Image Processing Steps

1. Get File Path: The internal path of the selected image file is obtained and printed.

2. Check File Existence: Checks if the file exists. If not, an error message is printed and the process is terminated.

3. Load Image: The image is loaded in grayscale.

4. Check Image Load: Checks if the image has been loaded correctly. If not, an error message is printed.

5. Process Image:

    - The image is converted to color.

    - A threshold is applied to convert it to a binary image (black and white).

    - The dimensions of the processed image are obtained.

6. Locate Staves: Staff templates are used to identify their positions in the image.

7. Filter Staff Heights: A histogram of the vertical positions of the staves is created and those that are above the average are filtered.

8. Merge Rectangles of Staffs: Rectangles representing the same staff are combined and drawn on the image.

9. Locate Musical Notes: Similar processes are repeated to locate different types of notes (sharp, flat, quarter, half, whole).

10. Group Notes: Notes are grouped based on their relative position on the staff.

11. Draw Notes on Image: Each group of notes is drawn on the image with a random color.

12. Generate MIDI File: A MIDI file is created and the detected notes are added.