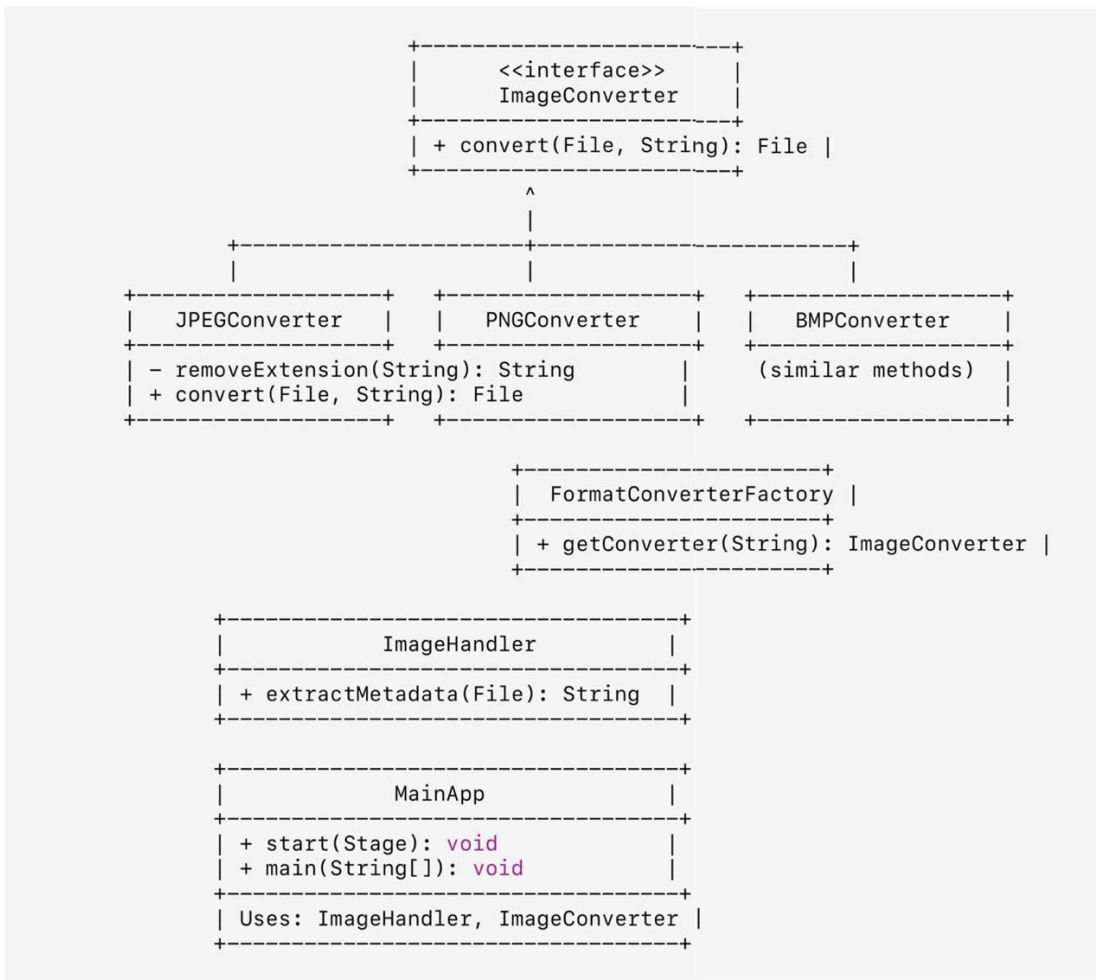


This document presents the class diagram and screenshots of the Image Management Tool, a Java-based application developed using JavaFX. The tool allows users to upload images, view metadata, and convert image formats. The class diagram below illustrates the structure of the project, including its main classes, interfaces, and their relationships.

Class Diagram



MainApp:

Acts as the entry point for the application.

Responsible for the GUI and user interactions.

Depends on **ImageHandler** for metadata extraction and **ImageConverter** for format conversion.

ImageHandler:

Extracts metadata from the image files.

Encapsulates the logic for metadata reading using the Metadata Extractor library.

ImageConverter (Interface):

Defines a common method `convert(File inputFile, String outputFileName)` for converting images.

Ensures extensibility by allowing new converters (e.g., for new formats) to implement this interface.

JPEGConverter, PNGConverter, BMPConverter:

Implement the ImageConverter interface.

Provide specific logic for converting images into JPEG, PNG, and BMP formats, respectively.

FormatConverterFactory:

Implements the Factory Design Pattern.

Dynamically creates and returns instances of converters (JPEGConverter, PNGConverter, or BMPConverter) based on user input.

During the design of the Image Management Tool, we focused on modularity and extensibility:

The use of the ImageConverter interface ensures that the code can easily support additional formats by implementing new converters.

