GUI Programming 2024 to 2025 – Year 2

Labwork 5: (10% overall or 100 points of 600 points for labwork this semester)

Topic: Slider, Progress Bar, Card Layout, Box Layout, Menus, Events, Modularization

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 – Use a JProgressBar combined with a JSlider (20 points)

Create a class called **Lab5Part1**. Create a JFrame that contains TWO components. The first components is a **JProgressBar** with a minimum value of 0 and a maximum value of 50. The second component is a **JSlider** also with a minimum value of 0 and a maximum value of 50. Layout out both components so that they are both clearly visible on the JFrame. Add listeners and handlers needed to make the JProgressBar mirror the value in the JSlider bar, i.e., if you move the slider bar up and down between 0 and 50 the progress bar moves up and down between 0 and 50 to exactly mirror the movements of the slider.

- Create the JFrame (1 point)
- Panels and layouts set so the components are well positioned (2 points)
- Create the progress bar and set values (4 points)
- Create the slider and set values (4 points)
- Create\Include the listener and handler (4 points)
- Implement the handler so the progress bar mirrors the slider (5 points)

Part 2 – Survey GUI with CardLayout (20 points)

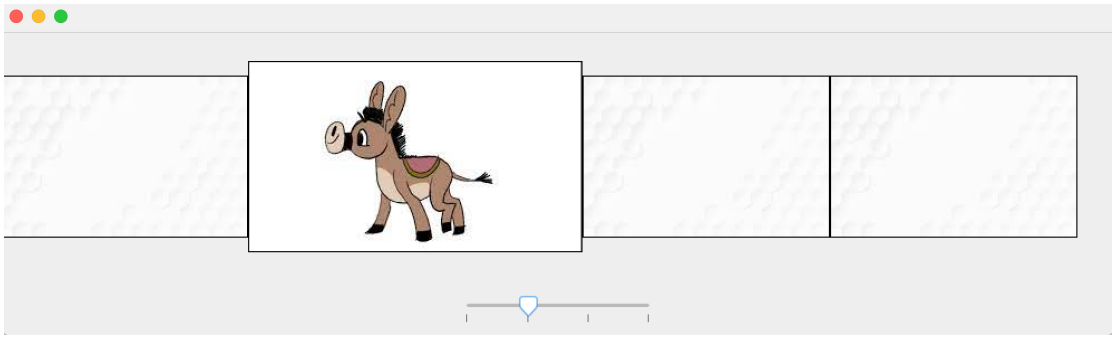
Create a class called **Lab5Part2**. Create a JFrame that conducts a small survey using four panels in a **card layout** (3 question panels and one for results). On the first three cards present three questions to the user which must have ONE response only (use radio buttons or check boxes that are contained in a button group), e.g., pick your favourite snack from the following Chocolate, Crisps, Popcorn etc. The questions should be chosen by you (about whatever you chose). The fourth card should show the results chosen from the current user (e.g. this user likes Crisps etc.). For full marks use at least one well-defined method to modularize the creation of the panels.

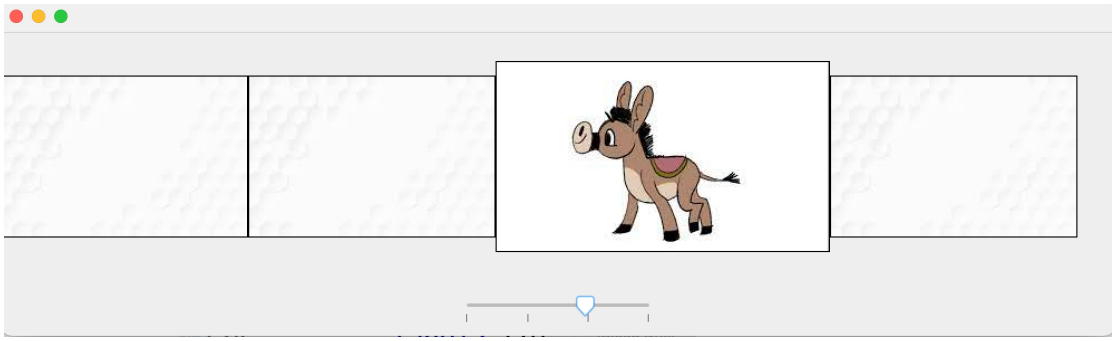
- Three survey panels with options (3 x 2) (6 points)
- Use of methods to build panels\cards (at least one for 2 pts.) (2 points)
- Use of Button groups to restrict choice to one option (MUTEX) (2 points)
- Response panel with survey results (in card layout) (2 points)
- Listeners added and working for components (2 points)
- Added all panels to Card Layout (2 points)
- Swapping of cards controlled by listener\handler (4 points)

Part 3 – BoxLayout with slider and change listener (30 points)

Create a class called **Lab5Part3**. Create a JFrame that contains a JPanel with FOUR JLabels stacked vertically or horizontally using a box layout (you may choose the orientation but you must use box layout). Place a Border around each of the labels and fill each label with a blank square\rectangular image (small enough to fit four of them in to the interface).

Add a slider (**JSlider**) to the interface so that when the user slides left and right on the slider a particular image of your choice is shown in the corresponding label, i.e., if the slider is all the way left the image shows in the left and all the rest remain blank (see the diagram below showing what the interface should show when the slider has the value 2 and 3).





- Create the frame (1 point)
- Create the FOUR labels (4 points)
- Set the box layout horizontal or vertical (2 points)
- Add panels to hold components (2 points)
- Add the labels to the layout and set the blank images (4 points)
- Set a border on each of the labels (3 points)
- Set the layout for the slider and add to interface (3 points)
- Implement the listener and the correct handler (5 points)
- Make the image appear to move (slide) from one label to next (6 points)

Part 4 – CardLayout with modularized JPanels (30 points)

Create a Java program called **Lab5Part4**. Create a JFrame that displays information about your favourite holiday destination in a JPanel and your favourite pastime in a second JPanel. You may choose to display two other pieces of information in both panels (cards) but it needs to be unique to you!, e.g., pets, hobbies, cars etc. You will use **CardLayout** to switch between these panels by using a JButton AND a JMenuitem (place the menu item to switch panels on a menu called 'View' at the top of the JFrame, the button can be placed anywhere that works on the frame without interfering with the display of the panels (cards)). Add an accelerator to the menu so that clicking CTRL-S will switch between the panels (cards).

Each of the panels should have a clearly defined title (with a nice Font) and an area to show an image of the destination/pastime and a small description in a JTextArea. The exact layout of the GUI is up to you but it must be well laid out in each panel. Add both panels to the card layout for switching displays.

If you use **modularization** to create the two panels (cards) it will be rewarded in this marking scheme (you can modularize the creation of the panels using **methods** or **classes**).

- Create the frame (2 points)
- Add the CardLayout (2 points)
- Create the first panel with Font title, Image, TextArea (4 points)
- Create the second panel with Font title, Image, TextArea (4 points)
- Add the switch button to switch between the cards (2 points)
- Create the menubar (and set) (1 point)
- Create the menu (1 point)
- Create menu item for switching and add to the menu (2 points)
- Add the listeners and handler methods for button switching (3 points)
- Add the listeners and handler methods for menu switching (3 points)
- Add accelerator to menu item to switch cards (2 points)
- Modularization of the panel creation (methods or classes) (4 points)