2D array

Q1: Take m and n input from the user and m * n integer inputs from user and print the following:
number of positive numbers
number of negative numbers
number of odd numbers
number of even numbers
number of 0.

```
public class as2_Q1 {

    static void printArray(int arr[][]){

        int positive = 0, negative = 0, zero = 0, odd = 0 ,
even = 0;
        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                if(arr[i][j] > 0) positive++;
                if(arr[i][j] < 0) negative++;
                if(arr[i][j] == 0) zero++;
                if(arr[i][j] % 2 != 0) odd++;
                if(arr[i][j] % 2 == 0) even++;
            }
        }
        System.out.println();
        System.out.println("Number of positives = " +
positive);
        System.out.println("Number of negatives = " +
negative);
        System.out.println("Number of odds = " + odd);
        System.out.println("Number of evens = " + even);
```

```
        System.out.println("Number of zeroes = " +
zero);
    }

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);
        System.out.println("Enter number of rows: ");
        int r = sc.nextInt();
        System.out.println("Enter number of column: ");
        int c = sc.nextInt();

        int [][] arr = new int[r][c];

        System.out.printf("Enter %d elements \n",r*c);
        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                arr[i][j] = sc.nextInt();
            }
        }
        printArray(arr);
    }
}
```

Q2: write a program to print the elements above the secondary diagonal in a user inputted square matrix.

```
import java.util.Scanner;

public class as2_Q2 {
```

```
    static void aboveSecondaryDiagonal(int arr[][]){
        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                if(i+j < 2){
                    System.out.print(arr[i][j] + " ");
                }
            }
        }
    }

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter square matrix side");
        int s = sc.nextInt();

        int [][] arr = new int [s][s];

        System.out.println("Enter element of array");

        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                arr[i][j] = sc.nextInt();
            }
        }
        System.out.println();
        aboveSecondaryDiagonal(arr);
    }
}
```

Q3: write a program to print the elements of both the diagonals in a user inputted square matrix in any order.

```
import java.util.Scanner;
```

```java
public class as3_Q3 {

    static void printDiagonal(int [][] arr){

        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                if(i == j || i + j == arr.length -1){
                    System.out.print(arr[i][j] + " ");
                }
            }
        }
    }

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter square matrix side");
        int s = sc.nextInt();

        int [][] arr = new int [s][s];

        System.out.println("Enter element of array");

        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                arr[i][j] = sc.nextInt();
            }
        }
        System.out.println();
        printDiagonal(arr);

    }
}
```

Q4: Write a program to find the largest element of a given 2D array of integers.

```
public class as2_Q4 {

    static int findLargest(int [][] arr){

        int max = Integer.MIN_VALUE;
        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                if(arr[i][j] > max){
                    max = arr[i][j];
                }
            }
        }
        return max;
    }
    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter rows");
        int r = sc.nextInt();

        System.out.println("Enter column");
        int c = sc.nextInt();

        int [][] arr = new int [r][c];

        System.out.println("Enter element of array");

        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                arr[i][j] = sc.nextInt();
            }
        }
```

```
        System.out.println("Largest is " +
findLargest(arr));
    }
}
```

Q5: Write a function which accepts a 2D array of integers and its size as arguments and displays the elements of middle row and the elements of middle column. Printing can be done in any order. [Assuming the 2D Array to be a square matrix with odd dimensions i.e. 3x3, 5x5, 7x7 etc...]

```
public class as2_Q5 {

    static void printMiddleElements(int [][] arr){

        int n =arr.length;
        for(int i = 0; i < n; i++){
            for(int j = 0; j < arr[i].length; j++){
                if(i == n/2 || j == n/2 ){
                    System.out.print(arr[i][j] + " ");
                }
            }
        }

    }

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter square matrix side of odd
numbers only");
        int s = sc.nextInt();

        int [][] arr = new int [s][s];

        System.out.println("Enter element of array");
```

```
        for(int i = 0; i < arr.length; i++){
            for(int j = 0; j < arr[i].length; j++){
                arr[i][j] = sc.nextInt();
            }
        }
        System.out.println();
        printMiddleElements(arr);
    }
}
```