Software Design Document

for

VECC Guest House Project

Prepared by

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1 Introduction

The project described within this document is a GUEST HOUSE module which is a part of VECC Employee Database Application (VEDA). The goal of designing this module is to reduce the manual paper work of the guest house booking and billing system which is hectic and hard to manage and maintainability issue arises with increasing number of users.

Any VEDA user will be able to raise a request to book rooms in guest house and admin will accept the request and book rooms depending upon the room availability criteria. If booking is confirmed then system will automatically send confirmation mail containing details to the requester. After arrival of the guests, there will be some status checking for allowing the guest to the VECC premises and CEP will be generated and given to the guests at the security. Then the check in time will be recorded at the guest house. At the time of their departure, the bills will be generated through this system and check out time will be recorded by the guest house staffs. At the security, the status will be checked again. If the payment is done then the security staffs will collect the CEP and then the guest will be allowed to leave the VECC premises. The access to different modules of this system is restricted depending upon authentications of various VEDA users.

1.1 Purpose of the SDD

This document provides the necessary information required to effectively define architecture and system design of the Guest House management system in order to give the development team guidance on the architecture of the system to be developed.Its intended audience is the project manager, and the project team. Some portions of this document, such as the user interface (UI), may be shared with the client/user, and whose input/approval into the UI is needed. Depending on the specifications and overall design outlines of the system, as described in this document the developers will start coding.

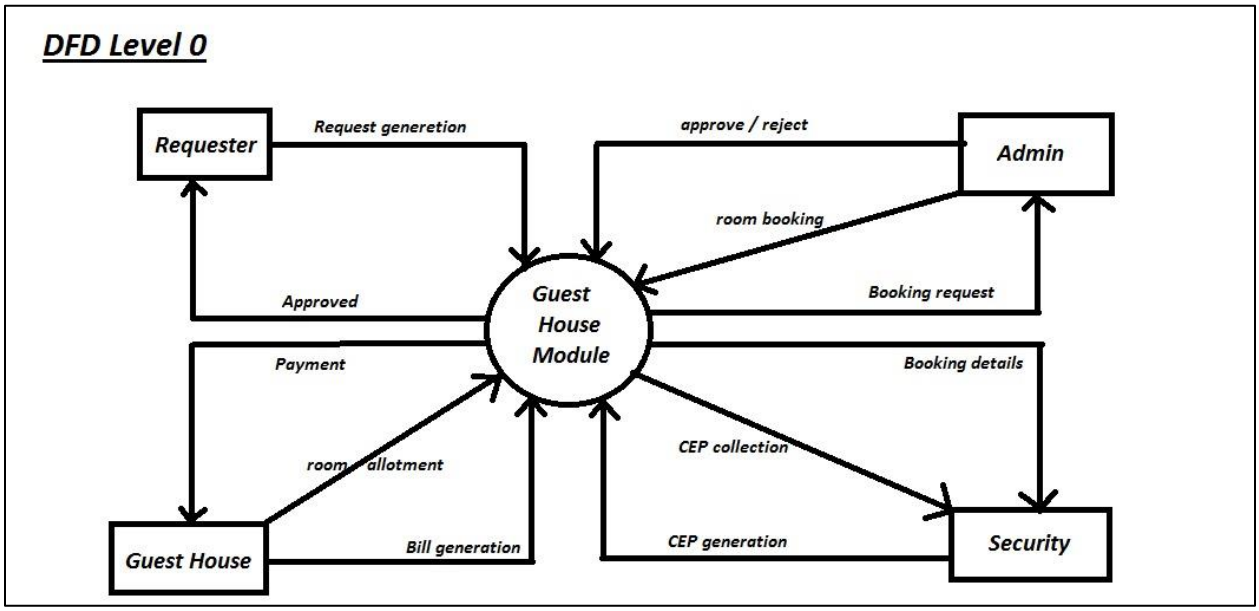
2. General Overview and Design Guidelines/Approach

This section describes the principles and strategies to be used as guidelines when designing and implementing the system.

