OLLSCOIL TEICNEOLAÍOCHTA BHAILE ÁTHA CLIATH
TU DUBLIN
TECHNOLOGICAL UNIVERSITY DUBLIN

# Technological University Dublin Blanchardstown Campus

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| **Academic term** | 2024-2025 |
| **Year of study** | 2 |

| **Programme code** | **Programme title** | **Module code** |
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| TU653 | Higher Certificate in Science in Computing in Information Technology | COMP H2011 |
| TU757 | Bachelor of Science in Computing in Information Technology | COMP H2011 |
| TU860 | Bachelor of Science (Honours) in Computing | COMP H2011 |
| TU863 | Bachelor of Science (Honours) in Computing in Digital Forensics and Cyber Security | COMP H2011 |

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| **Module title** | GUI Programming – Final Assessment (**40%** of overall grade) – Version 8 |

**Internal Examiner(s):** **Dr. Luke Raeside**
**External Examiner(s):** **Dr. Graham Healy**

## Instructions to candidates (READ VERY CAREFULLY):

1. **Please check that the module and programme which you are following is listed in the table above.**
2. **DOWNLOAD AND COMPLETE THE CORRET VERSION OF THE ASSIGNMENT FROM MOODLE (THERE ARE TEN VERSIONS):**
   - **VERSION 1 for students with student number ending with 4.**
   - **VERSION 2 for students with student number ending with 5.**
   - **VERSION 3 for students with student number ending with 6.**
   - **VERSION 4 for students with student number ending with 7.**
   - **VERSION 5 for students with student number ending with 8.**
   - **VERSION 6 for students with student number ending with 9.**
   - **VERSION 7 for students with student number ending with 0.**
   - **VERSION 8 for students with student number ending with 1.**
   - **VERSION 9 for students with student number ending with 2.**
   - **VERSION 10 for students with student number ending with 3.**
3. **YOU MUST CHOSE THE CORRECT ASSIGNMENT VERSION BASED ON YOUR STUDENT NUMBER IN ORDER TO RECEIVE A GRADE.**
4. **Attempt ALL parts of this assignment.**
5. **This is a 1 day assignment – upload the assignment to Moodle before 23:59pm on December 5th 2024.**
6. **Record TWO short video clips as part of this assignment (3 minutes approx.). Record a video before you start to code the solution AND record a video prior to submission of the completed code. VIDEOS MUST CONTAIN TECHNICAL DETAILS LIKE LAYOUTS, COMPONENTS etc. (things like PANELS used or planned to be used etc.)**

- **The initial video will summarize your plans for the coded solution, any difficulties you may feel you will have to overcome and include any designs or diagrams you have sketched (show to the camera).**
- **The second video will summarize what you managed to complete and summarize any difficulties encountered. Show the completed GUI(s) running, if possible, in this video. Ensure that you submit BOTH videos with the assignment. Failure to enclose the videos could result in an additional viva-voce examination (with -20% reduction), i.e., a follow-up one-to-one assessment. If you need to upload a link to the videos the links must be included in the submission and the lecturer must have download access.**

7. **IMPORTANT RULES FOR THE VIDEOS:**
    a. **I MUST SEE YOUR FACE TO INTRODUCE THE VIDEOS**
    b. **I MUST HEAR YOUR VOICE THROUGHOUT THE VIDEOS**
    c. **VIDEOS MUST BE IN ENGLISH.**

    **Failure to follow the above rules will result in a viva-voce examination being required (with -20% deduction), i.e., a follow-up one-to-one assessment that will be examined and graded based on student responses.**
    **NOTE: You may be selected for a viva-voce by the lecturer for unspecified reasons, e.g., random selection – in this case you will not incur a penalty. The lecturer will inform you of this at the time.**
8. **Java 1.8 is a minimum requirement for this assignment (Java 10+ recommended)**
9. **Self-assessment is optional for this assignment**
10. **ALL THE SUBMITTED WORK MUST BE YOUR OWN. THIS IS AN INDIVIDUAL ASSIGNMENT YOU CANNOT ASSIST OTHERS IN ANY WAY OR SEEK ASSISTANCE FROM ANYONE ELSE IN ANY WAY. ZERO MARKS WILL BE AWARED TO ANY STUDENT THAT ASSISTS ANOTHER OR RECEIVES ASSISTANCE WITH THIS ASSIGNMENT.**
11. **LATE SUBMISSION WILL INCUR PENALTIES:**
    - **Within first hour late will result in an automatic grade reduction of 20%, additional 20% reduction within every hour late thereafter, e.g., 1-2 hours late -40%, 2-4 hours late -60% etc.**
12. **YOU HAVE ALREADY SIGNED A COMMITMENT REGARDING ACADEMIC HONESTY THROUGH THE UNIVERSITY - HONOUR THAT COMMITMENT.**

