Homeasy

A Report Submitted
in Partial Fulfillment of the Requirements
for the Degree of
Master of Computer Applications

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to the
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UNDERTAKING

We declare that the work presented in this report titled "*Homeasy*", submitted to the Computer Science and Engineering Department, Motilal Nehru National Institute of Technology Allahabad, Prayagraj, for the award of the ***Master of Computer Applications*** degree, is our original work. We have not plagiarized or submitted the same work for the award of any other degree. In case this undertaking is found incorrect, we accept that our degree may be unconditionally withdrawn.

June, 2021
Allahabad

(Vishal Jain Abhishek
Rajput Chandar Jain)

CERTIFICATE

Certified that the work contained in the report titled "*Home-asy*", by **Vishal Jain, Abhishek Rajput, Chandar Jain**, has been carried out under my supervision and they has successfully completed all the requirements of the project.

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Acknowledgements

In the making of this project, many individuals have us to get through. We would like to extend our sincere thanks to them. We wish to express out gratitude towards our project mentor **Dr. Sarsij Tripathi** for giving us this opportunity to work and learn under him. With his thoughtful advice and supervision, we have been able to build something which is not only profitable to us but will also benefit the students of our college.

Since the inception of the idea of Homeasy, by our mentor, we are grateful to him for providing us with the necessary information regarding this project and giving us the free will to mould and build it as we like. We would be really fortunate if we are guided by him in our future.

Also, we express our thank-fullness to our parents for their unconditional support and cooperation. We thank the members of Computer Science and Engineering Department for their direct or indirect help during the project.

Preface

This report has been prepared to describe about our project **Homeasy**. We have prepared this so that anyone can avail down all the important pre-requisites and information,if needed for making this project. The learning and knowledge which we have achieved during this duration, we have tried to assemble it in this project report. This project is helpful when we need to manage hostels using a simple and effective way. Currently the hostel management is done manually and the records are saved on the paper, using this application the management and data storage of all the hostel related purposes can be achieved in a better way, we have tried to think in a practical way to solve the problems that occur in reality and tried to solve them using latest technologies available. Homeasy is focused on Spring Boot which is JAVA framework that provide building and management of a web application in a simple and effective way.

The report covers in detail, technical and other aspects of this project. The blend of learning and knowledge acquired during the development of this project is presented in this report. The project report starts with the overview of this project,basic implementations and also covers the general information of the technologies used.

Contents

Chapter 1

About Homeasy

Homeasy - Hostel Management System is a tool to help students and wardens to manage all hostel related activities using web application. The management and data storage does not involve any middleman and provides a better way to solve daily hostel activities. It makes hostel allocation an easier job for student and hostel authorities by providing online application for hostel, select rooms for students and calculation of mess fee refund. This project will also keeps the details of the hostelers and is headed by the warden.

Chapter 2

Introduction

2.1 Objective

The principal objective of **Homeasy** is to provide a simple, interactive, effective tool to wardens and students so the allocation and management of hostel can be done easily.

2.2 Motivation

Currently hostel management system at MNNIT Allahabad is using manual work and it is proved to be hard to handle and administer and consumes enough time. There is a lot of strain on the person who are running the hostel. Also allotment process is done manually and may lead to corruption in allocation process as well as mess fee calculation. So we needed to come up with a solution that can reduce the paper work and can adapt to the requirements digitally.

Chapter 3

Proposed work

We worked on creating a website for end users to provide them with the accessibility of hostel facilities online. Our website provides the following features to the users:

- **Login/Signup**: Student/Admin both have common page to login.We are redirecting the user according to their authorities.
- **Home Page**: Home Page of a user depends on whether he is a student or an admin. In student home page user can see his basic details and in admin home user can see hostel details.
- **Editing details**: The student can also edit his/her basic details (anything except Registration Number).
- **Request**: The student can also raise request to admin about **closing of mess account, room changing and hostel leaving.**
- **Notification**: This page shows the request raised by student. Admin can accept/decline the request.

