Title

Analyze the user input string.

Background

N/A

Program Specifications

Write a program to analyze the input string and display the following information:
- Display the number of characters in the string.
- Display the all characters, uppercase characters, lowercase characters.
- Display the list of number, list of even numbers, list of odd numbers, and list of square numbers.
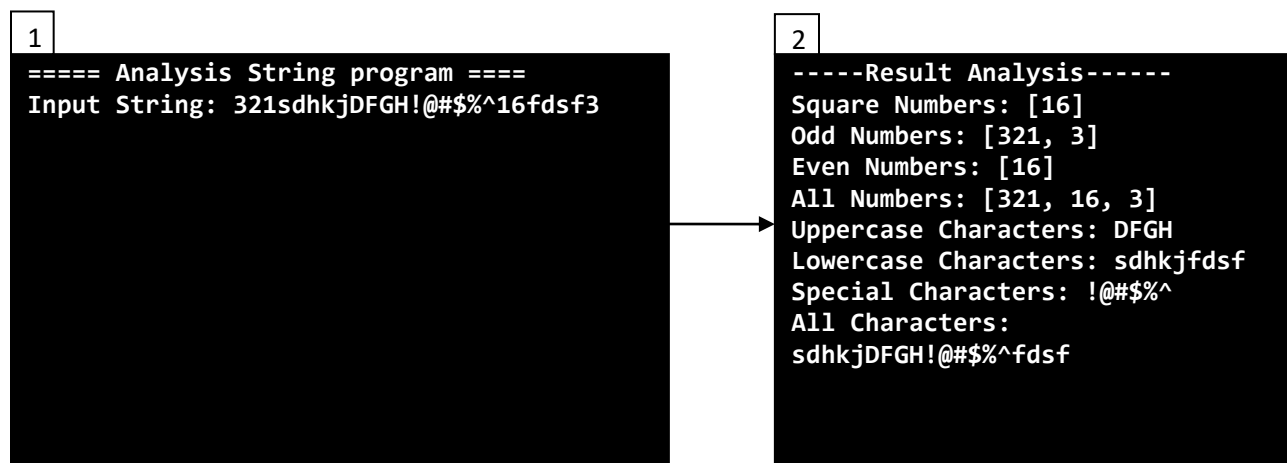- Display the special characters

Function details:

Function 1: Display Gui And Input Data.
- User runs program. The program prompts user to input data.
- Auto next **Function2**.

Function 2: Perform function
- Analyze and display result
  - Display the number of characters in the string.
  - Display the all characters, uppercase characters, lowercase characters.
  - Display list of numbers, list of even numbers, list of odd number, and list of square numbers
  - Display the special characters
- Exit the program.

Expectation of User interface:

```
1
===== Analysis String program ====
Input String: 321sdhkjDFGH!@#$%^16fdsf3
```

```
2
-----Result Analysis------
Square Numbers: [16]
Odd Numbers: [321, 3]
Even Numbers: [16]
All Numbers: [321, 16, 3]
Uppercase Characters: DFGH
Lowercase Characters: sdhkjfdsf
Special Characters: !@#$%^
All Characters:
sdhkjDFGH!@#$%^fdsf
```

Guidelines

Student must implement methods

- getNumber
- getCharacter

in startup code.

Hint:
- Create AnalysisStringclass which includes the two methods as described in Functional Requirements section.
  - Method getNumber to retrieve the following results
    - List all numbers (using Regular Expressions)
    - List even numbers (number% 2 == 0)
    - List odd numbers (number% 2!= 0)
    - List square numbers (using Math.sqrt)
  - Method getCharacter to retrieve the following results
    - String of all characters
    - String of special characters (using Regular Expressions)
    - String of uppercase characters (usingCharacter.isUpperCase())
    - String of lowercase characters (opposite)

Function 1: Analyze the number types
- Method name: public HashMap<String, List<Interger>>getNumber(String input)
  - Input:
    - input: the input string.
  - Return: analysis result.

Function 2: Analyze the character types and special characters
- Method name: public HashMap<String, StringBuilder>getCharacter(String input)
  - Input:
    - input: the input string.
  - Return: analysis result.