School Of Mechanical & Manufacturing Engineering, NUST

Department of Mechanical Engineering

CS-114 - Fundamental of Programing

Lab task # 08

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

Code

```cpp
#include <iostream>
using namespace std;
int main()
{
int n, a[n];
double sum=0, avg;
cout <<"enter the number of elements of array"<<endl;
cin>>n;


    for (int i=0;i<n;i++)
    {
        cout <<"enter the number"<<i+1<<endl;
        cin>>a[i];
        sum=sum+a[i];
    }
    avg=sum/n;
    cout<<"so average is "<<avg;
}
```

Output

D:\c++\lab tasks\lab manual 8.exe

```
enter the number of elements of array
4
enter the number1
2
enter the number2
3
enter the number3
4
enter the number4
5
so average is 3.5
--------------------------------
Process exited after 4.131 seconds with
```

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

Code

```
{
int x, a[5] ;
cout<<"enter the numbers for bubble sorting"<<endl;
for(int i =0; i<5;i++) {
    cout <<" enter number " <<i+1<<endl;
    cin>>a[i];
    cout<<endl;

}
for (int i =0; i<4; i++) {
    for ( int j=0; j<4;j++) {
        if (a[j+1]<a[j]) {
            x=a[j];
            a[j]=a[j+1];
            a[j+1] =x;
        }
    }
}
cout<<" bubble sort : ";
for ( int i=0;i<5;i++)
cout<<a[i]<<" ";

}

}
```

Output

```
ass enter the numbers for bubble sorting
 enter number 1
3

 enter number 2
4

 enter number 3
5

 enter number 4
6

 enter number 5
2

 bubble sort : 2 3 4 5 6
-----------------------------
```

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

```cpp
{
int b, num, P, temp, min, ar[5];
    cout<<"Enter the number of elements: ";
    cin>>num;
    cout<<"Enter the elements: "<<endl;

    for(int a=0;a<num;a++)
    {
        cin>>ar[a];
    }
    for (int a = 0; a<num-1;a++)
    {
        min=ar[a];
        P=a;
        for (b=a+1;b<num;b++) {
            if (min>ar[b])
            {
                min=ar[b];
                P=b;
            }
        }
        temp=ar[a];
        ar[a]=ar[P];
        ar[P]=temp;
    }
    cout<<"Sorted elements: "<<endl;
    for(int a=0;a<num;a++) {
        cout<<ar[a]<<" ";
}}
```

Output

```
Enter the number of elements: 3
Enter the elements:
4
2
4
Sorted elements:
2 4 4
------------------------------
Process exited after 23.54 seconds
```