Aror University of Art, Architecture, Design and Heritage
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Department of Multimedia and Gaming
Course: Data Structures CSC-221 (Practical)
Instructor: Engr. Fatima Jaffar

Lab No. 2

Objective: Understanding and implementing array operations

Name: _____ _____ **Roll Number:** _____

Score: _____ **Signature:** _____ **Date:** 28/ 08/ 2024

Introduction:

An array is a variable that can store multiple values of the same type.

For example,

Suppose a class has 27 students, and we need to store the grades of all of them. Instead of creating 27 separate variables, we can simply create an array:

double grade[27];

Here, **grade** is an array that can hold a maximum of **27** elements of **double** type.

Array Declaration:

```
dataType arrayName[arraySize];
```

For Example:

int x[6];

int - type of element to be stored

x - name of the array

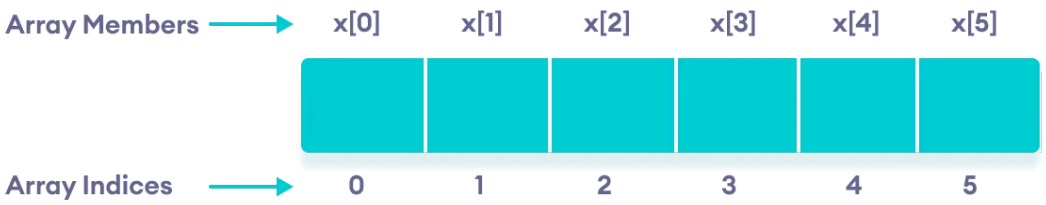
6 - size of the array

Access Elements in Array:

Each element in an array is associated with a number. The number is known as an array index. We can access elements of an array by using those indices.

// syntax to access array elements

array[index];



Few Things to Remember:

- The array indices start with 0. Meaning x[0] is the first element stored at index 0.
- If the size of an array is n, the last element is stored at index (n-1). In this example, x[5] is the last element.
- Elements of an array have consecutive addresses. For example, suppose the starting address of x[0] is 2120.
- Then, the address of the next element x[1] will be 2124, the address of x[2] will be 2128, and so on.

Here, the size of each element is increased by 4. This is because the size of int is 4 bytes.

Array Initialization:

```
// declare and initialize and array
int x[6] = {19, 10, 8, 17, 9, 15};
```

Example 1: Displaying Array Elements

```
#include <iostream>
using namespace std;
int main() {
  int numbers[5] = {7, 5, 6, 12, 35};
  //  Printing array elements
  for (int i = 0; i < 5; ++i) {
    cout << numbers[i] << "  ";
  }  return 0;}
```

LAB TASKS

1. Write program that takes Inputs from User and Store Them in an Array.
2. Write a program that Displays Sum and Average of Array Elements Using for Loop
3. Write a loop to find and print the maximum and minimum element in the array.
4. Write a program to search for a value in the array.
5. Declare an array of only 0s and 1s, write a problem to count the occurrences of 0s.
6. Write a program to add a new value in the array on 0 index.
7. Write a program to add a new value at the end of the array.
8. Ask the user to input a position and a new value, then update the array at that position. Print the updated array.
9. Write a program to delete a number at index 0 of an array.
10. Write a program to delete a number at last index of an array.