University of Central Punjab

Faculty of Information Technology

Object Oriented Programming (Section O4)

Assignment No. 02 [Question Paper]

Semester	Fall, 2022	**Course Code**	SECP2033
Time Allowed	20-11-2022 to 28-11-2022	**Total Marks**	100
Instructor	Muhammad Naeem Akhtar	**Department**	SE

Purpose of the Assignment

The main intent of the assignment is to make students practice basic concepts related to classes. It includes

1.Class Definition in C++	2.Parameterized Default Constructor	3.Copy Constructor
4.Destructor	5.Dynamic Memory Allocation	6.Use of "this" pointer
Passing & Returning Objects from functions		

Important Instructions

1. **There is only one question.**
2. It is a group assignment and students shall work in a **group of two**.
3. *Only one member of each group shall submit the assignment on CMS but on top of source file, write names & roll numbers of both group members in comments.*
4. Each member must **participate equally**. Marks will be on the degree of contribution in preparing the assignment.
5. Proper coding & naming conventions must be used
6. Please, no submission after deadline will be accepted
7. Assignment shall be evaluated through viva and examination of the code.
8. Your sincere effort will surely help you get better marks.
9. Checklist on the next page shall be used by the instructor to evaluate your assignment.

Evaluation Checklist for Assignment

Coding Conventions followed?	Error Checking	Quality of Algorithms Used	Copied?	Completeness
YES / NO	YES / NO	Good: Avg: Poor:	YES / NO	YES / NO

Student Contribution

Roll Number	Name	Clarity of Concepts	Contribution in the Implementation	Marks Obtained
		Poor Fair Good	No Contribution Equal Contribution Major Contribution	/100
		Poor Fair Good	No Contribution Equal Contribution Major Contribution	/100

Question No. 01 **Marks:50**

You have to create a program that will create “Set” data type. This set shall only have integers as its members. Two objects of this class shall be created in the program. User shall be able to select from the menu to perform a specific operation on these sets. Details are provided in the given table. UML Class Diagram is below the following table. Please read carefully all the information provided in the following table.

Sr No.	Requirement
1	Program shall contain “Set” Data type.
2	A set shall contain only “unique” integers as its members.
3	Program shall prompt the user to enter size of both sets. Both sets shall be of the same size.
4	Numbers shall be generated randomly to store in each set. NOTE: A set only contain unique members. So need to ensure it.
5	Once the sets are created and populated with integers then the program shall show the following Menu Press “U” to Find Union Press “I” to Find Intersection Press “E” to Check Equality of Sets Press “M” to Perform Membership Test Press “C” to Check Number of Members in the Set(Cardinality) Press “X” to Exit
Sequence Of Data Input	
1	At first program shall prompt the user to enter the size of both sets.
2	Then program shall display the menu given above to prompt the user to perform a desired set operation.
Validation Checks	
1	Entered size of the set cannot be less than 1 and greater than 20.

Sample Input

Enter Size of Both Sets: 6

Sample Output

The created sets are
A= { 5,4,20,34,45,47 }
B= { 20,24,34,45,50,55}

Press “U” to Find Union
Press “I” to Find Intersection
Press “E” to Check Equality of Sets
Press “M” to Perform Membership Test
Press “C” to Check Number of Members in the Set (Cardinality)
Press “X” to Exit

Please Select the Operation you want to perform on these sets: I

Result of Intersection Operation

I = { 20, 34,45 }

Press “U” to Find Union
Press “I” to Find Intersection
Press “E” to Check Equality of Sets
Press “M” to Perform Membership Test
Press “C” to Check Number of Members in the Set (Cardinality)
Press “X” to Exit

Please Select the Operation you want to perform on these sets: E

➔ *Class Diagram is on the Next Page*

UML Class Diagram for Set Class

Note: You can always add more members into the class definition if you need so.