2.1 General Overview

The system will be accessed only by the VEDA users. Depending upon the designations of VECC employees access to different modules of the application is restricted. The Guest House management system will be divided into four modules, i.e the requesters, admin, security staffs, guest house staffs. Separate operations will be tackled by these four modules. Depending upon the designation of the employee they will be allowed to login to a particular module and perform some task or view user data.

Low level Context diagram



2.2 Assumptions/Constraints/Risks

2.2.1 Assumptions

It is assumed that he login credentials to various modules of the system is completely confidential and will not be shared with any third party. Operations of a particular module of this guest house system is dependent on other modules and the data will be stored and accessed from a central database.

2.2.2 Constraints

- End-user environment: It is assumed that the users of this system will have all time access to internet and the central database of VECC as this is the main criteria to use this online guest house management system.
- Security requirements (or other such regulations)
- Memory or other capacity limitations: The sever side should have enough memory space to run this application.

2.2.3 Risks

The entire system will be developed using the grials application, i.e that Groovy-Grails-Tools-Suite. If the grails application is stopped working at the server side the entire application will stop working.

With increasing amount of user data volume the performance of the system may be degraded.

3. System Design

3.1 Database Design

The system will cover booking, accommodation, meals, and accounts details. To help the system smoothly carry out its intended purpose to meet the hotel management needs, the following tables will be used to store data:

1. **GH_REQUISITION :** contains the details of the employees who have raised a booking request.

2. **GH_GUEST :** contains all details of the coming guest for whom a booking request has been sent.

3. **GH_FAMILY :** contains the details of the family members associated with a particular guest.

4. **GH_ROOM :** contains the details of the rooms of both the guest houses of VECC i.e, Silver Jubilee, Hostel.

5. **GH_TARIFF :** contains the list of room cost for different guest category and room facility.

6. **GH_ROOM_TRANSACTION :** contains a list of rooms that hs been bokked for a duration against a guest.

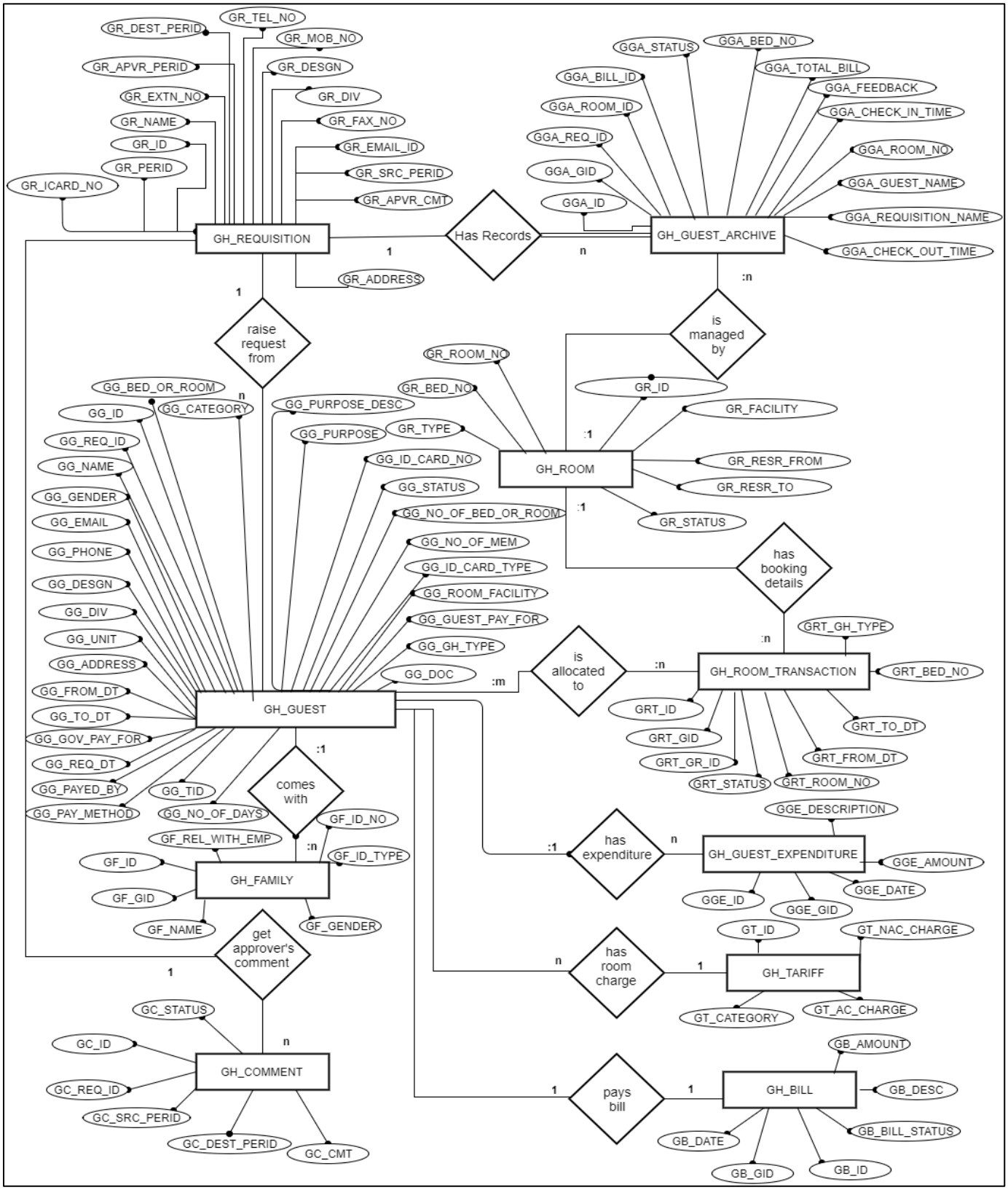
7. **GH_GUEST_ARCHIVE :** contains a history data of guests for whom booking has been done currently and in past.

