CAPSTONE PROJECT

SECURE DATA HIDING IN IMAGE USING STEGANOGRAPHY

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OUTLINE

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PROBLEM STATEMENT

- In today's digital world, securing sensitive information is crucial. Traditional encryption methods can attract attention, making them vulnerable.

- **Steganography** offers a covert way to hide data within images, ensuring secrecy without raising suspicion. Our project implements **Image Steganography** using the **Least Significant Bit (LSB) technique** to embed and extract hidden messages securely.

TECHNOLOGY USED

- **Programming Language:** Java
- **Libraries:** Java AWT, Swing, javax.imageio, BufferedImage
- **Tools & Platforms:** NetBeans IDE, JDK
- **File Handling:** PNG, BMP formats, FileInputStream, FileOutputStream

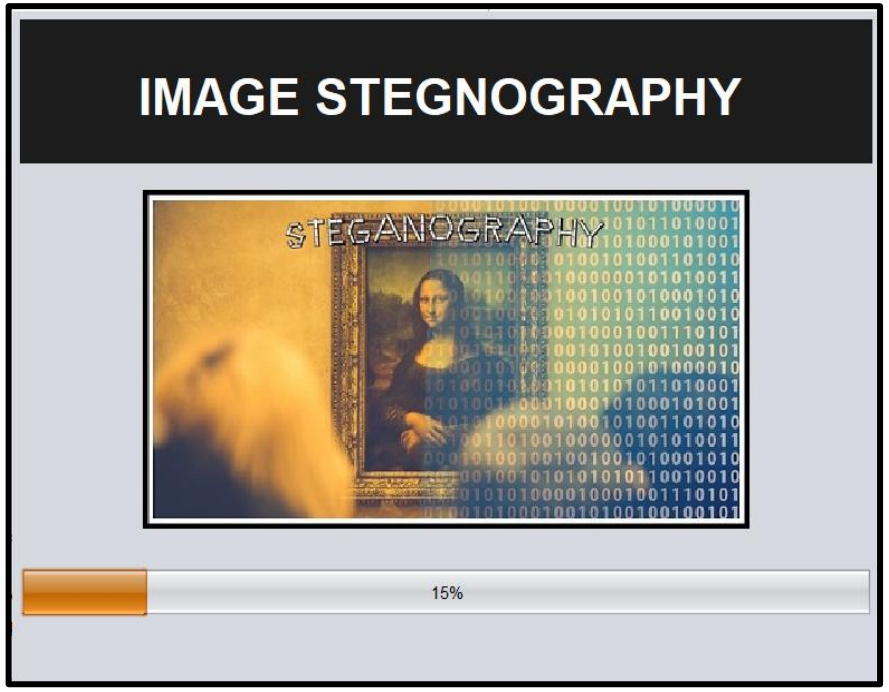
WOW FACTORS

- **Fast and Efficient** – Converts images quickly without heavy processing.
- **Simple and Lightweight** – No unnecessary features, just straightforward image conversion.
- **Cross-Platform Compatibility** – Works on any system with Java installed.
- **Minimal Dependencies** – Uses Java's built-in libraries, reducing setup hassle.
- **User-Friendly GUI** – Easy-to-use interface built with Swing for a smooth experience.

