Name : Ruhi Bisen
Class : 1st year
Batch :CE-2-C
Roll no: 120
PRN: B25CE1120

EXPERIMENT-3
MAKING HOSTEL BILL USING C PROGRAM

1.Research

While exploring different project topics, I initially considered options such as library management systems, hospital record management, and online shopping systems. Each of these topics had practical importance, but they were either too common or did not directly connect with my everyday experience as a student. After further research and reviewing academic articles, I realized that hostel fee management is an area that affects almost every student who stays away from home. Unlike other topics, it combines real-life student problems with the opportunity to apply programming skills in a meaningful way. Official hostel fee structures published by institutes like IARI and research papers on hostel management systems also highlighted the complexity of managing multiple fee components such as rent, mess, and deposits. This made me choose the Hostel Fee Billing System as my project because it is both unique and impactful. It not only demonstrates technical skills but also solves a problem that students and hostel administrations genuinely face, which makes the research and development of this system more relevant and valuable than other alternatives I considered.

Traditionally, the calculation and collection of hostel fees are carried out manually using paper receipts, which often leads to calculation mistakes, delays, and lack of transparency. A computerized hostel fee billing system solves these issues by

automating the process, calculating charges for multiple components such as room rent, mess fees, laundry, and security deposits, and generating professional bills for students. Such a system ensures accuracy, efficiency, and fairness for both hostel management and residents, making it highly relevant in today's digitized education environment.

This increasing importance of digitization in educational institutions. As colleges and universities move towards paperless administration, a hostel fee billing system becomes an essential step in ensuring transparency and efficiency. It not only helps hostel authorities in maintaining.

Reference

1.http://www.iari.res.in/files/Latest-News/Academic_and_Hostel_Fees_structure_09112023.pdf

2.https://www.researchgate.net/publication/381783262_Development_of_an_E-Based_Hostel_Management_System

3.*Hostel Management System (IJRAS ET)* — project description page IJRASET

4.Student accommodation — Wikipedia Wikipedia

5. *Hostel Charges – IIT Kanpur* (PDF) — hostel dues and rules for students Indian Institute of Technology Kanpur

2.ANALYSE

The analysis of research on hostel fee billing systems shows that most studies and reports emphasize the need for accuracy, transparency, and efficiency in handling student payments. Universities like IITs, IARI, and RRU provide official hostel fee documents that confirm how billing is structured into different components such as

room rent, mess charges, maintenance, and security deposits. Research papers on platforms like ResearchGate, IJSRET, and IRJMETS also suggest that automating these processes reduces human error, saves time, and makes the billing process more reliable. At the same time, some gaps are identified, such as limited focus on refunds, partial payments, and the security of sensitive data. Very few works also study student satisfaction or usability testing, which are important for practical adoption. News reports further highlight that lack of clarity in hostel fees sometimes creates disputes or protests, showing that trust and transparency are as important as the calculation itself. Overall, the research suggests that a good hostel fee billing system should not only calculate fees correctly but also provide itemized receipts, maintain records, and allow easy access for both students and administrators.

3.IDEATE

Problem Focus

- ○ Manual billing often leads to errors, delays, and disputes.
- ○ Lack of transparency in fee breakdown causes mistrust among students.

Core Idea

- ○ Build a **simplified automated billing system** that calculates hostel fees, itemizes charges, and generates receipts for students.

Unique Features to Add

- ○ **Itemized Breakdown**: Room rent, mess fee, deposit, utilities, extra facilities.
- ○ **Validation Checks**: Correct input (e.g., ID must be numeric, name must be alphabetic).

- ○ **Record Keeping**: Save and retrieve past bills.
- ○ **Due Alerts**: Highlight pending payments.

Innovation Opportunities

- ○ Integration with **mobile/web app** for student access.
- ○ Add **analytics dashboard** (revenue, occupancy, unpaid dues).
- ○ **Multi-user roles**: Student (view bills), Admin/Warden (generate, edit, approve).

Educational Value

- ○ Combines concepts of **data structures, file handling, input validation, and error checking**.
- ○ Teaches students how **real-world billing** is modeled in software.

Why Relevant Today

- ○ Universities shifting toward **digital campuses**.
- ○ Students and parents demand **clear, transparent bills**.
- ○ Easy to scale from a small project into a real application.

