

Assignment questions Mastering java 8

Problem Statement 1:

Create a Java program that uses JShell to execute mathematical expressions input by the user. The program should prompt the user to input expressions for evaluation, handle basic mathematical operations (addition, subtraction, multiplication, division), and display the results. It should also provide error handling for invalid expressions to prevent program crashes, and the user can continue entering expressions until they decide to exit.

Example:

```
public static void main(String[] args) {  
    JShell jShell = JShell.create();  
    Scanner scanner = new Scanner(System.in);  
    while (true) {  
        // Prompt the user to input a mathematical expression  
        // Check if the user wants to exit  
        if (input.equalsIgnoreCase("exit")) { break; }  
        String jShellCode = // your jshell code expression  
        jShell.eval(jShellCode); // Handle JShell events  
        for (SnippetEvent event : jShell.snippets()) {  
            if (event.status() == SnippetEvent.Status.VALID) {  
                // Display the result }  
            else { // Handle invalid expressions }  
        }  
    }  
}
```

```
import jdk.jshell.*;  
import java.util.Map;  
import java.util.Scanner;  
import java.util.TreeMap;  
  
public class Calculator {  
    public static void main(String[] args) {  
        Map<String, String> history = new TreeMap<>();  
        // Create JShell instance  
        try (JShell jShell = JShell.create();  
            Scanner scanner = new Scanner(System.in)) {  
            System.out.println("Welcome to the JShell Calculator!");  
            System.out.println("Enter a mathematical expression (e.g., 2 + 2) \n  
or type 'exit' to quit. or type 'history' to get previous calculations");
```

```

        System.out.println("Type 'history/his' to view previously evaluated
expressions.");

        // Loop to continuously prompt user for input
        while (true) {
            // Prompt the user to input a mathematical expression
            System.out.print("Please enter a mathematical expression: ");
            String input = scanner.nextLine();

            // Check if the user wants to exit
            if (input.equalsIgnoreCase("exit")) {
                break;
            }

            // Check if the user wants to see history
            if (input.contains("his")) {
                if (history.isEmpty()) {
                    System.out.println("No history available yet.");
                } else {
                    System.out.println("Calculation History:");
                    history.forEach((expression, result) ->
                        System.out.println(expression + " = " + result));
                }
                continue;
            }

            // Evaluate the expression in JShell
            try {
                Iterable<SnippetEvent> events = jShell.eval(input);
                // Process the result
                boolean resultDisplayed = false;
                for (SnippetEvent event : events) {
                    if (event.status() == Snippet.Status.VALID) {
                        String result = event.value();

                        if (result != null) {
                            history.put(input, result); // Store in history
                            System.out.println("Result: " + result);
                            resultDisplayed = true;
                        } else {
                            history.put(input, "invalid"); // Store in history
                            System.out.println("Expression is valid but has
no result.");
                        }
                    }
                }

                // If no result is displayed, handle as invalid input
                if (!resultDisplayed) {
                    System.out.println("Invalid expression. Please try
again.");
                }
            } catch (Exception e) {
                System.out.println("Error evaluating expression. Please try
again.");
            }
        }
        System.out.println("Thank you for using JShell Calculator.
Goodbye!");
    }
}

```

