# “HOSTEL MANAGEMENT SYSTEM”

*Project report submitted to the Amrita Vishwa Vidyapeetham in partial fulfillment of the requirement for the Degree of*

**BACHELOR of TECHNOLOGY**

**in**

**COMPUTER SCIENCE AND ENGINEERING**

*SUBMITTED BY*

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**MAY 2021**

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Reviewer

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Place: Amritapuri Date:
17 May 2021

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**
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# DECLARATION

We, **Akarsh S Nair, Alfy Alex, Nayan M K, Shyamdev Krishnan and Sabarinath B** hereby declare that this project entitled **Hostel Management System** is a record of the original work done by us under the guidance of **Smt Akshara P Byju** Dept. of Computer Science and Engineering, Amrita Vishwa Vidyapeetham, that this work has not formed the basis for any degree/diploma/associations/fellowship or similar awards to any candidate in any university to the best of our knowledge.

Place: Amritapuri Date:
17 May 2021

Signature of the student

Signature of the Project Guide

# Acknowledgments

We take this occasion to thank God, almighty for blessing us with his grace and taking our endeavor to a successful culmination. We extend our sincere and heartfelt thanks to our esteemed guide, Ms Akshara P Byju for providing us with the right guidance and advice at the crucial junctures and for showing us the right way. We extend our sincere thanks to our respected head of the division, for allowing us to use the facilities available. We would like to thank the other faculty members also, at this occasion. Last but not the least; we would like to thank friends for the support and encouragement they have given us during the course of our work.

**Akarsh S Nair**

**Alfy Alex**

**Nayan M K**

**Shyamdev Krishnan J**

**Sabarinath B**

# Abstract

As the name specifies **HOSTEL MANAGEMENT SYSTEM** is a software developed for managing various activities in the hostel. For the past few years the number of educational institutions has been increasing rapidly. Thereby the number of hostels is also increasing for the accommodation of the students studying in this institution. And hence there is a lot of strain on the person who is running the hostel and software's are not usually used in this context. This particular project deals with the problems of managing a hostel and avoids the problems which occur when carried manually.

Identifying the shortcomings of an existing system leads to the design of a computerized system that is compatible with the existing system, making the system more user-friendly .You can improve the efficiency of your system and overcome the shortcomings of your existing system. Our project outcome includes a structured management system with the following:

- High security
- Data redundancy can be avoided to some extent
- Data consistency
- Easy to handle
- Easy data updating
- Less human error ·
- Strength and strain of manual labor can be reduced

# Contents

# 1. Introduction

It is not a good idea to employ manual systems in the modern era of automated systems, whether they be software or hardware. If there is no management structure in place, hostels are often run by hand. Normally, registration form manual verification and other data-saving procedures are carried out on paper. As a result, many repetitions can be eliminated by an automated system. In order to help decrease the quantity of human input due to the shortcomings of the existing methods, an automated system was developed. They benefit from it since it saves them from having to do the manual labor required to locate records of students, student meal bills, and details on individuals who left the hostel in the past. This system provides information on how a student's fees, housing assignment, and meal plan expenses can be better managed. Special elements like the number of students in a room, the student's ID, and available space or free rooms will also be included in the hostel administration system.

In this project, the Hostel Management System makes use of these data structures to store and process various data associated with the system.

**Objectives**

Our aim is to implement a Hostel Management System which makes it easier to update student information, calculate mess food quantity, manage fee payment and make the management process flawless. In this project, we mainly focus on 5 primary data structures, namely:

- Linked List
- Queue
- Array List
- Priority Queue
    - Array

# 2. Feasibility Study

Technical feasibility in the proposed system deals with the technology used in the system. It deals with the hardware and software used in the system whether they are of the latest technology or not. It happens that after a system is prepared a new technology arises and the user wants the system based on that technology. The frontend element of our Hostel Management System uses Java console. However, there's no particular backend element. This system uses Windows platform.

Economic feasibility talks about the benefits that which we get from this project. Here with the introduction of this online process we are not only reducing the time taken for the registration of the entrants. We even reduce the burden on the administrator. As this project is not only reducing the time but also the work burden of the user we say that this product is economically feasible.

