

## 1. INTRODUCTION

### 1.1 Project Idea:

Now a days everything is trending towards digitalization and with the development of internet technology, which may sometimes leads to problem of data loss and leads to privacy concern, hence Secret Writing will help to hide the information to provide authentication and confidentiality to user.

### 1.2 Need of project:

- To maintain secret communication between two people.
- To hide message from third person.
- To protect private information sensitive data & to enhance the security of communication.

### 1.3 Literature survey:

#### **[1]A Study and literature Review on Image Steganography 2013 - by Parmar Ajit Kumar Maganbhai1**

In the present age, the exploration of digital multimedia content has lead to it being utilized as a medium of safe and secure communication. The art of secret communication by a secret medium like images is known as steganography as the rival method of detecting the presence of embedded data in media is called steganalysis. In this review article we have studied and analyzed the different methodologies from various researchers in their research. The main goal of image steganography is to hide the existence of the data message from illegal intention.

#### **[2] Steganography Literature Survey, Classification and Comparative study 2010**

**- by Alaa Fkirin**

Transmitting confidential images between two channels suffer from hacking.

So, protecting confidentiality has become a very essential issue. Several methods are developed to protect important information. The main idea is based on embedding important information in multimedia carrier such as: text, image, audio, and video. The developed methods may be classified as steganography and watermarking.

## **2.PROBLEM STATEMENT & SCOPE**

### **2.1 Problem Statement:**

Now a days everything is trending towards digitalization and with the development of internet technology, which may sometimes leads to problem of data loss and leads to privacy concern, hence Secret Writing will help to hide the information to provide authentication and confidentiality to user.

### **2.2 Project Scope:**

- In the future we can provide more advanced security to the data, where no hacker can decrypt it using any other tools.
- Also we can add voice assistant which can encrypt and decrypt the data.

### **2.3 Area of project:**

The area of security project can vary depending on the specific context and objectives. Here are a few common areas of security projects:

**Application Security:** Application security projects focus on securing software applications and preventing vulnerabilities that can be exploited by attackers. This may involve code reviews, penetration testing, and implementing secure coding practices.

It's important to note that these areas are not mutually exclusive, and many security projects may involve multiple aspects. The specific focus and scope of a security project will depend on the users needs, and the nature of the potential threats they face.

## 2.3 Goals & objectives:

### Goals:

When it comes to secret writing, the primary goal is to ensure that the message remains hidden and can only be deciphered by the intended recipient. Here are some common goals for secret writing:

- **Confidentiality:** This means that unauthorized individuals should not be able to understand or access the content of the message.
- **Encryption:** Encryption ensures that even if someone intercepts the message, they cannot understand its meaning without the appropriate decryption method or key.
- **Decryption:** The goal is to make sure that only authorized individuals can decipher the hidden message.
- **Steganography:** This can be done by hiding the message within images, files, or other forms of digital or physical media.

### Objectives:

- **Covert Communication:** Secret writing can enable covert communication between individuals or groups, particularly in situations where open communication may be monitored or restricted. It allows for the exchange of information without raising suspicion or alerting third parties.
- **Authentication:** Secret writing techniques such as digital signatures or cryptographic protocols can be used to verify the authenticity and integrity of a message. This ensures that the message comes from a trusted source and has not been modified during transmission.
- **Espionage or Intelligence Gathering:** In certain contexts, secret writing may be employed by intelligence agencies or individuals engaged in espionage to hide sensitive information or communicate covertly. The objective here is to protect classified information and ensure that only authorized parties can decipher the message.

### 3. SOFTWARE REQUIREMENT SPECIFICATION

#### 3.1 Software Requirements:

| Software requirements | specification                |
|-----------------------|------------------------------|
| Operating system      | Windows 11                   |
| Front end             | C#                           |
| Back end              | File Handling                |
| Tool                  | Microsoft visual studio 2017 |

Table 3.1. Software Requirements

#### 3.2 Hardware Requirements:

| Hardware Requirement | Specification                                 |
|----------------------|---|
| System               | A Desktop/Laptop with Intel core i5 2.50 GHz. |
| Hard Disk            | 1tb   |
| Monitor              | 15 VGA Colour.                                |
| Ram                  | 4 GB  |