Chapter 4

Implementation

To implement the project, we used **Spring Boot** framework with Hibernate for database object relational mapping.The Spring Framework provides a comprehensive programming and configuration model for modern Java-based enterprise applications. Spring focuses on the "plumbing" of enterprise applications so that teams can focus on application-level business logic, without unnecessary ties to specific deployment environments.

4.1 Introduction

Homeasy is a web based app which provides users with functionalities like Hostel Information, list of roommates, updating profile, raise request etc. Homeasy is made using Spring-Boot framework.

- Spring Boot is an open source Java-based framework used to create a micro Service. It is developed by Pivotal Team and is used to build stand-alone and production ready spring applications.
- It provides a flexible way to configure Java Beans, XML configurations,and Database Transactions. It provides a powerful batch processing and manages REST endpoints.
- Handling dependency management is a difficult task for big projects. Spring

Boot resolves this problem by providing a set of dependencies for developers convenience.

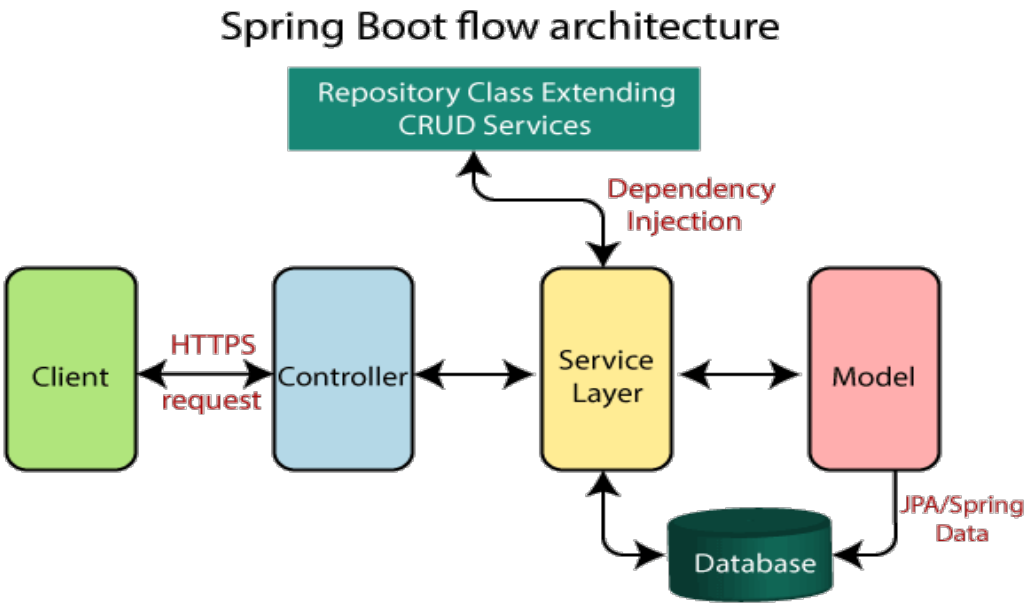
4.2 Scope and Responsibilities

The importance of the proposed project can be measured in terms of saving of papers and time. Identification of the drawbacks of the existing system leads to the designing of computerized system that will be compatible to the existing system with the system which is more user friendly and GUI oriented. We can improve the efficiency of the system, thus overcome the drawbacks of the existing system. The Homeasy is web based software to provide college students accommodation to the college hostel more efficiently.

