Software Requirements Specification

October 27, 2014

Resource Management at BITS Goa

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

1.0. Introduction

1.1. Purpose

The purpose of this document is to present a detailed description of the Resource Management System at BITS Pilani Goa Campus. 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. This document is intended for both the stakeholders and the developers of the system.

1.2. Scope of Project

This software system will enable students of BITS Pilani Goa Campus to carry out resource management effectively. It will allow them to book cabs and classrooms with ease. This system will be designed to minimize the discomfort to students by automating the process rather than having a manual one.

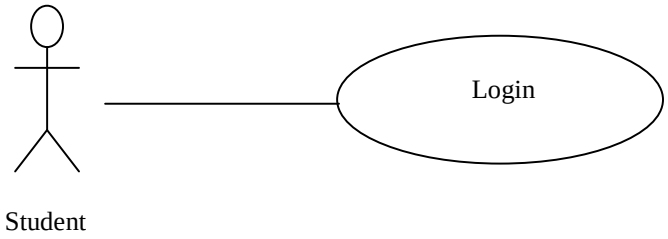
This system is designed to allow the students to request for booking a classroom and the software will check if the room is available on the required date and time. If available the room will be allotted else the student will be informed about the unavailability.

This system also allows for booking cabs by students on two levels. The first one being booking by students for personal reasons (such as going to a shack with friends, going for a movie, shopping, etc). The second being booking by students for college-related purposes (such as fest work, inter-college competitions, etc). Students can fill in details about location, time, number of people and the software on the basis of availability of cabs will assign them a cab. The payment is in-cash for students going out for personal reasons. For students going out for college-related purpose, only the receipt has to be collected. No payment is made since the amount will be added to CSA account for deduction at the end of the semester.

2.1 CAB BOOKING

2.1.1 Student (Actor)

Use case: Login
Diagram:



Brief Description

To make cab bookings the student must login.

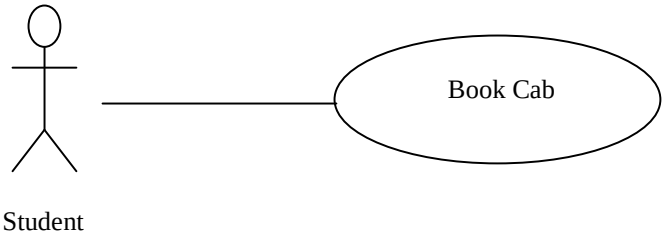
Initial Step-By-Step Description

Before the student enters this use case he already has access to the cab booking and classroom booking software.

1. The student will choose the login option.
2. The software will provide him with two login options- informal or formal
3. If the student chooses the formal option he will be required to enter a pre-assigned user ID and password.
4. If the student chooses the informal option, he can continue as guest user.
5. After logging in he/she can book the cab, cancel booking or make payment.

Use Case: Book Cab

Diagram:



Brief Description

The student gets options for booking cab.

Initial Step-By-Step Description

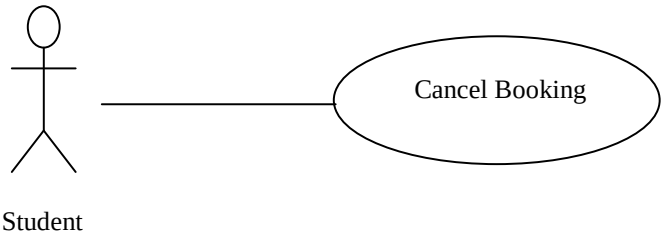
Student can enter this use case only after he has logged in.

1. The student chooses to search for a cab
2. Search involves the need to enter details such as location, time and number of passengers
3. The student can also check the cab status
4. Booking the cab also allows for review of the details entered so that they can be changed if need be
5. Booking cab also involves making payments. Payments are made in case of informal booking and only receipt is collected in case of formal booking.

The book cab use case is connected with the student and database actors. Thus whatever details are entered or edited by the student during the cab-booking procedure, the corresponding changes are made in the database.

Use Case: Cancel Booking

Diagram:



Brief Description

The cancel booking use case enables the student to cancel his request for the cab even after the confirmation of booking is done.

