scope of this Document

Two users for the system are the students and the warden for all respective Uneswa campuses. Our constraints for this section includes our deadline for the document which is due 24/11/2022

1.3 Overview

The product will have capabilities which are, but not limited to storing student details like students name, SID, billing amount, available rooms, student's emails, payment types

2. General Description

2.1 Product Functions

The product should make input of data and the entire checkout process easier and streamlined for the users (students and warden) and time efficient for both users.

2.2 Similar System Information

The product is being developed with HTML and Bootstrap.

2.3 User Characteristics

The users include students and the warden as they input data on the website. For this system, the user is required to know the basic usability of a website as well as a very base level understanding of a computer, which hopefully the programmer will make a user-friendly website for students not familiar with operating a website application.

2.4 User Problem Statement

The students are almost always incorrectly billed for their residential stays, and mostly pay more than they are supposed to. Student also have to physically visit the Warden's office for booking a room. As for the wardens, they use Excel spreadsheet for keeping their records, and too many man hours are needed to enter the information collected. In a nutshell, the current billing system is done manually.

2.5 User Objectives

The warden wants a database that will store information on a website application. The students want a website application to use for booking available residential rooms. The program must faciliatate the ease of input. It also must store the necessary, or rather relevant items needed for both warden and students.

2.6 General Constraints

Constraints include an easy to use interface for the website through HTML and Bootstrap.

3. Functional Requirements

1. **Items provided to the billing system shall be stored in the database.**
    1. Items shall be stored on the laptop machine and have complete fields.
    2. Very high criticality
    3. Limited network / wi-fi availability could present a technical challenge
    4. The above stated factor is a risk we have encountered. Eliminate it by reducing the dependency of our program on these things.
    5. This requirement is the basis of the project; all other aspects depend on it.

2. **The data stored should be able to be manipulated.**
    1. Items and other data should be able to be added and updated.
    2. Very high criticality
    3. We do not foresee any technical risks involved in this requirement.
    4. The only factor we can encounter here is the user of the system not being able to use it correctly. We will overcome this by training those who will be using it.
    5. This requirement is dependent on requirement one.

4. Interface Requirements

4.1 User Interfaces

- **4.1.1 GUI**
  The user interface for this program is the interface provided by Bootstraps and HTML.
- **4.1.2 CLI**
  There is no command line interface
- **4.1.3 API**
  MTN mobile money, FNB, Standard bank

- **4.1.4 Diagnostics or ROM**
  There is a troubleshooting and help section provided by Microsoft

4.2 Hardware Interfaces

The program uses the hard disk. Access to the hard drive and other hardware is managed by the operating system.

4.3 Communications Interfaces

If we decide to implement a network for a shared database, the operating system will handle those connections.

4.4 Software Interfaces

HTML and Bootstraps

5. Performance Requirements

The database is designed to be operated on negligible amount of hard drive space to store the database. This requirement is for the warden's PC.

500 MHz processor or higher
256MB RAM or higher
1.5GB Available Hard Drive Space
Windows 7 or later versions and OS X 10.10 or later versions

6. Other non-functional attributes

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6.1 Security

The system shall be designed with a level of security appropriate for the sensitivity of information enclosed in the database. More interaction is needed with client about the volatility of the information. One requirement that could be implemented is encrypting the database and/or making the database password-protected, by user's request.

6.2 Binary Compatibility

This system will be compatible with any modern computer that has internet connection (whether PC or Mac), and will be designed with more than one computer in mind.

6.3 Reliability

Reliability is one of the key attributes of the system. Back-ups will be made regularly so that restoration with minimal data loss is possible in the event of unforeseen events. The system will also be thoroughly tested by all team members to ensure reliability.

6.4 Maintainability

A quick checklist is formulated for website maintenance:

1. Checking that all pages are loading without errors
2. Running a backup and making sure a previous version of the website is stored
3. Making updates to website software and plugins

6.5 Portability

The system shall be designed in a way that shall allow it to be run on multiple computers with internet connection.

6.6 Extensibility

The system shall be designed and documented in such a way that anybody with an understanding of using the internet and web applications shall be able to extend the system to fit their needs with the team's basic instructions.

6.7 Reusability

The system should be designed in a way that allows the database to be re-used regularly until a student terminates his/her stay duration.

6.8 Application Affinity/Compatibility

This system requires internet connection.

6.9 Resource Utilization

The resources used in the creation of this system include the internet.

6.10 Serviceability

The maintenance of the system should be able to be sufficiently performed by any person with a basic understanding of bootstrap and HTML.

7. Operational Scenarios

Scenario A: Initial Data Input

The students shall enter the personal information into the database for its initial construction and evolution. The fields will be completed via a user portal that will manipulate the data.

Scenario B: Student Check-out

The warden shall be able to evaluate the information about the student booking a room, and record it. They will also enter the residential block with the room number which will indicate in the student's user interface. Other relevant information like the billing price will be displayed as well.

Scenario C: Database Maintenance

The student may want to alter/delete information, In this case they will need to be able to remove the data that has been entered.

8. Preliminary Use Case Models

This section presents a list of the fundamental sequence diagrams and use cases that satisfy the system's requirements. The purpose is to provide an alternative, "structural" view of the requirements stated above and how they might be satisfied in the system.

8.1 Use Case Model

The updated Use Case model is attached at the Project plan document.

9. Updated Schedule

The updated PERT/GANTT chart is attached at the Project plan document

10. Updated Budget

An updated budget is attached at the Project plan document

11. Appendices

11.1 Definitions, Acronyms, Abbreviations

Uneswa – University of Eswatini

HTML – Hypertext Markup Language

PC – Personal Computer