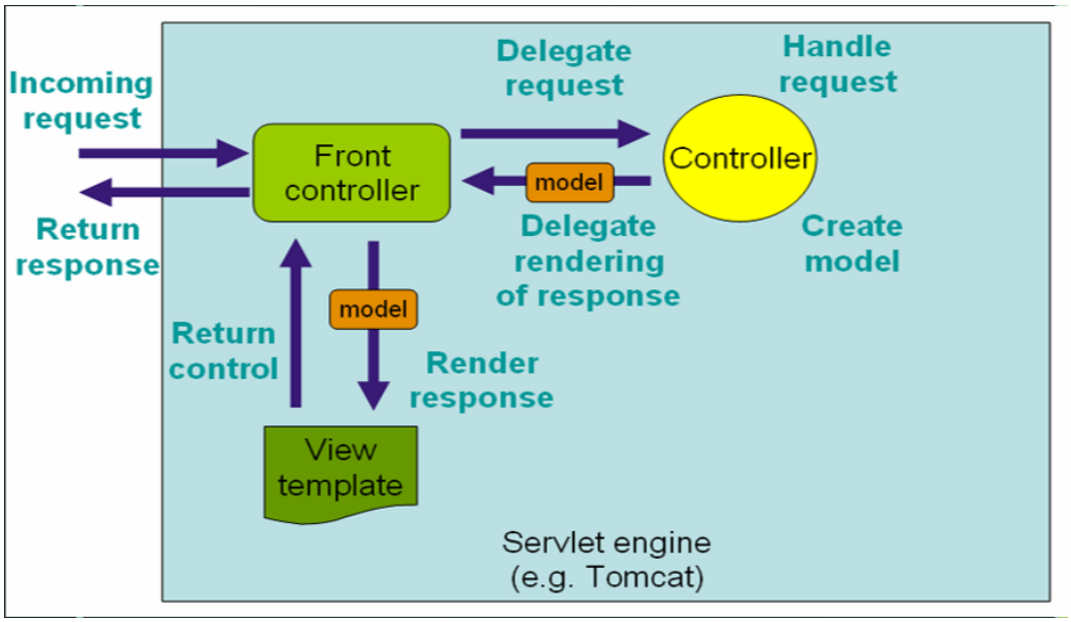
4.3 Design

4.3.1 High Level Design

High Level Design of Spring Boot MVC Architecture is shown below:

