Software Requirements Specification

Version 1.0
November, 2014

Resource Management System

Abhishek Tiwary (2013A7PS810G)

Ahmad S. Jauhar (2012A3PS100G)

Nisarg Shah (2013A7PS694G)

Shubham Jain (2013A7PS007G)

Shubham Jain (2013A7PS049G)

Varsheeth Talluri (2013A7PS045G)

Submitted in partial fulfillment
Of the requirements of
CS F213 Object Oriented Programming

Table of Contents

1.0. Introduction

1.1. Purpose
1.2. Scope of Project
1.3. Glossary
1.4. References
1.5. Overview of Document

2.0. Overall Description

2.1 System Environment
2.2 User use cases
2.2.1 Use case: Book a room
2.2.2 Use Case: Book a cab
2.2.3 Use Case: Cancel
2.2.4 Use Case: Check status
2.2.5 Use Case: Login
2.3 Administrator use cases
2.4 Database use cases
2.5 User Characteristics

3.0. Requirements Specification

3.1 External Interface Requirements
3.2 Functional Requirements
-- User Related
-- Admin Related
-- Database Related
3.3 Detailed Non-Functional Requirements
3.3.1. Logical Structure of the Data
3.3.2. Security

1.0. Introduction

1.1. Purpose

The purpose of this document is to present a detailed description of a Resource Management System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli.

1.2. Scope of Project

This software system will be an End User oriented Resource Management System for scheduling of transport and lecture sessions in BITS Goa. This system will be designed to minimize the time required by the user to book either of the two, cabs or lecture halls, which would have taken inordinate amounts of time and effort if done manually . By minimizing the time taken for the user system will meet the user's needs while remaining easy to understand and use.

The system is also designed to allow the service providers to manage the system easily, while ensuring the the data of users is not compromised.

1.3. Glossary

Term	Definition
Database	Collection of all the information monitored by this system.
Admin	Instructor-in-charge for approving the room bookings. Cab dealer in case of cab booking, who keeps updating the available cabs.
User	Users who wants to book a cab or a room.

1.4. References

IEEE. *IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications.* IEEE Computer Society, 1998.

1.5. Overview of Document

The next chapter, the Overall Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third chapter, Requirements Specification section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

Both sections of the document describe the same software product in its entirety, but are intended for different audiences and thus use different language.

