

National University of Computer and Emerging Sciences, Lahore Campus



Course: Computer Programming
Program: BS(Computer Science)
Duration: 60 Minutes
Paper Date: 16-Nov-2018
Section: All
Exam: Midterm II

Course Code: CS103
Semester: Fall 2018
Total Marks: 45
Weight: 15
Page(s): 1
Roll No:
Section

Instructions: - Questions during exam are not allowed. Take reasonable assumptions where needed.

Question 1 [40 Marks]: Complete the definition of the class given below such that the main program runs successfully. Make sure that your program doesn't consume extra memory space and it should not leak any memory.

```
class Set{
private:
    int* elements;    //To save elements of a Set
    int size;         //Total number of elements in a Set
};

void main()
{
    int arr1[] = {10,20,30,40};
    Set s1(arr1 , 4); //Creates a Set with elements of arr1 and size = 4

    int arr2[] = {5,15,55};
    Set s2(arr2 , 3); //Creates a Set with elements of arr2 and size = 3

    cout<<"Set 1:\t"<<s1<<"Set 2:\t"<<s2; //Prints Set 1: {10,20,30,40}
                                         //Set 2: {5,15,55}

    Set s3;
    s3 = s1+s2; //Takes sorted Union of s1 and s2

    cout<<"Set 3:\t"<<s3; //Prints Set 3: {5,10,15,20,30,40,55}

    int arr3[] = {1,2,100,-1}; //-1 is delimiter
    s3 = arr3 + s1;             //Returns sorted Union
    cout<<"Set 3:\t"<<s3; //Prints Set 3: {1,2,10,20,30,40,100}

    cout<<s1--;                 //Prints {10,20,30,40}
    cout<<s1;                   //Prints {9,19,29,39}
}
```

Question 2 [5 Marks]: Write exact sequence of function calls for following code:

s3 = arr1 + s2 + arr3;