Prog. 24 A square matrix is said to be a magic square, if the sum of each row, each column and each diagonal is same. Write a program to enter an integer number N. Create a magic square of size N × N. Finally, print the elements of the matrix as magic square.

The program runs for a sample data as:

Enter matrix dimension of a magic square:

Enter number of rows only for a magic square:

4

Magic square of size 4 × 4 as shown below:

16	2	3	13
5	11	10	8
9	7	6	12
4	14	15	1

Enter matrix dimension of a magic square:

Enter number of rows only for a magic square:

5

Magic square of size 5 × 5 as shown below:

17	24	1	8	15
23	5	7	14	16
4	6	13	20	22
10	12	19	21	3
11	18	25	2	9

```
//A sample program on Magic Square
import java.util.*;
class Magic_Square
{
public static void main(String args[])
{
Scanner in=new Scanner(System.in);
int i, j, k, n, t;
System.out.println("Enter matrix dimension of a magic square:");
System.out.println("Enter number of rows only of a magic square:");
n=in.nextInt();
int a[][]=new int[n][n];
//Initializing double dimension array
for(i=0;i<n;i++ )
```

```
{
for(j=0;j<n;j++)
a[i][j]=0;
}
if(n%2!=0)
{
 i=0;j=n/2;k=1;
while(k<=n*n)
{
a[i][j]=k++;
i--;j++;
if(i<0 && j>n-1)
{
i=i+2;
j--;
}
if(i<0)
 i=n-1;
if(j>n-1)
 j=0;
 if(a[i][j]>0)
{
 i=i+2;
 j--;
}
}
}
else
{
k=0;
for(i=0;i<n;i++)
{
for(j=0;j<n;j++)
a[i][j]=++k;
}
j=n-1;
for(i=0;i<n/2;i++)
{
t=a[i][i];
a[i][i]=a[j][j];
a[j][j]=t;
t=a[i][j];
a[i][j]=a[j][i];
a[j][i]=t;
j--;
}
}
System.out.println("Magic square of size "+n+" x "+n+" as shown below:");
for(i=0;i<n;i++)
```

```
{
for(j=0;j<n;j++ )
System.out.print(a[i][j] + "\t");
System.out.println();
}
}
}
```