CSS-114- FUNDAMENTALS OF PROGRAMMING

LAB MANUAL #8

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Lab Task:

1. Write a C++ program to calculate average of numbers of array.

CODE:

```
#include<iostream>

using namespace std;

int main(){


 cout<<"Lab task 1"<<endl; //calculate average of numbers of an array

   double sum=0,avg;

            int k, arr[k];

            cout<<"Enter the number of elements of the array:"<<endl; //input an array and it elements from the user

            cin>>k;

            cout<<"Enter the Elements:"<<endl;

            for(int i=0;i<k;i++){

              cin>>arr[i];

              sum= sum + arr[i]; } //as the elements are input, they are also collectively summed up

              avg = (sum/k); //the sum of the element is divided by the number of elements to find the average

              cout<<"Average of all the elements in the array is:"<<avg<<endl;

              return 0;

}
```

CODE OUTPUT:

```
Lab task 1
Enter the number of elements of the array:
6
Enter the Elements:
33
21
12
56
7
3
Average of all the elements in the array is:22

--------------------------------
Process exited after 11.42 seconds with return value 0
Press any key to continue . . .
```

2. Implement Bubble sort on an array of 5 integers.

CODE:

```
#include<iostream>

using namespace std;

int main(){


 cout<<"Lab Task 2"<<endl; //Use Bubble sort on an array

   int swap,h=5;

            int arr[h];

            cout<<"Input elements of the 5 integer array:"<<endl; //input a five element array from the user

            for(int i=0;i<h;i++){

              cin>>arr[i];

            }

            for(int i=0;i<h-1;i++){ //using two loops and an integer intermediate, the value of the last element is compared with every corresponding element

                        for(int j=i+1;j<h;j++){                    //and its position is swapped in ascending order

                                    if(arr[j]<arr[i]){

                                    swap = arr[j];

                                    arr[j]=arr[i];

                                    arr[i]=swap;

                                    }

                        }

            } cout<<"The Sorted Array is:"<<endl;

            for(int i=0;i<h;i++){

              cout<<arr[i]<<" ";} return 0; }
```

CODE RESULT:

```
Lab Task 2
Input elements of the 5 integer array:
3
4
5
2
1
The Sorted Array is:
1 2 3 4 5
--------------------------------
Process exited after 20.97 seconds with return value 0
Press any key to continue . . .
```

3. Implement Selection Sort on an array of 5 integers.

CODE:

```
#include<iostream>

using namespace std;

int main(){

        cout<<"Lab Task 3"<<endl; //Use Selection sort on an array

         int X=0,y=5;

        int arr[y];

        cout<<"Input elements of the 5 integer array:"<<endl; //input a five element array from the user

        for(int i=0;i<y;i++){

          cin>>arr[i];

        }

        for(int i=0;i<5;i++){ //run a loop from 0 till n-1, n being the number of elements

        X=arr[i]; //set an integer value, X,as the minimum element 0, and as an intermediate for the swapping of the elements in the array

        for(int j=i; j<5; j++){  //nest a loop that will run for each value of i till n-1

                if (X>arr[j]){ //each value of i will be compared to all the values that follow it, and if it is greater, it will be swapped with that value

                        X = arr[j];

                        arr[j]=arr[i];

                        arr[i]=X;

                }

        }

        }

        cout<<"The Sorted Array is:"<<endl; //print the sorted array

        for(int i=0;i<y;i++){

          cout<<arr[i]<<" ";} return 0; }
```

CODE RESULT:

```
Lab Task 3
Input elements of the 5 integer array:
4
3
2
1
7
The Sorted Array is:
1 2 3 4 7
--------------------------------
Process exited after 4.381 seconds with return value 0
Press any key to continue . . .
```