Progressive Education Society's

MODERN COLLEGE OF ARTS, SCIENCE AND COMMERCE

GANESHKHIND, PUNE – 411016

A PROJECT ON:

Image Encryption

SUBMITTED TO:

Savitribai Phule Pune University

BY:

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S.Y BSc (Computer Science) [2022-23]

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CERTIFICATE

This is to certify that **Sanskruti Joshi** and **Priyanka Rout** of **SY BSC (Computer Science)** completed the project work titled **"Image Encryption"** for the curriculum of Savitribai Phule Pune University during the academic year **2022-2023.**

Project Guide	**Head of Department**
Prof. Pooja Bahirat	Dr. Shubhangi Bhatambrekar

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Problem Definition

The whole world is going through a lot of cybercrimes like hacking of personal information which includes private photos, important data, bank details, forensic investigation etc. The sole purpose of this project is to provide user friendly software to the customer to secure their essential images using methods like Encryption and Decryption. If the images are not encrypted properly someone might get access to the images without any real trouble provided, they have access to wherever the image is being stored. In the 21st century, images are very crucial. Securing data between different endpoints is very important not only for public networks but also for private ones. Data breaches of sensitive, unencrypted information occur almost weekly and many of the events become highly publicized.

Hence, there are many existing systems of image encryption techniques; however, they have certain limitations, such as:

1. Requires large data size
2. Long computational time
3. High computing power
4. Unsuitable for practical image encryption and online communication.

Scope Of the Proposed System

The conventional cryptographic algorithms are mainly based on discrete mathematics. Chaos-based cryptography relies on the complex dynamics of nonlinear systems.

The image encryption algorithm includes 2 steps:

1. Firstly, the image fusion is completed between the original image and the key image.
2. The pixel values of the fusion image are encrypted by the Henon chaotic system.

Chaos-based image encryption systems are also fast enough for real-time applications.

Objectives

The purpose of Encryption is confidentiality-concealing the content of the message by translating it into a code. Encryption process includes verification of the sender's image and indicates that the content has not been changed.

The conversion of an encrypted image into its original form is Decryption. It is generally a reverse process of encryption. It decodes the encrypted information so that an authorized user can only decrypt the data as decryption requires a secret key or password.

Provide an image encryption mechanism which provides high security level, less computational time and power in a reliable and efficient way to deal with bulky, difficult and intractable data.

System Requirements

Hardware requirements:

Processor: Pentium IV 2.0 GHz and above

Hard disk: 10GB

RAM: 256 MB

Software requirements:

Operating system: Windows

IDE: MyEclipse

Coding language: Java

Front end: J2EE

Back end: MySQL

Module Specifications

Encryption:

- Selects image
- Provides key for encrypting

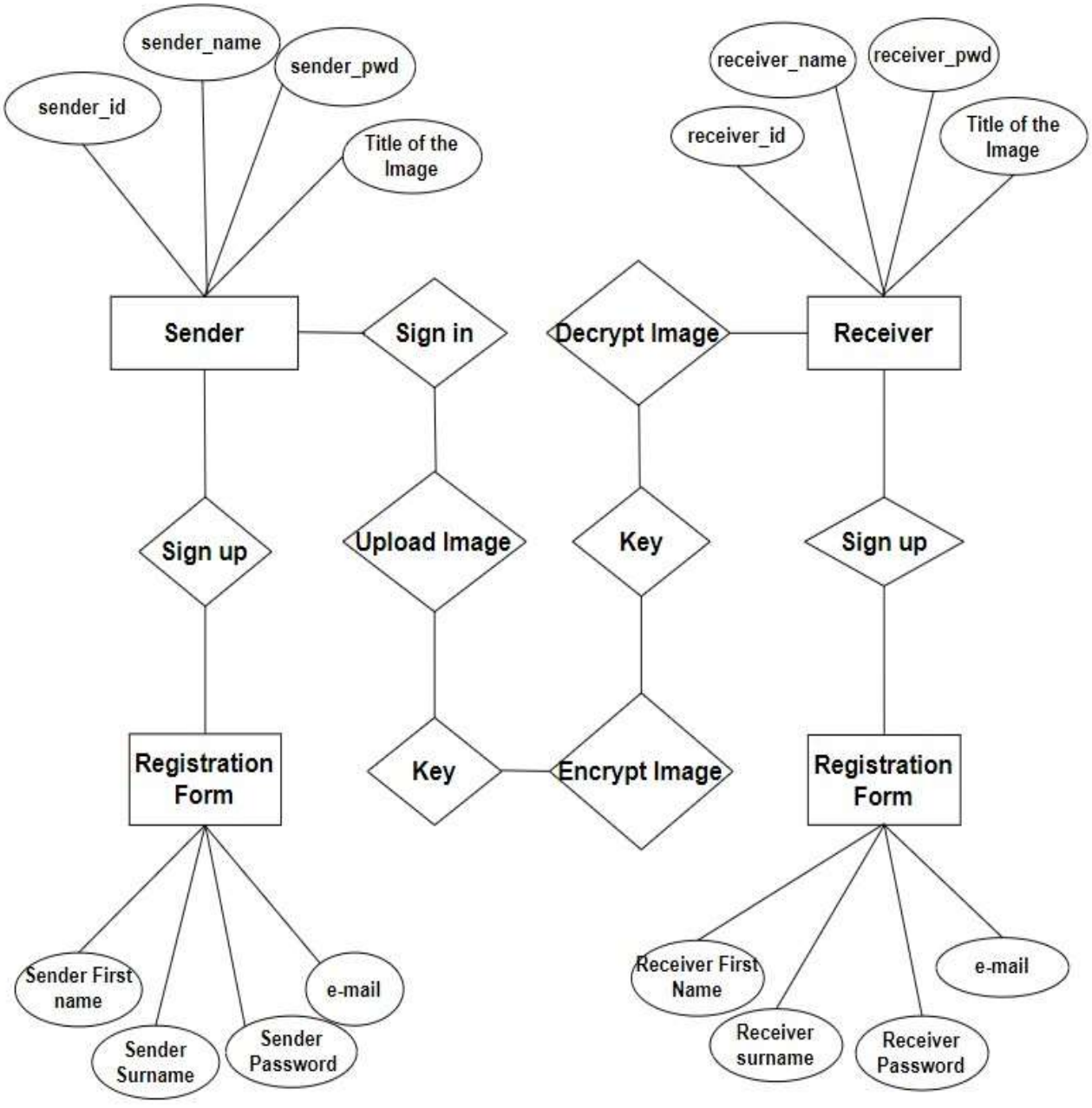
Decryption:

