

M10 Homework Assignment: Lambdas

Due Apr 19 by 11:59pm **Points** 100 **Submitting** a file upload **File Types** zip
Available until Apr 19 at 11:59pm

This assignment was locked Apr 19 at 11:59pm.

Complete a JavaFX GUI that allows a user to draw a line and then display information about that line.

Before You Begin

Carefully review the provided files.

LineInfoGUI: the main JavaFX program

- The program allows the user to click two points and create a line.
- There are three buttons to allow the user to request information about the line:
 - the distance between the starting and ending points of the line
 - the midpoint of the line
 - whether or not the line is horizontal or vertical
- When you run this program as provided, you should be able to create lines.
- The buttons have no functionality- this is what you will add.

LineInfoDisplayer: a functional interface with an enum and static factory method

- The functional interface has one method: `getInfo`.
 - Classes that implement this interface implement the `getInfo` method.
 - The `getInfo` method takes in a line and returns a String of information about that line.
 - In a pre-Java 8 setup, you could imagine writing three classes to implement this interface: `DistanceDisplayer`, `MidpointDisplayer`, `VertHorzDisplayer`.
- The interface declares an enum to describe the three types of line information we're using in this program.
- The interface contains a static factory method to create an object of type `LineInfoDisplayer` based on the type passed in as a parameter.

Requirements

As stated in the [Syllabus](#), homework that do not compile will receive 0 points. Note that compiler *warnings* are okay, but compiler *errors* that mean you cannot compile your code will result in a score of 0.

Requirements

1. Review the files provided.

- Make sure you have a good understanding of the methods and variables in the provided code.
2. **(45 points)** Complete the LineInfoDisplayer interface.
 - Implement the factory method to return three different possible LineInfoDisplayer objects based on the requested type passed in as a parameter.
 - Requirement: use lambdas.
 - Suggestion: use a switch statement.
 3. **(35 points)** Complete the LineInfoGUI class.
 - Write code to set the action of the three buttons.
 - For the action, assign a value to the lineInfoDisplayer variable using the static factory method you wrote in LineInfoDisplayer.
 - Update the appropriate Text variable to display the information.
 - Requirement: use lambdas.
 4. **(10 points)** Add a time stamp to the LineInfoGUI class.
 - When the user completes a line, display the time in some human-friendly format.
 - Update the variable timeText to display the information.
 - I do not list where this update should occur- that is part of what you should figure out.
 5. **(10 points)** Style: Your class should follow Java coding conventions and best practices. Follow naming conventions for variables, classes, and methods. Reduce duplicated code.

Note that you **must** use lambdas for this homework. Code written without lambdas will receive zero points.

Extra Credit

For 10 points extra credit, add a fourth type of line information- you can decide what it should be! Update both the GUI and the interface to support this fourth information type.

Provided Files and Example Video

Here are the provided files to modify.

[M10LambdaHomeworkFiles.zip](#)

Here is a video of a sample interaction with a completed program. The video does not include the extra credit.

Submission

To submit:

1. Remove any package statements from all files so that no classes are in a named package.
 - To do this, remove "package mypackage;" from the top of all files.
2. Zip together your LineInfoGUI.java and LineInfoDisplay.java files.
 - Be sure to zip the .java file, not the .class file.
3. Upload the zip file.

Groupwork

You can work in a group for up to five homeworks. You can earn 5 points extra credit for each submission (max 25 points). I encourage you to work in a group at least once. Programming in the real world is nearly always done with others and it's useful to practice working in a group!

If submitting as a group:

- **Submit one assignment only through one group member's account.**
- Put the names of all group members in the comment submission box on Canvas.
- Everyone in the group will receive the same score and feedback.