2.0. Overall Description

2.1. System Environment

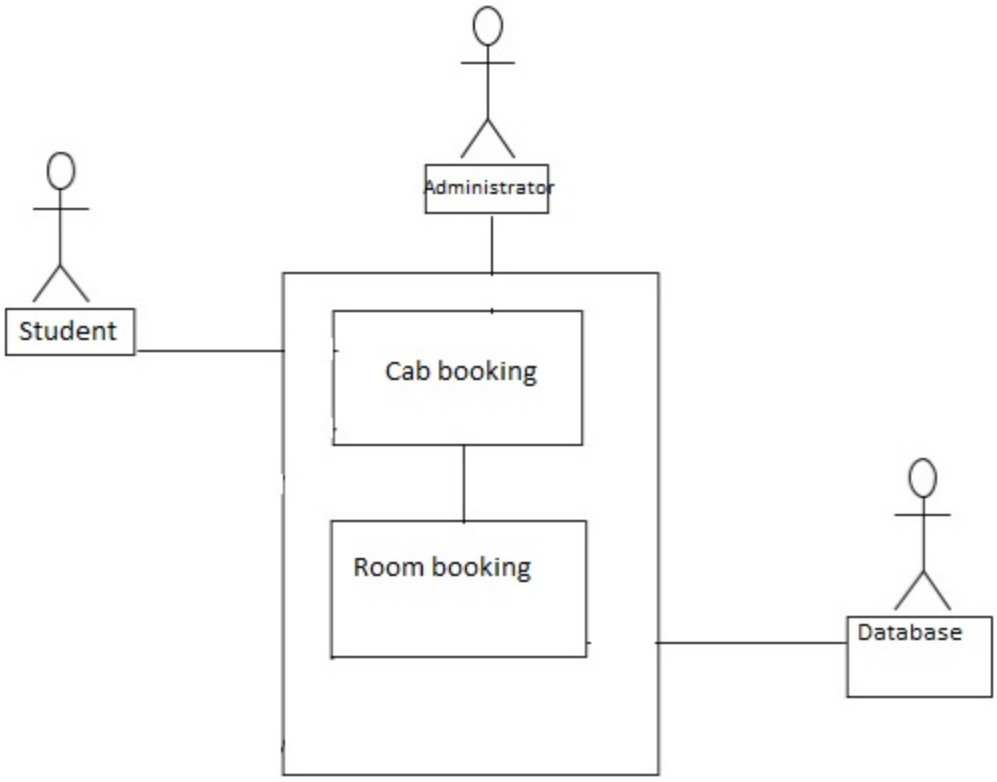
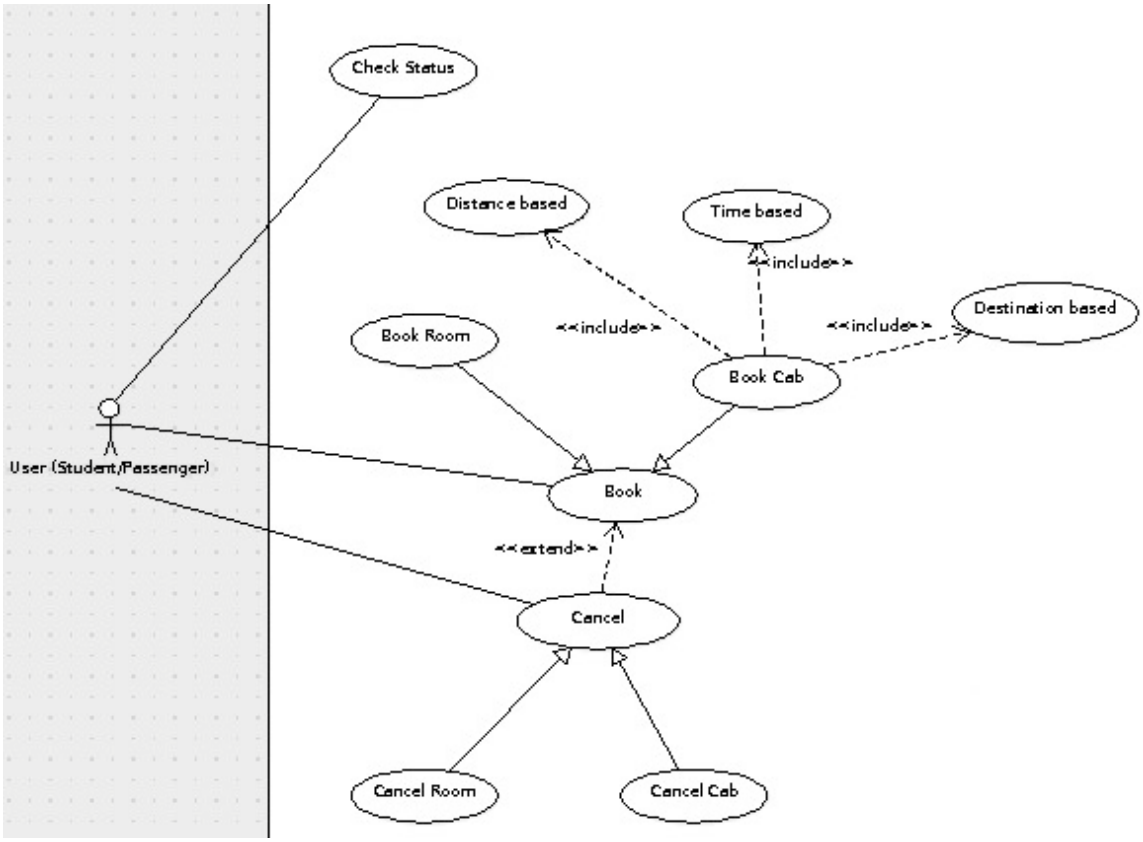


Figure 1 - System Environment

The Resource Management System has two actors and one co-operating system - user and administrator. Both the users and the administrator access the system directly. The users will have certain restrictions regarding accessing all the features of the system. The administrator will not have these restrictions.