The Factory Design Pattern (FormatConverterFactory) simplifies the management of converter classes and avoids tightly coupling the main logic with specific format implementations.

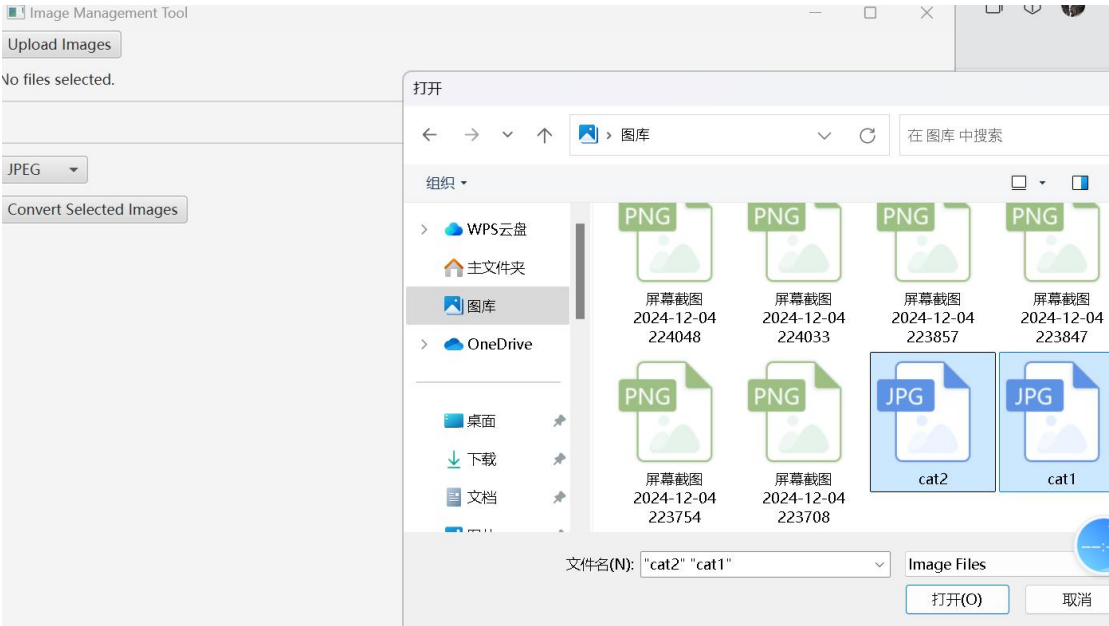
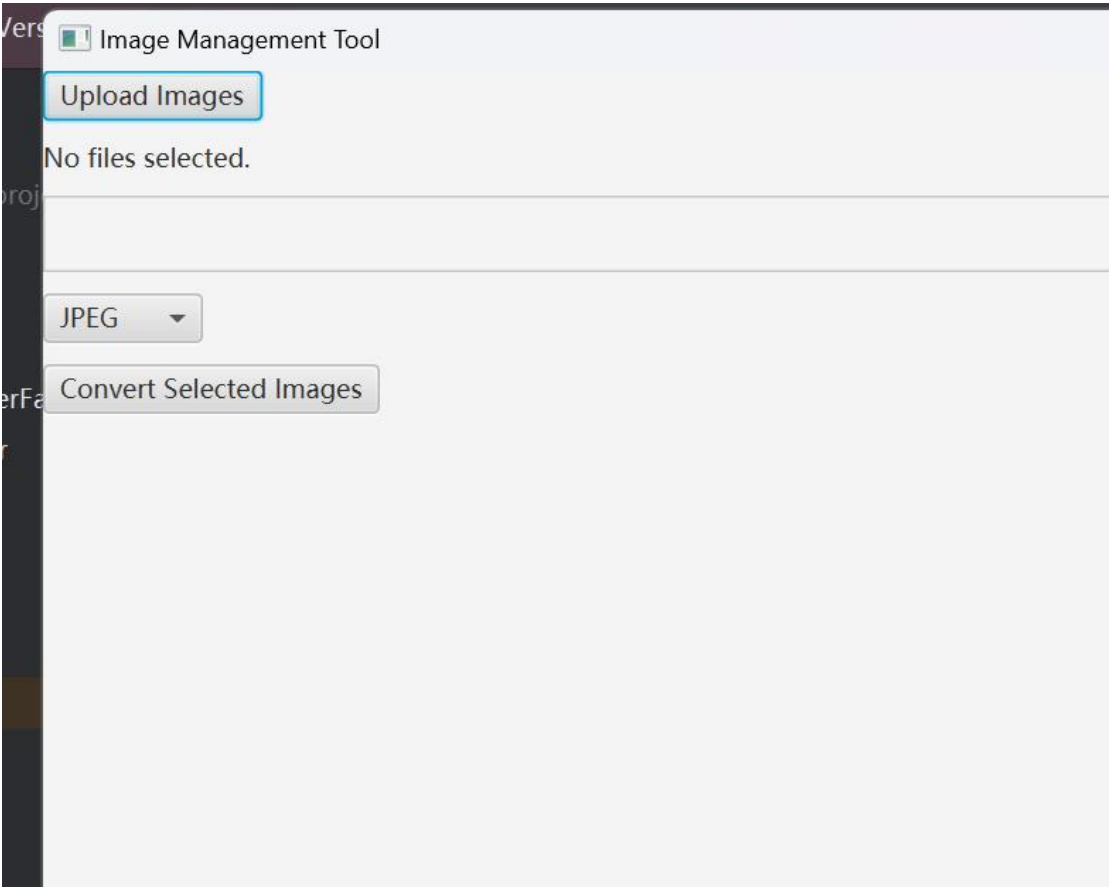
MainApp orchestrates all the interactions, keeping the GUI logic separate from the core processing logic, adhering to separation of concerns.

