

Assignment# 1

Question 1. Write a program that calculates the occupancy rate for a hotel. The program should start by asking the user how many floors the hotel has. A loop should then iterate once for each floor. In each iteration, the loop should ask the user for the number of rooms on the floor and how many of them are occupied. After all the iterations, the program should display how many rooms the hotel has, how many of them are occupied, how many are unoccupied, and the percentage of rooms that are occupied. The percentage may be calculated by dividing the number of rooms occupied by the number of rooms.
Input Validation: Do not accept a value less than 1 for the number of floors. Do not accept a number less than 10 for the number of rooms on a floor.

Question 2. Write a program that asks the user to enter today's sales for five stores. The program should then display a bar graph comparing each store's sales. Create each bar in the bar graph by displaying a row of asterisks. Each asterisk should represent Rs.100 of sales. Here is an example of the program's output. Enter today's sales for store 1: 1000 [Enter]
Enter today's sales for store 2: 1200 [Enter]
Enter today's sales for store 3: 1800 [Enter]
Enter today's sales for store 4: 800 [Enter]
Enter today's sales for store 5: 1900 [Enter]
SALES BAR CHART (Each * = Rs.100)
Store 1: *****
Store 2: *****
Store 3: *****
Store 4: *****
Store 5: *****

Question 3. You are required to write a program for a fast food/snack parlor. Your program shows the following menu to the user

M Meals
B Beverages

Prompt the user to enter m/M to buy a meal and B or b for a Beverage. If the user chooses to buy a meal then you should display the following

- | | |
|-----------------|---------|
| 1. Burger | Rs. 450 |
| 2. Roll Paratha | Rs. 220 |
| 3. Spaghetti | Rs. 300 |

But if the user chose beverage from the first menu, then following items are displayed.

- | | |
|----------------|---------------|
| 1. Coffee | Rs 200/cup |
| 2. Fresh Juice | Rs. 350/glass |
| 3. Green Tea | Rs. 75/cup |

Read user's choice (1, 2 or 3), ask quantity of the selected item. Now compute and display the total bill. Add a 3.5% tax on the total Bill.

The owner of the business decides to offer discounts during the off-peak hours. Any purchases made from 4:00 to 6:00 PM will get 25% discount on the total bill. Also all the purchases after midnight till 8:00 AM in the morning will be charged only 50% of the actual Bill.

The following piece of code can help you do it.

```
time_t timeNow = time(0);
tm* now = localtime(&t);
int thisHour = timeNow->tm_hour;
```

This above code reads the current system time and retrieves the current hour in the variable **thisHour**. The value of hour is on the 24 hours clock i.e. if you run this code at 8 p.m. (evening), the variable **thisHour** will have value 20. Similarly it will be 6 if you run it at 6:00 a.m in the morning. But remember that you will have to include the time.h header in order to use this code.

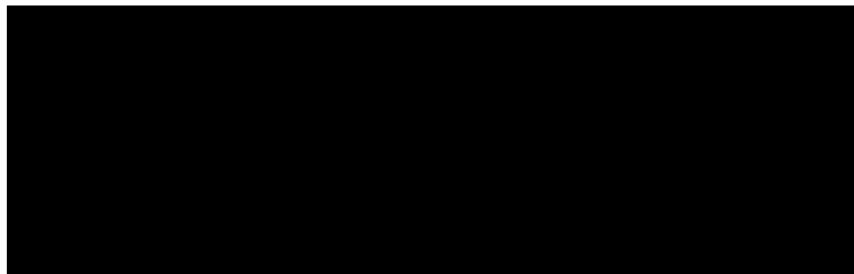
Question 4. Solve the following programs using c++.

i. Ask user to input a character and classify if the character is:

- Alphabet
- Digit
- Space Character
- Escape Character
- Other Special Character

Hint: To input every kind of character, you can use **getCh()** or **getChe()** functions to input the character instead of “**cin>>**”, these functions are available in “**conio**” library.

ii. Show a menu to the user as:



Then input the choice from the user and perform the respective operation.

Question 5. Write a program that prints the Decimal Equivalent of a Binary Number. Input a 8 digit integer containing only 0s and 1s (i.e., a "binary" integer) and print its decimal equivalent.

Hint: Use the remainder and division operators to pick off the "binary" number's digits one at a time from right to left. Just as in the decimal number system, in which the rightmost digit has a positional value of 1, and the next digit left has a positional value of 10, then 100, then 1000, and so on, in the binary number system the rightmost digit has a positional value of 1, the next digit left has a positional value of 2, then 4, then 8, and so on. Thus, the decimal number 234 can be interpreted as $4 * 1 + 3 * 10 + 2 * 100$.

The decimal equivalent of binary 1101 is $1 * 1 + 0 * 2 + 1 * 4 + 1 * 8 = 1 + 0 + 4 + 8 =$

Question 6. HP company uses a computer program to troubleshoot the servers. A General diagnosis flowchart for troubleshooting HP servers is provided below in figure 01. Use the flowchart to create a C++ program that leads a person through the steps of fixing a bad HP server.

Here is an example of the program's output (following one of the flow):

Starting General Diagnosis Program.

Recoding symptoms information - **DONE**.

Rebooting server to see if condition still exists - **DONE**.

Is this a newly installed server? **yes [enter]**

Please resear any components that may have come loose during shipping - **DONE**.

Rebooting the server - **DONE**.

Does the condition still exist? **no [enter]**

Recording all actions taken for future - **DONE**.

Congratulations, your server problems are solved.

Notice the program ends as soon as a solution is found to the problem.

HP- Server General Diagnostic Flowchart