<< The division of the Resource Management System into two component parts, a room booking service and a cab booking service, is an example of using domain classes to make an explanation clearer. >>

2.2 User Use Cases



The user has four use cases while the administrator will have two use cases and the database will have three. This section outlines each of the four use cases of user.

2.2.1 Use case: Book a room

Brief Description

The user access the Room sharing system, enters his details and chooses one of the available rooms. A notification is the sent to the instructor to approve it.

Initial Step-By-Step Description

Before this use case can be initiated, the user has already authenticated to the website using his Moodle Account credentials.

1. The user enters the detials about the preferred room, which includes number of people, whether he needs the projector or not, etc.
2. The user chooses a room from a list of rooms offered by the system after quering the database.
3. Once chosen, a notification is sent to the instructor for approval.

2.2.2 Use case: Book a cab

Brief Description

The user enters his credentials, accesses his profile and chooses one of the rooms or cabs he has already booked previously. He can then cancel any number of those bookings.

Initial Step-By-Step Description

1. User fills in a form to enter relevant details.

2. The user then decides which cab to book.
3. The user may choose to share an already booked cab.

2.2.3 Use Case: Cancel

Brief Description

The user enters his credentials, accesses his profile and chooses one of the rooms or cabs he has already booked previously. He can then cancel any number of those bookings.

Initial Step-By-Step Description

Before this use case can be initiated, the Author has already authenticated to the website using his Moodle Account credentials.

1. The user chooses the booking he wishes to cancel.
2. The system then sends the details of the entry to the database where the data of the booking has been saved.
3. If a match is found in the database, the respective booking is cancelled.
4. The system then displays a confirmation about the cancellation or displays that the booking reference is invalid.

2.2.4 Use Case: Check status

Brief Description

The user enters his credentials, accesses his profile and check the status of his bookings.

Initial Step-By-Step Description

Before this use case can be initiated, the Author has already authenticated to the website

using his Moodle Account credentials.

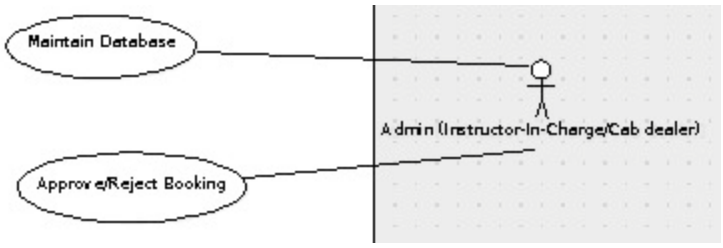
1. The user accesses his profile.
2. The user then chooses to see the status of his bookings.
3. The system then consults with the database and finds out about the bookings done by the particular ID and displays them.

2.2.5 Use Case: Login

Brief Description

The user enters his ID and password. The details are verified using Moodle server.