The inclusion of exception handling and modular design ensures the tool is robust and easy to maintain.

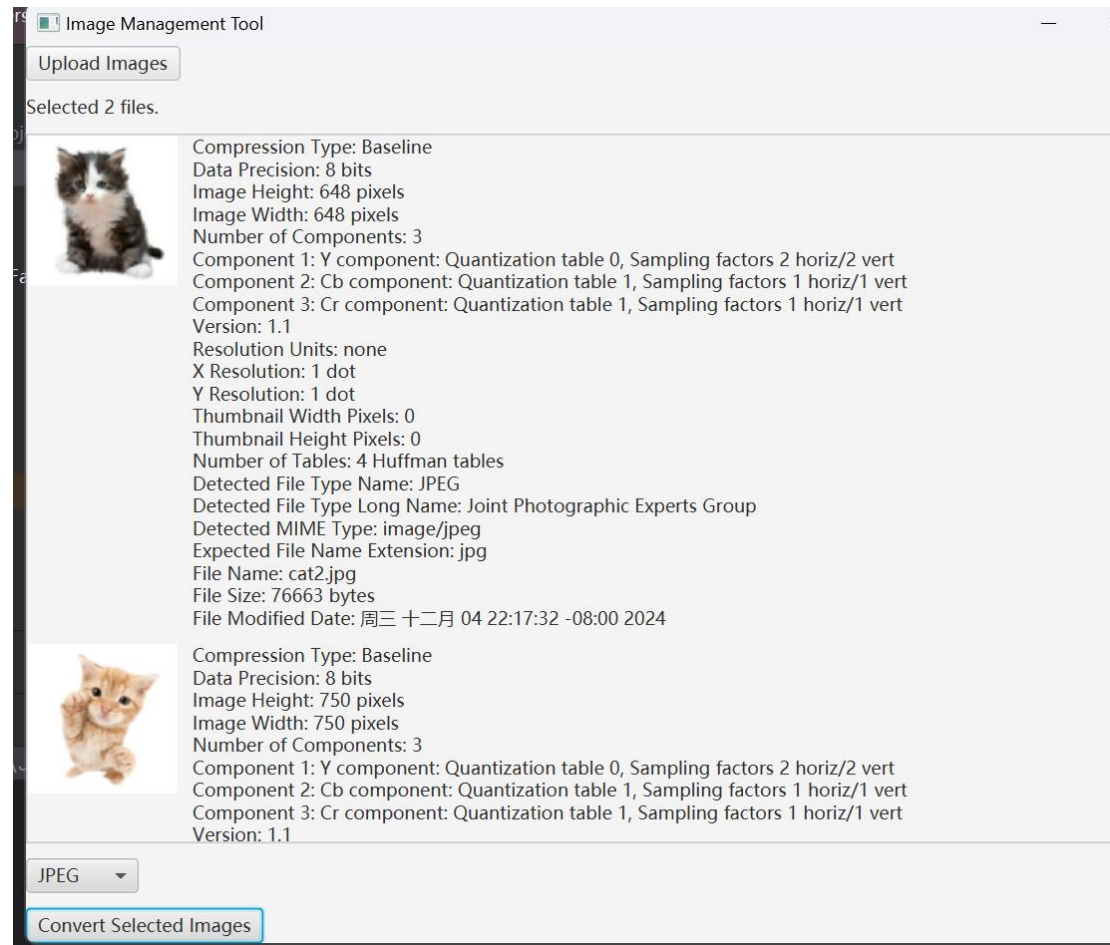
Screenshots

Image Uploading

First, click the Upload Images button and select the images you want to upload. The tool supports multiple file selection, so you can upload several images at once.