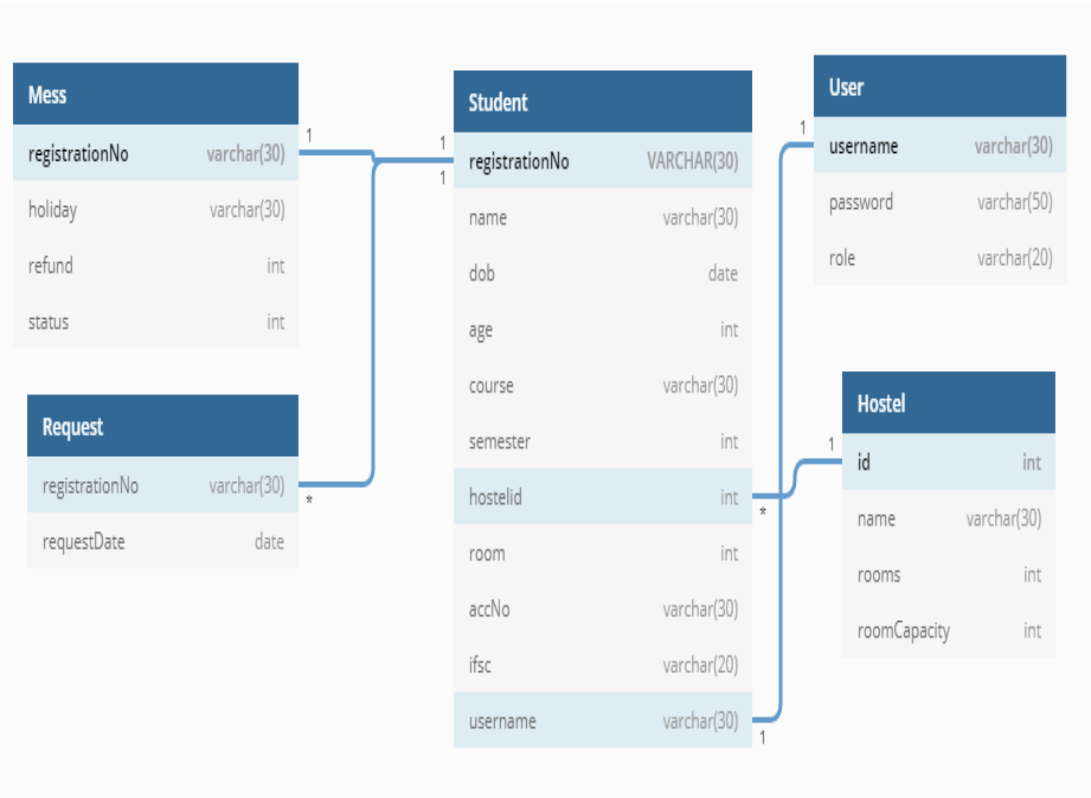


4.3.2 Backend


Incoming request
Return response
Front controller
Delegate request
Handle request
Controller
model
Delegate rendering of response
Create model
Return control
model
Render response
View template
Servlet engine (e.g. Tomcat)

4.3.3 ER Diagram

Entity Relationship Diagram:



Chapter 5

Software/ Hardware Requirements

Technical requirements of homeeasy is feasible and not very hard to obtain, although preferable the system should be equipped with the high speed processor. The software used is easily available on the Internet and can be downloaded free of cost if not previously installed on the respective system the hardware requirement too is very minimal.Our project uses Java, HTML, JavaScript which all are platform independent languages hence does not constraint user to stick to a single platform.

5.1 Software Requirements

The technologies required are:-

1. Java 8 or Higher
2. Spring Boot
3. HTML
4. CSS
5. JavaScript
6. SQL
7. ThymeLeaf

The softwares required are:-

1. IDE like Intellij, Eclipse
2. Xampp
3. MySql
4. Web Browers like Google Chrome, Mozilla Firefox

5.2 System Requirements

The system should meet the following requirements:-

1. Operating System: Windows 7 or above
2. Processor: Intel Core or AMD
3. RAM : 2 GB Ram
4. HDD : 256 GB Hard Disk

Chapter 6

Problems faced and solution

While developing a web application using Spring Boot and Hibernate framework, we had to face the following issues:

- Since there are two separate frameworks, we need to check the compatibility of the database and frontend with backend. We need to make a loose coupling between frontend and backend. To solve this we use Thymeleaf (a java template) to connect frontend with backend.
- While transferring object values from frontend to backend we are facing problems for storing data. To resolve this issue we use the Thymeleaf template in HTML and map Java objects in HTML file.
- During the testing of the project, we need to use the H2 database and at the time of deployment, we need to change our database to MySql which leaded to the problem of changing Queries. To resolve this we use JPA Repository which provides an abstract structure that was then implemented by Hibernate.

Chapter 7

Learnings

Apart from the technical knowledge that we gained during the course of this project, we also evolved much more as a software developer by learning a few other things that will help us throughout the career. We would like to share a few below:

- We need to understand the pros and cons of all the technologies we are considering before we zero in on a single one and never to use a technology/language just because its something new and is being used by top companies.
- It is good to think about future but we should not complicate our architecture too much doing that. Not every company is Google and not everyone can afford the technology debt. Sometimes going with the trivial solution is more beneficial.
- Testing your work is as important as developing it. If we write a code that is not testable, it will probably be of no use to us in future and will soon be replaced by a better one.

Chapter 8

Conclusion and Future Scope

8.1 Conclusion

Taking with respect to the project, it will make the students feel more relax and will help in maintaining the students mess record and hostel structure.

8.2 Future Scope

In the future we expect to include more functionalities to our project like:

- Complaint Section : Where we can track record of complaints registered by students.
- Mess Attendance : Record live attendance daily.
- Choice of Room Partner : To provide a way that students can choose their room partner for next semester registration.

Chapter 9

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