Wondrous Square

A Wondrous square is an n by n grid which fulfils the following condition.
i)It contains integers from 1 to n^2, where each integer appears only once.
ii)The sum of integers in any row or column must add up to $0.5*n*n(n^2+1)$.
For example the following grid is a wondrous square where the sum of each rows or column is 65 when n=5:

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

Write a program to read n (2 <= n <=10) and the values stored in these n by n cells and output if the grid represents a wondrous square or not.
Also output all the prime in the grid along with their row index and column index as shown in the output.
Sample Input: N=4

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

Sample Output:

```
INPUT MATRIX :
16      15      1       2
6       4       10      14
9       8       12      5
3       7       11      13
YES IT IS A WONDROUS SQAURE

PRIME           ROW INDEX   COLUMN INDEX
  2                 0               3
  3                 3               0
  5                 2               3
  7                 3               1
 11                 3               2
 13                 3               3
```

Solution:

```
import java.util.*;
class Wondrous_sqare
{
  public static void main()
  {
    Scanner sc =new Scanner(System.in);
    int n,i,j,x1=1,sum1,sum2,x2=1,k,l,c;
    int a[][]=new int[10][10];
    int b[]=new int[100];
    double y;
    System.out.println("Enter the size of the array :");
    n=sc.nextInt();
    System.out.println("Enter the values for Wondrous Square :");
    for(i=0;i<n;i++)
     {
       for(j=0;j<n;j++)
          {
          a[i][j]=sc.nextInt();  //taking input in 2D array
          }
     }
      System.out.println("INPUT MATRIX :");
    for(i=0;i<n;i++)
     {
       for(j=0;j<n;j++)
          {
          System.out.print(a[i][j]+"\t");
          }
          System.out.println();
     }
    for(i=1;i<=n*n;i++)
       {
         b[i]=0;    //Assign SDA to 0
       }
    for(i=0;i<n;i++)   //check validity of first condition
       {
         for(j=0;j<n;j++)
           {
             if(b[a[i][j]]==0)
                b[a[i][j]]=1;
             else
                x1=0;
           }
       }
```

```
if(x1==0)
 System.out.println("NOT WONDROUS SQAURE");
else
   {
     y=0.5*n*(n*n+1);  //check validity of second condition
     for(i=0;i<n;i++)
        {
          sum1=0;
          sum2=0;
          for(j=0;j<n;j++)
             {
               sum1=sum1+a[i][j];
               sum2=sum2+a[j][i];
             }
           if(sum1!=y || sum2!=y)
             x2=0;
        }
      if(x2==0)
      System.out.println("NOT WONDROUS SQAURE");
   }
  if(x1==1 && x2==1)
  System.out.println("YES IT IS A WONDROUS SQAURE");
  System.out.println();
  System.out.println("PRIME \t ROW INDEX \t COLUMN INDEX");
  for(i=2;i<=n*n;i++)
     {
       c=0;
       for(k=1;k<=i;k++)
          // {
            if(i%k==0)
              c++;
        //   }
          if(c==2)
            {
              for(j=0;j<n;j++)
                //  {
                   for(l=0;l<n;l++)
                //       {
                        if(a[j][l]==i)
                        System.out.println(i+"\t\t"+j+"\t\t"+l);
                //         }
                //    }
            }
     }
}
```

}