# Hostel Management System

A Capstone Project Report

Software Development Capstone Project (SE133 - H2)
Department of Software Engineering
Daffodil International University

**Submitted by Group 7:**


| Name | Student ID |
|---|---|
| Mohammad Ali Nayeem | 242-35-022 |
| Emtiaz Hossain | 242-35-744 |
| Arpita Barmon | 242-35-794 |
| Jahid Hossain | 242-35-142 |



**Supervisor:**
Sumona Afroz
Lecturer, Department of Software Engineering
Daffodil International University


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# 1 Project Overview

This Hostel Management System is a foundational C programming project designed to automate basic hostel-related tasks such as managing resident information and room assignments. Replaces a manual system with a functional command-line application ideal for students who want to apply core programming principles in a real-world scenario.

**Demo Video:** Click here to watch the demo

# 2 Key Features

- **Resident Management:** Add new residents with details such as name, age, sex, and room number.
- **View All Residents:** Display a list of all current residents and their information.
- **Resident Check-Out:** Remove a resident from the system.
- **Interactive Menu:** A user-friendly, menu-driven interface.
- **Modular Design:** Organized into separate C files for clarity and reusability.

# 3 Screenshots

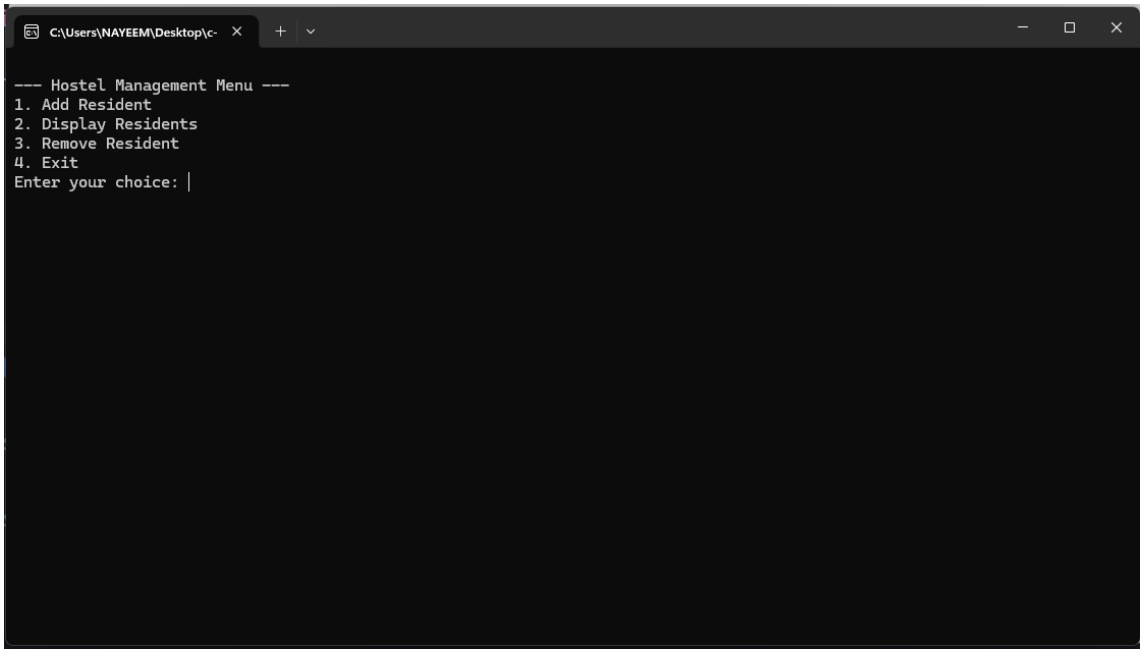


Figure 1: Main Menu

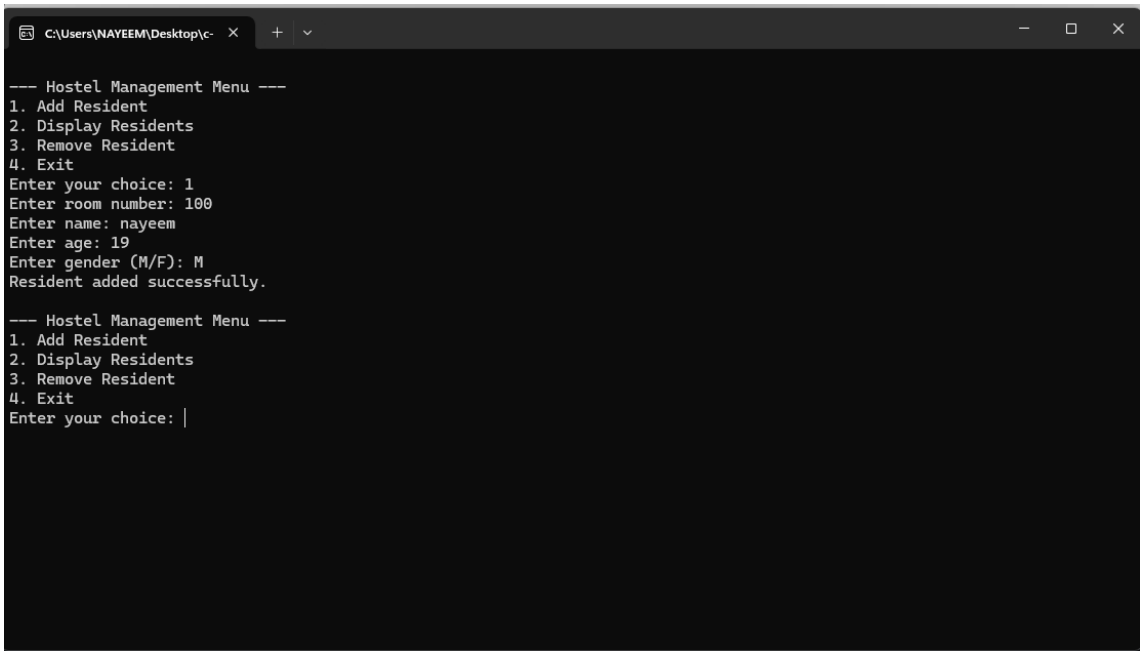


Figure 2: Adding a Resident

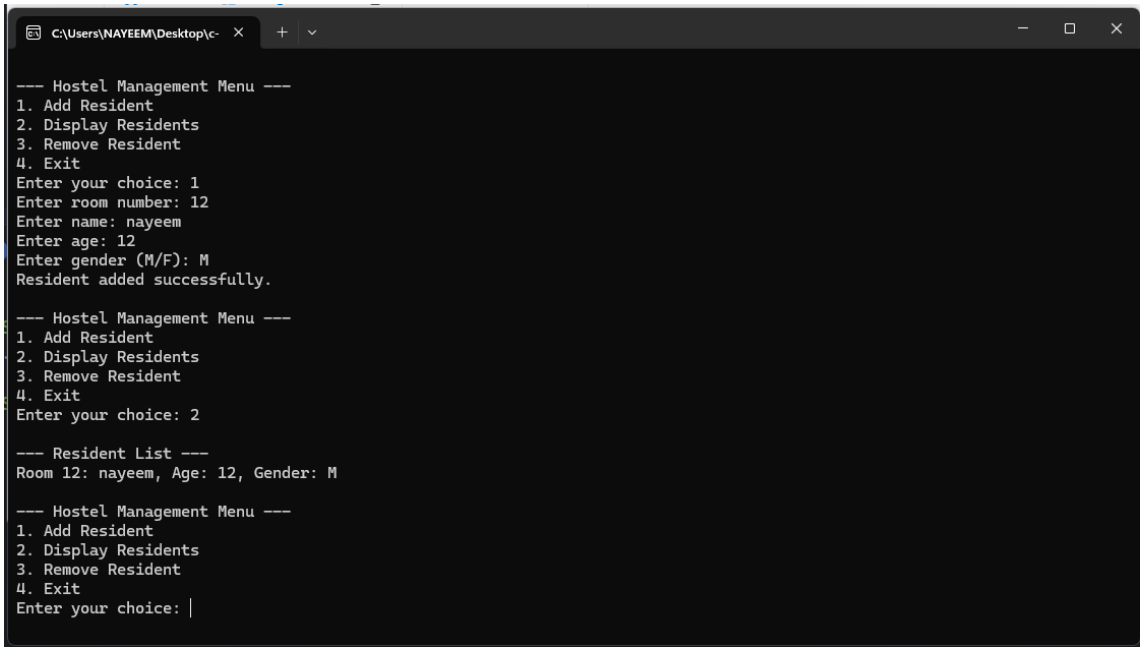


Figure 3: Displaying All Residents

# 4 Project Structure

- `app.c` – Main application loop and menu control.