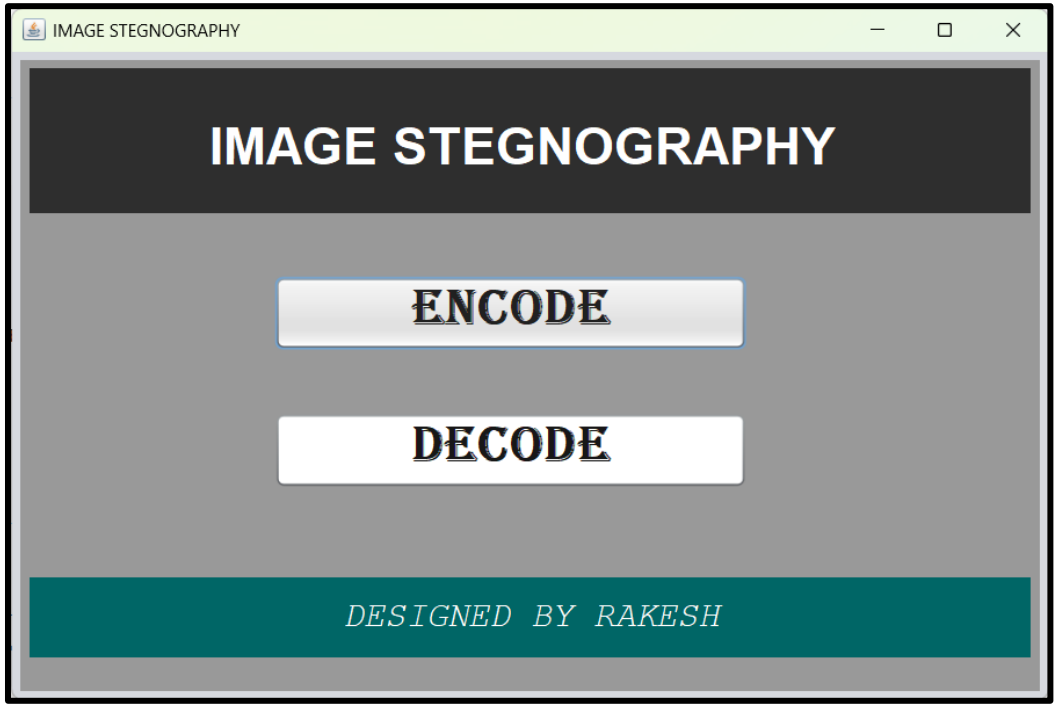
END USERS

- **Journalists & Whistleblowers:** To transmit confidential information securely.
- **Military & Government Agencies:** For secure communication.
- **Businesses:** To protect sensitive corporate data.