# Problem Definition

The operation and maintenance of a hostel come with many disadvantages. even more so with a manual system. The officer might not always be aware of how many students are in a room because the majority of hostels only have one hostel manager. He must check each room individually to see if it is occupied. People who owe money to the hostel may occasionally preserve their receipts, large notebooks, or sheets of paper. One would never be able to determine whether a student is in debt or not if the books were to disappear or be stolen. The officer could not be aware of which rooms are available or not, which makes room allocation a concern as well. Additionally, some hostels have a large number of rooms or many floors, making it difficult for applicants to browse through all of the floors for an available room. Additionally, the officer might not be aware of the number of students in a certain room or if it is full or not.

# 4. Requirements

The design of this project contains both hardware and software. The specifications are listed below.

## 4.1 Hardware

- CPU 2GHz
- Hard Disk 10GB
- Memory 1GB of RAM
- Processor Intel® i3

## 4.2 Software

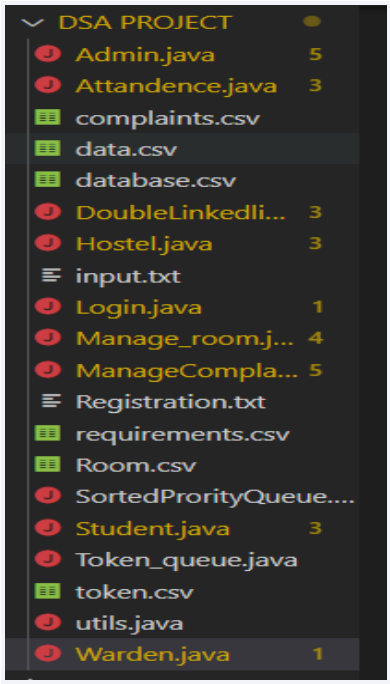
- JDK 8 or higher
- IDE for java
- Visual Studio Code
- JDK terminal

# 5. Proposed Methodology

This project is aimed at developing a system for keeping records and showing information about or in a hostel. This system will help the hostel officer to be able to manage the affairs of the hostel. This system will provide full information about a student in the hostel. It will show rooms available or not and number of people in a particular room. This will also provide information on students who have paid in full or are still owing. Also included is a user module for employees or the hostel officer. There will also be an admin module which will be accessed by the administrator and has the ability to access all the data in the system.

We planned on implementing a structured Hostel Management System which includes the following:

- The data of all the students which can be updated (Implemented using Linked List).
- Room allotment for students (Implemented using Arrays).
- A token system for food (Implemented using Queue).
- Attendance portal for students (Implemented using Array List).
- File handling (Implemented using Array List).




The user entering data will be saved in the csv file for further use.
Like **token.csv** is used to store the token with id and name of student .
**Data.csv** is used to store the details of the student .
**Database.csv** is used to add the present and absent of the student.
**Complaints.csv** is used to store the complaints with priority .

Functions that we used:

***Login**
***Manage Student**
***Manage Room**
***Add Stock**
***Take attendance**
***Update details**
***Implement notice board**

# Data Structures Used:

## Doubly Linked List: (Add Student details )

A linked list is a linear data structure, in which the elements are not stored at contiguous memory locations. The elements in a linked list are linked using pointers.
We have implemented linked lists in our program to add ,update ,etc. The data of the students is add as a node in the linked list.
We have used different methods like:

- Search the student
- Add the student
- Update the student details
- Delete the student

## Queue: (Food Tokens)

A Queue is a linear structure which follows a particular order in which the operations are performed. We can only insert from the back and remove from the top.
We have implemented a queue to store the tokens for the food, the student can take the token , which means their name and id will be enqueued to the queue in the file and the warder can delete the token , dequeue the name and id .

### Arrays: (Manage Room)

We have used an array in the room managing as the size of the room is fixed and the value will  be saved .

