

Q1.

Code:

```
package Q_01;

public class Q_01 {
    public static void main(String[] args) {
        int count = 10;
        for (int i=0; i<4; i++) { // 4 rows
            for (int j=0; j<10; j++) { // 10 columns
                System.out.print(count+" ");
                count++;
            }
            System.out.print("\n"); // Move to the next line after printing 10 numbers
        }
    }
}
```

Output:

```
10 11 12 13 14 15 16 17 18 19
20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39
40 41 42 43 44 45 46 47 48 49
```

```
Process finished with exit code 0
```

Q2.

Code:

```
package Q_02;

import java.util.Scanner;

public class Q_02 {
    public static void main(String[] args) {
        //Create a Scanner object to read input
        Scanner scanner = new Scanner(System.in);
        int input = 0;
        while (input >= 0) { //Keep reading until a negative number is entered
            System.out.println("Please enter a number: ");
            // Read the input number
            input = scanner.nextInt();

            if (input < 0) {
                System.out.println("Negative number entered.");
                break; // Exit the loop if a negative number is entered
            }
            // Output the number of digits in the input number
            System.out.println(input + " has " + noOfDigits(input) + " digits");
        }
        public static int noOfDigits(int input) {
            int count = 0;
            //Count the number of digits in the input number
            while (input > 0) {
                input /= 10;
                count++;
            }
            return count;
        }
    }
}
```

Output:

```
Please enter a number:
65784
65784 has 5 digits
Please enter a number:
465
465 has 3 digits
Please enter a number:
2048
2048 has 4 digits
Please enter a number:
-100
Negative number entered.

Process finished with exit code 0
```

Q3.

Code:

```
package Q_03;

import java.util.Scanner;

public class Q_03 {
    public static void main(String[] args) {
        //Create a scanner object to read input
        Scanner scanner = new Scanner(System.in);
        System.out.println("Please enter a number for n: ");
        // Read the input number
        int n = scanner.nextInt();
        // Output the multiplication table for the input number
        for (int i=0; i<10; i++) {
            System.out.println(n+"x"+(i+1)+" = "+(n*(i+1)));
        }
    }
}
```

Output:

```
Please enter a number for n:
6
6x1 = 6
6x2 = 12
6x3 = 18
6x4 = 24
6x5 = 30
6x6 = 36
6x7 = 42
6x8 = 48
6x9 = 54
6x10 = 60

Process finished with exit code 0
```

Q4.

Code:

```
package Q_04;

import java.util.Scanner;

public class Q_04 {
    public static void main(String[] args) {
        // Create a scanner object to read input
        Scanner scanner = new Scanner(System.in);
        System.out.println("Please enter a number of rows of the pyramid: ");
        // Read the number of rows for the pyramid
        int rows = scanner.nextInt();
        // Output the pyramid pattern
        for (int i = 1; i <= rows; i++) {
            for (int j = rows; j > i; j--) {
                System.out.print(" ");
            }
            for (int k = 1; k <= (2 * i - 1); k++) {
                System.out.print("*");
            }
            System.out.print("\n");
        }
    }
}
```

Output:

```
Please enter a number of rows of the pyramid:
5

  *
 ***
*****
*****
*****

Process finished with exit code 0
```

Q5.

Code:

```
package Q_05;

import java.util.Scanner;

public class Q_05 {
    public static void main(String[] args) {
        //Create a scanner object to read input
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter a word, phrase, number or sequence of characters:");
        // Read the input string
        String input = scanner.nextLine();
        // Call the reverseString method to reverse the input string
        String reverse = reverseString(input);

        // Check if the input is a palindrome
        if ( input.equals(reverse) ) {
            System.out.println("The input '"+input+"' is a palindrome.");
        } else
            System.out.println("The input '"+input+"' is not a palindrome.");
    }
    public static String reverseString(String input) {
        // Use recursion to reverse the string
        if (input.isEmpty())
            return input;
        else
            return reverseString(input.substring(1)) + input.charAt(0);
    }
}
```

Output:

```
Enter a word, phrase, number or sequence of characters:
racecar
The input 'racecar' is a palindrome.

Process finished with exit code 0
```

Q6.

Code:

```
package Q_06;

import java.util.Random;
import java.util.Scanner;

public class Q_06 {
    public static void main(String[] args) {
        // Create a scanner object to read input
        Scanner scanner = new Scanner(System.in);
        // Create a random number object
        Random random = new Random();
        // Generate a random number between 1 and 100
        int randomNumber = random.nextInt(100) + 1; // Random number between 1 and 100
        System.out.println("Guess a number between 1 and 100:");
        // Read the user's guess
        int guess = scanner.nextInt();

        // Loop until the user guesses the correct number
        while (guess != randomNumber) {
            if (guess < randomNumber)
                System.out.println("Try again (hint: higher):");
            else
                System.out.println("Try again (hint: lower):");
            guess = scanner.nextInt();
        }
        // Output the correct guess
        System.out.println("Congratulations! You guessed the number " + randomNumber +
" correctly.");
    }
}
```

Output:

```
Guess a number between 1 and 100:
50
Try again (hint: higher):
60
Try again (hint: higher):
70
Try again (hint: lower):
65
Try again (hint: lower):
64
Try again (hint: lower):
63
Congratulations! You guessed the number 63 correctly.

Process finished with exit code 0
```

Q7.

Code:

```
package Q_07;

import java.util.Scanner;

public class Q_07 {
    public static void main(String[] args) {
        // Create a scanner object to read input
        Scanner scanner = new Scanner(System.in);
        System.out.println("Please enter a sentence: ");
        // Read the input sentence
        String sentence = scanner.nextLine();
        System.out.println("Please enter a word to be replaced: ");
        // Read the word to be replaced
        String word = scanner.nextLine();
        System.out.println("Please enter a word to replace with: ");
        // Read the word to replace with
        String replace = scanner.nextLine();

        // Find the first occurrence of the word in the sentence
        int location = sentence.indexOf(word);
        // Find the word length
        int wordLength = word.length();
        String temp = sentence;

        // Replace all occurrences of the word in the sentence
        while (location >= 0) {
            temp =
sentence.substring(0,location)+replace+sentence.substring(location+wordLength);
            location = temp.indexOf(word);
            sentence = temp;
        }
        // Output the modified sentence
        System.out.println(temp);
    }
}
```



Output:

```
Please enter a sentence:  
time after time, he said there would be time, but time ran out  
Please enter a word to be replaced:  
time  
Please enter a word to replace with:  
chance  
chance after chance, he said there would be chance, but chance ran out  
  
Process finished with exit code 0
```