EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Term I, Fall 2021

Course: CSE103 (Structured Programming), Section – 4
Instructor: Taskeed Jabid
Full Marks: 30
Time: 90 Minutes

Note: There are Six questions, answer ALL of them.
In some question, you need to choose some input data. I expect that no input data set will be same with any other script.

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1. Given two points in a plane the distance between those two points can be calculated by Euclidean distance and also by Manhattan distance. Write a C program which input two points and display the Euclidean distance and also the Manhattan distance. The formulas of these distance are

   Euclidean distance: $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

   Manhattan Distance: |X1 – X2| + |Y1 – Y2|

2. In a COVID vaccination center, there are **B** booth and each booth is capable to give 200 shots easily, 250 shots with some effort, 300 shots in a hectic manner. However, if more than 300 shots are needed then center needs to open new booths. In a particular day, **N** people came for vaccination. Write a C program which can input the value of B and N and display whether with the given number of booths the vaccination can be done easily, with some effort, in hectic manner or should open some new booths.

3. Write a C program which can input last seven days temperature in the city and display how many days were comfortable weather and how many days were extreme weather. A day falls in the comfortable weather when temperature is in between 20-24 including 20 and 24.

   Sample Input

   22 20 25 19 17 23 24

   Sample Output

   Comfortable weather: 4 days

   Extreme weather: 3 days

4. Read the following code carefully. Write down different values of x, y for which the code will generate the different possible output.

```c
#include <stdio.h>
int main()
{
    int x,y;
    scanf("%d%d",&x,&y);
    if(x%y==1 || y%2==0){
        if(x>=5&&x<=10){
            printf("Hello\n");
        }
        else{
            printf("Welcome\n");
        }
    }
    if(x%y==0 && y%x==0){
        printf("Good Morning\n");
    }

    return 0;
}
```

5. Read the following code carefully. Choose the values of x, y on your own and write down the output the program generates of your chosen input value.

```c
#include <stdio.h>
int main()
{
    int x,y;
    float a;
    scanf("%d%d",&x,&y);
    a=x+y;
    printf("%.2f\n", a);
    a=x-y;
    printf("%.2f\n", a);
    a=x*y;
    printf("%.2f\n", a);
    a=x/y;
    printf("%.2f\n", a);
    a=x%y;
    printf("%.2f\n", a);

    return 0;
}
```

6. Read the following code carefully. Choose the values of x (greater than 10), y on your own and write down the output the program generates of your chosen input value. Explain your answer.

```
1   #include <stdio.h>
2   int main()
3   {
4       int x,y,i,c,d,e;
5       c=d=e=0;
6       scanf("%d%d",&x,&y);
7       for(i=1;i<=x;i++){
8           if(i%2==0 || x%i==0){
9               c++;
10          }
11          if(x%i==1 || x%i==1){
12              d++;
13          }
14          if(y%x==0 || x%y==0){
15              e++;
16          }
17      }
18
19      printf("%d\n", c);
20      printf("%d\n", d);
21      printf("%d\n", e);
22
23      return 0;
24  }
25
```