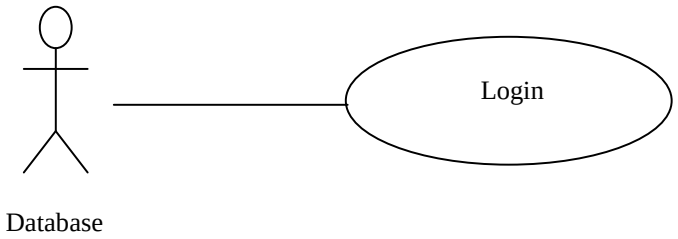
Initial Step-By-Step Description

1. After entering the details, the user is provided the cancel booking option.
2. If the user cancels his booking, the changes are made in the database accordingly

2.1.2 Database

Use Case: Login

Diagram:



Brief Description

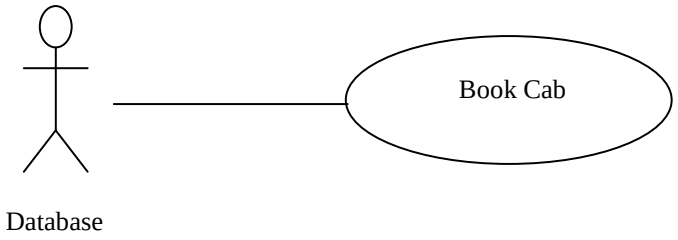
The database uses login to specify the channel of booking available to the student.

Initial Step-By-Step Description

1. As the student enters detail to login the database checks if the student is a formal or an informal user.
2. If the student is an informal user the database will provide pay-in-cash option.
3. If the student is a formal user the database will provide a message saying collect the receipt only.

Use Case: Book Cab

Diagram:



Brief Description

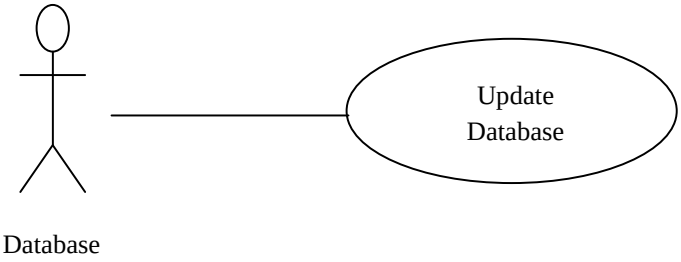
The database through this use case enables student to book cab.

Initial Step-By-Step Description

1. As the student enters details of the cab requirement, the database checks for the availability of such a cab.
2. If such a cab is available then the database allows for booking.
3. After the booking is done it also gives a review option to the student to edit booking.

Use Case: Update Database

Diagram:



Brief Description

The database updates the database every time a booking or cancellation is done.

Initial Step-By-Step Description

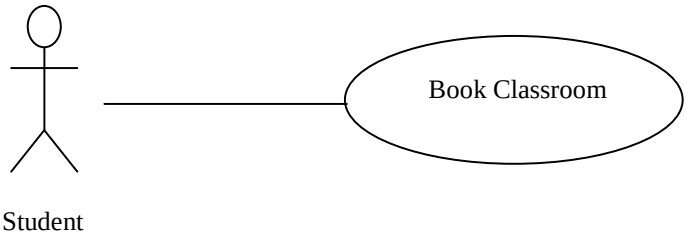
1. Once the student confirms booking the database is updated to show unavailability of the cab that was booked.
2. Once the student cancels a booking the database is updated to show the availability of the cab ,the booking of which was cancelled.

2.2 CLASSROOM BOOKING

2.2.1 STUDENT

Use Case: Book Classroom

Diagram:



Brief Description

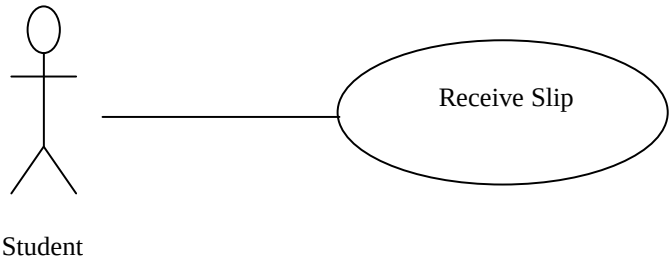
The user is provided options for booking classrooms.

Initial Step-By-Step Description

1. The student has to enter his details (name ,id no.) in order to book a classroom. He also has to enter other details like date, time and purpose of classroom booking. He also has to select the classroom type.
2. The student is also provided choice for checking availability of classrooms. He can also specify his requirements like projector, A.C. while entering details for booking classroom. He can check availability of these resources in any classroom he wants to book.
3. The details provided by the student are analyzed by the administrator and he accordingly gives permission to the student for booking the classroom.
4. If the permission is granted by the administrator, the booking is confirmed and changes are made in the database accordingly. The student then receives a permission slip as a proof of this confirmation which can also be printed by him.

