# CAPSTONE PROJECT

# SECURE DATA HIDING IN IMAGE USING STEGANOGRAPHY

Presented By:
Student Name : DANIEL JABARAJ V
College Name & Department : As-Salam College of Engineering and Technology & CSE

edunet foundation

# OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
- Git-hub Link
- Future scope

# PROBLEM STATEMENT

In today's digital age, the need for secure communication and data protection is paramount. Traditional encryption methods, while effective, are often easily detectable. There is a growing demand for techniques that ensure data confidentiality without raising suspicion. The objective of this project is to develop a secure method for hiding sensitive data within digital images using steganography, making the existence of the hidden data undetectable to unauthorized individuals.

# TECHNOLOGY USED

- **Programming Language:** Python
- **Libraries:**

  OpenCV library for image processing.

  `os` library in Python provides a way to interact with the operating system.

  `string` library provides useful tools for handling and manipulating strings.
- **Algorithms:**

  Least Significant Bit (LSB) for embedding data into images.

  Advanced Encryption Standard (AES) for data encryption before embedding.
- **Tools:**

  Integrated Development Environment (IDE): PyCharm/Visual Studio Code/Spyder( Use in this project ).

  Version Control: GitHub.

# WOW FACTORS

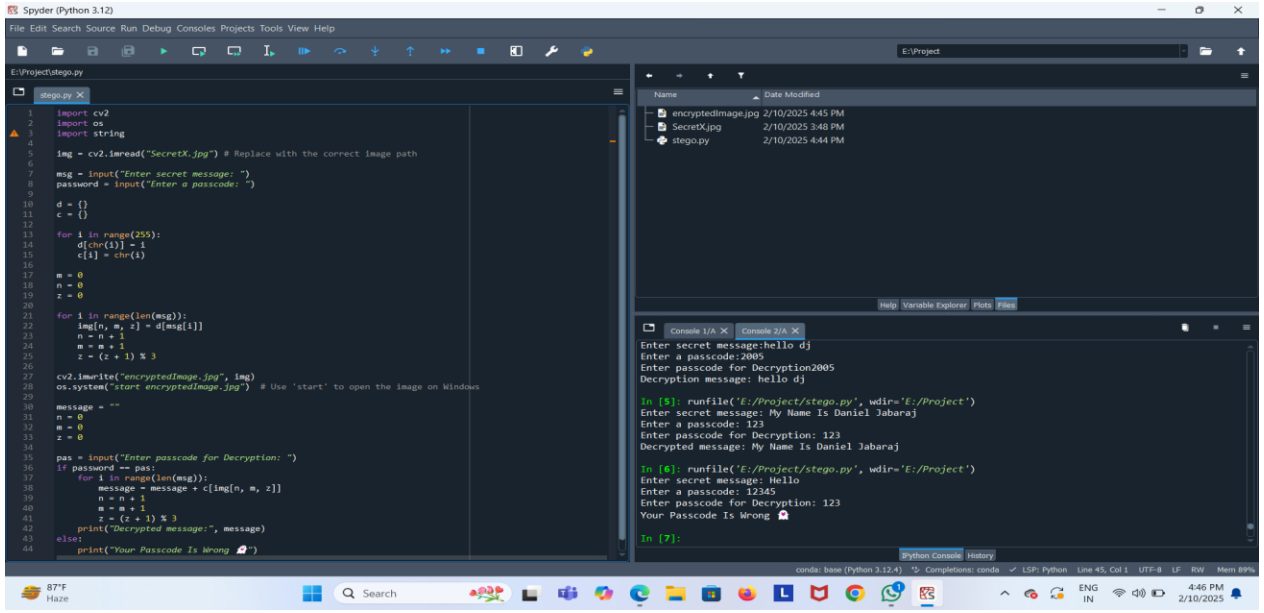
- **Invisibility:** The hidden data is imperceptible to the human eye, maintaining the visual integrity of the cover image.
- **Double Security:** Combines encryption and steganography, ensuring data remains secure even if detected.
- **Cross-Platform:** Compatible with multiple operating systems (Windows, macOS, Linux).

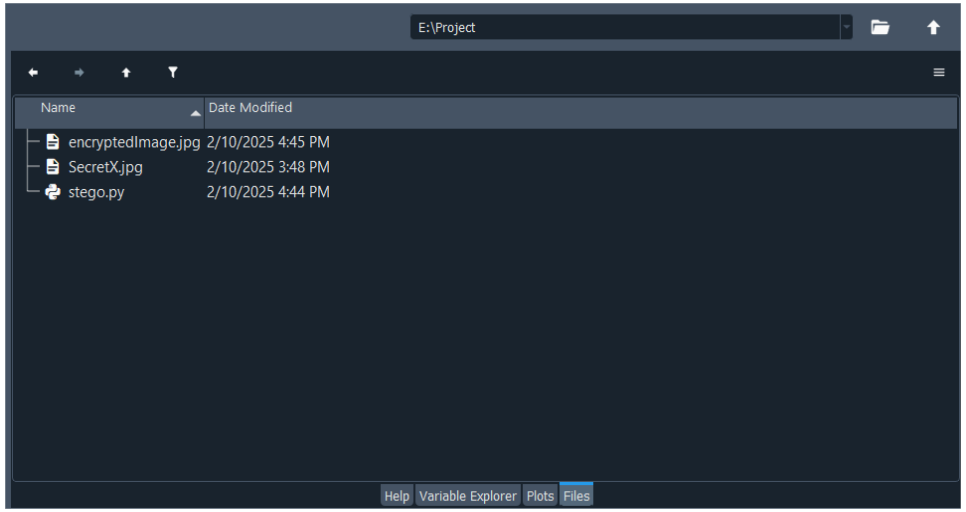
# END USERS

This project targets individuals and organizations that require confidential communication, such as:

- Journalists working in hostile environments.
- Government agencies needing secure data exchange.
- Corporate sectors safeguarding trade secrets.
- Individuals concerned about personal privacy.