8. **GH_EXPENDITURE :** contains a expenditure list and its charges for guests who have stayed at VECC Guest House.

9. **GH_BILL :** contains a total bill amount and description for each guest

10. **GH_COMMENT :** contains comment of the employee who have approved a booking request of his subordinate.

The tables and relations among the tables are depicted in the following **ER diagram:**



3.2 User Machine-Readable Interface

VEDA Users will interact with the guest house system in the following way :

3.2.1 Inputs

i) Requisition

Any present employee of VEDA will login as user role and fill up the requisition form by entering valid data in order to raise a request for a guest. This form will contain all the details of the employee who is giving requisition, the guest details, the details of family members associated with each guest. The employee will be able to edit these data until he forwards the application form.

ii) Admin

Guest House Admin will login as Admin role and fill up forms of room or tariff if any new room / tariff category is added to the guest house, or any updates are necessary for the existing rooms / tariffs.

iii) Guest House Staff

Guest house staffs will enter all the expenditures done by the guest as food cost or any other cost with a form.

And at the time of bill payment the method of payment i.e, cash/credit cart etc. will be entered to the system.

3.2.2 Outputs

i) Requisition

The employees logged in as user role will be able to view a list of guest with their details for whom he has raised booking request.

ii) Admin

The guest house admin will be able to view the pending booking requests, an entire list of guests form whom booking has been done. The admin will be able to see which rooms are available in a particular duration of time by entering the desired date span.

iii) Security

The security staffs will be able to view the guest details while the guest will arrive at VECC gate.

iv) Guest House

The guest house staffs will be able to view the list of the guests about to come today, all the guests who are checked in, the bill details of the all the current guests.

3.3 User Interface Design

Foe the user interface design the developers will use the same CSS, BOOTSTRAP files that are currently in use in all other running applications of VEDA.. And to design the web pages similar kind of styling and format will be used.

4. Operational Scenarios

The protocol of the project is described hereby :

Step 1. Any current employee of VEDA willing to request for guest house accommodation booking will fill up the requisition form online mentioning all the details of the coming guest.

The guest may be some person inside VECC Kolkata or any outsiders. In case of guests coming from outside of VECC the person details will be sent by fax/ mail and the VECC employee will fill up his data accordingly will raising a request for him.

Step 2. The guest house admin will periodically check the pending booking requests and allot room for those guests according to their requirement of room facility or guest house type and after the booking is done an confirmation mail will be sent to the guest as well as the VECC employee who requested for that concerned guest.

