National University of Science and Technology

School of Mechanical and Manufacturing Engineering

Lab Manual #08

CS-114 Fundamentals of Programming

Course Instructor: Khawaja Fahad Iqbal

Lab Instructor: Muhammad Affan

Introduction:

Name: Muhammad Furqan Ul Arsh

CMS ID: 476347

Section: ME-15B

Date: 30-11-2023

Task 1:

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

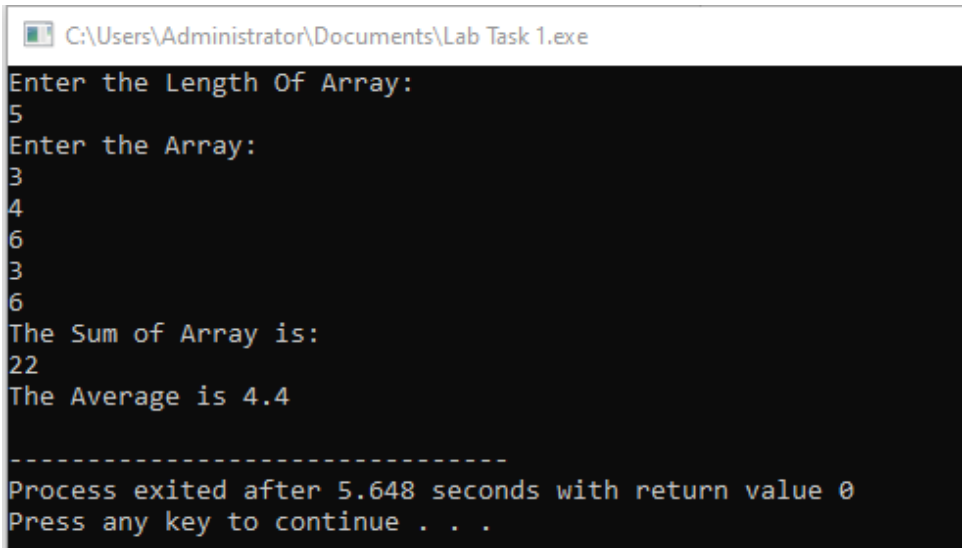
Solution:

```
//Lab Task 1
#include <bits/stdc++.h>
using namespace std;
int main(){
int Alen;
double sum;
double Avg;
int A[Alen];
cout<<"Enter the Length Of Array: "<<endl;
cin>>Alen;
cout<<"Enter the Array: "<<endl;
for(int i=0;i<Alen;i++){
cin>>A[i];
}
cout<<"The Sum of Array is: "<<endl;
for(int j=0;j<Alen;j++){
sum+=A[j];
}
cout<<sum<<endl;
Avg=sum/Alen;
cout<<"The Average is "<<Avg<<endl;
```

return 0;

}

Result:



Lab Task 2:

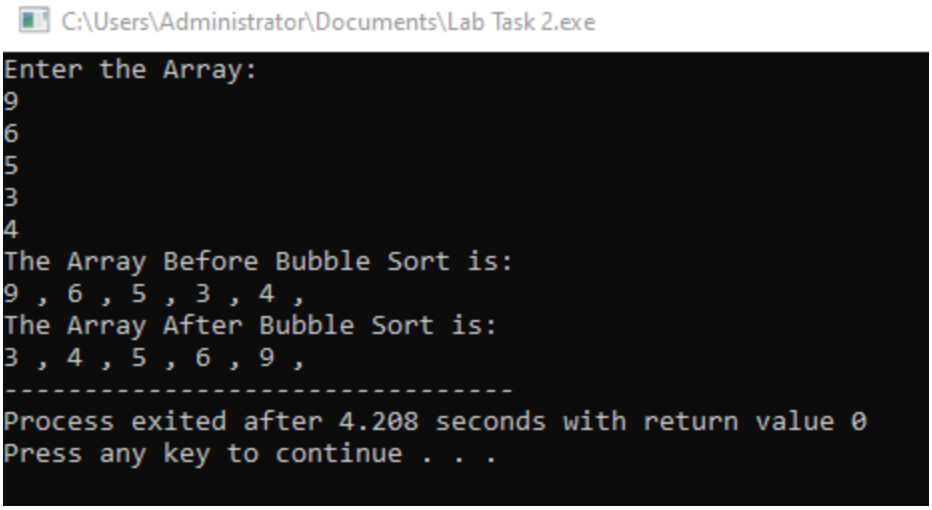
Implement Bubble sort on an array of 5 integers.

