

Fundamentals Of Programming

Lab Manual 8

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Section A

Q1) Average of elements in an array

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

    int array_size;
    float sum = 0;
    cout<<"Enter array size: "<<endl;
    cin>>array_size;
    int arr[array_size];

    cout<<"Enter numbers: "<<endl;
    for (int i = 0; i<array_size; i++){
        cin>>arr[i];
    }

    for(int j = 0; j<array_size; j++){
        sum += arr[j];
    }

    float avg = sum/array_size;
    cout<<"The average of the numbers in array is "<<avg<<endl;
}
```

Output:

```
mac@MacBooks-MacBook-Pro c++ % cd "/Users/mac/Desktop/my code/c++/" &
ac/Desktop/my code/c++/"m6
Enter array size:
4
Enter numbers:
3
5
2
1
The average of the numbers in array is 2.75
mac@MacBooks-MacBook-Pro c++ %
```

Q2) Bubble sort on array of 5 elements.

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

    int arr[5];
    cout<<"Enter 5 integers: "<<endl;
    for(int i = 0; i<5; i++){
        cin>>arr[i];
    }

    int temp = 0;
    for (int i = 0; i <5; i++){
        for(int k = 0; k<4; k++){
            if (arr[k]>arr[k+1]){
                int temp = arr[k];
                arr[k] = arr[k+1];
                arr[k+1] = temp;
            }
        }
    }

    for (int j =0; j<5; j++){
        cout<<endl;
        cout<<arr[j];
    }
    cout<<endl;
}
```

Output:

```
mac@MacBooks-MacBook-Pro c++ % cd "/Users/mac/Desktop/my code/c++/" &
rs/mac/Desktop/my code/c++/"m6-2
Enter 5 integers:
2
7
4
9
1

1
2
4
7
9
mac@MacBooks-MacBook-Pro c++ %
```

Q3) Selection sort

```
#include <iostream>
using namespace std;
int main(){
    int arr[5];
    int min;
    cout<<"Enter 5 numbers: "<<endl;
    for (int i = 0; i<5; i++){
        cin>>arr[i];
    }

    for (int j = 0; j<5; j++){
        min = arr[j];
        for (int k = j; k<5; k++){
            if(min>arr[k]){
                min = arr[k];
                arr [k] = arr[j];
                arr[j] = min;
            }
        }
    }

    for (int s = 0; s<5; s++){
        cout<<arr[s]<<" ";
    }

}
```

Output:

```
mac@MacBooks-MacBook-Pro c++ % cd "/Users/mac/Desktop/my code/c++/" &
rs/mac/Desktop/my code/c++/"m6-3
Enter 5 numbers:
4
34
6
7
1
1 4 6 7 34 %
mac@MacBooks-MacBook-Pro c++ %
```