Problem 1: Process a coffee order: take customer size choice, calculate total price based on size and add-ons, and handle a list of 5 drink types.

```
import java.util.Scanner;


public class CoffeeOrderSimple {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);


      System.out.println("Welcome to Coffee Shop!");
      System.out.println("Drinks: 1.Espresso 2.Latte 3.Cappuccino 4.Americano 5.Mocha");
      System.out.print("Enter drink number (1-5): ");
      int drink = sc.nextInt();


      double price = 0;
      switch (drink) {
         case 1: price = 80; break;
         case 2: price = 100; break;
         case 3: price = 110; break;
         case 4: price = 90; break;
         case 5: price = 120; break;
```

```
            default:
                System.out.println("Invalid drink!");
                return;
        }

        System.out.println("Choose size: 1.Small 2.Medium 3.Large");
        int size = sc.nextInt();

        if (size == 2) price += 20;
        else if (size == 3) price += 40;

        System.out.print("Add extra shot? (y/n): ");
        char addOn = sc.next().charAt(0);
        if (addOn == 'y' || addOn == 'Y') price += 15;

        System.out.println("\nYour total coffee price is: ₹" + price);
        System.out.println("Thank you! ☕ ");

        sc.close();
    }
}
```

Problem 2: Create a method that accepts two numbers and an operation symbol. Use a switch to perform and return the result of addition, subtraction, multiplication, or division.

```
public class Calculator {


   public static double calculate(double num1, double num2, char operator) {
      double result;


      switch (operator) {
         case '+':
            result = num1 + num2;
            break;


         case '-':
            result = num1 - num2;
            break;


         case '*':
            result = num1 * num2;
            break;


         case '/':
```

```
            if (num2 == 0) {
                throw new ArithmeticException("Cannot divide by zero.");
            }
            result = num1 / num2;
            break;

        default:
            throw new IllegalArgumentException("Invalid operator: " + operator);
    }

    return result;
}

public static void main(String[] args) {
    // Example usage
    double a = 10;
    double b = 5;

    System.out.println("Addition: " + calculate(a, b, '+'));
    System.out.println("Subtraction: " + calculate(a, b, '-'));
    System.out.println("Multiplication: " + calculate(a, b, '*'));
    System.out.println("Division: " + calculate(a, b, '/'));
```

```
    }
}
```

Problem 3: Input a string and count vowels, consonants, digits, and special characters using loops and conditionals.

```
import java.util.Scanner;


public class CharacterCounter {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);


        // Input
        System.out.print("Enter a string: ");
        String input = scanner.nextLine();


        // Counters
        int vowels = 0, consonants = 0, digits = 0, specialChars = 0;


        // Convert to lowercase for easier vowel checking
        String str = input.toLowerCase();


        // Loop through characters
        for (int i = 0; i < str.length(); i++) {
```

```
    char ch = str.charAt(i);

    if (Character.isLetter(ch)) {
        // Check for vowels
        if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {
            vowels++;
        } else {
            consonants++;
        }
    } else if (Character.isDigit(ch)) {
        digits++;
    } else if (!Character.isWhitespace(ch)) {
        // Ignore spaces, count other characters as special
        specialChars++;
    }
}

// Output
System.out.println("Vowels: " + vowels);
System.out.println("Consonants: " + consonants);
System.out.println("Digits: " + digits);
System.out.println("Special Characters: " + specialChars);
```

```
        scanner.close();
    }
}
```

Problem 4: For n customers, input name, account type, and balance. Apply 4% interest for savings and 6% for fixed accounts, then display updated balances.

```
import java.util.Scanner;

class Customer {
    String name;
    String accountType;
    double balance;

    // Constructor
    Customer(String name, String accountType, double balance) {
        this.name = name;
        this.accountType = accountType;
        this.balance = balance;
    }

    // Apply interest based on account type
    void applyInterest() {
```

```
        if (accountType.equalsIgnoreCase("Savings")) {
            balance += balance * 0.04;
        } else if (accountType.equalsIgnoreCase("Fixed")) {
            balance += balance * 0.06;
        } else {
            System.out.println("Invalid account type for " + name);
        }
    }

    // Display customer info
    void display() {
        System.out.println("Name: " + name);
        System.out.println("Account Type: " + accountType);
        System.out.printf("Updated Balance: %.2f\n", balance);
        System.out.println("------------------------");
    }
}

public class BankInterestApp {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
```

```
// Input number of customers
System.out.print("Enter number of customers: ");
int n = scanner.nextInt();
scanner.nextLine(); // Consume newline

Customer[] customers = new Customer[n];

// Input details for each customer
for (int i = 0; i < n; i++) {
    System.out.println("Enter details for Customer " + (i + 1) + ":");

    System.out.print("Name: ");
    String name = scanner.nextLine();

    System.out.print("Account Type (Savings/Fixed): ");
    String accountType = scanner.nextLine();

    System.out.print("Balance: ");
    double balance = scanner.nextDouble();
    scanner.nextLine(); // Consume newline

    customers[i] = new Customer(name, accountType, balance);
```

```
        }

        // Apply interest and display results
        System.out.println("\n--- Updated Balances ---");
        for (Customer c : customers) {
            c.applyInterest();
            c.display();
        }

        scanner.close();
    }
}
```