Solution:

```
//Lab Task 2

#include <bits/stdc++.h>

using namespace std;

int main(){

int n=5,swap;

int Arr[n];

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

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

cin>>Arr[i];

}
```

```
cout<<"The Array Before Bubble Sort is: "<<endl;
for(int j=0;j<n;j++){
cout<<Arr[j]<<" , ";
}
for(int k=0;k<n;k++){
for(int l=0;l<n-1;l++){
if(Arr[l]>Arr[l+1]){
swap=Arr[l];
Arr[l]=Arr[l+1];
Arr[l+1]=swap;
}
}
}
cout<<endl;
   cout<<"The Array After Bubble Sort is: "<<endl;
   for(int i=0;i<n;i++){
         cout<<Arr[i]<<" , ";
}
return 0;}
```

Result:



Lab Task 3:

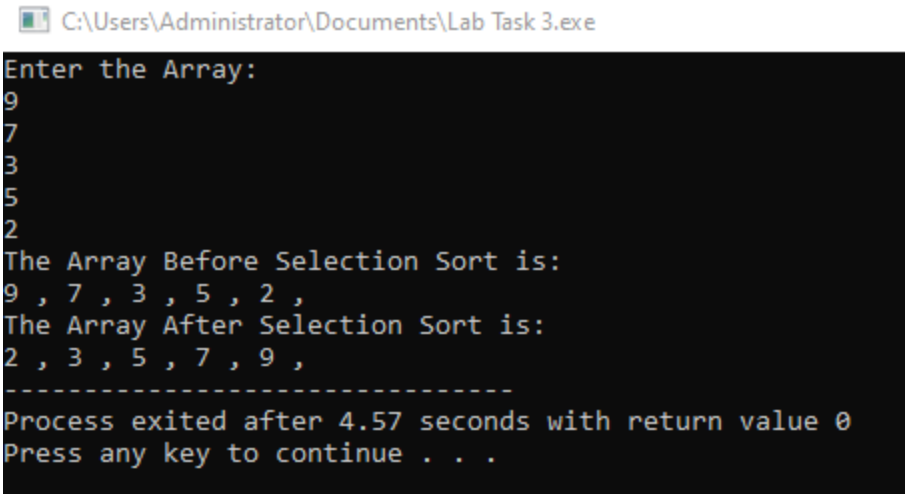
Implement Selection sort on an array of 5 integers.

Solution:

```
//Lab Task 3

#include <bits/stdc++.h>

using namespace std;

int main(){

int n=5,swap;

int Arr[n];

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

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

cin>>Arr[i];

}

cout<<"The Array Before Selection Sort is: "<<endl;

for(int j=0;j<n;j++){

cout<<Arr[j]<<" , ";

}
```

```
for(int k=0;k<n;k++){
int min=k;
for(int l=k+1;l<n;l++){
if(Arr[l]<Arr[min]){
min=l;


}
}
swap=Arr[k];
Arr[k]=Arr[min];
Arr[min]=swap;
}
cout<<endl;
   cout<<"The Array After Selection Sort is: "<<endl;
   for(int i=0;i<n;i++){
         cout<<Arr[i]<<" , ";
}
return 0;}
```

Result:


C:\Users\Administrator\Documents\Lab Task 3.exe
Enter the Array:
9
7
3
5
2
The Array Before Selection Sort is:
9 , 7 , 3 , 5 , 2 ,
The Array After Selection Sort is:
2 , 3 , 5 , 7 , 9 ,

Process exited after 4.57 seconds with return value 0
Press any key to continue . . .