Use Case: Receive Slip

Diagram:



Brief Description

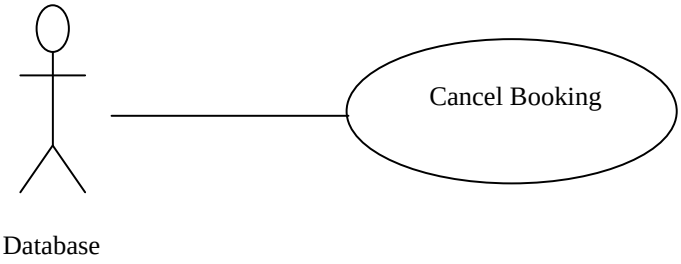
The student will receive a slip after booking is confirmed.

Initial Step-By-Step Description

1. After the booking details are entered by the student and the booking is confirmed, the details of the booking are printed.
2. This entails receiving of permission slip by the student.

Use Case: Cancel Booking

Diagram:



Brief Description

The cancel booking use case enables the student to cancel his request for the classroom even after the confirmation of booking is done

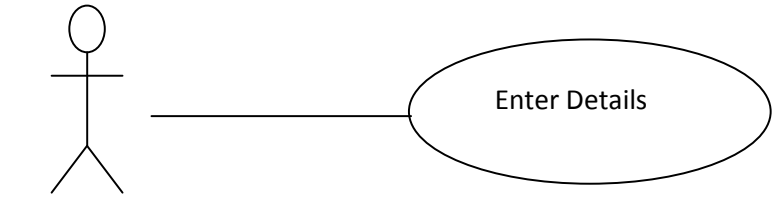
Initial Step-By-Step Description

1. After entering the details, the user is provided the cancel booking option.
2. If the user cancels his booking, the changes are made in the database accordingly.

2.2.2 ADMINISTRATION

Use Case: Enter Details

Diagram:



Brief Description

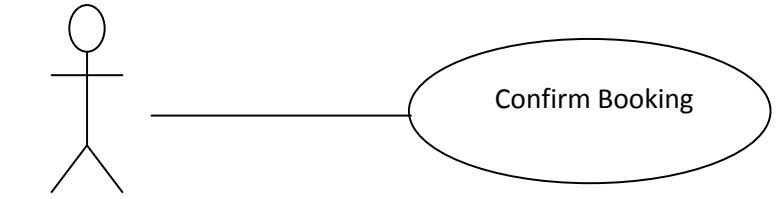
The administration uses this to see the details entered by the students.

Initial Step-By-Step Description

1. The admin read the data entered by the student. The details include date, time, class and purpose.
2. By searching through the database it informs the student about the availability of the required classroom.

Use Case: Confirm Booking

Diagram:



Brief Description

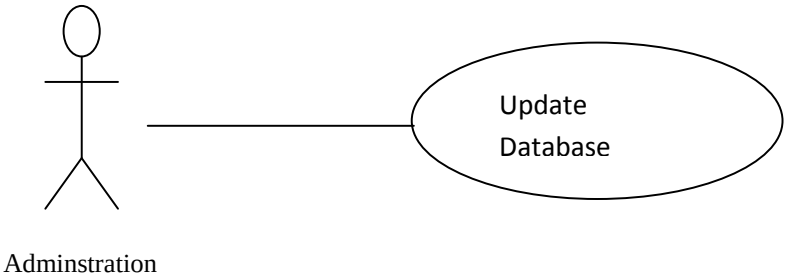
The administration uses this to confirm the booking of a classroom.

Initial Step-By-Step Description

1. The admin searches the records to see the availability of a required classroom.
2. If the required classroom is available, the admin books it for the student who made the request.

Use Case: Update Database

Diagram:



Brief Description

The administration uses this to update the database.

Initial Step-By-Step Description

1. If the booking is confirmed the database is updated to show the unavailability of the classroom.
2. If the booking is confirmed the database is updated to show the availability of the classroom since it is now available for others to book.

2.3 User Characteristics

The student is expected to be Internet literate and be able to use a search engine.

Student is expected to be Windows literate and must be able to use button, pull-down menus, and similar tools.