2.3. Administrator Use Cases



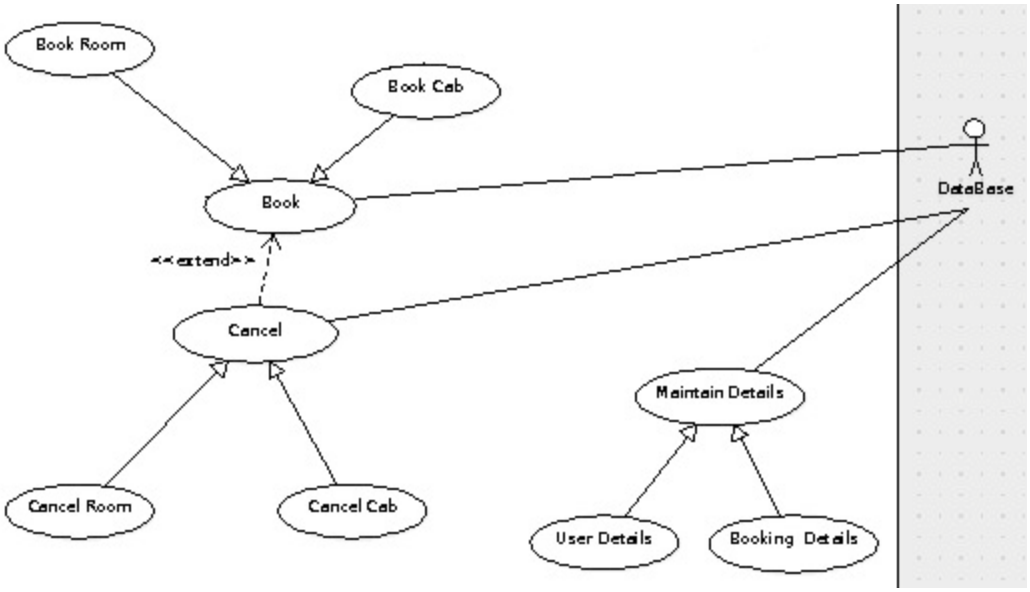
Brief Description

The administrator reviews the room/cab bookings.

Initial Step-By-Step Description

1. The administrator is provided with an interface such that he can view pending room booking requests (if he is an instructor) or check status of booked cabs (if he is a cab dealer).
2. The admin approves or rejects the room based on the purpose.
3. Has access to the database and maintains it.

2.4 Database Use Cases



Brief Description

The database maintains all the bookings.

Initial Step-By-Step Description

1. Whenever a new booking is created, it is stored in the corresponding table in the database depending upon whether it is a room booking or a cab booking.

2.5 User Characteristics

The user is the one who selects to book a cab or a room. The user logs in with his ID and password, which the system checks for authenticity. The user is expected to be aware of the classrooms in BITS-Goa which are to be booked.

3.0. Requirements Specification

3.1 External Interface Requirements

The only link to an external system is the link to the Moodle Server to verify the membership of a user or instructor. The fields of interest to the Resource Management Systems are user's name and ID.

3.2 *Functional Requirements*

User Related

3.2.1 Book Cab

Use Case Name	Book Cab
Precondition	The user logs in.
Basic Path	1. User selects whether to go for Distance, Time or Destinatic based booking. 2. User fills in required details in the form generated. 3. User confirms his entered details.
Postcondition	The Database is updated to store the details and request enter

Distance Based

Use Case Name	Distance Based
Precondition	The user is logged in and has chosen distance based booking.
Basic Path	1. User inputs cab requirements in generated form. 2. User inputs Distance he/she expects to travel. 3. User gets to review calculated fare based on inputs given i steps 1 and 2. 4. User confirms booking.
Postcondition	The Database is updated to store the new booking.

Time Based

Use Case Name	Time Based
Precondition	The user is logged in and has chosen Time Based Booking.

Basic Path	1. User selects cab requirements such as type, ac/non ac and others based on form provided. 2. The user inputs time for which the cab is to be booked. 3. Fare is calculated and shown based on input given in previ steps. 4. The user confirms booking.
Postcondition	The Database is updated to store the new booking details..

Destination based booking

Use Case Name	Destination based booking
Precondition	The user is logged in and has chosen destination based booking.
Basic Path	1. User selects cab requirements such as type, ac/non ac and others based on form provided. 2. The user inputs the starting and final destination for which cab is to be booked. 3. Fare is calculated and shown based on input given in previ steps.

	4. The user confirms booking.
Postcondition	The Database is updated to store the details and request entered.

3.2.2 Book Room

Use Case Name	Book Room
Precondition	User login is verified using external moodle server.
Basic Path	1. User enters details such as reason for booking, expected attendance count and timing in the form generated. 2. User chooses room that is available and meets his/her requiremens. 3. User confirms entered details.
Postcondition	Database is updated to register this new request.

3.2.3 Cancel

Use Case Name	Cancel
Precondition	The user logs in to the system.
Basic Path	1. The user logs in to the system.