The admin can also cancel a booking in case an urgent room requirement arises for any conference or meeting.

Step 3. As the guest arrives the VECC gate, the security staff checks whether he has a booking to VECC guest house or not and if they found him to be a valid guest by seeing the data in the system then the allows him to enter VECC premises and gives him a CEP.

Step 4. The guest house staffs check the guest status and set his status to check in

Step 5. The guest house staffs will keep on adding all the expenditures that will be done by the guest as food cost and any other services.

Step 6. At the departure date of the guest the guest house staffs will generate bill against the guest and collect the payment and enter the method of payment to the system.

Step 7. After payment is done the guest house staffs will set the guest status as checked out at the time of departure.

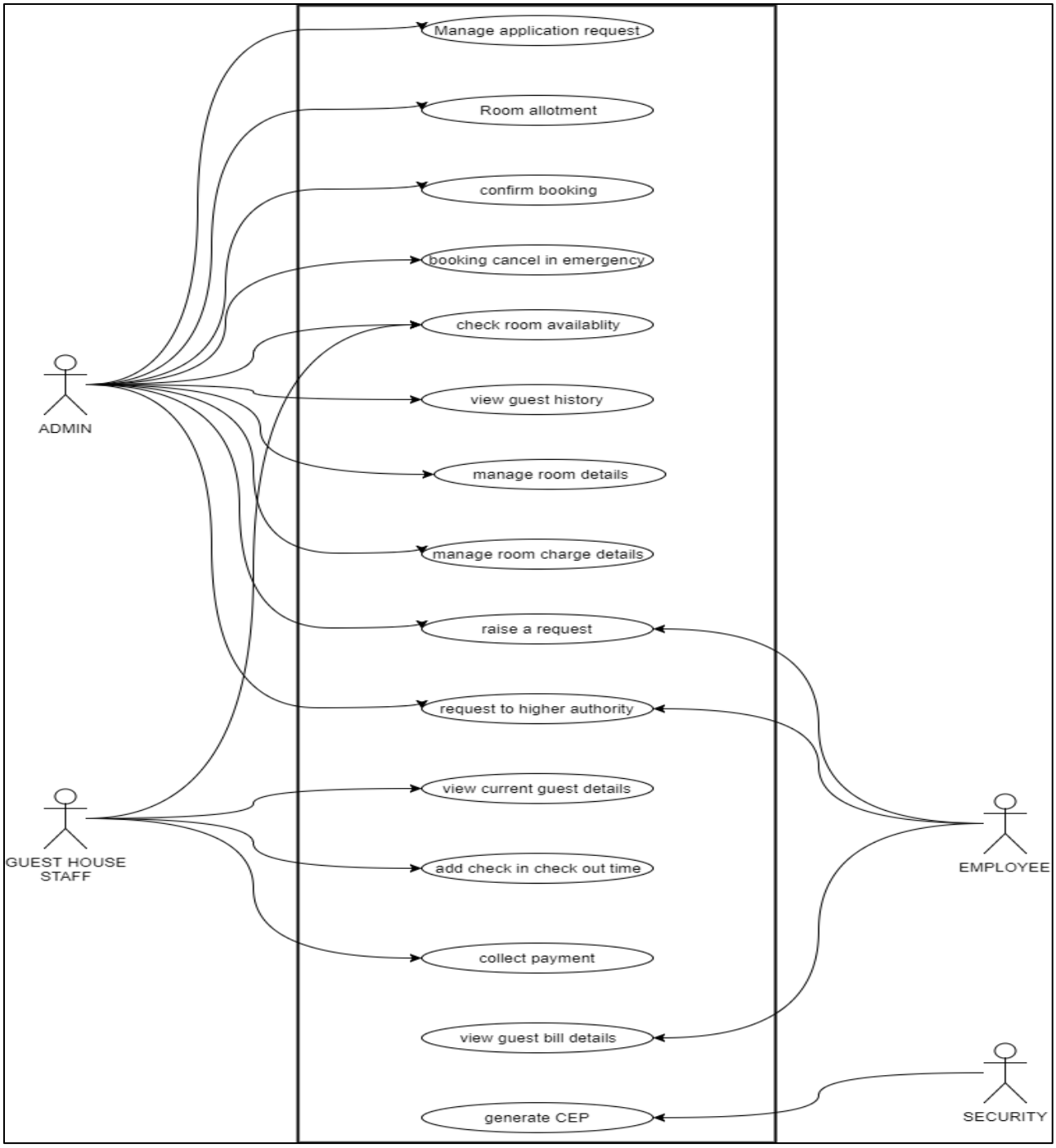
Step 8. The security staffs will return the CEP given to the guest at the entry time, while he finally leaves VECC.