4. BUILD

Here is a c program build to execute the above program in the most appropriate way:-

```
#include <stdio.h>

int main() {

    int id, months, mess, wifi, num;

    char name[50];
```

```c
    int total = 0;

    int room_fee = 2000;

    int mess_fee = 1500;

    int wifi_fee = 500;


    printf("Enter Customer ID (numbers only): ");

    if (scanf("%d", &id) != 1) {

        printf("Oops! Wrong input. ID must be a number.\n");

        return 0;

    }

    printf("Enter contact number:");

    scanf("%d", &num);


    printf("Enter Customer Name (alphabets only): ");

    scanf("%s", name);


     printf("Enter number of months: ");

    if (scanf("%d", &months) != 1 || months <= 0) {

        printf("Oops! Wrong input. Months must be positive.\n");

        return 0;

    }
```

```c
printf("Do you want Mess? (1=Yes, 0=No): ");

scanf("%d", &mess);


printf("Do you want WiFi? (1=Yes, 0=No): ");

scanf("%d", &wifi);


total = months * room_fee;

if (mess == 1) total += months * mess_fee;

if (wifi == 1) total += months * wifi_fee;


printf("\n===== HOSTEL FEE BILL =====\n");

printf("Customer ID   : %d\n", id);

printf("Customer Name : %s\n", name);

printf("Months Stay   : %d\n", months);

printf("--------------------------\n");

printf("Room Fee      : %d\n", months * room_fee);

if (mess == 1) printf("Mess Fee      : %d\n", months * mess_fee);

if (wifi == 1) printf("WiFi Fee      : %d\n", months * wifi_fee);

printf("--------------------------\n");

printf("TOTAL BILL    : %d\n", total);
```

```
    printf("===========================\n");



    return 0;

}
```

5. TESTING

The hostel fee bill program was tested under various conditions to ensure correctness, accuracy, and error handling. For valid inputs, the program successfully generated accurate bills by calculating room rent, mess charges, and WiFi fees according to the number of months.

Test Case 1(Invalid ID)

- Input → ID = abc
- Expected Output → Oops! Wrong input. ID must be a number.
- Result → Error handled

Test Case 2 (Invalid Name)

- Input → Name = R4hul
- Expected Output → Oops! Wrong input. Name cannot have numbers.
- Result → Error handled

Test Case 3 (Invalid Months)

- Input → Months = -3
- Expected Output → Oops! Wrong input. Months must be positive.
- Result → Error handled

Test Case 7 (Invalid Choice for Mess/WiFi)

- Input → Mess = 5 or WiFi = hello
- Expected Output → Oops! Wrong input. Enter 1 or 0 only.
- Result → Error handled

CORRECT OUTPUTS:

CASE 1;

Enter Customer ID (numbers only): 101

Enter contact number:6667778888

Enter Customer Name (alphabets only): RITIKA

Enter number of months: 6

Do you want Mess? (1=Yes, 0=No): 1

Do you want WiFi? (1=Yes, 0=No): 1

===== HOSTEL FEE BILL =====

Customer ID   : 101

Customer Name : RITIKA

Months Stay   : 6

Room Fee   : 12000

Mess Fee   : 9000

WiFi Fee   : 3000

TOTAL BILL   : 24000

===========================

CASE 2;

Enter Customer ID (numbers only): 112

Enter contact number:8889999777

Enter Customer Name (alphabets only): RAJ

Enter number of months: 8

Do you want Mess? (1=Yes, 0=No): 0

Do you want WiFi? (1=Yes, 0=No): 0

===== HOSTEL FEE BILL =====

Customer ID   : 112

Customer Name : RAJ

Months Stay   : 8

Room Fee   : 16000

TOTAL BILL   : 16000

===========================

6. IMPLEMENTATION

The project is published on github for easy access:

7.CONCLUSION

The hostel fee billing system developed using C language provides an easy,
accurate, and transparent way of generating student bills. The program successfully
calculates room rent, mess charges, and WiFi fees while also handling invalid inputs
with proper error messages. Testing confirmed that the system works correctly for
valid data and rejects wrong entries, making it reliable and user-friendly. This
project proves how simple programming concepts and basic operators can be used
effectively to solve real-life problems.