RESULTS

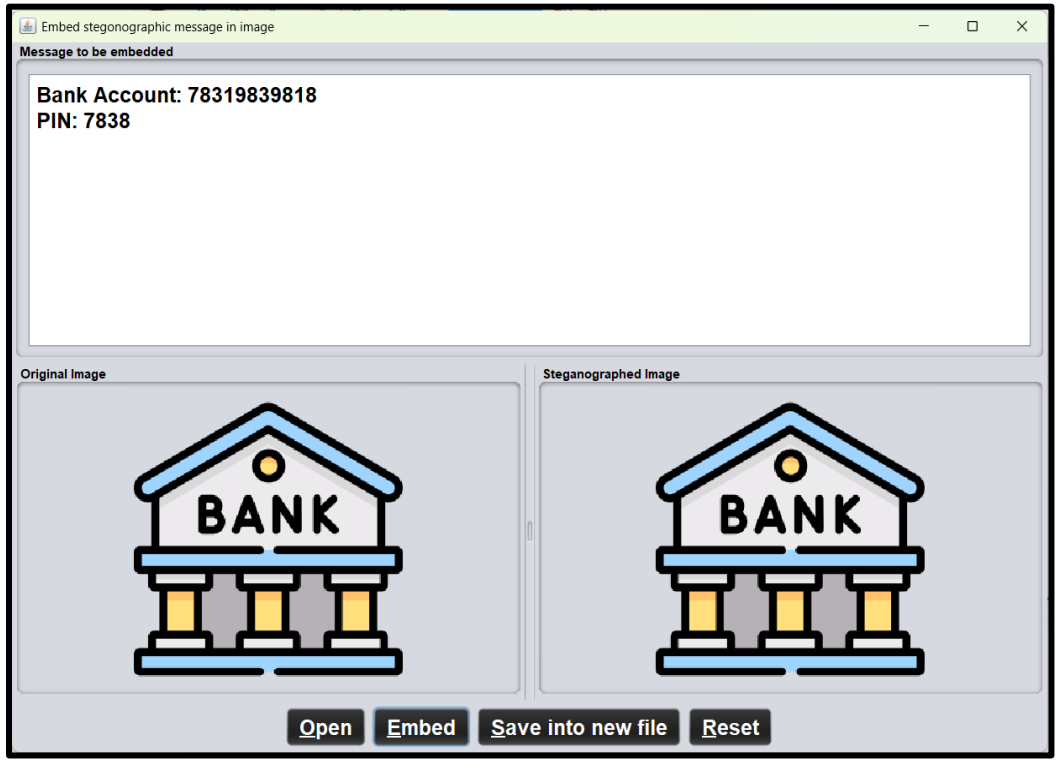


Splash Screen

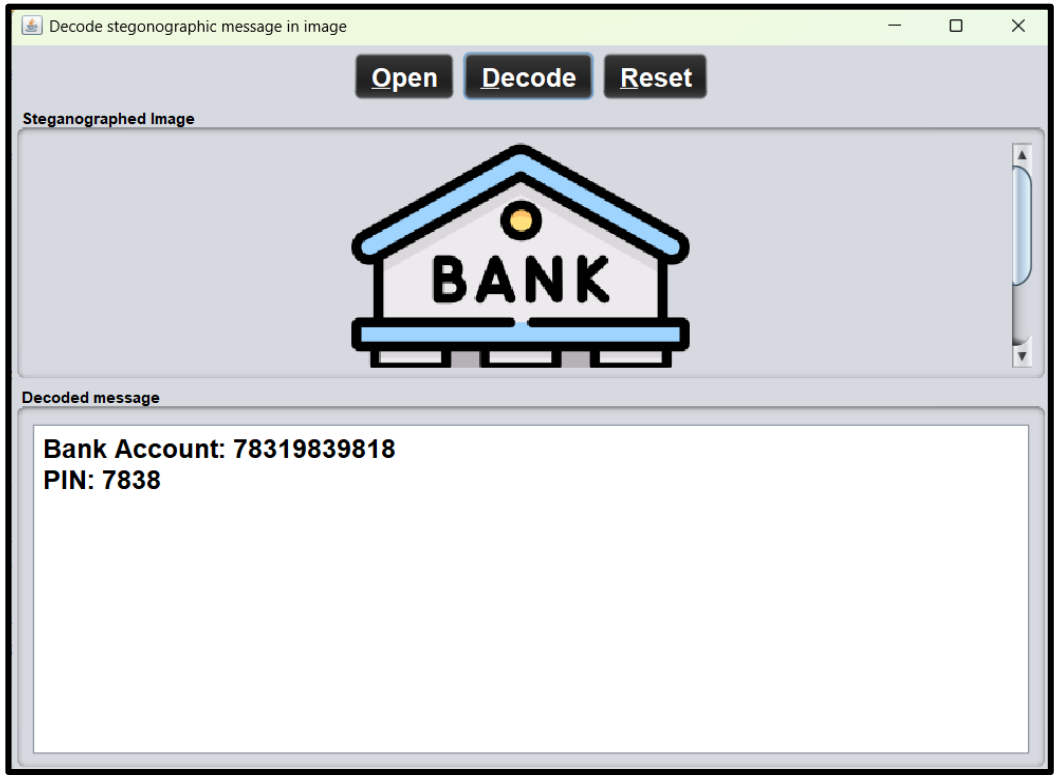


Menu Screen

RESULTS



Encryption Screen



Decryption Screen

CONCLUSION

- This project demonstrates the power of **steganography** in securely hiding and retrieving sensitive information within images.
- By leveraging the **Least Significant Bit (LSB) technique**, we achieve an **efficient and undetectable** method for data concealment.
- The system ensures **data security and confidentiality**, making it useful for **cybersecurity applications, secure communication, and digital watermarking**.

GITHUB LINK

- https://github.com/Rakesh0045/Edunet-CyberSecurity-Project

FUTURE SCOPE(OPTIONAL)

- **Enhanced Security** – Implement encryption techniques like AES to make hidden data more secure.
- **Multi-Format Support** – Extend support to other image formats like BMP for wider usability.
- **Steganalysis Resistance** – Improve techniques to prevent detection by steganalysis tools.
- **Increased Data Capacity** – Optimize the LSB algorithm to store larger messages without quality loss.
- **Real-World Applications** – Adapt for secure government or corporate data exchange.

THANK YOU

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