# Week 0-LAB A

## Practice Lab

## 1)

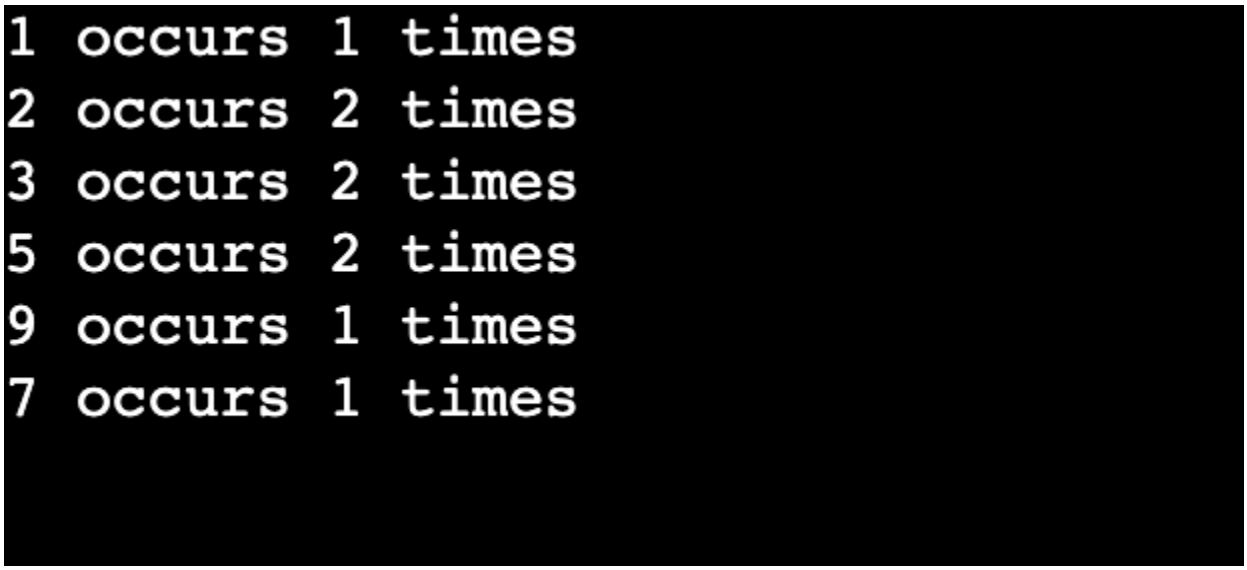
```
#include<iostream>

using namespace std;

int main()

{

   int a;

   cout<<"Enter number of inputs:";

   cin>>a;

   int arr[a];

   cout<<"Enter the numbers";

   int sum=0;

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

      cin>>arr[i];

       sum+=arr[i];

   }

   cout<<"The average of the given numbers is : "<<(float(sum))/a;

   return 0;

}
```

```
Enter number of inputs:7
Enter the numbers
1
2
3
4
5
6
7
The average of the given numbers is : 4
Process returned 0 (0x0)   execution time : 11.940 s
Press any key to continue.
```

## 2)

```
#include <iostream>

using namespace std;

int main() {

  int array[] = {1, 2, 3, 5, 2, 9, 7, 3, 5};

  int n = sizeof(array) / sizeof(array[0]);

  int unique[n];

  int freq[n];

  int count = 0;

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

     freq[i] = 0;

  }

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

     int j;

     for (j = 0; j < count; ++j) {

        if (array[i] == unique[j]) {

           freq[j]++;
```

```
            break;
        }
    }
    if (j == count) {
        unique[count] = array[i];
        freq[count] = 1;
        count++;
    }
  }
  for (int i = 0; i < count; ++i) {
    cout << unique[i] << " occurs " << freq[i] << " times" << endl;
  }
  return 0;
}
```



