JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY, NOIDA, SECTOR-62

Information Security Lab

SYNOPSIS

IMAGE BASED STEGANOGRAPHY

SUBMITTED TO:

Dr. AASTHA MAHESHWARI

BY:

TEAM MEMBERS (B6 BATCH):

- ***SAUMIL GUPTA (22103179)***
- ***TANUSH (22103157)***
- ***KARAN NAVEEN SOOD (22103180)***

(5th Semester)

TABLE OF CONTENT

INTRODUCTION

Steganography is the technique of hiding secret data within an ordinary, non-secret file or message to avoid detection. The secret data is then extracted at its destination. When combined with encryption, steganography provides an extra layer of protection for sensitive information. In this project, steganography involves hiding data within an image file. The image used for this purpose is known as the cover image, and the image obtained after embedding the data is called the stego image.

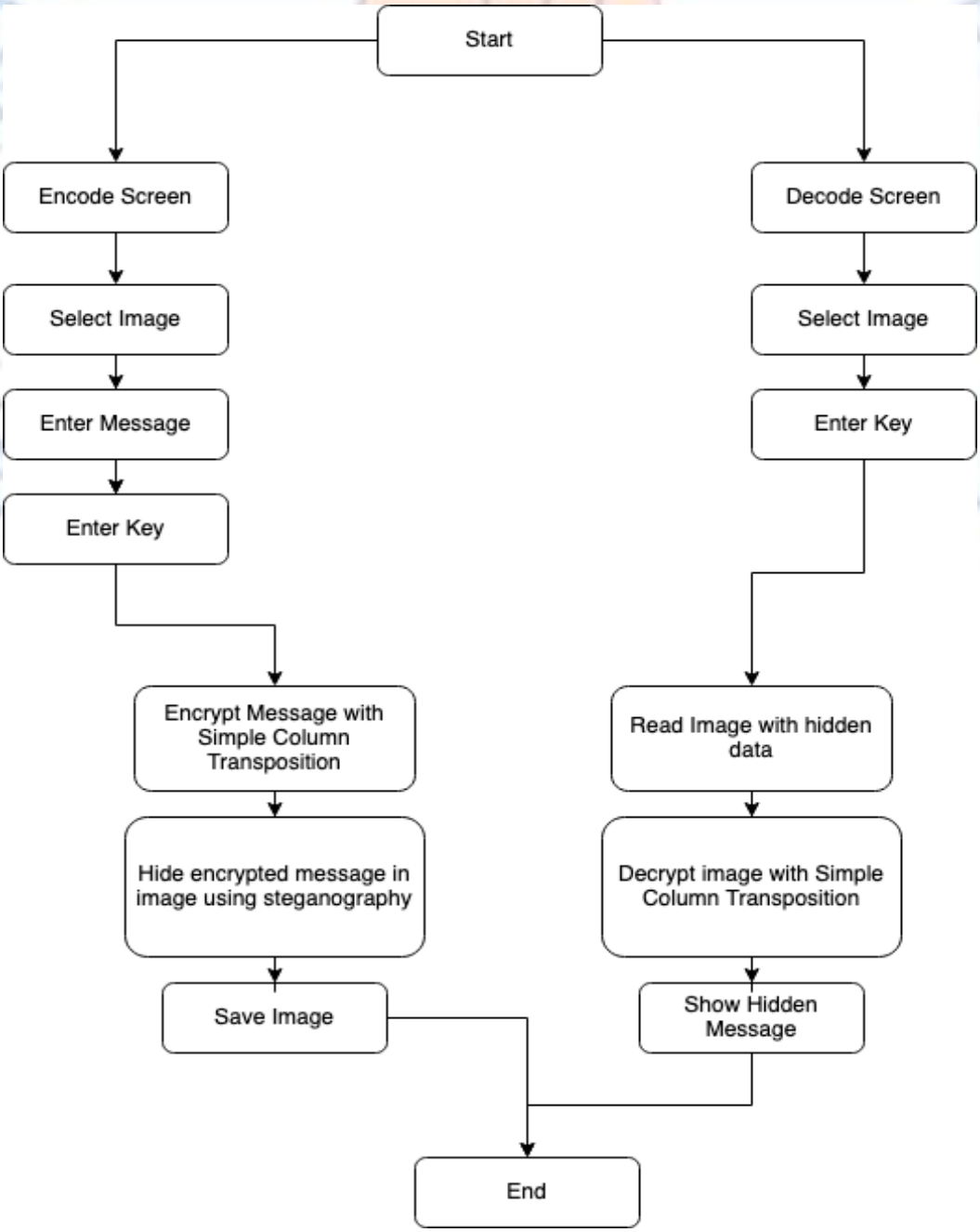
Cryptography, a related field, focuses on secure communication techniques that allow only the sender and intended recipient to access the message's content. It is closely associated with encryption, where ordinary text is transformed into ciphertext and later decrypted.

Given the rising concerns about privacy, it is unsafe to leave important messages unprotected. Encrypting messages is crucial, and adding steganography on top of encryption further secures the information. In this project, we use the Columnar Transposition Cipher technique to encrypt messages, which requires a key in addition to the text.

PROBLEM STATEMENT

In an era where digital communication is pervasive, ensuring the privacy and security of sensitive information is paramount. Traditional encryption methods, while effective, may still be vulnerable to detection if the existence of encrypted data is known. To address this, our project aims to combine encryption with steganography to create a more secure method of communication. The challenge is to securely hide encrypted text within an image, making it undetectable to unauthorized parties, and ensuring that only those with the correct key can retrieve the original message.

FLOWCHART


Start
Encode Screen
Select Image
Enter Message
Enter Key
Encrypt Message with Simple Column Transposition
Hide encrypted message in image using steganography
Save Image
Decode Screen
Select Image
Enter Key
Read Image with hidden data
Decrypt image with Simple Column Transposition
Show Hidden Message
End

FUNCTIONALITIES

The primary function of this project is to provide secure data transmission by hiding encrypted messages within an image. The project utilizes the Columnar Transposition Cipher algorithm to encrypt the message before embedding it into the image.

NON-FUNCTIONAL REQUIREMENTS

- Security
- Reliability
- Performance
- Maintainability
- Scalability
- Usability

TOOLS AND TECHNOLOGIES USED

1. Python
2. Vs code
3. IO
4. OS

REFERENCES

https://www.geeksforgeeks.org/columnar-transposition-cipher/

https://www.techtarget.com/searchsecurity/definition/steganography/

https://www.geeksforgeeks.org/image-steganography-in-cryptography/