- `hostel.h` – Header file with Resident struct and declarations.

- `hostel.c` – Core functions: add, display, remove residents.
- `utils.h/.c` – Input validation and menu utilities.
- `Makefile` – Compile and link automation.

## Sample Code Snippet

```c
#include <stdio.h>

typedef struct {
    int roomNumber;
    char name[50];
    int age;
    char gender;
    int isOccupied;
} Resident;

void displayResidents(const Resident residents[], int size) {
    for (int i = 0; i < size; ++i) {
        if (residents[i].isOccupied) {
            printf("Room %d: %s, Age: %d, Gender: %c\n",
                   residents[i].roomNumber, residents[i].name,
                   residents[i].age, residents[i].gender);
        }
    }
}
```

### `app.c` (Main)

- Declares an array of `Resident` structs.
- Loops through a text-based menu.
- Invokes add/view/remove functions.

# 5 How to Run

```
git clone https://github.com/kazinayeem/hostel-management-capstone.git
cd hostel-management
make
./hostel_management
```

# 6 Conclusion

This project demonstrates the utility of modular design and structured programming in C. It is designed to mimic real-world hostel operations and serves as a great introduction to real-world system design for software engineering students.

# References


- **GitHub Repo:** `https://github.com/kazinayeem/hostel-management-capstone`
- **W3Schools:** `https://www.w3schools.com/c/`
- **GeeksforGeeks:** `https://www.geeksforgeeks.org/c-programming-language/`
- **Tutorialspoint:** `https://www.tutorialspoint.com/cprogramming/index.htm`
- **ResearchGate:** `https://www.researchgate.net`