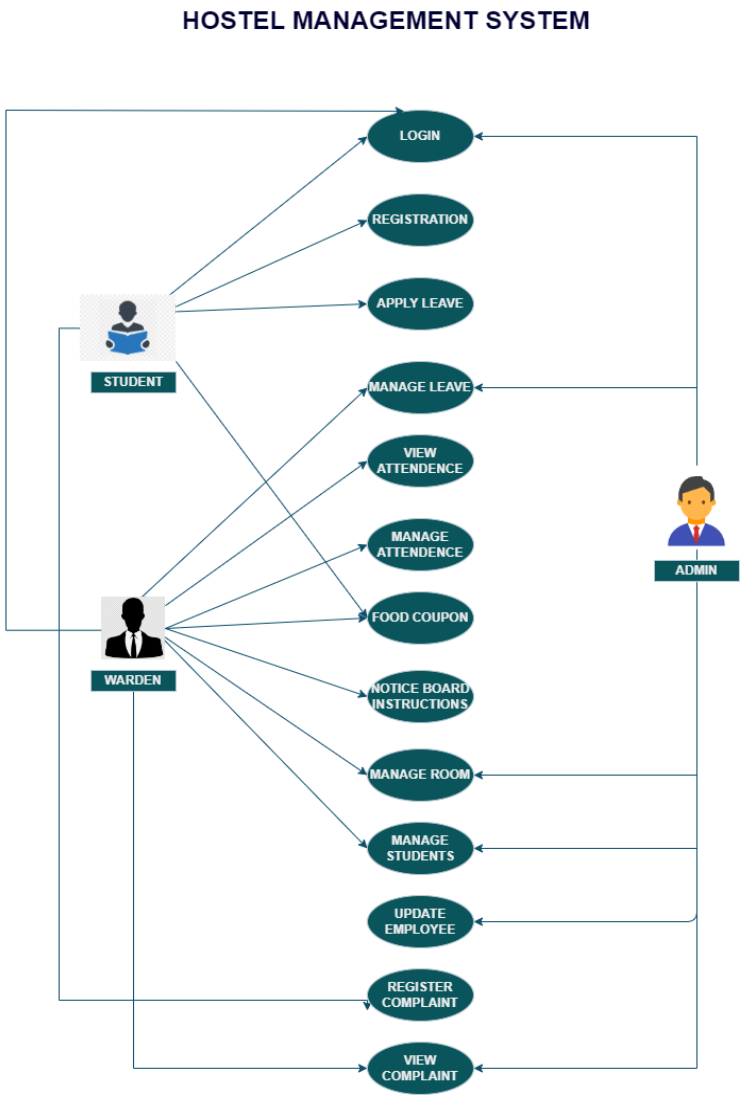
### Priority Queue(Complaint Register)

Here the student can raise the complaint based on the priority and this will be added to the file based on the priority and the warden or admin can remove the complaint only based on the priority (after solving it ).

**ArrayList** - For file handling reading and getting the data and storing them as arraylist. ArrayList has been implemented also to add the details of the students during the attendance.

