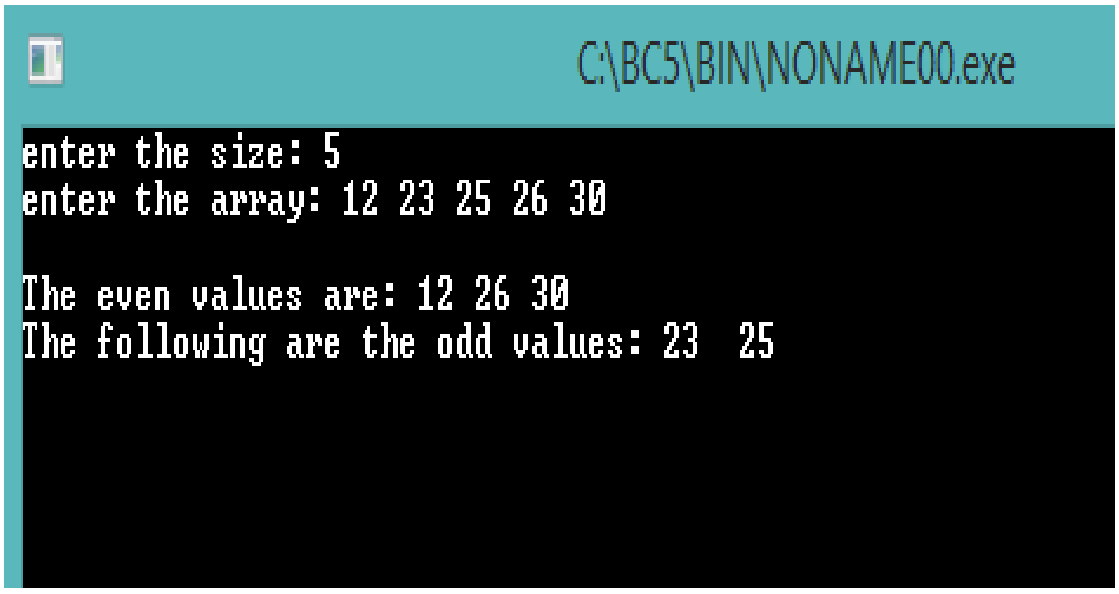
Q.19. Write a program to create an array L1 with n values. Create two user defined functions even ( ) - to create an array which store only even values from L1 and Odd ( ) - to create an array which store only odd values from the L1.

```
#include<iostream.h>
#include<conio.h>
void even(int arr[],int size)
{int dup[100],z=0,k=0;
for(int i=0;i<size;i++)
{if(arr[i]%2==0)
 {k=k+1;
  dup[z++]=arr[i];
 }
}
cout<<"\nThe even values are: ";
for(int i=0;i<k;i++)
cout<<dup[i]<<" ";
}
void odd(int arr[],int size)
{int dup[100],k=0,z=0;
 for(int i=0;i<size;i++)
{if(arr[i]%2!=0)
 {k=k+1;
```

```
 dup[z++]=arr[i];
 }
}
cout<<"\nThe following are the odd values: ";
for(int i=0;i<k;i++)
cout<<dup[i]<<"  ";
}
void main()
{int a[100],n;
cout<<"enter the size: ";
cin>>n;
cout<<"enter the array: ";
for(int i=0;i<n;i++)
cin>>a[i];
even(a,n);
odd(a,n);
getch();
}
```

Output:

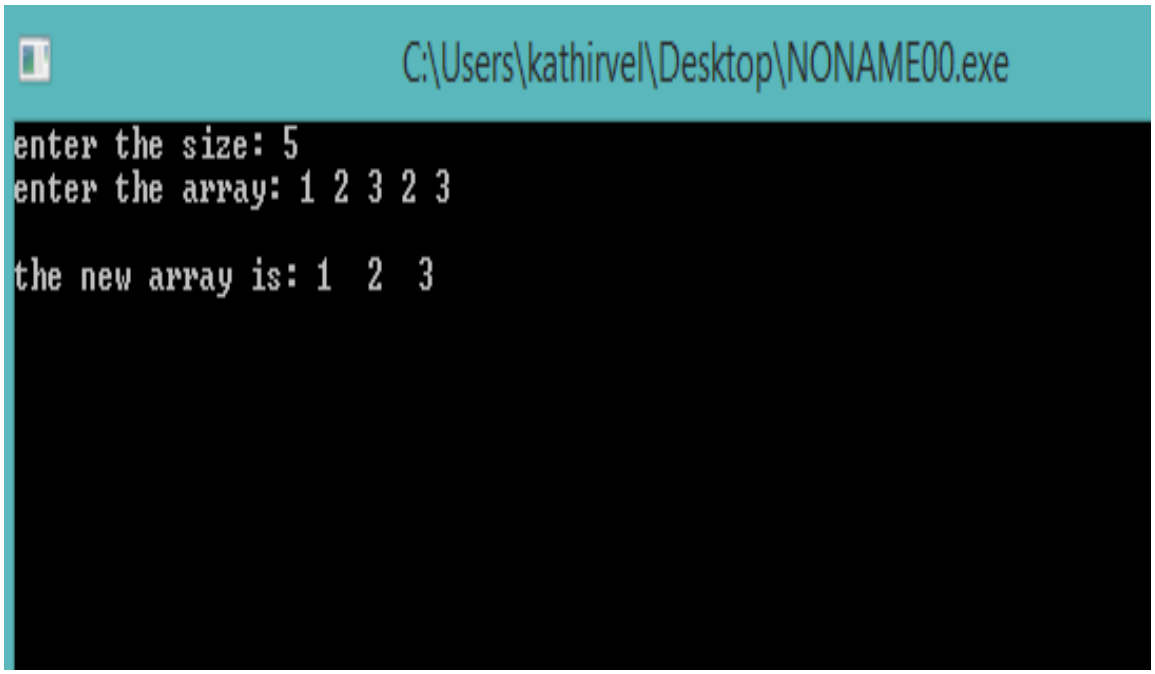

C:\BC5\BIN\NONAME00.exe
enter the size: 5
enter the array: 12 23 25 26 30
The even values are: 12 26 30
The following are the odd values: 23 25

Q.20. Write a program to remove all adjacent duplicate elements from the given array. The program should contain a function del_adjacent_dups to delete duplicate elements.

```
#include<iostream.h>
#include<conio.h>
void del_adjacent_dups(int arro[],int n1);
void main()
{int n,arr[100];
cout<<"enter the size: ";
cin>>n;
cout<<"enter the array: ";
for(int i=0;i<n;i++)
cin>>arr[i];
del_adjacent_dups(arr,n);
getch();
}
void del_adjacent_dups(int arro[],int n1)
{for(int i=0;i<n1;i++)
 {for(int j=i+1;j<n1;j++)
  {if(arro[i]==arro[j])
   {for(int a=j;j<n1-1;j++)
```

```
        arro[a]=arro[a+1];
        n1--;
       j--;
      }
     }
    }
    cout<<"\nthe new array is: ";
    for(int i=0;i<n1;i++)
    cout<<arro[i]<<"  ";
    }
```

Output:


C:\Users\kathirvel\Desktop\NONAME00.exe
enter the size: 5
enter the array: 1 2 3 2 3
the new array is: 1 2 3

Q.21. Write a menu driven program to read a numeric array and do the following using functions:

(i) To get the position and insert an element.

(ii) To delete an element from the array.

(iii) To search for an element.

(iv) To sort the given array.

```
#include<iostream.h>
#include<conio.h>
void main()
{  int a[100],n;
  char ch;
  cout<<"enter the size: ";
  cin>>n;
  cout<<endl;
  cout<<"enter the elements: ";
  for(int i=0;i<n;i++)
  cin>>a[i];
  cout<<"\na.enter the given elemnet in a given position";
  cout<<"\nb.delete an element for the array";
  cout<<"\nc.search for an element";
  cout<<"\nd.to sort the given array";
```

