

underLeaf

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OVERVIEW:

UnderLeaf is a simple Java tool that lets users hide private information inside pictures without changing the way they look. It can store text messages, documents, or even another image within a cover image, keeping the hidden content completely invisible to normal view. The tool is built using JavaFX, providing a clear and easy interface for both hiding and revealing information. It combines basic image processing with simple data handling to conceal information effectively.

KEY FEATURES:

Feature	Description
Message Encoding	This feature allows the user to hide a secret text message inside an image file in a safe and simple way.
Document Encoding	This feature lets users hide a .txt file within a chosen cover image.
Image-in-Image Encoding	This option allows users to embed one image within another without affecting its visible features.
Decoding Function	This feature extracts the hidden text, file, or image from an encoded image with accuracy.
Multiple Format Support	The tool supports common image types such as PNG, JPG, JPEG, and BMP for both hiding and revealing data.
Error Handling	The tool displays clear and simple messages whenever an error occurs during encoding or decoding.

IMPLEMENTATION:

Module	Functionality
Main	This package starts the JavaFX application and loads all the necessary files and resources for the program to run.
Controller	This package manages user actions, such as button clicks and input selections, within the application window.
Steganography.Logic	This package handles the main process of hiding and revealing data during encoding and decoding.
Steganography.Exceptions	This package manages custom errors, including unsupported image types or failed operations, to ensure smooth functioning.
Steganography.Modals	This package displays alert boxes, messages, and status pop-ups to keep users informed about ongoing actions.
Steganography.Types	This package defines the data types and formats used for managing hidden information within the program.
Resources	This section stores layout files, CSS style sheets, and fonts that define the look and design of the application.

CONCLUSION:

UnderLeaf is a simple and well-structured Java project that brings the concept of hiding data inside images into a practical desktop tool. It keeps information secure while maintaining a clean and easy-to-use design. The project clearly demonstrates the use of Java packages, JavaFX layout, image-based data processing in one unified system.