FACULTY OF COMPUTER SCIENCE AND ENGINEERING
Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Topi

Lab Duration: 3 hrs. **CS112 Object Oriented Programming Lab** **Marks: 10**

Lab No: 04 **Instructor: Mr. Usman Haider** **Dated:07/03/2022**

Before performing tasks, keep in mind following rules:

1. **CHEATING IS NOT ALLOWED. Looking at someone else's screen is also cheating.**
2. **Mobile phone and internet usage are not allowed.**
3. **If you have any queries related to a task, you can ask instructors only. Never talk to each other until you are allowed.**
4. **Do not answer any query until you are asked.**
5. **Perform all the tasks.**
6. **Avoiding any of the above rules will lead to marks deduction.**

Task 1:

Create a class swap to swap to variables. The swap class will contain three functions:

Setter(); \\ for input

Swap(); \\ swap the values

Display(); \\ print the values

Sample Input:

Enter the two values: 2 3

Sample Output:

Before Swapping A= 2 & B=3

After swapping A=3 & B=2

Note: You can not use any extra variable. Just two variables are allowed.

Task 2:

Write a program to perform mentioned matrix operations. Create a class twoDArray that contains these members:

2D array of type integers created statically and its size only i.e., SIZE=5.

Include the following member functions for 2DArray class:

Initialize (); // initialize 2D array with random values

Print (); // print values of 2D array

Transpose (); // take transpose of 2D array

isSymmetry(); // check if matrix is symmetric or not.

twoDArray multiply (twoDArray obj1, twoDArray obj2)

Task 3:

Define a class that will hold the set of integers from 0 to 31. An element can be set with the set member function and cleared with the clear member function. It is not an error to set an element that's already set or clear an element that's already clear. The function test is used to tell whether an element is set.

Member functions:

void small_set::set(int item); // Set an element in the set

void small_set::clear(int item); // Clear an element in the set

int small_set::test(int num); // See whether an element is in set

Sample Program:

small_set a_set;

a_set.set(3); // Set contains [3]

a_set.set(5); // Set contains [3,5]

a_set.set(5); // Legal (set contains [3,5])

cout << a_set.test(3) << '\n'; // Prints "1"

cout << a_set.test(0) << '\n'; // Prints "0"

a_set.clear(5); // Set contains [3]