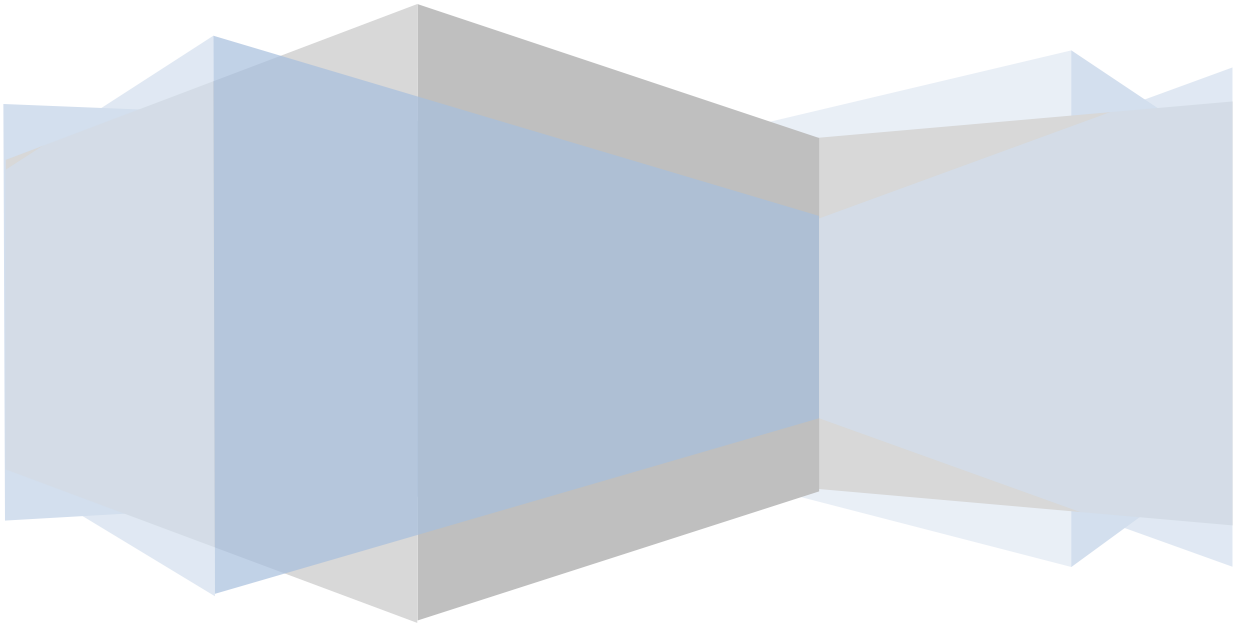
Mehran University of Engineering and Technology Jamshoro

ASSIGNMENT : LAB 09
SUBJECT : PROGRAMMING FUNDAMENTALS
ROLL NO : 24BSAI29
SUBMITTED BY : SYED MUHAMMAD QASIM
SUBMITTED TO : MA'AM FAHAMA BARKZAI



Department of Software Engineering
Mehran University of Engineering and Technology, Jamshoro

Course: AI-112 – Programming Fundamentals			
Instructor	Engr. Fahama Barakzai	**Practical/Lab No.**	09
Date		**CLOs**	3
Signature		**Assessment Score**	01 Mark

Topic	**Working with Arrays**
Objectives	- To become familiar with basic concepts of Arrays. - To work with Single dimensional and Multi-dimensional arrays.

Lab Discussion: Theoretical concepts and Procedural steps

TOOLS: TURBOO C++/ DEV C++/ VS-CODE/ CODE BLOCKS

Lab Tasks

1) Rebuild a C++ code that takes a value at runtime and searches it in the array. If the value appears in the array, then it prints the position of the value or else prints a message that value is not found.

```cpp
#include <iostream>
using namespace std;

int main() {
    int numbers[5] = {10, 20, 30, 40, 50};
    int searchValue, position = -1;

    cout << "Enter a value to search: ";
    cin >> searchValue;

    for (int i = 0; i < 5; i++) {
        if (numbers[i] == searchValue) {
            position = i;
            break;
        }
    }

    if (position != -1) {
        cout << "Value found at position " << position << endl;
    } else {
        cout << "Value not found in the array." << endl;
    }

    return 0;
}
```