# 6. Result and Analysis

## Use Case Diagram




## Use cases and Characteristics

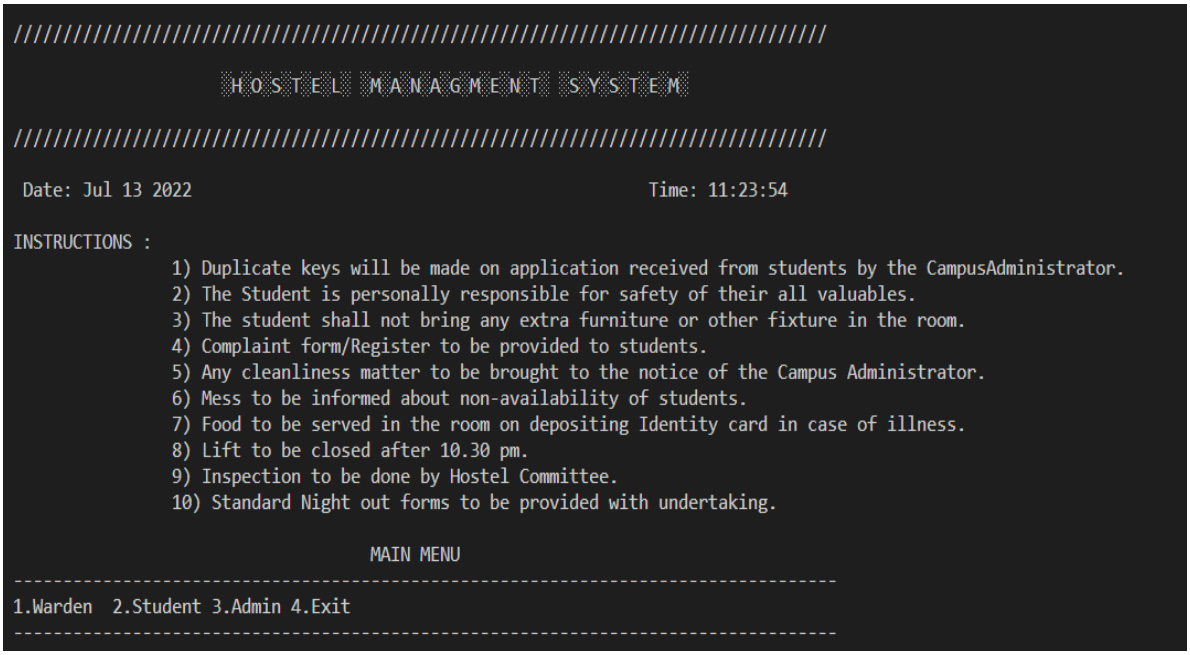
| ACTOR | USER DESCRIPTION |
|---|---|

| | |
|---|---|
| Admin | Admin will be responsible to manage the details of all the students, Wardens and room allotments. Like admin can a new user and view the list of existing users in the application.<br><br>● Login<br><br>● Admin can ADD/DELETE/UPDATE user or<br>student details.<br><br>● Admin can<br>ADD/DELETE/UPDATE the records of wardens.<br><br>● Admin can check the activity of rooms in the hostel.<br>● Add instructions in the notice board |
| **Student/User** | ● Students can register and login to the application and manage the profile username and password.<br>● Add the personal details .<br>● Students can check their transaction and<br>profile details.<br>● Students can change their details.<br>● Students can vacate the room. |

| | |
|---|---|
| **Warden** | ● The Warden can manage the student details.<br>● Manage food coupons<br>● Warden can check the room availability and manage the room allotment according to the requirement.<br>● Warden can view the stock availability |

## DESIGN AND IMPLEMENTATION (Input, UI and Output)

### 1. Welcome Page / Main Menu




Input :

Users can choose the entry from 1 to 4.

Output :

1 → Warden can access the system and the warden's portal opens.
2 → Opens the Student's portal
3 → Admin portal opens.

**2. Warden's Portal**

```
================================================================
                    Warden Page
================================================================
1. Add a student:
2. Search for a student:
3. Delete a student:
4. Update a student info:
5. Display the students info:
6. Give token to the Student:
7. Remove token
8. Attandence Portal
9. Manage room
10. View Stock in the hostel
11. View complaints raised by students :
-1 To return to menu:
```

Input :

Users can enter the choice from 1 to 10 and an option is given to access the main page.

Output :

1 → Adds a new student:

```
-1 To return to menu:
Enter your choice: 1
Enter the student's name: sabu
Enter the student's Id: 54
Enter the student's Room Number: 12
Enter the student's Department: aie
Enter the location Starting from zero to insert the student at: 4
```

2 → Can search the existing students

```
Enter your choice: 2
Enter the student's Id: 1
Found:
(Student's info)

Name    ID      roomnumber      Department
akarsh  1       12.0    cse
================================================================
----------------------------------------------------------------
```

3 → Delete a student

4 → Can update a students details

```
-1 to return to menu.
 Enter your choice: 4
 Enter the student's Id: 2
 What do you want to update [N]ame,[I]d,[R]oom, [D]epartment:I
 Enter the new Id: 4
 ----------------------------------------------------------------
```

5 → Can view the student's info

```
-1 to return to menu.
Enter your choice: 5
Name    ID      roomnumber      Department
akarsh  1       12.0    cse

nayan   4       14.0    cse

shyam   3       22.0    aie

sabu    54      12.0    aie

alfy    4       31.0    ece

sabari  5       3.0     mech
```

6 → Gives food coupon

7 → Manages food coupon

8 → Access the attendance portal

```
2
1. GET ALL STUDENT
2. TAKE ATTANDANCE OF  ALL STUDENT ATTENDANCE
3. GET ALL STUDENT ATTENDANCE
EXIT 0
Enter Choice=>
2

.....................Students.....................
Name: akarsh - ID: 1
Is Presented then ENTER 'p' else ENTER 'n'=>
p
akarsh Present today...
.....................................................................


.....................Students.....................
Name: nayan - ID: 4
Is Presented then ENTER 'p' else ENTER 'n'=>
p
nayan Present today...
.....................................................................


.....................Students.....................
Name: shyam - ID: 3
Is Presented then ENTER 'p' else ENTER 'n'=>
n
shyam Absent today...
.....................................................................
```