- Key for decrypting
- Gives original image

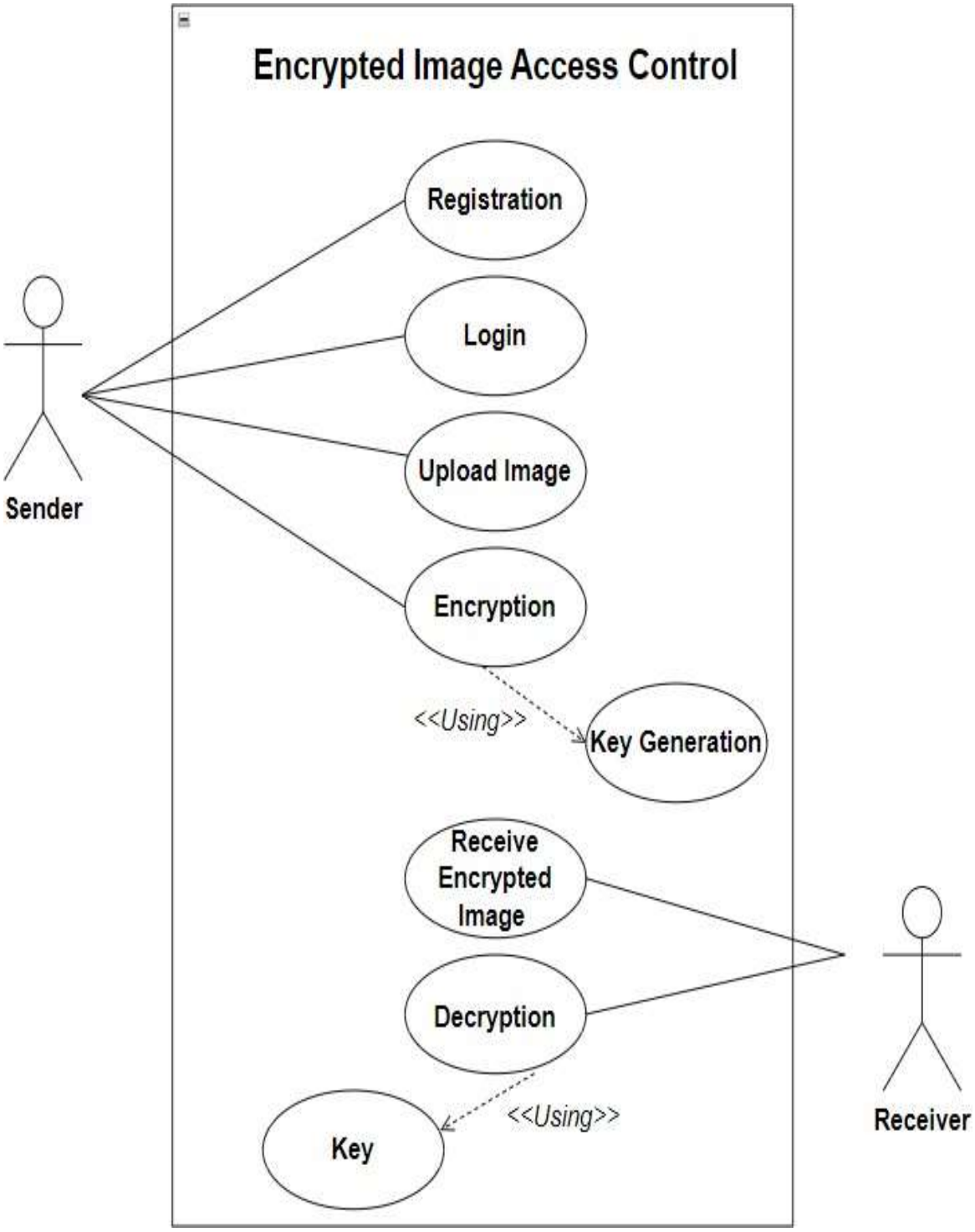
User:

- Create account
- Log in to the account
- Upload or download image

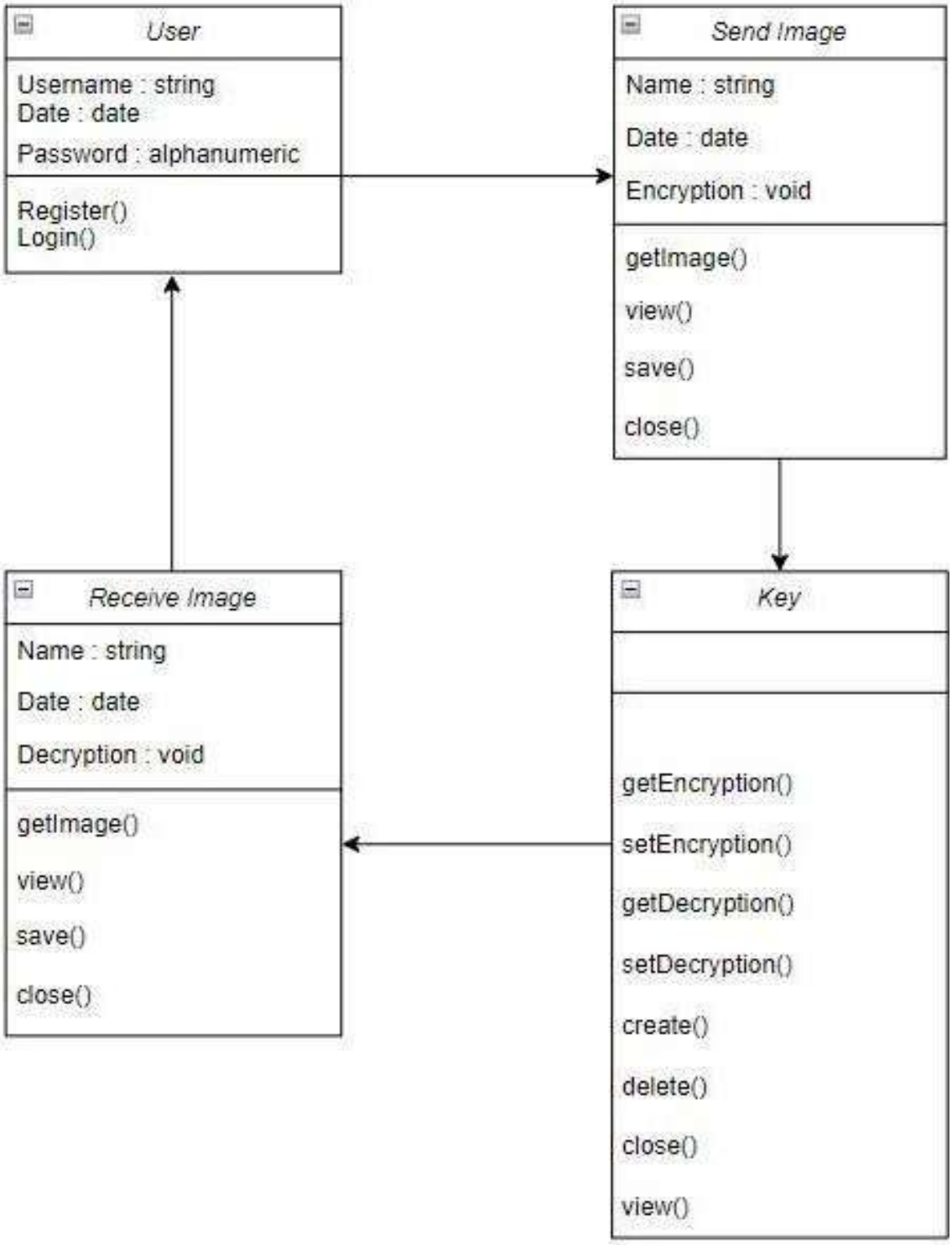
Entity Relation Diagram



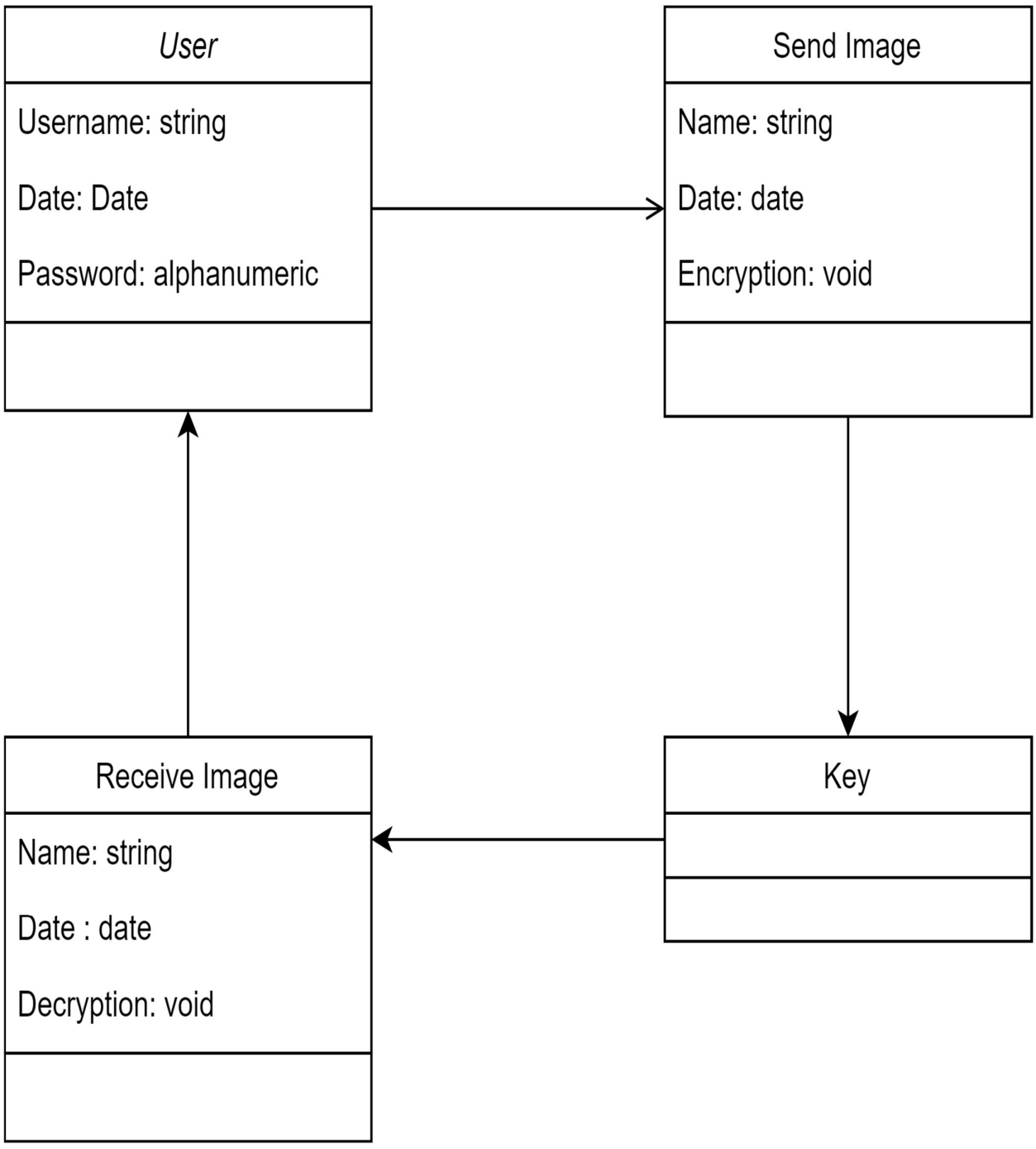
Use Case Diagram



