



## Sheet 5

1. Write a C++ program that will prompt the user to input an integer array with 5 values. Then it ask the user to enter a number to check whether or not this number is found in the array or not.

Answer:

```
#include <iostream>

using namespace std; int main()
{
    int arr[5], num, i;
    cout<<"Enter 5 integer values";
    for(i=0;i<5;i++)
        { cout<<"\n value at index "<<i<<":";  cin>>arr[i];}
    cout<<"\n Enter an integer number: ";
    cin>>num;
    for(i=0;i<5;i++)
        if(arr[i]==num)
            {cout<<num<<" is found at index: "<<i<<endl;
              break;}
    if(i==5)
        cout<<num<<" is not found";
    return 0;
}
```

2. Write a C++ program that will prompt the user to input an integer array with 10 values. Then it print its maximum and minimum values.



**Answer:**



```
#include <iostream>

using namespace std;

void readArray(int a[], int size);
int calMin(const int a[], int size);
int calMax(const int a[], int size);

int main()
{
    int arr[10], min,max;
    cout<<"Enter 10 integer values";
    readArray(arr, 10);
    min=calMin(arr, 10);
    max=calMax(arr, 10);
    cout<<"\n min= "<<min<<"\n max= "<<max;
    return 0;
}

void readArray(int a[], int size)
{
    for(int i=0;i<size;i++)
        { cout<<"\nvalue at index "<<i<<":";  cin>>a[i]; }
}

int calMin(const int a[], int size)
{

```



```
int min=a[0];
for(int i=1;i<10;i++)
    if(a[i]<min) min=a[i];
return min;
}

int calMax(const int a[], int size)
{
    int max=a[0];
    for(int i=1;i<10;i++)
        if(a[i]>max)
            max=a[i];
    return max;
}
```

3. Write a C++ program to display a matrix as shown below. The diagonal of the matrix fills with 0. The lower side fills with -1s and the upper side fills with 1s.



	1	2	3	4	5
1	0	1	1	1	1
2	-1	0	1	1	1
3	-1	-1	0	1	1
4	-1	-1	-1	0	1
5	-1	-1	-1	-1	0

**Answer:**

```
#include<iostream>
using namespace std;
int main() {
int matrix[5][5];
int i,j;
for(i=0;i<5;i++) //assign values to the matrix
for(j=0;j<5;j++){
    if(i==j)
        matrix[i][j]=0;
    else if(i>j)
        matrix[i][j]=-1;
    else
        matrix[i][j]=1;}
for(i=0;i<5;i++){ //print the array
for(j=0;j<5;j++)
    cout<<matrix[i][j]<<"\t";
    cout<<"\n"; }

return 0;

}
```

4. What is the output of the following program segment?



```
int temp[5];
for (int i = 0; i < 5; i++)
    temp[i] = 2 * i - 3;
for (int i = 0; i < 5; i++)
    cout << temp[i] << " ";
cout << endl;
temp[0] = temp[4];
temp[4] = temp[1];
temp[2] = temp[3] + temp[0];
for (int i = 0; i < 5; i++)
    cout << temp[i] << " ";
cout << endl;
```

Answer:

-3 -1 1 3 5  
5 -1 8 3 -1

**5. What is stored in the array list after the following C++ code executes?**

```
list[0] = 5;
for (int i = 1; i < 6; i++)
{
    list[i] = i * i + 5;
    if (i > 2)
        list[i] = 2 * list[i] - list[i - 1];
}
```

Answer:

List[0]=5, list[1]=6, list[2]=9, list[3]=19, list[4]=23, list[5]=37

**6. Write C++ statements to define and initialize the following arrays.**

a. Array heights of 10 components of type **double**. Initilaize this array to the following

values: 5.2, 6.3, 5.8, 4.9, 5.2, 5.7, 6.7, 7.1, 5.10, 6.0.

Answer:

double arr[10]={ 5.2, 6.3, 5.8, 4.9, 5.2, 5.7, 6.7, 7.1, 5.10, 6.0};

b. Array weights of 7 components of type **int**. Initialize this array to the following values:

120, 125, 137, 140, 150, 180, 210.

Answer:



```
int arr[7]={ 120, 125, 137, 140, 150, 180, 210};
```