## GUI PROGRAMMING FINAL ASSESSMENT 5th December 2024

**VERSION 8: For students with student number ending with 1.**

## Question 1 – Model a Household Cooker in SWING (30 Marks):

Create a JFrame GUI in Java SWING that mimics a household cooker. Show the manufacturer make of your cooker at the top of the JFrame in a JLabel. Create five zones to represent cooking zones on the GUI frame (you may use square\rectangle zones as bordered JLabel's, i.e., they do not need to be circular heating zones). Provide a dropdown menu to change the Font size of the title label showing the brand name to a small, medium or large font (decide on your won appropriate Font sizes). For each cooking zone provide a slider bar from 0 to 10 that increases or decreases the power to the zone. A zero value represents 'OFF' and selecting 10 represents full power. When a zone is at full power change the color to bright red. When a zone is at zero the color should be the same as the starting color or background. The user slides to increase\decrease the redness of the zone from 0 to 10 in the same way a normal household cooker works, i.e., a value of 2 shows a dim\dark red color but a value of 8 will show bright red (10 being the brightest). It is possible to have all zones on at the same time but each zone needs to be separately controlled by its own slider bar.

Marking guideline:

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| - Code the JFrame (including visibility and size etc.) | **(2 marks)** |
| - Create and use panels (including setting layouts) | **(3 marks)** |
| - Create and add cooking zone components | **(3 marks)** |
| - Create and add the sliders | **(3 marks)** |
| - Use of the Font class | **(2 marks)** |
| - Add components to the panels and display within GUI | **(3 marks)** |
| - Implement listeners and handlers to change the zone values | **(4 marks)** |
| - Implement listeners and handlers for Font changer dropdown menu | **(4 marks)** |
| - Modularization (use of methods and/or separate classes) | **(3 marks)** |
| - Works to spec (including customizations [font size]) | **(2 marks)** |
| - Add comments to the code to explain key activities | **(1 mark)** |

## Question 2: Mouse Events (10 Marks):

Create a JFrame GUI in Java SWING that contains a JLabel and the text "An image will appear here when you move the mouse within the label". Implement mouse event handling so that an IMAGE AND A BORDER appears in the label ONLY when the mouse pointer **enters** within the label. As soon the mouse **exits** the label remove the image and replace with the original text message above and the border disappears.

Marking guideline:

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| - Code the JFrame (including visibility and size etc.) | **(2 marks)** |
| - Create the JLabel and set it in the frame (with the border) | **(2 marks)** |
| - Create the image in Java (appropriately sized) | **(1 mark)** |
| - Add the listener(s)\handler(s) to show the image and border. | **(3 marks)** |
| - Capture the exit event and set the label back to original | **(2 marks)** |

## 1. Self-assessment (optional):

You have been supplied with a self-assessment sheet (as a separate Excel spreadsheet). You MAY use the self-assessment sheet to indicate to the assessor how you feel you have performed and enter comments. Submit the completed self-assessment sheet **optionally** with the assignment upload.

## 2. GUI Programming Final Assessment Checklist:

### Before and During the assignment, have you?:

| | Y/N |
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| Recorded a video at the beginning of the coding (3 min approx.) | |
| Included the design sketches in the pre-coding video? | |

### Before submitting the assignment, have you included the following in the zip file for submission:

| | Y/N |
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| Your student number, e.g., B00XXXXX_Final.zip? | |
| All source code? | |
| Included two videos (at start of coding and at end before submission):<br>(large videos can be included as a ONEDRIVE link if needed) | |
| Included supporting images and other needed files (e.g., design sketches)? | |
| Included completed self-assessment (**optional**)? | |