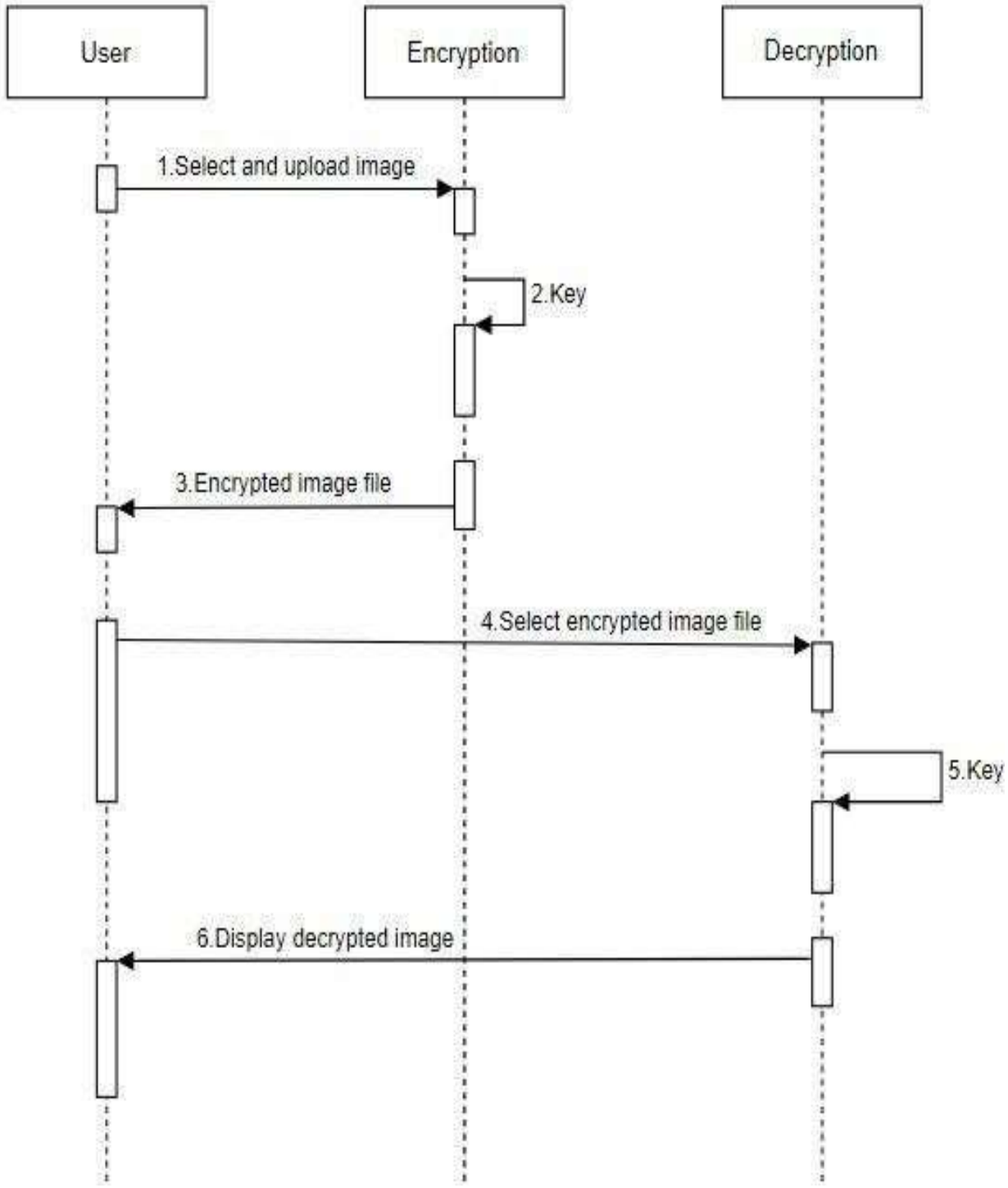
Class Diagram



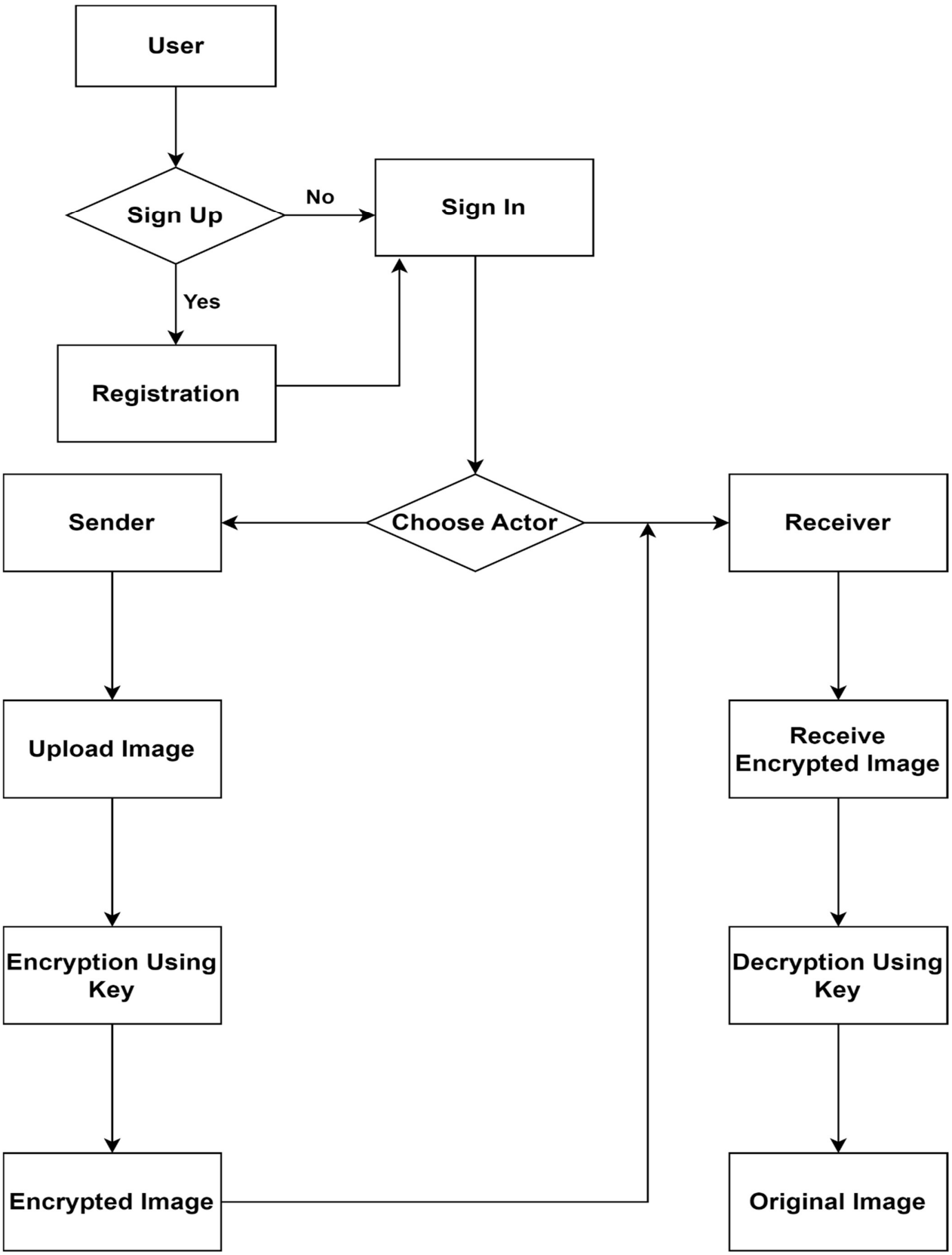
Object Diagram



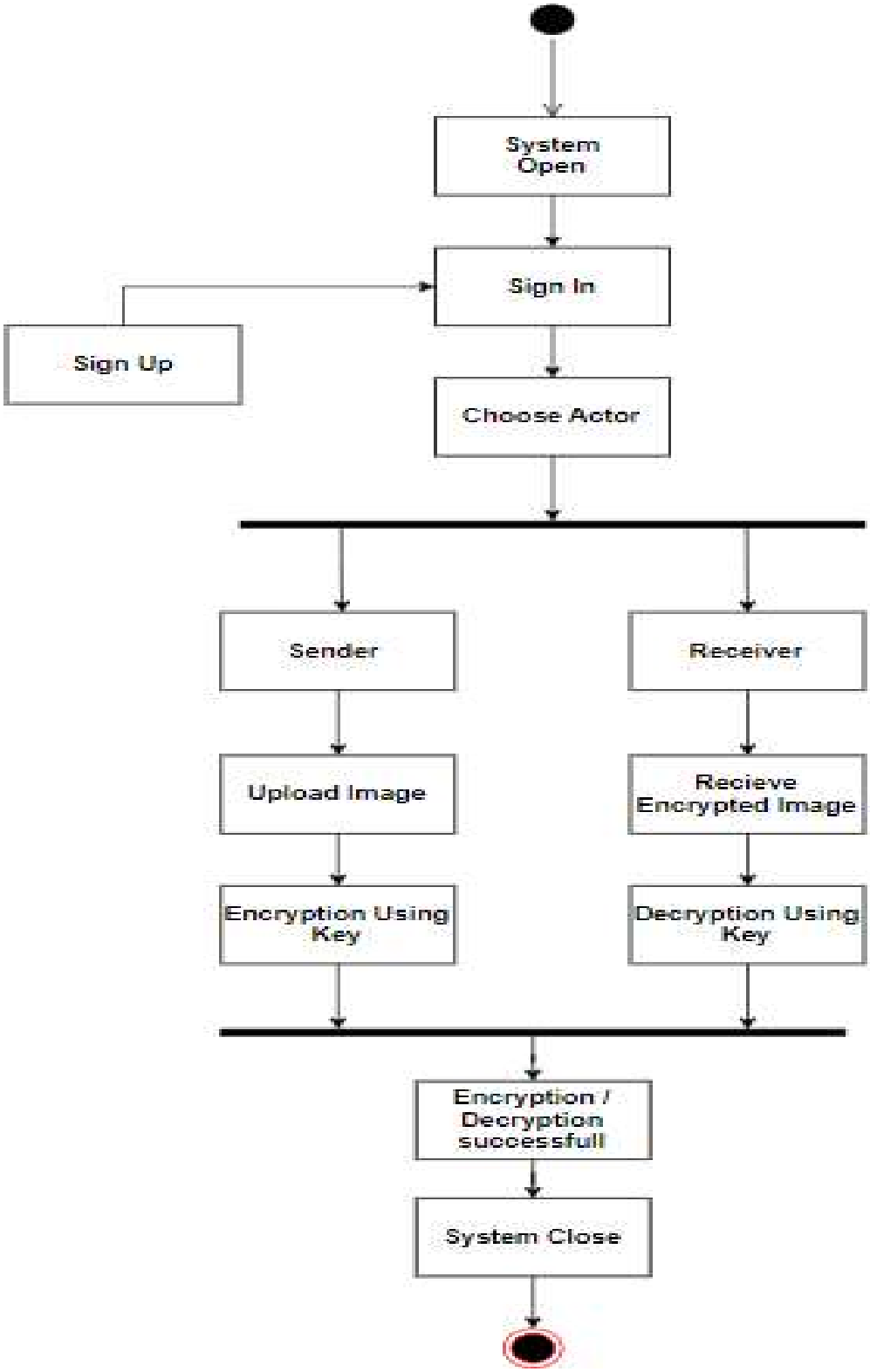
Sequence Diagram



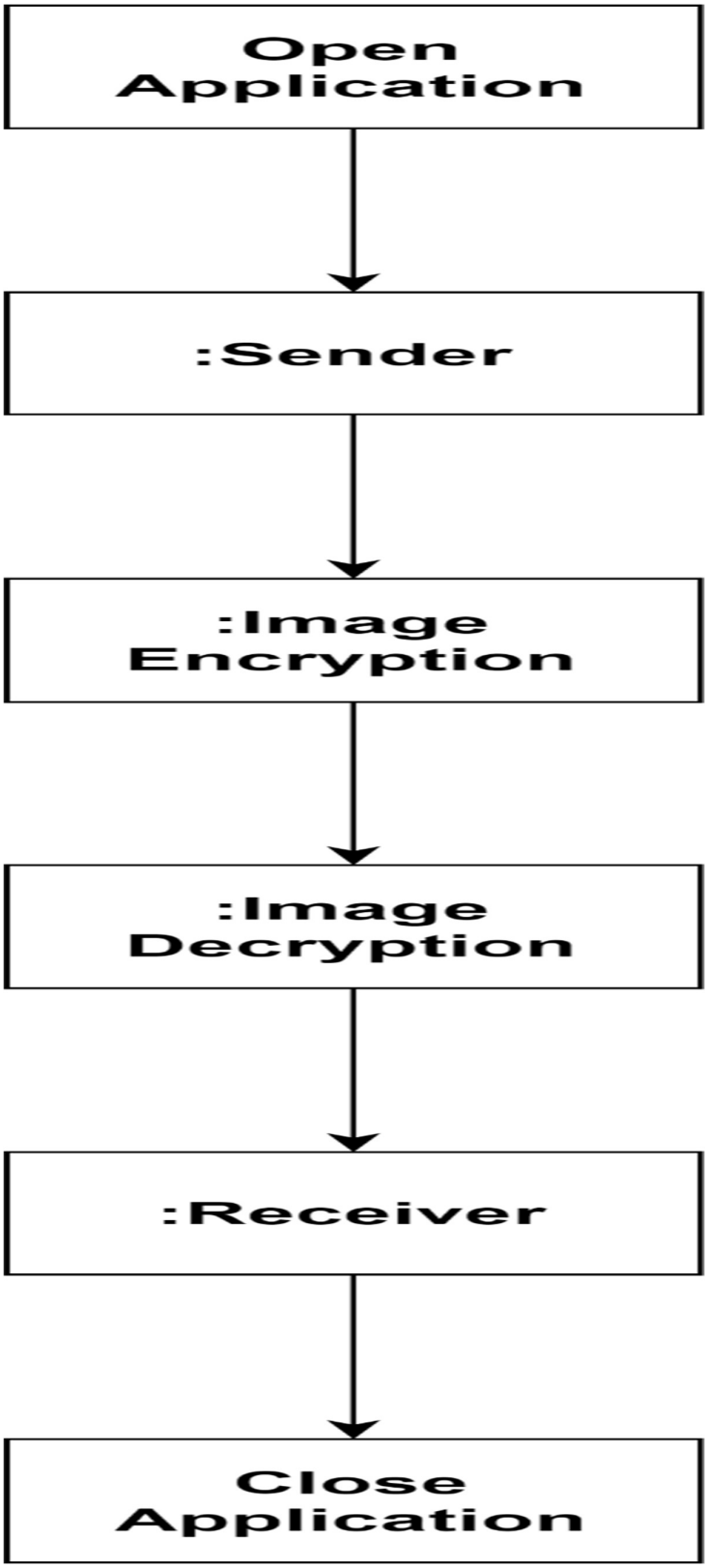