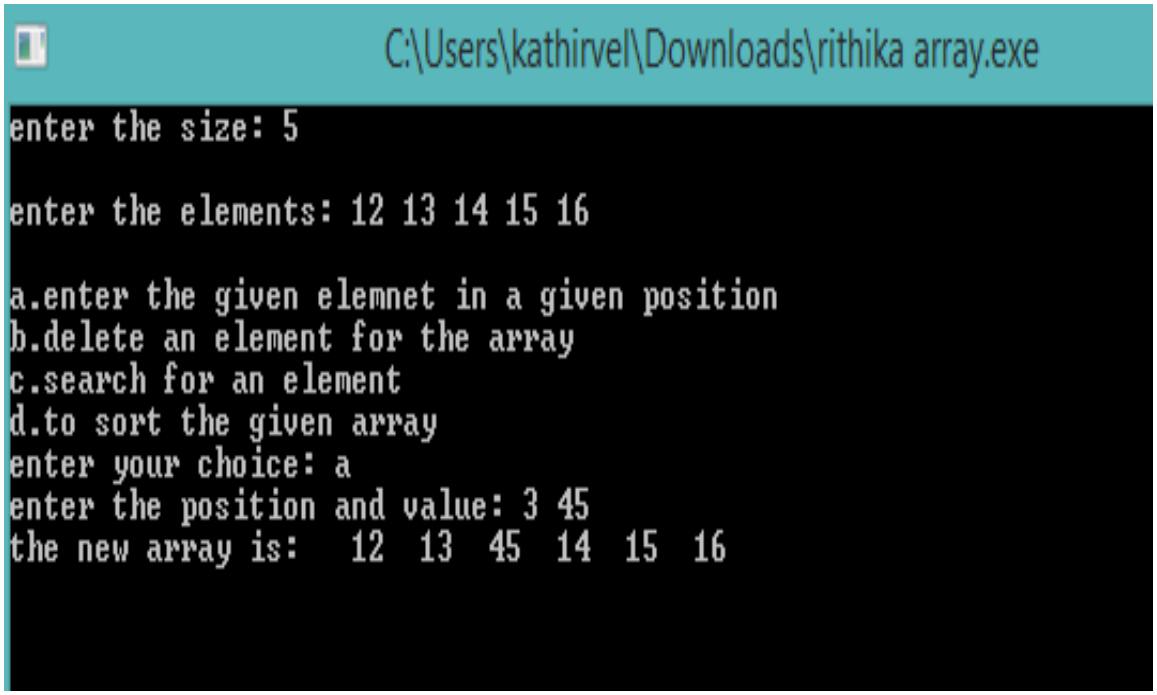
```
        cout<<endl;
        cout<<"enter your choice: ";
        cin>>ch;
        if(ch=='a')
        { int pos, val;
         cout<<"enter the position and value: ";
         cin>>pos>>val;
         for(int j=n;j>=pos;j--)
         a[j]=a[j-1];
         n++;
         a[pos-1]=val;
         cout<<"the new array is: ";
         for( int i=0;i<n;i++)
         cout<<"  "<<a[i];
        }
        else if(ch=='b')
        { int val,pos,flag;
          cout<<"enter the value to be deleted: ";
          cin>>val;
          for(int i=0;i<n;i++)
          {if(val==a[i])
            {pos=i;
```

```
        flag=1;
        break;
       }
      }
      if(flag==1)
      {for(int j=pos;j<n;j++)
      a[j]=a[j+1];
      n--;
      cout<<" the new array is: ";
      for(int i=0;i<n;i++)
      cout<<"  "<<a[i];
      }
      else
      cout<<"value not found";
     }
    else if(ch=='c')
    {int val,pos,flag=0;
     cout<<"enter the val to be searched: ";
     cin>>val;
     for(int i=0;i<n;i++)
        {if(a[i]==val)
         {pos=i+1;
```

```
        flag=1;
        }
       }
    if(flag==1)
    cout<<"the elemet is found in position: "<<pos;
    if(flag==0)
    cout<<"not found";
   }
   else if(ch=='d')
   {for (int i = 0; i < n; i++)
        {
            for (int j = i+1; j < n; j++)
            {
                if (a[j]<a[i])
                {
                    int tmp = a[i];
                    a[i] = a[j];

                    a[j] = tmp;
        }
       }
     }
```

```
cout<<"the array is asending order is: ";
for(int i=0;i<n;i++)
cout<<a[i]<<" ";
}
getch();
}
```

Output:


C:\Users\kathirvel\Downloads\rithika array.exe
enter the size: 5
enter the elements: 12 13 14 15 16
a.enter the given elemnet in a given position
b.delete an element for the array
c.search for an element
d.to sort the given array
enter your choice: a
enter the position and value: 3 45
the new array is: 12 13 45 14 15 16

Q.22. Write a function which accept 2D array of integers and its size as arguments and displays the sum of elements which lie on diagonals. Assuming the 2D list to be a square matrix with odd dimension [i.e. 3 x 3]

Example of the list content is

5 4 3

6 7 8

1 2 9

Output through the function should be

Diagonal One Sum: 21

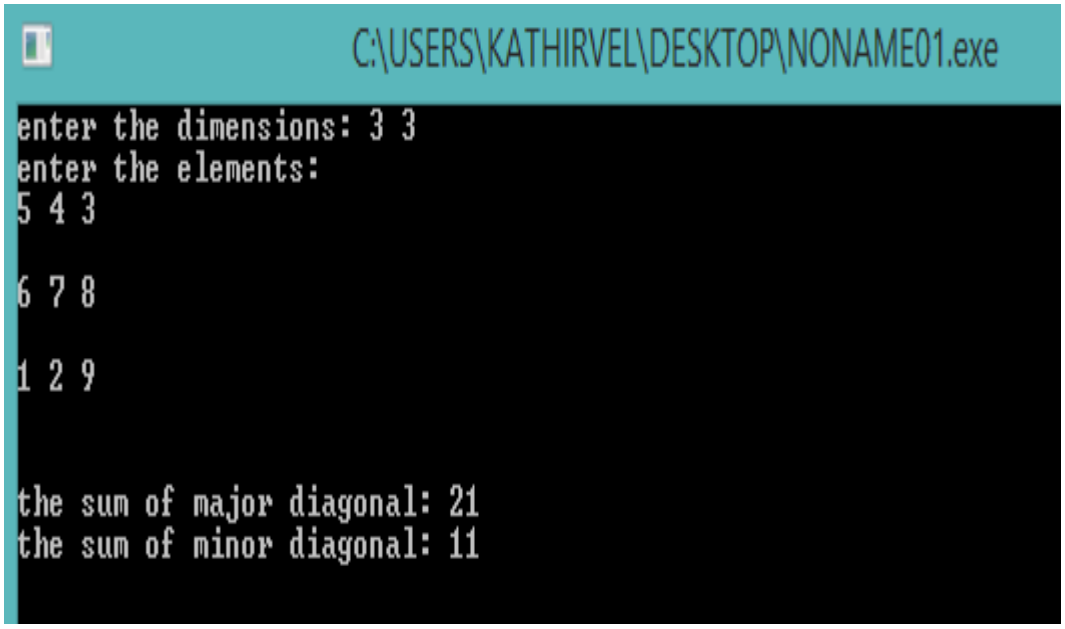
Diagonal Two Sum: 11

```
#include<iostream.h>

#include<conio.h>

void sumdiagonals(int arr[][100],int m1,int n1);

void main()

{int arr[100][100],m,n;

cout<<"enter the dimensions: ";
```

```
cin>>m>>n;

cout<<"enter the elements: "<<endl;

for(int i=0;i<m;i++)

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

 cin>>arr[i][j];

 cout<<'\n';

}



sumdiagonals(arr,m,n);

getch();

}

void sumdiagonals(int a[][100],int m1,int n1)

{int summajor=0,summinor=0;

for(int i=0;i<m1;i++)
```

```
{for(int j=0;j<n1;j++)
 if(i==j)
 summajor=summajor+a[i][j];
}
for(int i=0;i<m1;i++)
{for(int j=0;j<n1;j++)
 if((i+j)==(n1-1))
 summinor=summinor+a[i][j];
}

 cout<<"\nthe sum of major diagonal: "<<summajor;
 cout<<"\nthe sum of minor diagonal: "<<summinor;
}
```

Output:

