Fundamentals of programming I

Lab 4

Exercises

- Write a c++ program that calculates sum and average of an array.

- Write a c++ program that finds the largest number of an array

- Write a C++ program to stores the following values in an array called "firstArray". Then copy those values using a for loop into a second array called "secondArray" and print the values of "secondArray" using same the for loop. 100,200,300,400,500,600,700,800,900,1000

- Write a C++ program that allows user to enter five numbers and store them in an Array, then multiply each number by 2 and print the output.

- Write c++ program that allows user to enter 4 numbers and store them in an array and print the array by using pointers.

- Write a C++ code to swap values of two variables using pointers.

- Write a C++ Program to Find Even and Odd Numbers using the array.

- Write a C++ Program to Find Duplicate Elements in an Array.

- Write a C++ Program to Find the Smallest Number in an array.

- Write a C++ program to add two numbers using pointers.

- Write a C++ program for Sum of Integers an array using pointers.

Code 1

```cpp
#include<iostream>
using namespace std;
int main()
{
int n,i,sum=0;

double avg=0.0;
cout<<"Enter number of elements you want to insert ";
cin>>n;
int Arr[n];
for(i=0;i<n;i++)
{
cout<<"Enter element "<<i+1<<":";
cin>>Arr[i];
}
for(i=0;i<n;i++)
sum+=Arr[i];
cout<<"\nThe sum of Array is :"<<sum;
cout<<"\nThe average of Array is :"<<sum/i;
return 0;
}
```

Code 2

```cpp
#include <iostream>
using namespace std;
int main()
{
int i, n;
cout << "Enter total number of elements: ";
cin >> n;
float arr[n];
cout << endl;
// Store number entered by the user
for(i = 0; i < n; ++i)
{
cout << "Enter Number " << i + 1 << " : ";
cin >> arr[i];
}
// Loop to store largest number to arr[0]
for(i = 1;i < n; ++i)
{
// Change < to > if you want to find the smallest element
if(arr[0] < arr[i])
arr[0] = arr[i];
}
cout << "Largest element = " << arr[0];
return 0;
}
```

Code 3

```cpp
#include <iostream>
using namespace std;
int main()
{
    int secondArray[10], firstArray[10] = {100,200,300,400,500,600,700,800,900,1000};
    for(int i = 0; i<10; i++)

    {
        secondArray[i] = firstArray[i];
        cout<< secondArray[i]<<endl;

    }

    return 0;

}
```

Code 4

```cpp
#include <iostream>
using namespace std;
int main()
{
    int myArray[5];
    for(int i = 0; i < 5 ; i++)
    {
        cout<<"Please Enter a number: "<<endl;
        cin>>myArray[i];
    }
    for(int i = 0; i < 5 ; i++)
    {
        myArray[i] = myArray[i]*2;
    }

    cout<<"Array after multiplication: "<<endl;
    for(int i = 0; i < 5 ; i++)
    {
        cout<<myArray[i]<<endl;
    }

    return 0;
}
```

Code 5

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

int main() {

    int numbers[4];
    int* ptr;
    ptr=numbers;
    cout << "Enter 5 numbers: " << endl;

    // store input from user to array
    for (int i = 0; i < 4; ++i) {
        cin >> numbers[i];
    }

    cout << "The numbers are: ";

    // print array elements
    for (int n = 0; n < 4; ++n) {
        cout <<*(numbers+n) << "   ";
    }

    return 0;
}
```

```cpp
     2    #include <string>
     3    using namespace std;
     4
     5    int main()
     6    {
     7
     8        int size;
     9        cin >> size;
    10        int index1[size] = {};      expression must have a constant value
    11        int *index2[size];        expression must have a constant value
    12        for (int i = 0; i < size; i++)
    13        {
    14            cin >> index1[i];
    15        }
    16        for (int i = 0; i < size; i++)
    17        {
    18            index2[i] = &index1[i];
    19        }
    20        for (int i = 0; i < size; i++)
    21        {
    22            cout << *index2[i] << endl;
    23        }
    24        return 0;
    25    }
    26
```

C: > Users > Admin > C++ Test01.cpp > ⊛ main()

PROBLEMS 2   OUTPUT   TERMINAL

PS C:\Users\Admin> cd "c:\Users\Admin\" ; if ($?) { g++ Test01.cpp -o Test01 } ; if ($?) { .\Test01 }
5
1
2
3
4
5
1
2
3
4
5
PS C:\Users\Admin>

Code 6