## 3)

```
#include<iostream>

using namespace std;

int main(){


   int a;

   cout<<"Enter number of inputs:\n";

   cin>>a;

   int arr[a];

   cout<<"Enter the numbers:\n";


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

      cin>>arr[i];

   }


   cout<<"Before rotating:\n";

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

      cout<<arr[i]<<"  ";

   }

   cout<<"\n";

   int k=arr[0];

    for(int i=0;i<a-1;i++){

      arr[i]=arr[i+1];

    }

    arr[a-1]=k;
```

```
    cout<<"After rotating:\n";
      for(int i=0;i<a;i++){
       cout<<arr[i]<<"  ";
   }
}
```

```
Enter number of inputs:
7
Enter the numbers:
1
2
3
4
5
6
7
Before rotating:
1  2  3  4  5  6  7
After rotating:
2  3  4  5  6  7  1
Process returned 0 (0x0)   execution time : 6.022 s
Press any key to continue.
```

## 4)

```
#include<iostream>
using namespace std;
int main(){

   int a;
   cout<<"Enter number of inputs:\n";
   cin>>a;
   int arr[a];
   cout<<"Enter the numbers:\n";
```

```
    for(int i=0;i<a;i++){
        cin>>arr[i];
    }
int min=arr[0];
int smin=arr[1];
for(int i=0;i<a;i++){
    if(arr[i]<min){
        smin=min;
        min=arr[i];
    }
}
cout<<endl<<"The second smallest number is: "<<smin;
return 0;
}
```

```
Enter number of inputs:
4
Enter the numbers:
32
54
3
-66

The second smallest number is: 3
Process returned 0 (0x0)   execution time : 9.267 s
Press any key to continue.
```

**5)**

```
#include<iostream>
using namespace std;
int main()
{
   int a;
   cout<<"Enter number of inputs: ";
   cin>>a;
   int *arr=new int[a];
   cout<<"Enter the numbers:\n";
   for(int i=0;i<a;i++){
      cin>>arr[i];
   }
   cout<<"Input: ";
   for(int i=0;i<a;i++){
      cout<<arr[i]<<" ";
   }

   cout<<endl<<"Output: ";

    for(int i=0;i<a;i++){
      if(arr[i]%2==0)
      cout<<arr[i]<<" ";
    }
    for(int i=0;i<a;i++){
      if(arr[i]%2!=0)
```

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

}
```

```
Enter number of inputs: 8
Enter the numbers:
2 8 3 6 7 9 5 4
Input: 2 8 3 6 7 9 5 4
Output: 2 8 6 4 3 7 9 5
```

## 6)

```
#include<iostream>
using namespace std;
int main()
{
   int a;
   cout<<"Enter number of inputs: ";
   cin>>a;
   int *A= new int[a];
   for(int i=0;i<a;i++)
```

```
    {
        A[i]=rand()%100;
    }
    cout<<"The randomly generated array of length "<<a<<":"<<endl;
    for(int i=0;i<a;i++){
        cout<<A[i]<<" ";
     }
    return 0;
}
```

```
Enter number of inputs: 7
The randomly generated array of length 7:
83 86 77 15 93 35 86
```

## 7)

a)
Size of o1 : 8
Size of o2 : 16
Size of abc is : 16

(b)
Size of o1 : 8
Size of o2 : 24

(c)
Size of o1 : 8
Size of o2 : 24

(d)
Size of o1 : 8
Size of o2 : 24

(e)
Size of o1 : 8
Size of o2 : 16

(f)
Size of o1 : 8
Size of o2 : 20

## 8)

(a)
Ans : The code is correct and the output will be 4.5
(b)
Ans : The code is correct and the output will be 5
(c)
Ans : The code is correct and the output will be 4 4
(d)
Ans : Here the a is a pointer to an integer but it is uninitialized henceforth no memory can be allocated , hence accessing a[0] will lead to the termination of the code while running it.
(e)
Ans : The code is correct and the output will be 5
(f)
Ans : In this code the part size of(struct node) calculates the size of ‘n’ rather than calculating the size of memory allocated for the struct node.

(g)

Ans : the code is correct and the output will be 5

(h)

Ans : This program will print garbage values due to the use of delete() instead of free(a).