National University of Computer and Emerging Sciences

Lab Manual 1

for

Object Oriented Programming (OOP)

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Section	BSE-2A
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Instructions:

- If someone is caught using the internet in this lab without permission, their marks will be reduced to zero, and if caught in two labs in this manner, they will not be allowed to sit for a quiz.
- In case of Plagiarism, Straight Zero in particular lab and report this case to DC.
- Solve this Question in Sequence.
- Late Submission is not allowed. If someone evaluated his/her code then he/she will submit the code in google classroom and then leave the class.

Question 1: Basic Pointers

Write a C++ program that demonstrates the following:

- Declare a pointer variable.
- Initialize the pointer variable with the address of an integer variable.
- Print the address and value of the integer variable using the pointer.

Question 2: Pointer Operations

Write a C++ program that performs the following operations using pointers:

- Declare two integer variables and initialize them with values.
- Declare two pointer variables and point them to the respective integer variables.
- Perform addition and subtraction operations using pointers and print the results.

Question 3: Constant Pointers

Write a C++ program that uses constant pointers:

- Declare a constant integer variable.
- Declare a constant pointer to the integer variable.
- Attempt to change the value of the integer variable through the constant pointer.

Question 4: Pointer Parameter in Functions

Write a C++ program that defines a function called **modifyValue** which takes an integer pointer as a parameter. The function should do the following:

- If the integer pointed to by the pointer is even, double its value.
- If the integer pointed to by the pointer is odd, increment its value.

In the **main** function, declare an integer variable, initialize it with a value, and print its initial value. Then, call the modifyValue function with the address of this variable. After the function call, print the modified value of the variable.

Question 5: Dynamic Memory Allocation

Write a C++ program that demonstrates dynamic memory allocation:

- Use the **new** operator to allocate memory for an integer variable.
- Initialize the allocated memory with a value.
- Print the value and address of the dynamically allocated memory.
- Use the **delete** operator to free the allocated memory.

Question 6: Dynamic 1-Dimensional Arrays

Write a C++ program that works with dynamic 1-dimensional arrays:

- Create a dynamic array of integers of size n.
- Initialize the array with values.
- Print the elements of the array.
- Implement functions to delete an element from the array, add an element, and resize the array.