Problem 5: Read 5 daily temperatures into an array. Use a loop and a method to convert each temperature from Celsius to Fahrenheit, displaying both.

```
import java.util.Scanner;

public class TemperatureConverter {

    // Method to convert Celsius to Fahrenheit
    public static double celsiusToFahrenheit(double celsius) {
        return (celsius * 9 / 5) + 32;
    }
```

```
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        double[] celsiusTemps = new double[5];

        // Input 5 temperatures
        System.out.println("Enter 5 daily temperatures in Celsius:");
        for (int i = 0; i < 5; i++) {
            System.out.print("Temperature " + (i + 1) + ": ");
            celsiusTemps[i] = scanner.nextDouble();
        }

        // Display Celsius and Fahrenheit
        System.out.println("\nCelsius to Fahrenheit Conversion:");
        for (int i = 0; i < 5; i++) {
            double fahrenheit = celsiusToFahrenheit(celsiusTemps[i]);
            System.out.printf("Day %d: %.2f°C = %.2f°F\n", (i + 1), celsiusTemps[i],
fahrenheit);
        }

        scanner.close();
    }
```

}

Problem 6: Accept number of units consumed and calculate bill based on slab rates using conditionals and methods.

```
import java.util.Scanner;


public class ElectricityBillCalculator {


    // Method to calculate bill based on units
    public static double calculateBill(int units) {
        double bill = 0;


        if (units <= 100) {
            bill = units * 1.5;
        } else if (units <= 300) {
            bill = (100 * 1.5) + ((units - 100) * 2.5);
        } else if (units <= 500) {
            bill = (100 * 1.5) + (200 * 2.5) + ((units - 300) * 4.0);
        } else {
            bill = (100 * 1.5) + (200 * 2.5) + (200 * 4.0) + ((units - 500) * 6.0);
        }


        return bill;
```

```
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Input
        System.out.print("Enter number of units consumed: ");
        int units = scanner.nextInt();

        // Calculate bill
        double totalBill = calculateBill(units);

        // Output
        System.out.printf("Total bill for %d units: ₹%.2f\n", units, totalBill);

        scanner.close();
    }
}
```

Problem 7: Input a string and check if it’s a palindrome (ignore case and spaces). Use string methods and exception handling.

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

```
public class PalindromeChecker {

    // Method to check if a string is a palindrome
    public static boolean isPalindrome(String input) {
        // Remove spaces and convert to lowercase
        String cleaned = input.replaceAll("\\s+", "").toLowerCase();

        // Reverse the string
        String reversed = new StringBuilder(cleaned).reverse().toString();

        return cleaned.equals(reversed);
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        try {
            // Input string
            System.out.print("Enter a string: ");
            String input = scanner.nextLine();

            // Check for empty input
```

```
            if (input.trim().isEmpty()) {
                throw new IllegalArgumentException("Input cannot be empty.");
            }

            // Check palindrome
            if (isPalindrome(input)) {
                System.out.println("The string is a palindrome.");
            } else {
                System.out.println("The string is not a palindrome.");
            }

        } catch (Exception e) {
            System.out.println("Error: " + e.getMessage());
        } finally {
            scanner.close();
        }
    }
}
```

Problem 8: Read a word (**String**). Use a **loop** and a **switch** on each character to replace 'a' with '4', 'e' with '3', and 'o' with '0'.

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

```
public class ReplaceCharacters {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Input
        System.out.print("Enter a word: ");
        String input = scanner.nextLine();

        StringBuilder modified = new StringBuilder();

        // Loop through each character
        for (int i = 0; i < input.length(); i++) {
            char ch = input.charAt(i);

            // Use switch to replace specific characters
            switch (Character.toLowerCase(ch)) {
                case 'a':
                    modified.append('4');
                    break;
                case 'e':
                    modified.append('3');
                    break;
```

```
            case 'o':
                modified.append('0');
                break;
            default:
                modified.append(ch); // keep character as is
        }
    }

    // Output
    System.out.println("Modified word: " + modified.toString());

    scanner.close();
  }
}
```