Read Me - MIDI Piano Application

# Introduction

This project implements a MIDI Piano application in Java using the Java Swing framework for the GUI and the javax.sound.midi package to play MIDI notes. The application features a user interface with two octaves of piano keys, both white and black, and a dropdown for selecting different musical instruments like Piano, Guitar, and Trumpet. The piano keys can be interacted with using both mouse clicks and keyboard keys, and the application plays corresponding MIDI notes when keys are pressed.

# Achievements

1. Completed the UI design for the piano with 2 octaves of white and black keys. The keys are well-spaced and accurately represent a real piano layout.

2. Implemented ChangeListener for detecting button presses, and mapped the key press and release events to the appropriate MIDI notes.

3. Added functionality to switch between three musical instruments (Piano, Guitar, Trumpet) using a JComboBox. The MIDI instrument sound changes when a different instrument is selected.

4. Incorporated keyboard input for playing notes using corresponding key mappings. Keys 'a' to ';' are mapped to white notes, and keys 'q' to 't' are mapped to black notes.

5. Enhanced the user interface by adding note labels to white keys for easier identification and providing visual feedback (highlighting keys in yellow) when keys are pressed.

# Marks Estimation

I believe I should receive 10/10 marks for this lab based on the following criteria:

1. (5 Marks) Successfully implemented 2 octaves of piano keys with both black and white keys, and ensured they function correctly by playing the corresponding MIDI notes.

2. (3 Marks) Added the ability to select between three different musical instruments (Piano, Guitar, Trumpet), and each instrument plays a unique sound as expected.

3. (2 Marks) Improved the user interface by adding note labels, key highlighting, and optimizing the layout for a more user-friendly experience.

# Conclusion

Overall, the project meets all the requirements for this lab. The piano UI is functional and aesthetically improved, and the application successfully plays notes with corresponding MIDI sounds. The ability to change instruments and use both mouse and keyboard for input makes this a complete and polished solution.