<u>Lab – Java – Threads - Responsive GUI</u>

Overview

Write an application that uses threads and updates the GUI from the other threads.

Create an FXML GUI Application

Create a new Java FXML GUI application.

Unresponsive GUI (no threads)

First, we will write a version of the GUI that does not use threads. Here is a screenshot of the GUI:

	-		×		
Show	Messag	e			
Start Long Running Operation					
			_		

- Add a button named Show Message to the layout. The button should show the message "I love JavaFX" in a JavaFX alert dialog box (use the Alert class). For example: Alert alert = new Alert(Alert.AlertType.INFORMATION); alert.setContentText("I love JavaFX"); alert.show();
- Write a method named longRunningOperation. This method should have a loop that runs five times. Inside the loop make the thread sleep for one second. Before the loop print the message "Long running operation started" and after the loop print the message "Long running operation ended".
- Add a button name Start Long Running Operation to the layout. It should have an event handler that calls the longRunningOperation method.

Run the application. Press the Start Long Running Operation button then immediately press the Show Message button. Does the message appear? Keep pressing the Show Message button. When does the message finally appear?

Responsive GUI (threads)

Update the application so that the GUI will respond even when it is performing the long running operation. You will need to add code to execute the longRunningOperation method on another thread. You can do this using a normal thread.

Run the application. Press the Start Long Running Operation button then immediately press the Show Message button. Does the message appear?

Update GUI from Other Thread

Add a label to the layout below the Start Long Running Operation button. For example:

		_		×			
Show Message							
	Start Long Running Operation						
Label							

When the Start Long Running Operation button is pressed it should change the text in the label to "Long Running Operation Started". Make this update from the other thread just before the loop (not in the main thread). After the loop ends set the message in the label to "Long Running Operation Ended" from inside the other thread. You will need to use a special method to make updates to the GUI from another thread.



Pressing the Show Message button while the long running operation is being performed should still work.

Disable Start Long Running Operation When Its Executing

Add code to the main thread that will disable the Start Long Running Operation button when it is running and enable it when it finishes.



Progress Bar

Add a progress bar to the application. Each time through the loop in the other thread update the progress.

■ – □ ×	■ – □ ×	■ – □ ×
Show Message	Show Message	Show Message
Start Long Running Operation	Start Long Running Operation	Start Long Running Operation
Label	Long running operation started	Long running operation ended