5. Detailed Design

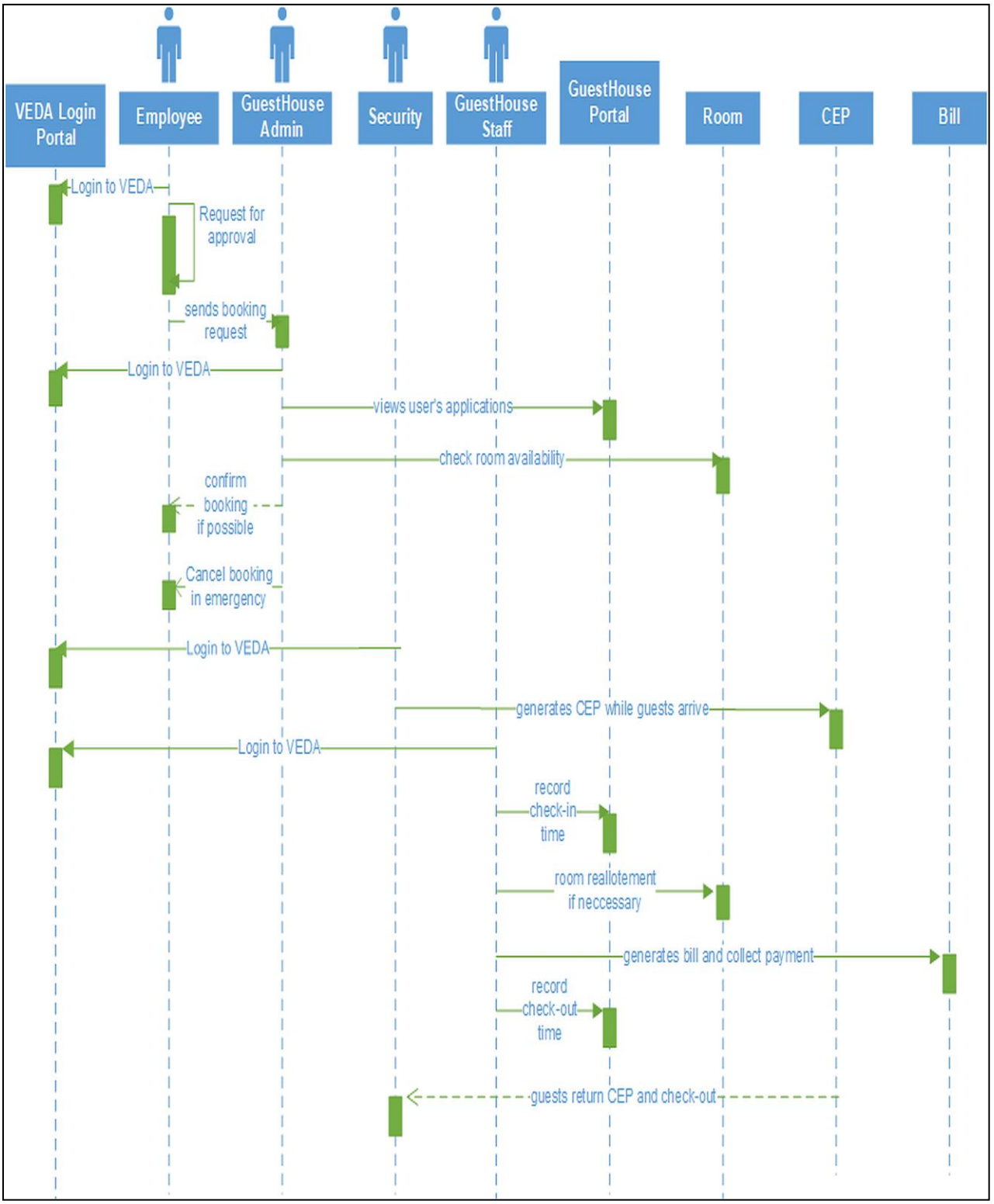
5.1 Software Detailed Design

The software will be developed at the Groovy Grails Tools Software environment which uses the technologies GSP, Groovy, javascript, ajax, css, html, bootstrap and Oracle 11g database is used .