	2. Here, he gets to choose whether he wishes to cancel a room booking or a cab booking. 3. Accordingly, the user is directed by the system to the respective window for the cancellation procedure to proce
Postcondition	The user is forwarded to the respective window for his cancellation.

Cancel Room

Use Case Name	Cancel room
Precondition	The user logs in to the system and chooses the option to cancel a booking.
Basic Path	1. The details of the rooms booked by the user is displayed. The user chooses one of the bookings and decides to proceed with the cancellation. 2. The system then sends the information to the database. 3. If there exists a booking in the same name, then the system erases he booking data otherwise it sends out a message saying that there is no booking of this name. 4. The booking data is modified on the database and the respective room is made available again for booking.
Postcondition	The database has been updated.

Cancel cab

Use Case Name	Cancel Cab
Precondition	The user logs in to the system and chooses the option to cancel a booking.
Basic Path	1. The details of the cabs booked by the user are displayed. The user chooses one of the booking and decides to proceeds with cancellation. 2. The system sends the information to the database. 3. The system deletes the booking for the cab and makes the cab available for booking in the database for the time it wa previously booked for.
Postcondition	The database has been updated.

3.2.4 Check Status

Use Case Name	Check Status
Precondition	<none>

Basic Path	1. The user login is verified using moodle server. 2. If valid, login details the are used to search for requests ma using booking module. 3. The status of the requests: whether confirmed, denied or pending, is displayed.
Postcondition	The user gets the status of his request.

3.2.5 Login

Use Case Name	Login
Precondition	The user has got to the login page.
Basic Path	1. The user types his LoginId and the password. 2. The system access the database and check the validity of th login and password. 3. If the details are correct then the system give access to the user. 4. If the details are not correct than theuser is not given acces

Postcondition	The user has got access.

Admin Related

3.2.6 Maintain database

Use Case Name	Maintain Database
Precondition	The database is populated with two tables - one for each room booking and cab booking.
Basic Path	The corresponding fields in the database table are modified when: 1. The administrator approves or rejects a booking. 2. The user cancels a booking.
Postcondition	The corresponding fields for room / cab are edited as per the cab h been booked / cancelled.

3.2.7 Approve/Reject Booking

Use Case Name	Approve/Reject Booking
Precondition	Administrator has to log in to get access to requests for booking.
Basic Path	1. Administrator checks the booking request details. 2. He/she then chooses to grant or deny permission.
Postcondition	The Database is updated to store the request status (whether denied or granted).

Database Related

3.2.8 Booking Details

Use Case Name	Booking Details
Precondition	The user filled Room Booking or Cab Booking ID and Password.
Basic Path	

	1. The system access the database and presents the booking done on that ID. 2. The user sees the details.
Postcondition	The user has got his booking details.

3.2.9 User details

Use Case Name	User Details
Precondition	The user has accessed to Room Booking or Cab Booking Page.
Basic Path	1. The system provides an interface to the user to type his/her details. 2. After typing these details the user presses the submit buttor 3. The user details are being saved into the database.
Postcondition	Now the database contains the user details.

3.3 Detailed Non-Functional Requirements

3.3.1 Logical Structure of the Data

ArrayLists will be used to store room information and attributes.

The data descriptions of each of these data entities is as follows:

User Data Entity

Data Item	Type	Description	Comment
Name	Text	Name of user	
ID	Text	Login ID	

Room Data Entity

Data Item	Type	Description	Comment
Room	Room	Stores all details of available rooms	
History	Text	Comments on past bookings	

Cab Data Entity

Data Item	Type	Description	Comment
Cab	Cab	Stores all details of available cabs	
History	Text	Comments on past bookings	

Instructor Data Entity

Data Item	Type	Description	Comment
Name	Text	Name of Article	
ID	Text	Author entity	Name of principle author

3.3.2 Security

The database will have its own security. Only the admin will be able to look into

the data by providing valid ID and password.Only the person who has booked a particular cab/room can cancel it.

To implement security features, the program will require login details for booking and cancellation. The login details will be cross checked by using moodle server. Furthermore, a normal user will not have administrator access. Administrator alone can login with his username password to make changes to room database , cab database and for approval of requests.