

Steps to run my code:

- 1) Please use IntelliJ.
- 2) Use openjdk-21 as the SDK.
- 3) Run the main file.

GUI functions:

- 1) GUI Forms:
 - a. To design the basic setup of the application.
- 2) Utilize JFrame, JPanel, JLabel, JButton:
 - a. JFrame: For the main application window.
 - b. JButton: For actions like opening files.
 - c. JLabel: For displaying images, especially the TIF images, or text.
 - d. JPanel: For setup the component.
- 3) Layout Management:
 - a. BorderLayout: homePanel and bottomPanel.
 - b. GridBagLayout: topPanel and centerPanel.
- 4) Event Handling:
 - a. ActionListeners: To apply action for every buttons.
- 5) Dialogs and File Selection:
 - a. JFileChooser: For the open file dialog.
 - b. FileNameExtensionFilter: For filtering the file type (wav and tif).

Reading and plotting the waveform of the WAV Files:

- 1) AudioInputStream:
 - a. To get the audio system from the selected file.
 - b. To get different data, such as: frame length, and the samples data.
- 2) ByteArray:
 - a. To store samples data of both left and right channel.
 - b. Combine both high and low into a sixteen-bit sample.
- 3) drawLine():
 - a. To draw the lines between two points.

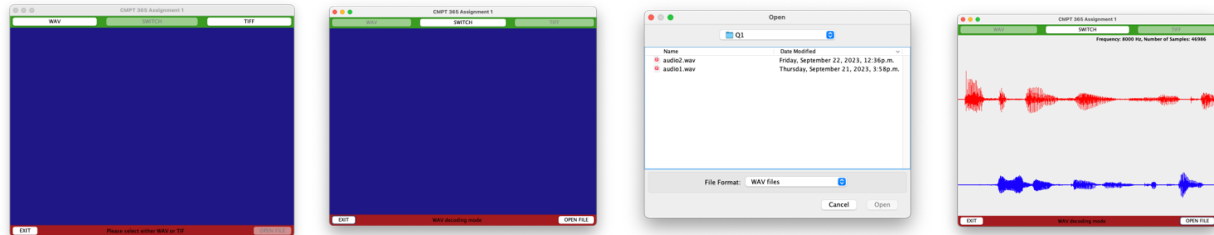
Reading and displaying the TIF Files:

- 1) BufferedImage:
 - a. To store the image.
- 2) ImageIO:
 - a. ImageIO.read() to read the image
- 3) JLabel:
 - a. To display the image.

Walkthrough:

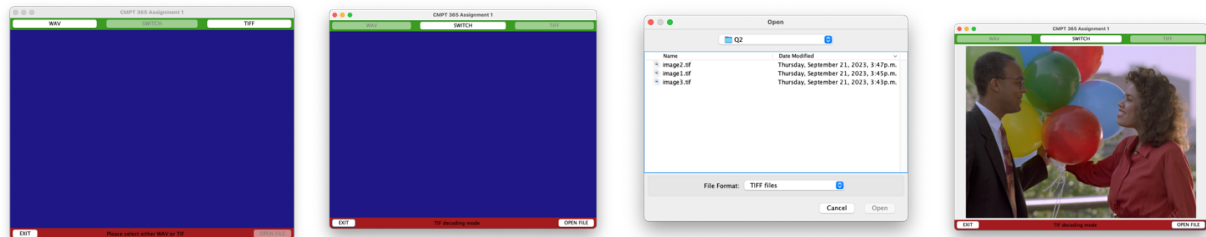
1) To read and plot the waveform of a wav file:

Firstly, you need to press the WAV button at the top left corner. After that the OPEN FILE button at the bottom right corner is enabled. After selecting the WAV file, it will plot the waveform of each channel on the screen including the number of samples and the sampling frequency on the top right corner.



2) To read an uncompressed .tif image file and display it on the screen:

Firstly, you need to press the TIFF button at the top right corner. After that the OPEN FILE button at the bottom right corner is enabled. After selecting the tif file, it will display the image on the screen.



Features:

- 1) Swap between two questions by pressing the SWITCH button.
- 2) The screen is re-sizeable.
- 3) The EXIT button can terminate the program.
- 4) Progress display message in the bottom middle section.
- 5) File filter for both question (only allow users to open tif or wav files).