🛠️ PRACTICE PROBLEM 1:

String Creation and Manipulation

Task: Create a program that demonstrates different ways to create strings and basic manipulation.

```
public class StringManipulation{
    public static void main(String[] args) {
        // TODO: Create the same string "Java Programming" using 3
different methods:
        // 1. String literal
        // 2. new String() constructor
        // 3. Character array

        // TODO: Compare the strings using == and .equals()
        // Print the results and explain the difference

        // TODO: Create a string with escape sequences that displays:
        // Programming Quote:
        //     "Code is poetry" - Unknown
        //     Path: C:\Java\Projects
    }
}
```

🛠️ PRACTICE PROBLEM 2:

String Input and Processing

Task: Create a program that takes user input and processes it using various string methods.

```
import java.util.Scanner;

public class StringMethods{
```

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

        // TODO: Ask user for their full name (first and last name)
        // TODO: Ask user for their favorite programming language
        // TODO: Ask user for a sentence about their programming experience

        // TODO: Process the input:
        // 1. Extract first and last name separately
        // 2. Count total characters in the sentence (excluding spaces)
        // 3. Convert programming language to uppercase
        // 4. Display a formatted summary

        scanner.close();
    }
}
```

🛠️ PRACTICE PROBLEM 3:

String Arrays and Methods

Task: Create a program that manages a list of student names using string arrays and methods.

```
public class StringArrays {

    // TODO: Create a method that takes a string array of names
    // and returns the longest name
    public static String findLongestName(String[] names) {
        // Your code here
    }

    // TODO: Create a method that counts how many names
    // start with a given letter (case-insensitive)
    public static int countNamesStartingWith(String[] names, char letter) {
        // Your code here
    }
```

```
    // TODO: Create a method that formats all names to "Last, First" format
    // Assume names are given as "First Last"
    public static String[] formatNames(String[] names) {
        // Your code here
    }

    public static void main(String[] args) {
        String[] students = {"John Smith", "Alice Johnson", "Bob Brown",
"Carol Davis", "David Wilson"};

        // TODO: Test all your methods and display results
    }
}
```

🛠️ PRACTICE PROBLEM 4:

Complete String Application (10 minutes)

Task: Create a simple text processor that combines all concepts learned.

```
import java.util.Scanner;

public class TextProcessor{

    // TODO: Method to clean and validate input
    public static String cleanInput(String input) {
        // Remove extra spaces, convert to proper case
        // Return cleaned string
    }

    // TODO: Method to analyze text
    public static void analyzeText(String text) {
        // Count: words, sentences, characters
        // Find: longest word, most common character
        // Display statistics
```

```
    }

    // TODO: Method to create word array and sort alphabetically
    public static String[] getWordsSorted(String text) {
        // Split text into words, remove punctuation, sort
        // Return sorted array
    }

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

        // TODO: Create a text processor that:
        // 1. Asks user for a paragraph of text
        // 2. Cleans and validates the input
        // 3. Analyzes the text (word count, character count, etc.)
        // 4. Shows the words in alphabetical order
        // 5. Allows user to search for specific words

        System.out.println("=== TEXT PROCESSOR ===");
        // Your implementation here

        scanner.close();
    }
}
```