```cpp
#include <iostream>

using namespace std;

int main()
{
    int x,y,z;
    int *ptr1=&x;
    int *ptr2=&y;
    int *ptr3=&z;
    cout<<" Enter First Number\n";
    cin>>x;
    cout<<"Enter Second Number\n";
    cin>>y;
    *ptr3=x;
    *ptr1=*ptr2;
    *ptr2=*ptr3;
    cout<<"first Number is:"<<*ptr1<<endl;
    cout<<"Second Number is:"<<*ptr2;
    return 0;
}
```

Code 7

```cpp
#include <iostream>
using namespace std;
int main()
{
    int arr[10],even[10],odd[10],evncount=0,oddcount=0;
    cout<<"Input numbers in the array \n";
    for(int i=0;i<10;i++)
        cin>>arr[i];
    for(int i=0;i<10;i++)
    {
            if(arr[i]%2==0)
                even[evncount++]=arr[i];
            else
                odd[oddcount++]=arr[i];
    }
    cout<<"The even numbers are: ";
    for(int i=0;i<evncount;i++)
        cout<<even[i]<<" ";
    cout<<"\nThe odd numbers are: ";
    for(int i=0;i<oddcount;i++)
        cout<<odd[i]<<" ";
}
```

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

int main()
{

    int index[10] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, even_index[10] = {}, odd_index[10] = {}, even_c = 0, odd_c = 0;
    for (int i = 0; i < 10; i++)
    {
        if (index[i] % 2 == 0)
        {
            even_index[even_c++] = index[i];
        }
        else
        {
            odd_index[odd_c++] = index[i];
        }
    }
    for (int i = 0; i < even_c; i++)
    {
        cout << even_index[i];
    }
    cout << "\n--------" << endl;
    for (int i = 0; i < odd_c; i++)
    {
        cout << odd_index[i];
    }
    return 0;
}
```

Code 8

```cpp
#include<iostream>
using namespace std;
int main()
{
    int i,j,a[50],size;
    cout<<"Enter array size( Max:50 ) :: ";
    cin>>size;
        cout<<"\nEnter array elements :: \n";
        for(i=0; i<size; i++){
            cout<<"\nEnter arr["<<i<<"] Element :: ";
                cin>>a[i];
        }
    cout<<"\nStored Data in Array :: \n\n";
    for(i=0;i<size;i++)
    {
    cout<<" "<<a[i]<<" ";
    }
    cout<<"\nDuplicate Values in Given Array are :: \n\n";
    for(i=0; i<size; i++)
     {
      for(j=i+1;j<size;j++)
      {
      if(a[i]==a[j])
      {
      cout<<" "<<a[i]<<" ";
      }
     }
    }
    return 0;
}
```

Code 9

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

int main()
{

        int small, arr[50], m, j;
        cout<<"Enter size of Array ( Max:50 ) :: ";
    cin>>m;
    cout<<"\nEnter Elements to Array Below :: \n";

        for(j=0;j<m;++j)
        {
            cout<<"\nEnter arr["<<j<<"] Element :: ";
            cin>>arr[j];
        }


        cout<<"\nSearching for smallest element ...\n\n";
        small=arr[0];
        for(j=0; j<m; j++)
        {
                if(small>arr[j])
                {
                        small=arr[j];
                }
        }
        cout<<"Smallest Element in Array = "<<small<<"\n";


        return 0;
}
```

Code 10

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


int main() {


    int num1, num2, *ptr1, *ptr2, sum=0;
    cout<<"Enter the two number :";
    cin>>num1>>num2;
    ptr1 = &num1;
    ptr2 = &num2;
    sum = *ptr1 + *ptr2;
    cout<<"Sum of the two number is "<<sum;


    return 0;


}
```

Code 11

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

int main() {

    int arr[5], i, sum = 0;
    int *ptr;

    cout << "Enter any 5 numbers :";
    for (i = 0; i < 5; i++) {
        cin >> arr[i];
    }


    ptr = arr;
    for (i = 0; i < 5; i++) {
        sum = sum + *(ptr + i);
    }


    cout << "\nSum of array elements :" << sum;

    return 0;

}
```