National University of Computer and Emerging Sciences



Lab 1

*for*

Object Oriented Programming

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| Section | BCS-B |
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# Lab 1

## **Instructions:**

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* 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: Dynamic 1-Dimensional Arrays**

### You are building a dynamic playlist manager that allows users to add and remove songs from their playlist. The number of songs can vary, so a dynamic array is suitable for managing the playlist.

### Task: Write a C++ program where you:

### ● Create a dynamic array of integers of size n (e.g., 5), where each element represents a song ID.

### ● Initialize the array with values representing song IDs.

### ● Print the elements of the array.

### ● Implement the following functions:

### ○ **deleteElement**: Removes a song from the playlist by its ID.

### ○ **addElement**: Adds a new song ID to the playlist.

### ○ **resizeArray**: Resizes the playlist to accommodate more or fewer songs.

### **Question 2: Dynamic Memory Allocation**

### You are developing a memory-sensitive application where you need to allocate memory for storing user input temporarily. After processing the input, the memory should be released.

### Task: Write a C++ program where you:

### ● Use the new operator to allocate memory for an integer variable called userInput.

### ● Initialize the allocated memory with a value of 25.

### ● Print the value and address of the dynamically allocated memory.

### ● Use the delete operator to free the allocated memory.

### **Question 3: Pointer Parameter in Functions**

A vending machine system needs to check the coin input for even or odd values. If the coin value is even, it should double the value to simulate a bonus round; if odd, it should add one to the value.

Task: Write a C++ program where you:

● Define a function modifyCoinValue that takes an integer pointer as a parameter. The function should:

● Double the coin value if it is even.

● Increment the coin value if it is odd.

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