

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;
}

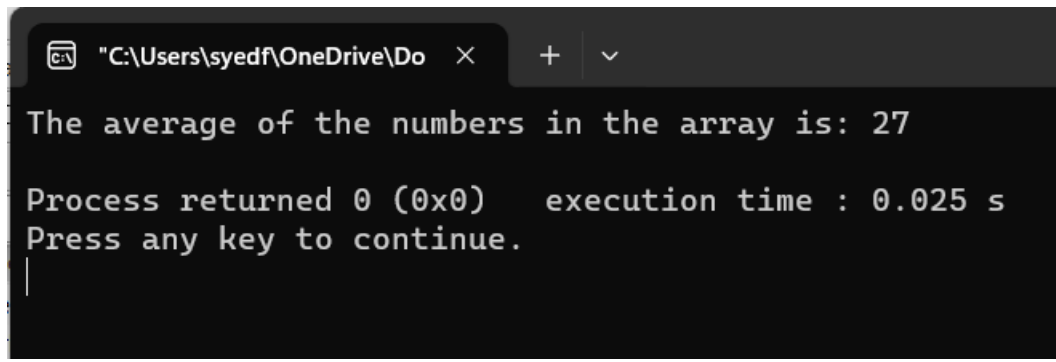
int main() {
    int arr[5] = {13, 15, 17, 40, 50};
    int size = sizeof(arr) / sizeof(arr[0]);

    double average = calculateAverage(arr, size);

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

    return 0;
}
```

Result:



```
"C:\Users\syedf\OneDrive\Do" × + ∨  
The average of the numbers in the array is: 27  
Process returned 0 (0x0) execution time : 0.025 s  
Press any key to continue.  
|
```

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++;
}

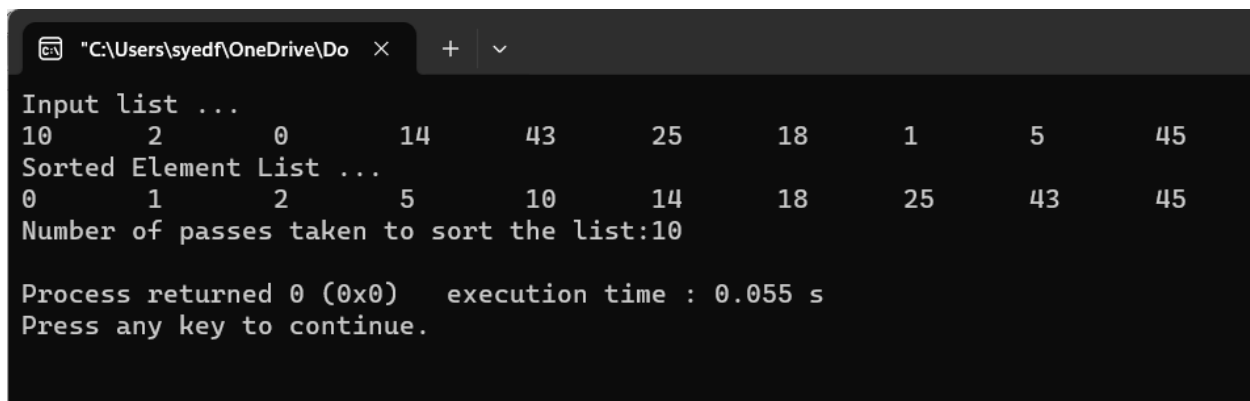
cout << "Sorted Element List ...\n";
for(i = 0; i < 10; i++) {
    cout << a[i] << "\t";
}

cout << "\nNumber of passes taken to sort the list:" << pass << endl;

return 0;
}

```

Result:



```

C:\Users\syedf\OneDrive\Do >
Input list ...
10      2      0      14      43      25      18      1      5      45
Sorted Element List ...
0       1       2       5      10      14      18      25      43      45
Number of passes taken to sort the list:10

Process returned 0 (0x0)   execution time : 0.055 s
Press any key to continue.

```

Lab Task# 3:

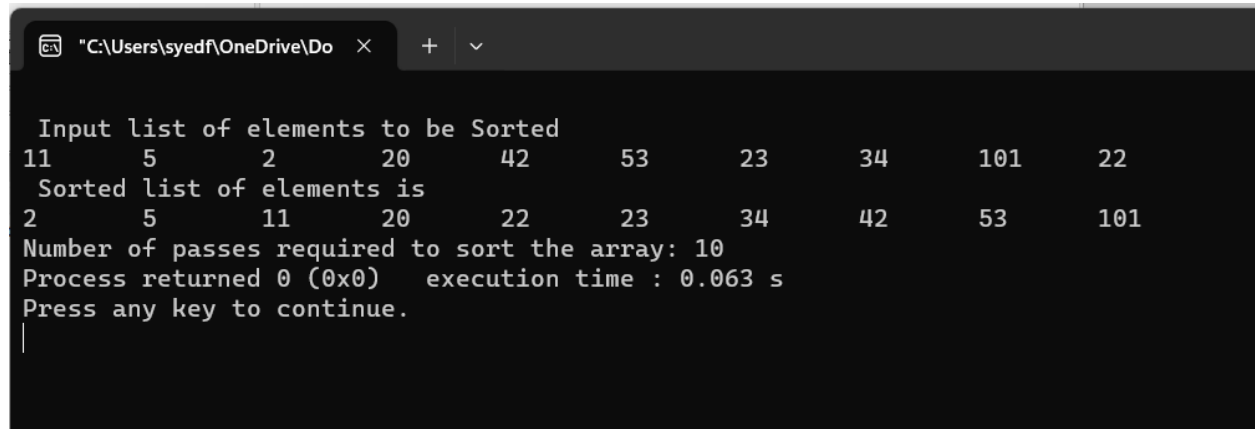
Implement Selection Sort on an array of 5 integers.

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:



The screenshot shows a Windows command prompt window with a dark background. The title bar at the top indicates the file path "C:\Users\syedf\OneDrive\Do". The command prompt displays the following text:

```
Input list of elements to be Sorted  
11      5      2      20     42     53     23     34     101     22  
Sorted list of elements is  
2       5      11     20     22     23     34     42     53     101  
Number of passes required to sort the array: 10  
Process returned 0 (0x0)   execution time : 0.063 s  
Press any key to continue.  
|
```