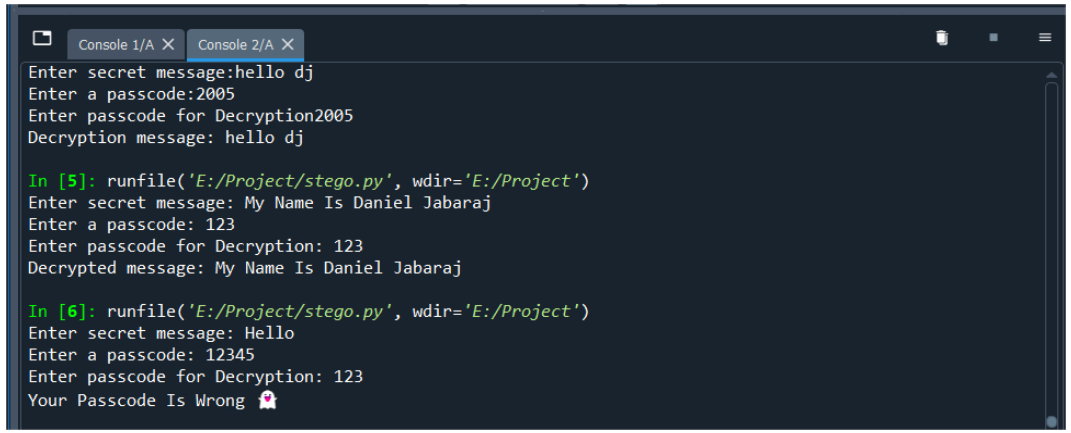
# RESULTS

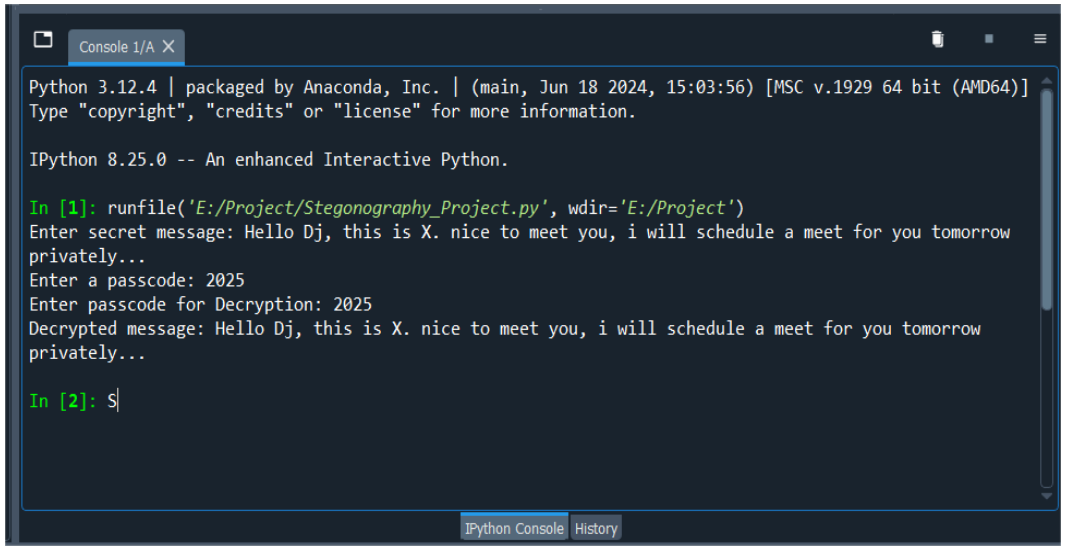



edunet foundation

# OUTPUT



# ORIGINAL IMAGE & ENCRYPTED IMAGE

# CONCLUSION

- The "Secure Data Hiding in Images Using Steganography" project successfully addresses the need for covert data protection in the digital realm. By combining steganography with encryption, the project provides a robust solution for secure communication without arousing suspicion.

# GITHUB LINK

- Click to View Project in Github: Daniel-Cva/Cyber-Security-Project

# FUTURE SCOPE

- **Enhanced Algorithms:** Research and implement more advanced steganographic techniques to increase data capacity and security.
- **Integration with Cloud Storage:** Enable secure storage and retrieval of steganographic images in cloud services.
- **Real-Time Communication:** Develop real-time secure communication systems using steganography.
- **Mobile Application:** Create mobile applications to allow users to hide and retrieve data on-the-go.
- **Machine Learning:** Employ machine learning to detect and prevent unauthorized steganographic attempts.

# THANK YOU

edunet foundation