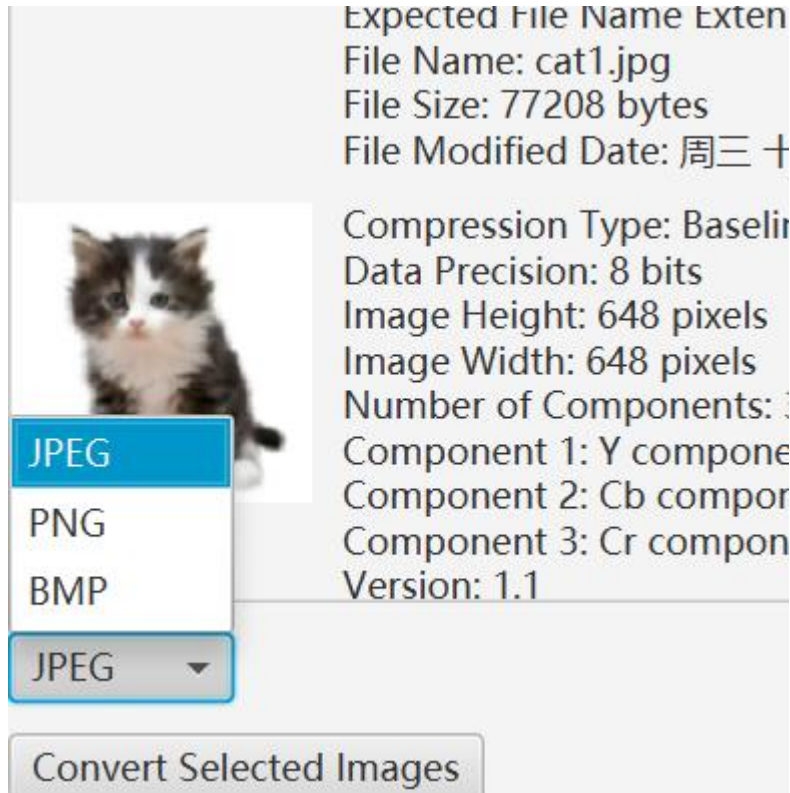


After uploading, you can see thumbnails of the images and their detailed metadata, such as the image width, height, file size, and more.



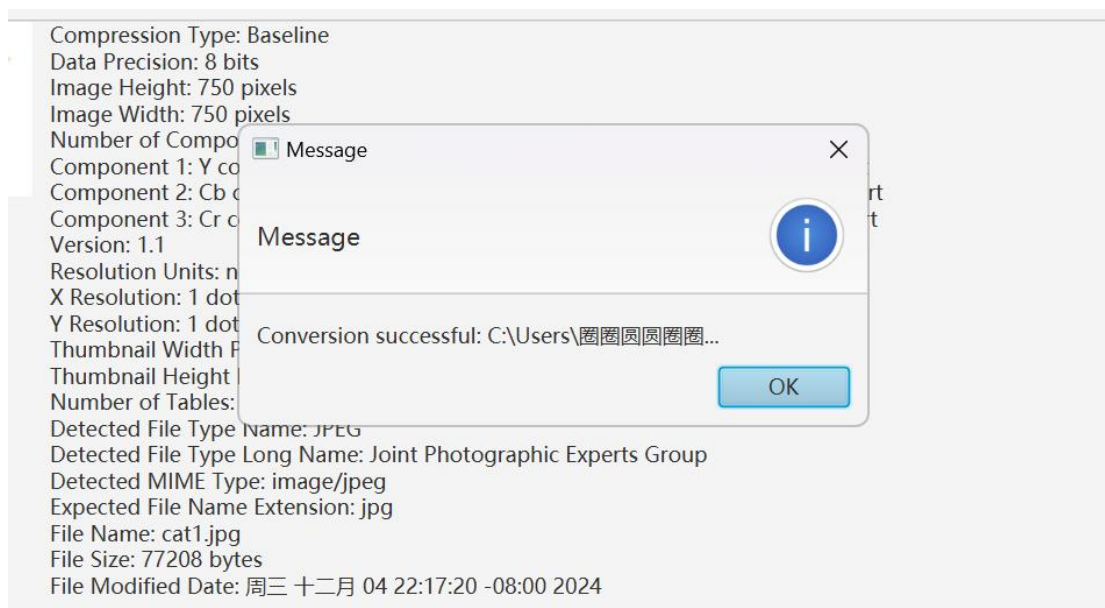
Format Selection

Next, select the target format from the dropdown menu at the bottom. For example, let's choose JPEG.



Format Conversion

Once the format is selected, click the Convert Selected Images button. The tool will convert all selected images into the chosen format. After the conversion, a pop-up will appear to confirm the success and show the file's save location.



Viewing the Results

The converted images are saved in the same folder as the original images, with filenames prefixed by converted_. For example, if the original file is cat1.png, the converted file will be named converted_cat1.jpeg.

