Level 1

Task: Temperature Converter Task 1

Description: Create a program that converts temperatures between Celsius and Fahrenheit. Prompt the user to enter a temperature value and the unit of measurement, and then perform the conversion Display the converted temperature.

```
import java.util.*;
public class Task1 {
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    System.out.print("Enter the temperature value: ");
    double temperature = scanner.nextDouble();
System.out.print("Enter the unit of measurement (C for Celsius, F for Fahrenheit): ");
      char unit = scanner.next().charAt(0);
if (unit == 'C' || unit == 'c') {
      double fahrenheit = celsiusToFahrenheit(temperature);
      System.out.printf("%.2f Celsius is %.2f Fahrenheit%n", temperature, fahrenheit);
}
else if (unit == 'F' || unit == 'f') {
     double celsius = fahrenheitToCelsius(temperature);
System.out.printf("%.2f Fahrenheit is %.2f Celsius%n", temperature, celsius);
}
else {
System.out.println("Invalid unit of measurement.");
 }
 }
public static double celsiusToFahrenheit(double celsius) {
      return (celsius * 9 / 5) + 32;
}
public static double fahrenheitToCelsius(double fahrenheit) {
      return (fahrenheit - 32) * 5 / 9;
 }
 }
```

Output:

Enter the temperature value: 54

Enter the unit of measurement (C for Celsius, F for Fahrenheit): f

54.00 Fahrenheit is 12.22 Celsius

Enter the temperature value: 45

Enter the unit of measurement (C for Celsius, F for Fahrenheit): c

45.00 Celsius is 113.00 Fahrenheit

Task: Palindrome Checker Task 2

Description: Implement a program that checks whether a given word or phrase is a palindrome. A palindrome is a word or phrase that reads the same forwards and backward, ignoring spaces and punctuation

=>

```
import java.util.*;

public class Task2 {

 public static void main(String[] args) {

            Scanner sc = new Scanner(System.in);

            System.out.print("Enter a word or phrase: ");

            String input = sc.nextLine();

            boolean isPalindrome = isPalindrome(input);

            if (isPalindrome) {

               System.out.println("The given word or phrase is a palindrome.");

            } else {

               System.out.println("The given word or phrase is not a palindrome.");

            }

        }

  public static boolean isPalindrome(String str) {

          String cleanedStr =  str.replaceAll("[^a-zA-Z0-9]", "").toLowerCase();

            int length = cleanedStr.length();

            for (int i = 0; i < length / 2; i++) {

               if (cleanedStr.charAt(i) != cleanedStr.charAt(length - 1 - i)) {

                  return false;

               }

            }

          return true;

        }

    }
```

Output:

Enter a word or phrase: Level

The given word or phrase is a palindrome.

Task: Student Grade Calculator Task 3

Description: create a program that calculates and displays the average grade of a student. Prompt the user to enter the number of grades to be entered, and then input each grade. Calculate the average and display it to the user

```
import java.util.*;

public class Task3 {

    public static void main(String[] args) {

            Scanner scanner = new Scanner(System.in);

            System.out.print("Enter the number of grades: ");

            int numberOfGrades = scanner.nextInt();

            double[] grades = new double[numberOfGrades];

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

                System.out.print("Enter grade " + (i + 1) + ": ");

                grades[i] = scanner.nextDouble();

            }

            double average = calculateAverage(grades);

            displayAverage(average);

        }

        public static double calculateAverage(double[] grades) {

            double sum = 0;

            for (double grade : grades) {

                sum += grade;

            }

            return sum / grades.length;

        }

        public static void displayAverage(double average) {

            System.out.printf("The average grade is: %.2f%n", average);

        }

    }
```

Output

```
Enter the number of grades: 6
Enter grade 1: 85
Enter grade 2: 95
Enter grade 3: 80
Enter grade 4: 75
Enter grade 5: 60
Enter grade 6: 74
The average grade is: 78.17
```

Task: Random Password Generator Task 4

Description: Build a program that generates a random password for the user. Prompt the user to enter the desired length of the password and specify whether it should include numbers, lowercase letters, uppercase letters, and special characters. Generate the password accordingly and display it to the user.

```
import java.util.Random;

import java.util.Scanner;

public class Task4 {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);


        System.out.print("Enter the desired length of the password: ");

        int length = scanner.nextInt();


        System.out.print("Include numbers? (y/n): ");

        boolean includeNumbers = scanner.next().toLowerCase().charAt(0) == 'y';


        System.out.print("Include lowercase letters? (y/n): ");

        boolean includeLowercase = scanner.next().toLowerCase().charAt(0) == 'y';


        System.out.print("Include uppercase letters? (y/n): ");

        boolean includeUppercase = scanner.next().toLowerCase().charAt(0) == 'y';


        System.out.print("Include special characters? (y/n): ");

        boolean includeSpecialChars = scanner.next().toLowerCase().charAt(0) == 'y';


        String password = generatePassword(length, includeNumbers, includeLowercase,
includeUppercase, includeSpecialChars);



        System.out.println("Generated password: " + password);
```

```
        scanner.close();
    }

    // Method to generate a random password based on user specifications
    public static String generatePassword(int length, boolean includeNumbers, boolean includeLowercase,
                                          boolean includeUppercase, boolean includeSpecialChars) {
        String numbers = "0123456789";
        String lowercase = "abcdefghijklmnopqrstuvwxyz";
        String uppercase = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";
        String specialChars = "!@#$%^&*()-_=+[]{}|;:'\",.<>?/`~";

        String allChars = "";
        if (includeNumbers) {
            allChars += numbers;
        }
        if (includeLowercase) {
            allChars += lowercase;
        }
        if (includeUppercase) {
            allChars += uppercase;
        }
        if (includeSpecialChars) {
            allChars += specialChars;
        }

        if (allChars.isEmpty()) {
            throw new IllegalArgumentException("At least one character type should be selected.");
        }

        Random random = new Random();
        StringBuilder password = new StringBuilder();
```

```
        for (int i = 0; i < length; i++) {
            int randomIndex = random.nextInt(allChars.length());
            password.append(allChars.charAt(randomIndex));
        }

        return password.toString();
    }
}
```

Output:

Enter the desired length of the password: 10

Include numbers? (y/n): y

Include lowercase letters? (y/n): y

Include uppercase letters? (y/n): y

Include special characters? (y/n): n

Generated password: AEd8Yb8chM