Lab 6: Functions, pass by value/reference

10:45 am to 12:45 pm

Total marks: 35

General instructions

- **No compensation or makeup lab**
- **Don't discuss with peers.**
- **Cheating cases will be given ZERO.**
- **You can ask only relevant queries from TAs.**
- **Strictly follow the instructions of TAs. Any misconduct will be dealt strictly.**
- **Complete your tasks by 11:45am. Last hour is reserved for evaluation**

Task 1:

(15 marks)

Your friend is using a post-paid Internet connection for the first time. The post-paid Internet connections are charged on the basis of total time the Internet has been used in a month. Your friend has to pay the total charges at the end of the month. The Internet service provider gives the customers the bill with the details of usage. But your friend is skeptical and he wants to check it for himself. Your friend has kept a record of the total time of usage in hours, minutes and seconds, every time he connected to Internet. Now he wants to calculate the charges he has to pay for the connection. To help your friend, write a program to calculate total charges of Internet connection. The program should allow your friend to input the usage time of each connection in hours, minutes and seconds and should add it to the total usage time. The program should then calculate the charges of the connection. The charges of the connection are 25 Rupees per hour (extra minutes and second from total are ignored).

To write the program, you are required to use functions. Implement three functions for the program that are:

1. Function to input the time (in hours, minutes and seconds) of usages in one sitting.

2. Function to add the input time to the total time of usage (Total time is also in hours, minutes and seconds.).

3. Function to calculate the total charges.

The main function should not contain any functionality. It should consist of series of function calls. All the relevant variables for calculating total time and total charges must be declared in main. Any violation in instructions will result in ZERO marks.

Sample run:

Enter the time the internet was used for in each sitting (in hours,

minutes and seconds).

Enter –1 to end.

Enter time of First Sitting:

Hour: 3
Minutes: 58
Seconds: 59
Enter time of Next Sitting:
Hour: 2
Minutes: 59
Seconds: 2
Enter time of Next Sitting:
Hour: 1
Minutes: 1
Seconds: 59
Enter time of Next Sitting
Hours: -1
Total time of usages is 8 hours.
Total charges are 200 Rs.

Task 2:

(10 marks)
Write a function that prints the following pattern on the screen. Use nested loops to design the pattern.

```
        1
      A B
    2 3 4
  C D E F
5 6 7 8 9
```

Hint: To print alphabets, you can use ASCII values of upper case alphabets to start with the loop.

Task 3:

(10 marks)

Write a program that implements a function swapR(int&,int&). This function should take input parameters by reference (i.e. swapped values should be reflected in original variables declared in main() before function call. Don't create local variables in swapR. The function should not print anything. Value of two variables before and after calling swapR should be displayed in main(). Moreover, your logic should not make use of any extra variable while swapping values. Your whole program should have only two variables declared (that will be swapped). Use of any extra variable will result in ZERO marks.