```java
// Q1
package test;

import java.util.Scanner;

/**
 *
 * @author Ibrahim
 */
public class Test {

    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        double sum = 0;
        double avg;
        int number = 10;
        System.out.println("Enter 10 numbers :");
        for(int i = 0; i < number; i++){

            sum += input.nextDouble();
        }
        avg = sum / (double)number;

        System.out.println("Sum = " + sum + "\nAvg = " + avg);

    }

}
```

```java
// q2
package test;

import java.util.Scanner;

/**
 *
 * @author Ibrahim
 */
public class Test {

    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter a number : ");
        int number = input.nextInt();
        int factorial = 1;
        for(int i = 1; i <= number; i++){
            factorial *= i;
        }
        System.out.println(number + "! = " + factorial);
    }

}
```

```
--------------------------------------------------------------------------
----
// q4
package test;

import java.util.Scanner;

/**
 *
 * @author Ibrahim
 */
public class Test {

    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Input the value of x : ");
        int x = input.nextInt();
        System.out.printf("input the  number of terms : ");
        int nOfTerms = input.nextInt();
        double term = 0;
        int fact = 1;
        double sumOfSeries = 0;

        for(int i = 0; i < nOfTerms; i++){

            for(int j = 1; j <= i * 2; j++){

               fact *= j;
            }

            term = (Math.pow(x, 2 * i)) / (int)fact;
            if(i%2 != 0)
                term *= -1;
            sumOfSeries += term;

            term = 0;
            fact = 1;
        }

        System.out.println("the sum is : " + sumOfSeries);
    }

}

--------------------------------------------------------------------------
---
// q3
package test;

import java.util.Scanner;

/**
 *
 * @author Ibrahim
 */
public class Test {
```

```
    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Input number of terms: ");
        int n = input.nextInt();
        int outNumber = 0;
        int sum = 0;
        for(int i = 0; i < n; i++){
            outNumber += Math.pow(10, i);
            System.out.print(outNumber);
            sum += outNumber;
            if(i+1 == n)
                continue;
            System.out.print(" + ");
        }
        System.out.println();
        System.out.println("The Sum is : " + sum);
    }

}

-------------------------------------------------------------------------
-
// q4
package test;

import java.util.Scanner;

/**
 *
 * @author Ibrahim
 */
public class Test {

    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Input the value of x : ");
        int x = input.nextInt();
        System.out.printf("input the  number of terms : ");
        int nOfTerms = input.nextInt();
        double term = 0;
        int fact = 1;
        double sumOfSeries = 0;

        for(int i = 0; i < nOfTerms; i++){

            for(int j = 1; j <= i * 2; j++){

               fact *= j;
            }

            term = (Math.pow(x, 2 * i)) / (int)fact;
            if(i%2 != 0)
                term *= -1;
            sumOfSeries += term;
```

```
            term = 0;
            fact = 1;
        }

        System.out.println("the sum is : " + sumOfSeries);
    }

}
--------------------------------------------------------------------------
-----
/*
q5
 */
package test;

import java.util.Scanner;

/**
 *
 * @author Ibrahim
 */
public class Test {

    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter number of rows : ");
        int row = input.nextInt();
        int numberOfAstricts = 0;
        for(int i = 0; i < row; i++){
            for(int j = row-1; j>i; j--){
                System.out.print(" ");
            }
            numberOfAstricts = 2 * i + 1;
            for(int j = 0; j < numberOfAstricts; j++){
                System.out.print("*");
            }
            System.out.println();
        }
    }

}
--------------------------------------------------------------------------
------
/*
q6
 */
package test;

import java.util.Scanner;

/**
 *
 * @author Ibrahim
 */
public class Test {
```

```
    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter number of rows : ");
        int rows = input.nextInt();
        boolean brick;
        for (int j = 1; j <= rows; j++) {
            if (j % 2 != 0) {
                for (int i = 1; i <= j; i++) {
                    if (i % 2 != 0) {
                        brick = true;
                    } else {
                        brick = false;
                    }

                    System.out.print(brick ? "1" : "0");
                }
                System.out.println();
            } else {
                for (int i = 1; i <= j; i++) {
                    if (i % 2 != 0) {
                        brick = true;
                    } else {
                        brick = false;
                    }

                    System.out.print(brick ? "0" : "1");
                }
                System.out.println();
            }

        }
    }

}

/////////////// another sloution/////////////////
package test;

import java.util.Scanner;

/**
 *
 * @author Ibrahim
 */
public class Test {

    /**
     * @param args the command line arguments
     */
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter number of rows : ");
        int rows = input.nextInt();
        String row = "";
        for (int i = 1; i <= rows; i++) {
            if(i %2 != 0){
                row = "1" + row;
```

```
            }
            else{
                row = "0" + row;
            }
            System.out.println(row);
        }
    }

}
```