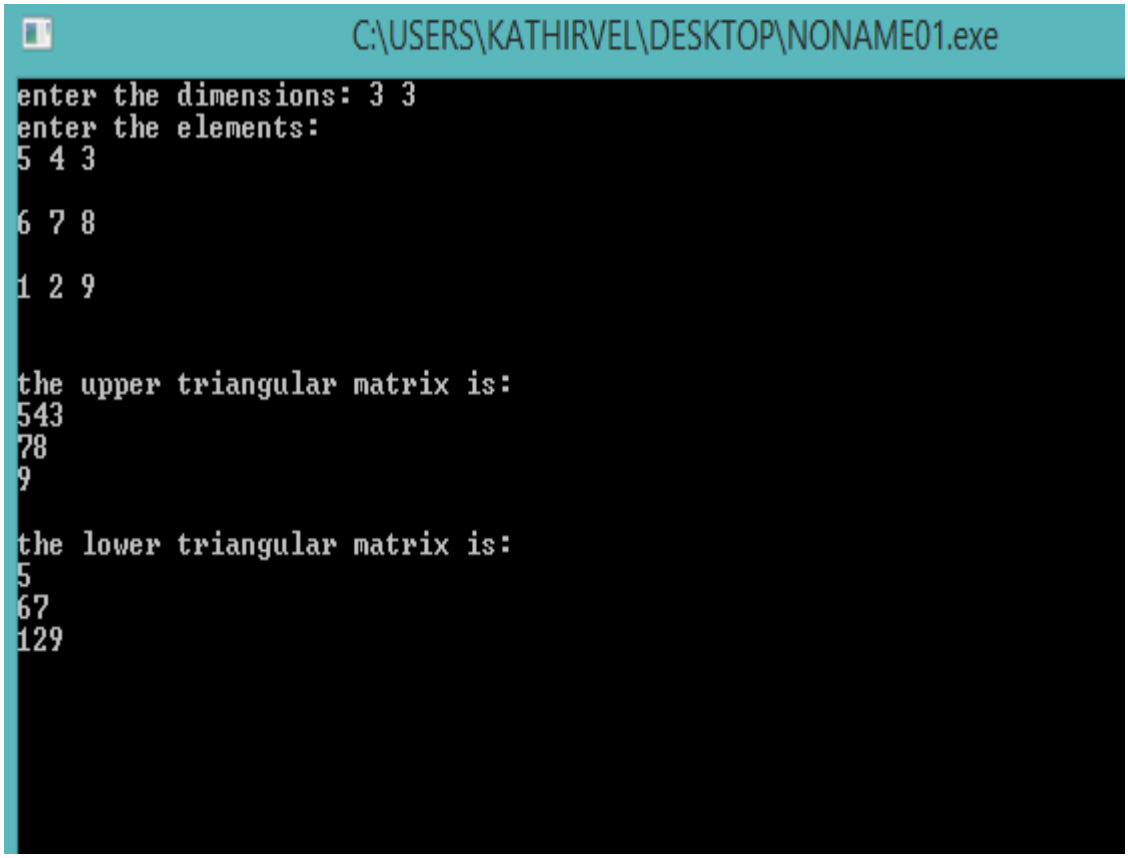

C:\USERS\KATHIRVEL\DESKTOP\NONAME01.exe
enter the dimensions: 3 3
enter the elements:
5 4 3
6 7 8
1 2 9
the sum of major diagonal: 21
the sum of minor diagonal: 11

Q.23. Write a program to display the upper and lower triangular matrix.

```
#include<iostream.h>
#include<conio.h>
void main()
{int a[100][100],m,n;
cout<<"enter the dimensions: ";
cin>>m>>n;
cout<<"enter the elements: "<<endl;
for(int i=0;i<m;i++)
{for(int j=0;j<n;j++)
 cin>>a[i][j];
 cout<<'\n';
}
cout<<"\nthe upper triangular matrix is: "<<endl;
for(int i=0;i<m;i++)
{for(int j=0;j<n;j++)
 if(i<=j)
 cout<<a[i][j]<<" ";
```

```
 cout<<endl;
}
cout<<"\nthe lower triangular matrix is: "<<endl;;
for(int i=0;i<m;i++)
{for(int j=0;j<n;j++)
 if(i>=j)
  cout<<a[i][j]<<" ";

 cout<<endl;
}
getch();
}
```

Output:


C:\USERS\KATHIRVEL\DESKTOP\NONAME01.exe
enter the dimensions: 3 3
enter the elements:
5 4 3
6 7 8
1 2 9
the upper triangular matrix is:
543
78
9
the lower triangular matrix is:
5
67
129