OUTPUT OF THE PROGRAM IS :

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

codr@codr-Latitude-E5470:/media/codr/DEE8F036E8F00E91/slides/PF/final/lab 09/task 01$ c
/final/lab 09/task 01/" && g++ main.cpp -o main && "/media/codr/DEE8F036E8F00E91/slides/
Enter a value to search: 10
Value found at position 0
codr@codr-Latitude-E5470:/media/codr/DEE8F036E8F00E91/slides/PF/final/lab 09/task 01$
```

2) Rebuild a C++ program that takes 5 floating numbers at runtime and stores them in an array and print their total sum and average.

```
02.cpp > main()
#include <iostream>
using namespace std;

int main()
{
    float numbers[5];
    float sum = 0, average;

    cout << "Enter 5 floating-point numbers: " << endl;
    for (int i = 0; i < 5; i++)
    {
        cin >> numbers[i];
        sum += numbers[i];
    }

    average = sum / 5;

    cout << "Total Sum: " << sum << endl;
    cout << "Average: " << average << endl;

    return 0;
}
```

OUTPUT OF THE PROGRAM IS :

```
Enter 5 floating-point numbers:
22.3
44.9
33.9
23.8
42.4
Total Sum: 167.3
Average: 33.46
```

3) Try a C++ program that sorts an array of integers in ascending order.

```cpp
#include <iostream>
using namespace std;

int main()
{
    int numbers[5];
    int size = 5;

    cout << "Enter 5 integers: " << endl;
    for (int i = 0; i < size; i++)
    {
        cin >> numbers[i];
    }

    for (int i = 0; i < size - 1; i++)
    {
        for (int j = 0; j < size - i - 1; j++)
        {
            if (numbers[j] > numbers[j + 1])
            {

                int temp = numbers[j];
                numbers[j] = numbers[j + 1];
                numbers[j + 1] = temp;
            }
        }
    }

    cout << "Sorted array in ascending order: ";
    for (int i = 0; i < size; i++)
    {
        cout << numbers[i] << " ";
    }
    cout << endl;

    return 0;
```

OUTPUT OF THE PROGRAM IS :

```
Enter 5 integers:
8
7
5
4
2
Sorted array in ascending order: 2 4 5 7 8
```

4) Consider the following integer array of size 10.
int array[10]={1,2,3,5,8,10,12,23,28,15};
Try a C++ program that finds and prints all odd numbers in the given array.

```cpp
#include <iostream>
using namespace std;

int main() {
    int array[10] = {1, 2, 3, 5, 8, 10, 12, 23, 28, 15};
    int size = 10;

    cout << "Odd numbers in the array are: ";


    for (int i = 0; i < size; i++) {
        if (array[i] % 2 != 0) {
            cout << array[i] << " ";
        }
    }

    cout << endl;

    return 0;
}
```

OUTPUT OF THE PROGRAM IS :

```
codr@codr-Latitude-E5470:/media/codr/DEE8F036E8F00E91/slides/P
/final/lab 09/task 01/" && g++ labtask04.cpp -o labtask04 && "
sk04
Odd numbers in the array are: 1 3 5 23 15
```

5) Practice a C++ program that finds the smallest element in the array and also its index.

```cpp
#include <iostream>
using namespace std;

int main()
{
    int array[10] = {7, 2, 9, 4, 1, 8, 6, 3, 5, 0};
    int size = 10;
    int smallest = array[0];
    int index = 0;

    for (int i = 1; i < size; i++)
    {
        if (array[i] < smallest)
        {
            smallest = array[i];
            index = i;
        }
    }

    cout << "Smallest element: " << smallest << endl;
    cout << "Index of the smallest element: " << index << endl;

    return 0;
}
```

OUTPUT OF THE PROGRAM IS :

```
codr@codr-Latitude-E5470:/media/cod
/final/lab 09/task 01/" && g++ labt
sk05
Smallest element: 0
Index of the smallest element: 9
codr@codr-Latitude-E5470:/media/cod
```