State Chart Diagram



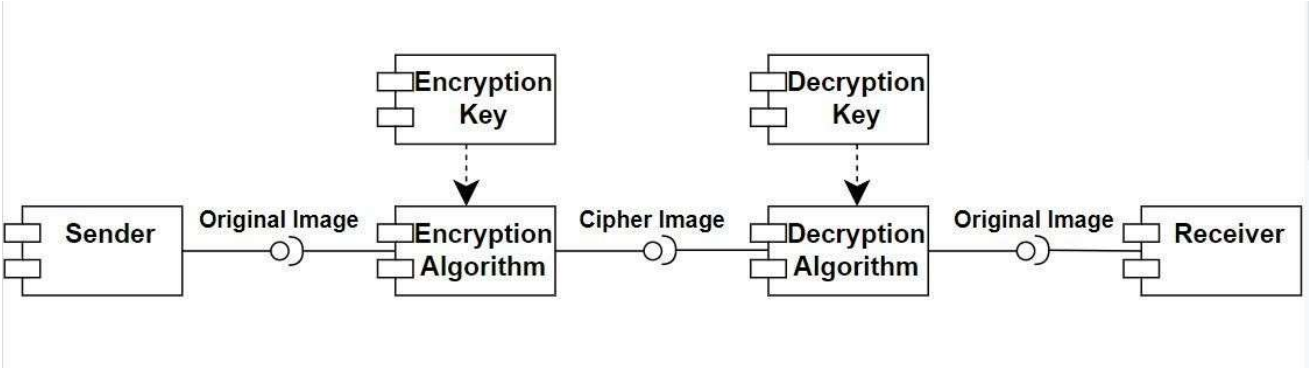
Activity Diagram



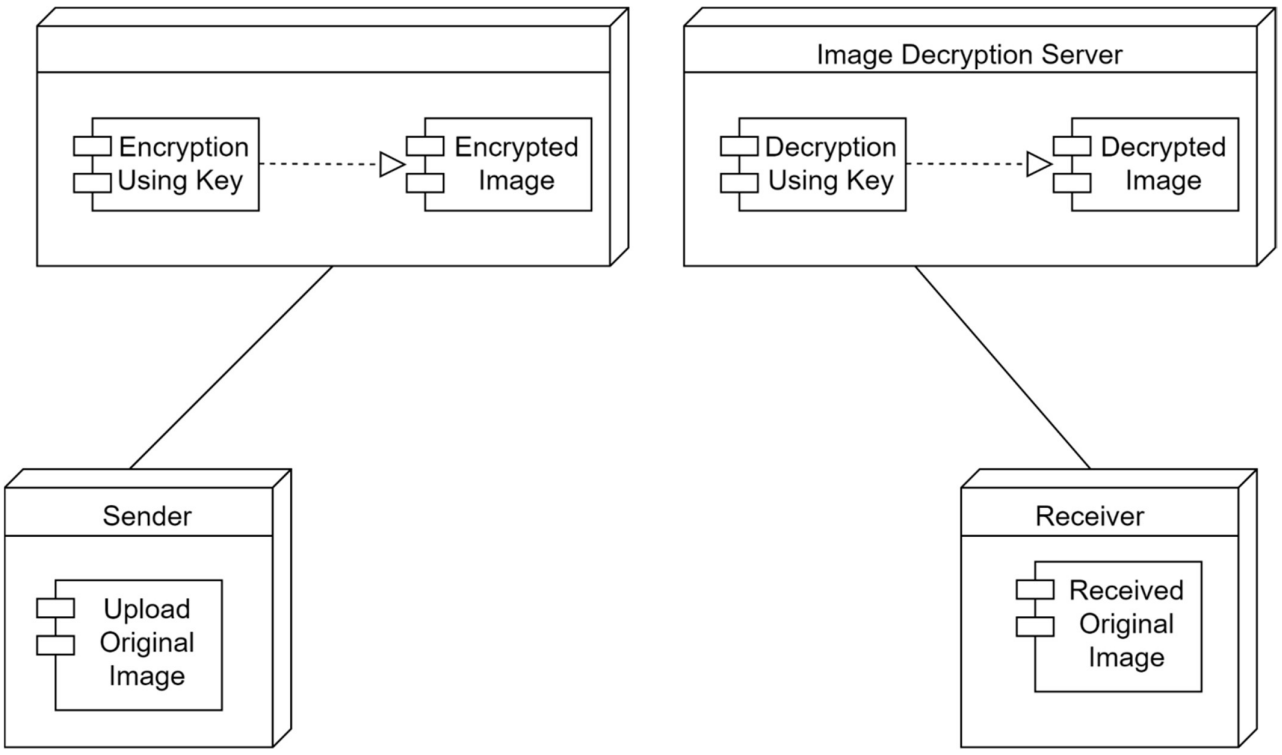
Collaboration Diagram



Component Diagram



Deployment Diagram



Pros and Cons

Advantages:

1. Large enough key space to resist all kinds of brute force attack
2. Cipher-image has a good statistical property
3. Encryption algorithm is sensitive to the secret keys
4. Provides high security level
5. Less computational time
6. Reliable and efficient way to deal with bulky, difficult and intractable data.

Limitation:

The application should be at both the sender and receiver in the network system.

Bibliography

- **Websites:**

Lucidchart

Slideshare

YouTube

Javatpoint

- **Books Referred:**

Software Engineering by Vision Publication by Dr. Reena Bharathi & Seema Purandare