3.0. Requirements Specification

3.1 External Interface Requirements

For the **cab booking**:
The only external system that is associated to the system is the cab database to check the availability of the cabs and the membership status of the user. The database stores the details of the user such as username and password for authentication. The database also uses the details provided by the user at the time of cab booking such as the place and time to check availability of the cab.

The **update database** use case sends the necessary details to the database to update the database and a Boolean is returned denoting the status of the cab. The **check cab status** use case also checks the database for a cab available for the place and time provided.

For the **classroom booking**:
The external interface for classroom booking is an administrator who approves of the requests for class room booking, updates the database and stores the necessary details for specific requirements. The database store place, time and purpose for the booking along with the personal details of the user like name and phone no.

The **update database** use case updates the database based on the booking or cancellation of classroom and returns a Boolean. The **Enter personal details** use case also sends the necessary details to the database.

3.2 Functional Requirements

3.2.1 Enter Details (Cab booking)

Use Case Name	Enter Details
Trigger	The student enters the details for carrying out the search
Precondition	The student has selected the search option
Basic Path	1. Details must be entered by the students to be able to search for cabs 2. The details to be included are location, time and number of passengers 3. If the number of passengers exceed 7 then the booking will not be allowed since they are exceeding the maximum limit 4. Only if there is a cab available as per the details mentioned will the can be booked

Postcondition	The availability of cabs is shown as per the details entered

3.2.2 Confirm Booking (Cab booking)

Use Case Name	Confirm Booking
Trigger	The booking done by the student has been confirmed
Precondition	The student has entered details and searched for a corresponding cab
Basic Path	1. The search has been done and a cab which meets the requirements of the details entered is displayed 2. The cab is booked and the database is updated simultaneously 3. The details of the confirmed booking are also printed
Postcondition	The booking after confirmation involves updating the database

3.2.3 Payment (Cab booking)

Use Case Name	Payment
Trigger	Payment means the service by the cab has been provided
Precondition	The booking has to be confirmed
Basic Path	1. After the booking is confirmed and the journey is completed the student has to make payments 2. If the student booked through guest login he/she must pay cash in hand 3. If the student booked though password he/she must collect receipt only
Postcondition	The payment is made to the cab drivers

3.2.4 Check Room Availability (Classroom Booking)

Use Case Name	Check Room Availability
Trigger	The Student will check for the availability of the classroom.
Precondition	The Student is required to provide the necessary details to check whether the room is available or not.
Basic Path	1. The student should first login. 2. The student selects the book room option. 3. The student should provide the details like time and date, and the type of the classroom required. 4. The database receives all the details entered and check for the availability of the specified classroom which is already stored.
Postcondition	The Student has to choose the extra requirements for the classroom if it is available.

3.2.5 Requirements (Classroom Booking)

Use Case Name	Requirements
Trigger	The Student will add the requirements that he need for the classroom he wants to book.
Precondition	The Student is required to provide the necessary details to check whether the room is available or not and if the room is available he can add the requirements.
Basic Path	1. The student should first login. 2. The student selects the book room option. 3. The student should provide the details like time and date, and the type of the classroom required. 4. The database receives all the details entered and check for the availability of the specified classroom which is already stored. 5. If the room is available the student will have to choose the extra requirements.
Postcondition	The Student has to choose the whether he needs projector and

	ac for the chosen room or not.

3.2.6 Choose Class Type (Classroom Booking)

Use Case Name	Choose Class type
Trigger	The Student will have to choose the type of classroom he wants to book.
Precondition	The Student is needed to choose book room option and enter details option.
Basic Path	1 .The student should first login. 2. The student selects the book room option. 3. The student should provide the details like time and date, and the type of the classroom required. 4. The database stores all this information and also the information about the classtypes. 5. The student have to choose between the class types stored in the database.
Postcondition	The Student has to choose the type of class which includes A-Wing classrooms,C-Wing classrooms, Lecture Theatres and Computer Centre.

3.3 Security

The database contains all cab and classroom entries and registered users booking details. Hence, the database should be protected from mischief of hackers who can get access to the database by injection techniques and can alter bookings or make multiple booking requests so as to overload the server which can ultimately cause the server to crash. Measures like disallowing simultaneous queries or multiple queries from the same IP and forbidding special

characters as input will be undertaken. Required ports of the server can be blocked accordingly to ensure more safety. Any more safety measures will be taken accordingly.