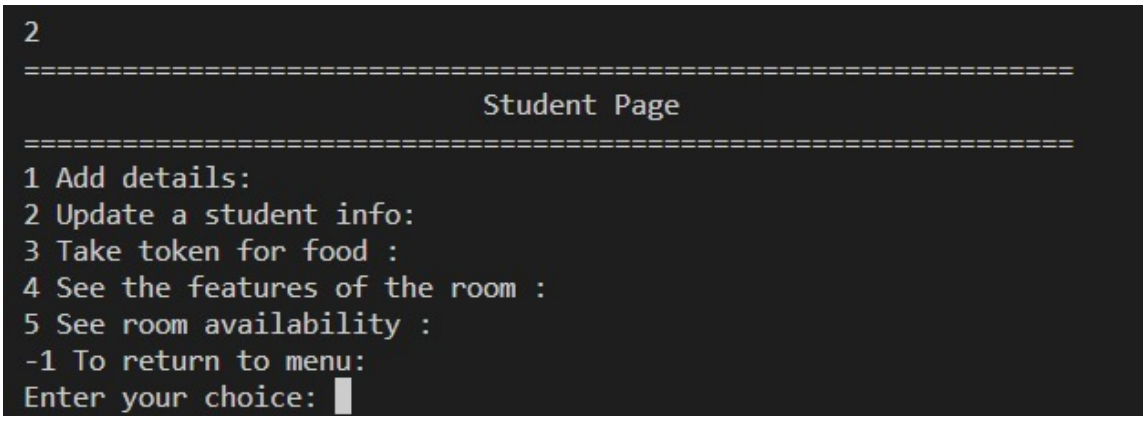
9 → Manages the student's room
10 → Check the stock availability

```
Enter your choice: 10
----------------------------------------
                Stock
----------------------------------------
1. item name : Bed
        Quantity:- 100
        Price:- 5000

2. item name : Dusk
        Quantity:- 150
        Price:- 7000

3. item name : Chair
        Quantity:- 50
        Price:- 450
```

### 3. Student's Portal



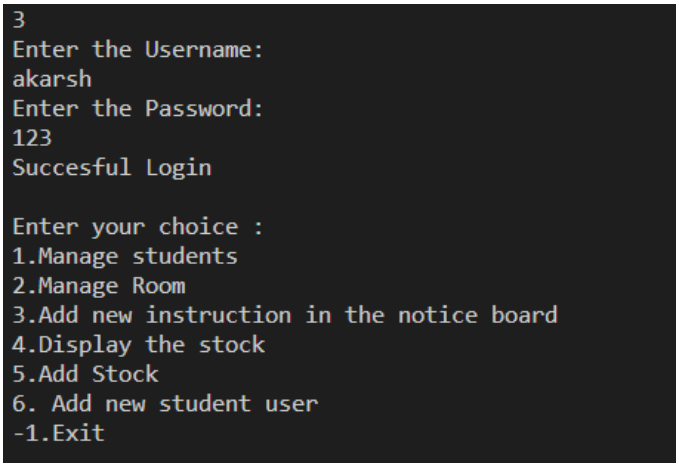

Input :

Users can enter the choice from 1 to 5 and an option is given to access the main page.

Output :

1 → Add more details about themselves
2 → Update one's own details
3 → Take coupon for food
4 → View the facilities of the rooms
5 → View the details of available rooms

### 4. Admin's Portal



Input :

Users can enter the choice from 1 to 6 and an option is given to access the main page.

Output :

1 → Manage both the students
2 → Manage  room
2 → Adding new instruction to the notice board
3 → Will display the available stock
4 → Adds new stock
5 → Add new student user
6 → Exits the portal

# 7. Conclusion

HOSTEL MANAGEMENT SYSTEM is very useful for hostel allotment and mess fee calculation. This hostel management software is designed for people who want to manage various activities in the hostel. For the past few years the numbers of educational institutions are increasing rapidly.

Thereby the numbers of hostels are also increasing for the accommodation of the students studying in this institution and hence there is a lot of strain on the person who is running the hostel and software's are not usually used in this context. So this particular project deals with the problems of managing a hostel and avoids the problems which occur when carried manually.

# 8. References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- **http://dspace.cusat.ac.in/jspui/bitstream/123456789/8250/1/ONLINE%20HOSTEL%20MANAGEMENT%20SYSTEM.pdf**
- **https://sourcecodehero.com/hostel-booking-system-project-in-c-with-source-code/**


# 9. Source code

https://github.com/Shyamdevkrishnanj/Hostel-Management-System

Link for  the source code of this project.