GUI Programming 2024 to 2025 – Year 2

Labwork 4: (10% overall or 100 points of 600 points for labwork this semester)

Topic: Listeners Continued and Menus in SWING

IMPORTANT NOTES:

- **NO COPYING PERMITTED AND ZERO MARKS WILL APPLY TO COPIED WORK. FURTHER ACTION MAY BE TAKEN AGAINST STUDENTS THAT HAVE BEEN FOUND TO COPY WORK.**

- **ASSESSMENT WILL INVOLVE ONE-TO-ONE QUESTIONS ABOUT YOUR SUBMITTED WORK. A COMPLETED SELF-ASSESSMENT SHEET WILL BE USED TO GUIDE THE ASSESSMENT. USE COMMENTS IN YOUR CODE TO ENSURE YOU DON'T FORGET WHY YOU WROTE CODE YOU MAY LATER BE ASKED ABOUT.**

- **ALL WORK MUST BE SUBMITTED TO MOODLE BY DATES SPECIFIED (SUBMISSION DEADLINES WILL BE POSTED ON MOODLE).**

- **MANY OF THE TASKS ASSIGNED BELOW CAN BE COMPLEX AND\OR THE DESCRIPTIONS MAY REQUIRE FURTHER CLARIFICATIONS. PLEASE USE THE AVAILABLE LAB TIMES TO ASK FOR CLARIFICATIONS AND ADVICE\HINTS ON THE TASKS BELOW.**

- **YOU CAN USE A SIMPLE JAVA ENABLED TEXT EDITOR IF YOU WISH, e.g., TEXTPAD or NOTEPAD. HOWEVER, I SUPPORT THE MOVING ON TO A MORE ADVANCED IDE AT THIS POINT ALSO (e.g., Eclipse or IntelliJ or NetBeans).**

- **CHATGPT and other similar AI tools that can code simple solutions are not permitted. THEY DO NOT TEACH YOU HOW TO BECOME A GOOD PROGRAMMER EITHER!**

Part 1 – JCheckBox with listeners (20 points)

Create a class called **Lab4Part1**. Create a JFrame that contains a JPanel with FOUR check boxes in it. The check boxes will have their text set to the following: "Tiny Font", "Large Font", "Very Big Font", "Huge Font". Make the four check boxes so that only ONE may be selected at a time (Hint: ButtonGroup). Add the check box panel to the **top** of the JFrame. Create and add a JLabel to the center region of the JFrame that has the text "Text To Resize". Make the GUI work so that the size of the text in the label changes size based on which check box is selected (Tiny, Large, Very Big, Huge). You may decide the exact size of each text font used.

- Create the frame (1 point)
- Create the FOUR check boxes (4 points)
- Make the check boxes so only one selectable (ButtonGroup) (3 points)
- Add the check boxes to the panel and place at top of frame (2 points)
- Add the label to the center of the frame with the correct text (2 points)
- Implement the listener and the correct handler for checkboxes (4 points)
- Make the handler method change the size of the text in label (4 points)

Part 2 – Menu with listeners (20 points)

Create a Java program called **Lab4Part2**. Create a JFrame that has a JMenu called 'Streaming Services'. Add at least five menu items with five different Streaming services of your choice (e.g. Netflix, NowTV etc.). Add a label to the main frame window. Implement listeners on the menu items so that when a particular Streaming Service is clicked an image of the correct company logo is shown in the label, e.g., select 'Netflix' and a picture of the Netflix logo appears.

- Create the menubar (and set) (2 points)
- Create the menu (2 points)
- Create and menu items and add all to the menu (6 points)
- Add the listeners and handler method (5 points)
- Get the images to appear correctly in the label (test it!) (5 points)

Part 3 – Menus with listeners and short cuts (30 points)

Create a JFrame class called **Lab4Part3**. Create a JFrame with a JMenu called 'News' and a second JMenu called 'Weather'. Modify the menus as described below:

The News Menu: Add at least TWO menu items to the news menu with the following headings 'Local News', 'International News'. When the user clicks the corresponding menu option make a CURRENT news related image appear in the GUI and also include a scrollable text area to describe the news item (e.g. The minimum wage was increased in budget 2024 – the news MUST be current). Add a mnemonic and appropriate accelerator to each of the menu items so that the menu options can be short-cut.

The Weather Menu: Add at least TWO menu items to the menu with the following headings 'Local Weather', 'International Weather'. When the user clicks the corresponding menu option make a CURRENT weather related image appear in the GUI and also include a scrollable text area to describe the weather event (e.g. Storm Babet, Floods in Cork! – the weather information or event MUST be current). Add a mnemonic and appropriate accelerator to each of the menu items so that the menu options can be short-cut, i.e., a key combination can be used.

- Create the menubar (and set) (2 points)
- Create and add the news menu (2 points)
- Create and add the weather menu (2 points)
- Create and add menuitems to news menu (2 x 2 points) (4 points)
- Create and add menuitems to weather menu (2 x 2 points) (4 points)
- Listeners for ALL menu items (4 points)
- Use of images and current news (2 points)
- Use of images and current weather event (2 points)
- Mnemonics and accelerators working (6 points)
- Scrollable textarea's (2 points)

Part 4 – Modified ATM machine with listeners and menus (30 points)

Create a class called **Lab4Part4**. Create a JFrame which modifies the ATM Machine created in Lab2Part4 so that at least THREE of the functionalities listed in the ATM work using listeners for the buttons AND include menus with shortcuts to carry out the same functions (any 3 functions can be chosen, e.g., lodge, withdraw, show balance). Use at least TWO accelerators and TWO mnemonics in the menu. You will need to add some sort of output label to show the response to the button pushes and menu selections. [Note: If you didn't get to do Lab2Part4 then you can do the whole thing from the start, or you can focus on the menus only and receive marks for those].

- Add the button listeners (3 points)
- Menubar (and set menu bar to frame) (2 points)
- Create and add the menu to menu bar (2 points)
- Add display\input label(s) to input\output information (3 points)
- Add the menu items (3 points)
- Add listeners for the menu items (3 points)
- Add at least TWO accelerators to menu items (4 points)
- Add at least TWO mnemonics to menu (4 points)
- Three functions minimum fully working with button handlers (3 points)
- Three functions fully working with menu handlers and shortcuts (3 points)