GUI Programming 2021 – Year 2
Labwork 5: (6% - or 60 points out of 500 points for labwork this semester)

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).**

Part 1 – Build a basic menu (10 points)

Create a class called **Lab5Part1**. Create a JFrame and add a JMenu to the JFrame's menubar. Call the menu 'Cities'. Add four menu items to the 'Cities menu using the names of any cities you wish (can be in Ireland or not). Add at least ONE image of a flag representing ONE of the cities in the menu (or the country where the city is in if there is no city flag - it should be a tiny image so it fits on the menu, e.g., 32x32).

- Create the menubar (and set) (1 point)
- Create menu and add to menu bar (3 points)
- Create menu items and menu (4 points)
- Add icon to ONE of the city menu items (2 points)

Part 2 – Menu with listeners (10 points)

Create a Java program called **Lab5Part2**. Create a JFrame that has a JMenu called 'Mobile networks'. Add at least three menu items with three different Mobile networks of your choice. Add a label to the main frame window. Implement listeners on the menu items so that when a particular network is clicked an image of the network company logo is shown in the label, e.g., select 'Gomo' and a picture of the Gomo logo appears.

- Create the menubar (and set) (1 point)
- Create the menu (2 points)
- Create and menu items (3 points)
- Add the listeners (2 points)
- Get the images to appear correctly (test it!) (2 points)

Part 3 – Menu with JCheckBoxMenuItem (10 points)

Create a Java program called **Lab5Part3**. Create a JFrame that has a JMenu that allows a JCheckBoxMenuItem to be selected. In the center of the JFrame add a JLabel that will display if the JCheckBoxMenuItem is selected or deselect (or "JCheckBox Off" or "JCheckBox On"). The output in the label must change to reflect the change in selection of the check box (so listeners and handlers needed, display on message in label when selected and off message when not selected).

- Create the menubar (and set) (1 point)
- Create the menu (2 points)
- Create and JCheckBoxMenuItem (3 points)
- Add the listeners (2 points)
- Make label change to show whether the check box item is selected (2 points)

Part 4 – Menus with listeners and short cuts (10 points)

Create a JFrame class called **Lab5Part4**. Create a JFrame with a JMenu called 'News'. Add at least three menu items to the menu with the following headings 'Local News', 'International News', 'Weather'. When the user clicks the corresponding menu option make a news related image appear in the GUI and also include a scrollable text area to describe the news item (e.g. International News could report that the US president got a new haircut or beat some deadly viral infection – 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.

- Create the menubar (and set) (1 point)
- Create and add the menu (2 points)
- Create and add menuitems (3 x 1 point) (3 points)
- Listeners for ALL menu items (shortcuts tested) (2 points)
- Short-cut working (1 point)
- Scrollable textarea (1 point)

Part 5 – Modified ATM machine with listeners and menus (20 points)

Create a class called **Lab5Part5**. Create a JFrame which modifies the ATM Machine created in Lab3Part5 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). 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 Lab3Part4 then you can do the whole thing from the beginning or you can focus on the menus only and receive marks for those]

- Add the button listeners (2 points)
- Menubar (and set) (1 point)
- Add the menu (2 points)
- Add display\input label(s) to input\output information (2 points)
- Add the menu items (2 points)
- Add listeners for the menu items (3 points)
- Add at least THREE accelerators to menu items (3 points)
- Add at least ONE mnemonic to menu (2 point)
- System fully working with button (1 point)
- System fully working with menus (2 points)