Object Oriented Programming
Spring 2022
Assignment#1

Submission date: Tuesday March 8, 2022

Implement a set calculator which implements the following operations on integer sets
- Set Intersection
- Set Union
- Set Difference
- Set Complement
- IsElement (this is a utility function)

Use dynamic arrays to store the elements of the set.

Your program must ask for the operation (intersection, union, difference, complement) from the user, input the sets from the user, compute the resultant set and output the set from the user. Define the following function to implement the set calculator

Input: This function should take the input of size of the set, dynamically allocate the required amount of memory and then input elements of the set elements

Output: This function should output the set (dynamic array of elements and its size) passed as parameter

IsElement: This function takes a set and an integer x as parameter. It must return true if x belongs to the set and return false otherwise.

Intersection: This function would take two sets (elements and size) as parameter, compute the intersection and return the elements and size of the resultant set

Union: This function would take two sets (elements array and size) as parameter, compute the union and return the elements and size of the resultant set

Difference: This function would take two sets (elements array and size) as parameter, compute the difference and return the elements and size of the resultant set

Complement: This function takes two sets (elements array and size) U and A as parameters and compute the complement of A, where U is the universal set.

All these functions (Intersection, Union, Difference and Complement) must use IsElement to perform the desired functionality. The size of dynamically allocated arrays must be exactly equal to the size of the set. There must not be any logical errors (memory leak and dangling pointers)

Important Note:

Submit your code files at google classroom as one single file. If you have more than one files compress them and submit them as single file. The name of file must your complete roll number. Your code must be properly commented.

This is an individual assignment and the code submitted must be your own contribution. Any sort of plagiarism will be dealt seriously and may lead to severe consequences including negative marking.