5.1.1 Use Case Diagram



5.1.2 Sequence Diagram



5.2 Security Detailed Design

Authentication : While the user logs in to VEDA his identity is verified using either his Login CC or Email Id and his password. No outsiders will be allowed to login to the system.

Authorization : As the project is divided in to different modules the employees will also have separate authorization to view some data or perform some operation related to guest house module. This will be predefined and a specific employee is allowed to login to VEDA with different roles that is designed for him.

Encryption : At the time of communication between server and the VEDA users the data will be transferred in an encrypted form. The system will be designed in such a manner that it can prevent SQL Injection attacks and Cross-Site Scripting attacks.

5.2 Performance Detailed Design

- System should be able to handle multiple users.
- Database updating should follow transaction processing to avoid data inconsistency.
- Our module provides a good graphical user interface with various forms for viewers.
- The web pages will be updated without reloading the page.

5.3 Internal Communications Detailed Design

All the operations done from any of the modules of the project, its result will the stored at the central database and correspondingly the outputs will be reflected.

6. External Interfaces

6.1 User Interfaces

The request form will be available to every VEDA user as well as the admin. Anyone can play the role of a requester and generate request by filling up the form and sending it to the higher authority for approval. After the request gets approved, requester will send it to the admin for booking. The admin can see all the requests which is stored in “GH_REQUISITION” table as well as the room availability which will be fetched using the tables “GH_ROOM” and “GH_ROOM_TRANSACTION” table. If room is available within the requested period then admin will confirm booking and book room. Admin can cancel any booking for emergency purpose. The security also can access the system and check the status of the bookings. They cannot change anything except the status of the booking. They will generate a CEP for the guests at the check-in time. The guest house can view all the details of the guest and can change the room number of the guest which was set by the admin if guest requests so and the room is also available. They will generate the bills at the check-out time and bill will be calculated according to the type of guest. If personal, then only room charge and damage cost (if any) will be applicable and if official then food charges will also be calculated with this. The bill will be printed. Security will check the status in the “GH_BILL” table, if it is showing that the payment is done then the CEP will be collected. The admin and the guest house can check all the details of a particular room or a person using the table “GH_ROOM_TRANSACTION” and flow of the request using “GH_COMMENT” table.

6.2 Hardware Interfaces

Hardware requirements for a system to work are:

- CPU : Any CPU which can be in the form of external (CPU for PC) or internal (for laptops)
- Monitor: Any monitor which is capable of displaying the signals sent by the computer.
- Keyboard: A standard QWERTY keyboard for data entering.
- Mouse: Any standard mouse.

6.3 Software Interfaces

Software requirements for a system to work are :

- Oracle 10g database or higher version
- Google Chrome or any other web browser

6.4 Communications Interfaces

Communication Interface:

- Web browser: Chrome, internet explorer
- SMTP server
- LAN connection

Appendix A: Glossary

GSP : Groovy server pages

AJAX : Asynchronous Javascript

Requisition : The VECC employee who sends guest house booking requests for a guest.

CEP : Act as a VECC ID card for the guests to ensure his authentication

ER Diagram ; Entity Relationship diagram

Appendix B: Referenced Documents

1. Software Requirement Specification for VECC Guest House module
2. Project Report for VECC Guest House module

Appendix C: Approvals

The undersigned acknowledge that they have reviewed the SDD and agree with the information presented within this document. Changes to this SDD will be coordinated with, and approved by, the undersigned, or their designated representatives.

Table 1 - Approvals

Document Approved By	Date Approved
VINEET KUMAR RAKESH (Project Guide)	Date