Computer Systems & Programming

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Lab Tasks of Lab Manual 8

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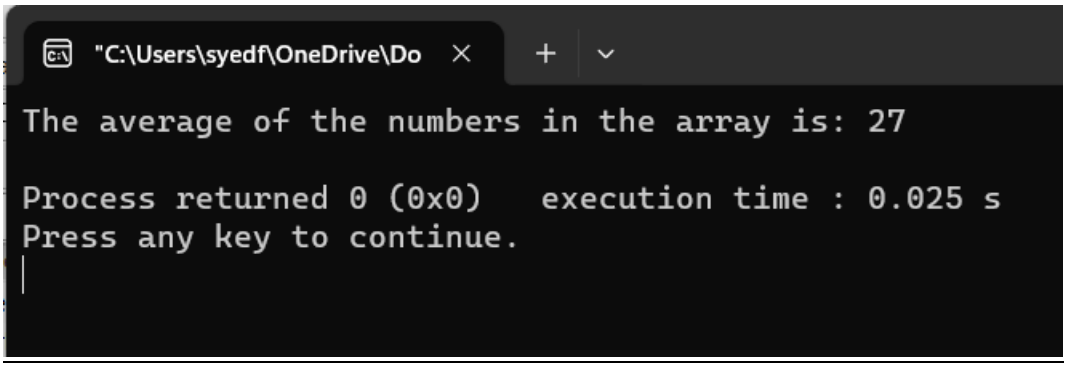
Lab Task# 1:

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

Code:

```
#include <iostream>

using namespace std;


double calculateAverage(int arr[], int size) {
   double sum = 0.0;
   for (int i = 0; i < size; i++) {
      sum += arr[i];
   }
   return sum / size;
}


int main() {
   int arr[5] = {13, 15, 17, 40, 50};
   int size = sizeof(arr) / sizeof(arr[0]);


   double average = calculateAverage(arr, size);


   cout << "The average of the numbers in the array is: " << average << endl;


   return 0;
}
```

Result:



Lab Task# 2:

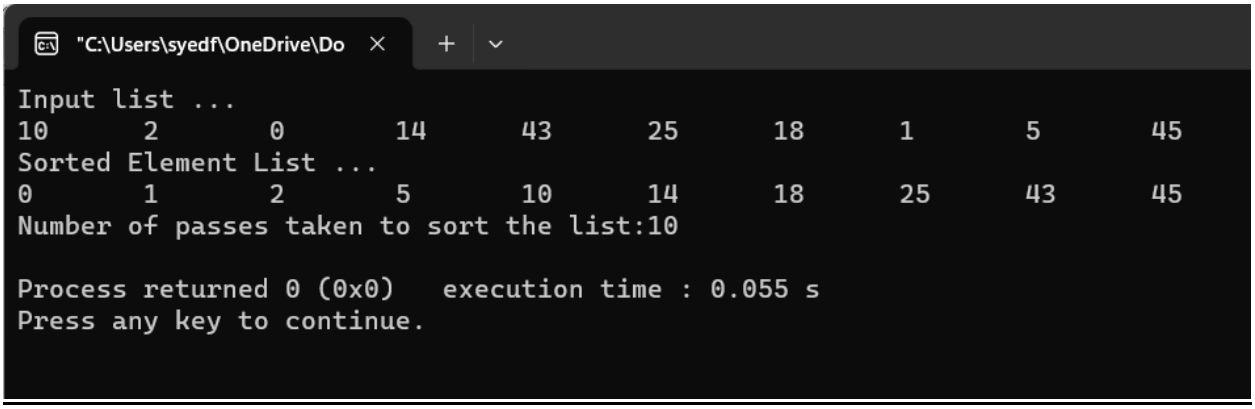
Implement Bubble sort on an array of 5 integers.

Code:

```
#include<iostream>
using namespace std;
int main ()
{
  int i, j,temp,pass=0;
  int a[10] = {10,2,0,14,43,25,18,1,5,45};
  cout <<"Input list ...\n";
  for(i = 0; i<10; i++) {
    cout <<a[i]<<"\t";
  }
cout<<endl;
for(i = 0; i<10; i++) {
  for(j = i+1; j<10; j++)
```

```
  {
    if(a[j] < a[i]) {
      temp = a[i];
      a[i] = a[j];
      a[j] = temp;
    }
  }
pass++;
}
cout <<"Sorted Element List ...\n";
for(i = 0; i<10; i++) {
  cout <<a[i]<<"\t";
}
cout<<"\nNumber of passes taken to sort the list:"<<pass<<endl;
return 0;
}
```

Result:



Lab Task# 3:

Implement Selection Sort on an array of 5 integers.

Code:

```
#include<iostream>
using namespace std;
int findSmallest (int[],int);
int main ()
{
   int myarray[10] = {11,5,2,20,42,53,23,34,101,22};
   int pos,temp,pass=0;
   cout<<"\n Input list of elements to be Sorted\n";
   for(int i=0;i<10;i++)
   {
      cout<<myarray[i]<<"\t";
   }
   for(int i=0;i<10;i++)
   {
      pos = findSmallest (myarray,i);
      temp = myarray[i];
      myarray[i]=myarray[pos];
      myarray[pos] = temp;
      pass++;
   }
   cout<<"\n Sorted list of elements is\n";
   for(int i=0;i<10;i++)
   {
      cout<<myarray[i]<<"\t";
   }
   cout<<"\nNumber of passes required to sort the array: "<<pass;
   return 0;
}
int findSmallest(int myarray[],int i)
{
   int ele_small,position,j;
   ele_small = myarray[i];
   position = i;
   for(j=i+1;j<10;j++)
   {
      if(myarray[j]<ele_small)
      {
         ele_small = myarray[j];
         position=j;
      }
```

```
    }
    return position;
}
```

Result: