**Problem Statement – 1**

/\*

Write a Java program to solve quadratic equations (use if, else if and else).

Definition of Done:

DoD 1: The program asks the values of coefficients of a quadratic equation.

DoD 2: The program should display the roots or an appropriate message.

\*/

import java.util.Scanner;

/\*\*

 \* practical\_2\_problem\_statement\_1

 \*/

public class practical\_2\_problem\_statement\_1 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("\nEnter the Values of Coefficients of the Quadratic Equation: ax^2 + bx + c = 0");

        System.out.print("\nEnter tha Value of a: ");

        int a = sc.nextInt();

        System.out.print("Enter tha Value of b: ");

        int b = sc.nextInt();

        System.out.print("Enter tha Value of c: ");

        int c = sc.nextInt();

        System.out.println("\nThe Quaratic Equation : " + a + "x^2 + " + b + "x + " + c + " = 0");

        int D = b \* b - 4 \* a \* c;

        if (D > 0) {

            System.out.println("\nThe Quadratic Equation Has Real Roots.");

        } else if (D < 0) {

            System.out.println("\nThe Quadratic Equation Has Imaginary Roots.");

        } else if (D == 0) {

            System.out.println("\nThe Quadratic Equation Has Real and Equal Roots.");

        }

    }

}

**Output:**

Graphical user interface, text, application, email

Description automatically generated

**Problem Statement - 2**

/\*

Write a Java program that asks the user to provide a single character from the alphabet.

Print Vowel or Consonant, depending on the user input.

If the user input is not a letter (between a and z or A and Z), or is a string of length > 1,

print an error message.

Definition of Done:

DoD 1: The program asks an input from the user.

DoD 2: A single character input is taken from the user or an error message is generated.

DoD 3: The program should print “Vowel” if the entered character is a vowel and

“Consonant” if the entered character is a consonant.

\*/

import java.util.Scanner;

/\*\*

 \* practical\_2\_problem\_statement\_2

 \*/

public class practical\_2\_problem\_statement\_2 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("\nEnter a character: ");

        String character = sc.next();

        int ascii = character.charAt(0);

        if (character.length() == 1) {

            if (ascii >= 65 && ascii <= 90 || ascii >= 97 && ascii <= 122) {

                if (character.equalsIgnoreCase("a") ||

                        character.equalsIgnoreCase("e") ||

                        character.equalsIgnoreCase("i") ||

                        character.equalsIgnoreCase("o") ||

                        character.equalsIgnoreCase("u")) {

                    System.out.println("\nThe Entered Character is a Vowel.");

                } else {

                    System.out.println("\nThe Entered Character is a Consonant");

                }

            } else {

                System.out.println("Invalid Input! The Entered Value is not a Alapahbetic Character.");

            }

        } else {

            System.out.println("Invalid Input! You Have Entered More than One Character.");

        }

    }

}

**Output:**

Graphical user interface, text, application, email

Description automatically generated

**Problem Statement - 3**

/\*

Write a Java program to print following structure:

\*

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\*\*\*

\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*\*

\*/

import java.util.Scanner;

/\*\*

 \* practical\_2\_problem\_statement\_3

 \*/

public class practical\_2\_problem\_statement\_3 {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        // System.out.print("Enter the Number of Rows: ");

        // int n = sc.nextInt();

        int n = 6;

        for (int i = 1; i <= n; i++) {

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

                System.out.print("\*");

            }

            System.out.println();

        }

    }

}

**Output:**

Graphical user interface, text, application, email

Description automatically generated