Table 3.2. Hardware Requirements

#### 4. PROJECT PLAN

| Month                 | Week 1                             | Week 2                       | Week 3                             | Week 4                            |
|-----------------------|------------------------------------|------------------------------|------------------------------------|-----------------------------------|
| <b>Feb<br/>2023</b>   | Introduction<br>To<br>Mini project | Search the topic<br>project  | Collect the related<br>information | Create the<br>synopsis            |
| <b>March<br/>2023</b> | Start working on<br>the project    | Design and coding<br>project | Coding                             | Testing                           |
| <b>April<br/>2023</b> | Improvement in<br>code             | Testing                      | Report                             | Updated Report                    |
| <b>May<br/>2023</b>   | Enhancing project<br>code          | Created executable<br>file   | Testing                            | Final project<br>and presentation |

**Table: 4.1 Project schedule**

## 5. SOFTWARE DESIGN

### 5.1 DFD

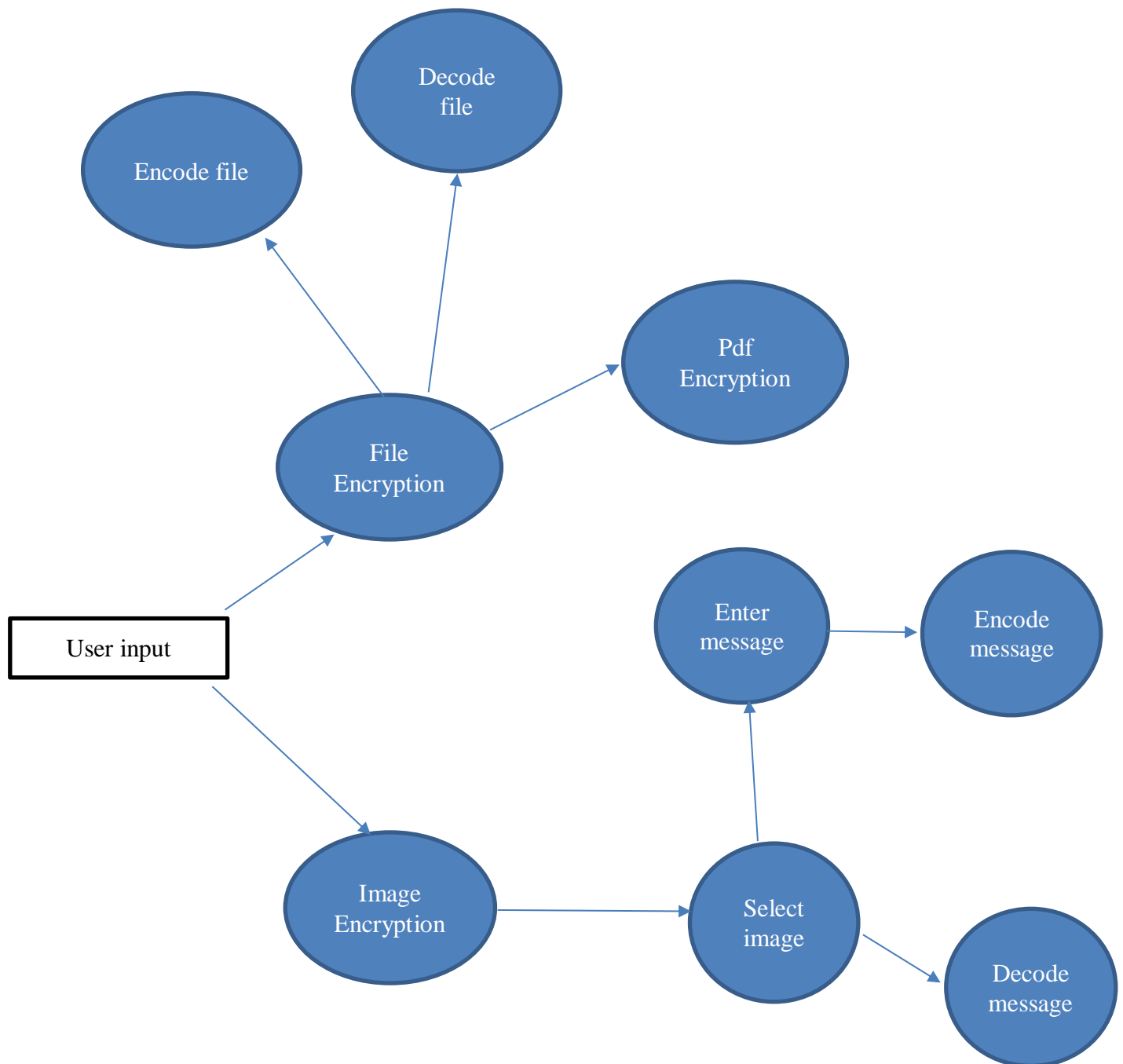


Figure: 5.1 DFD

## 5.2 Flow chart

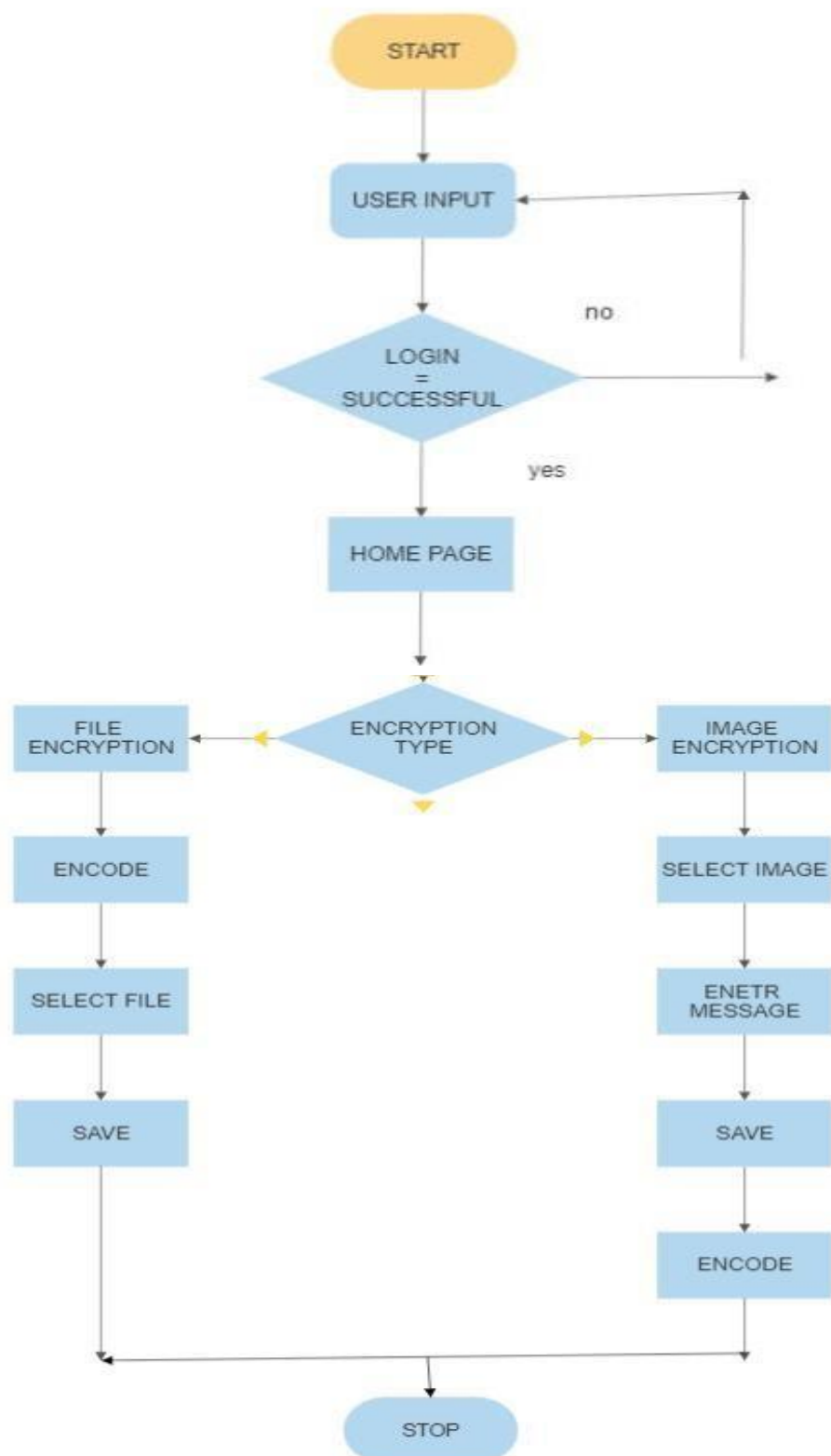
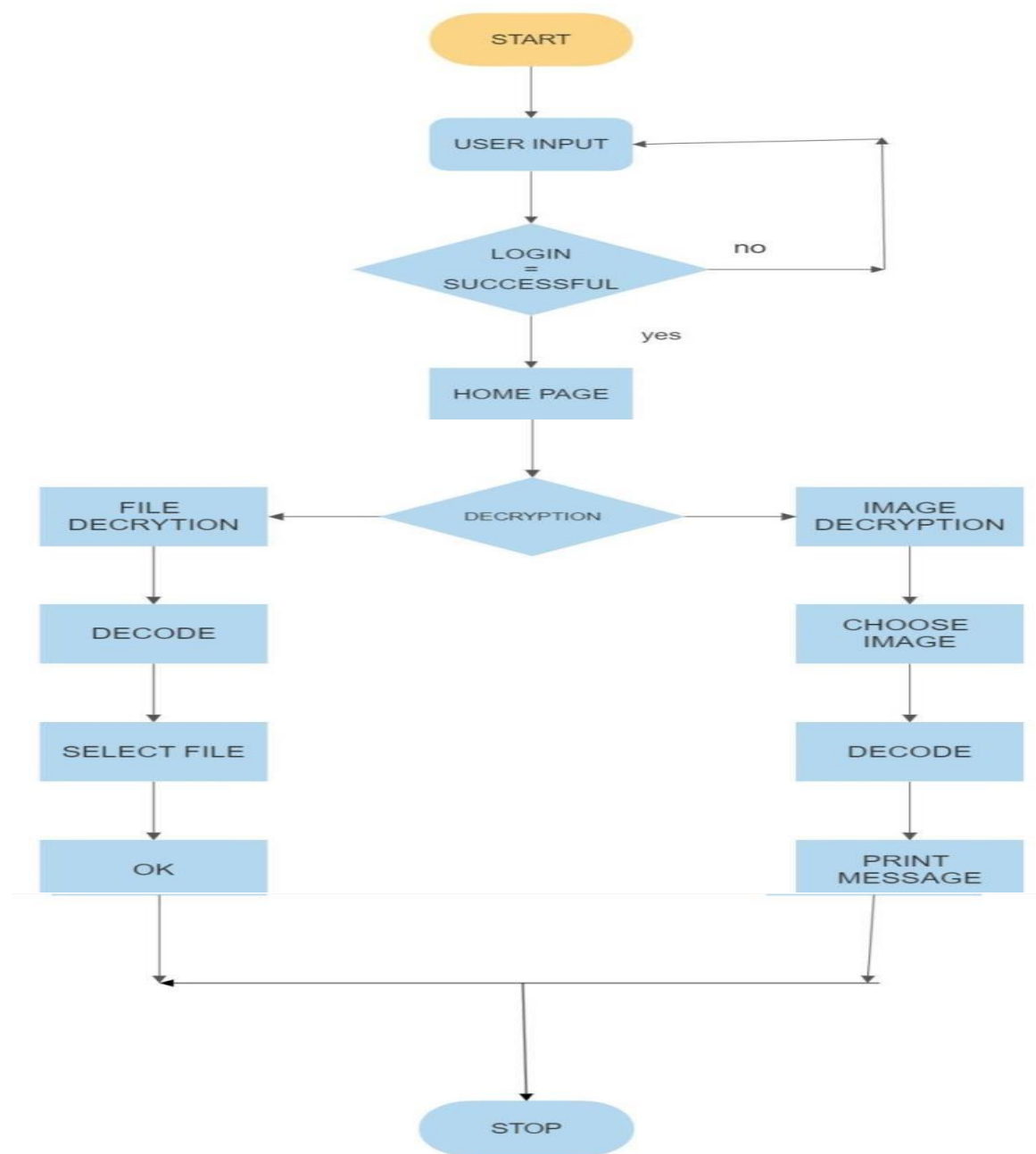
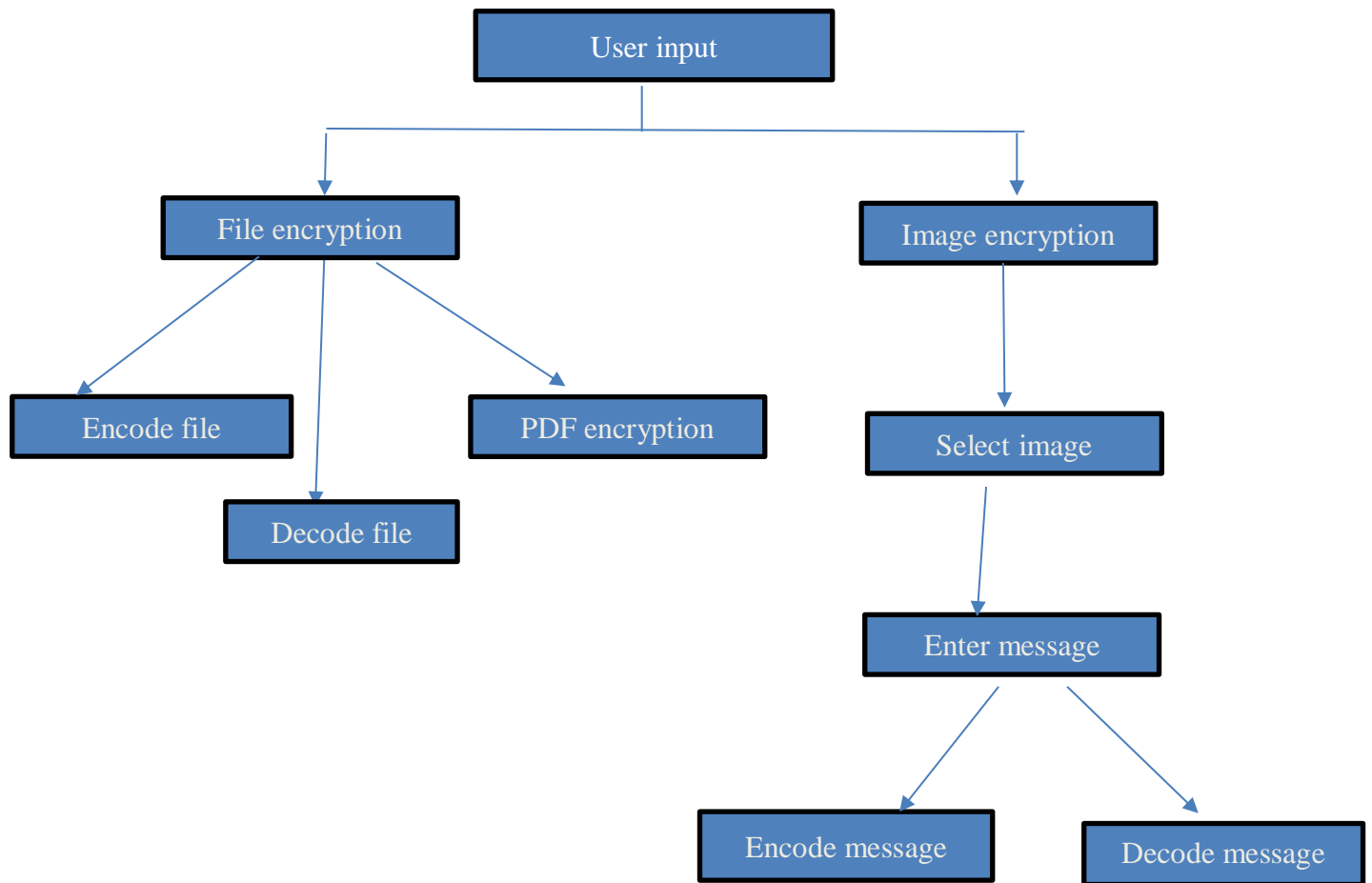


Figure: 5.2 Encryption

**Figure: 5.2 Decryption**

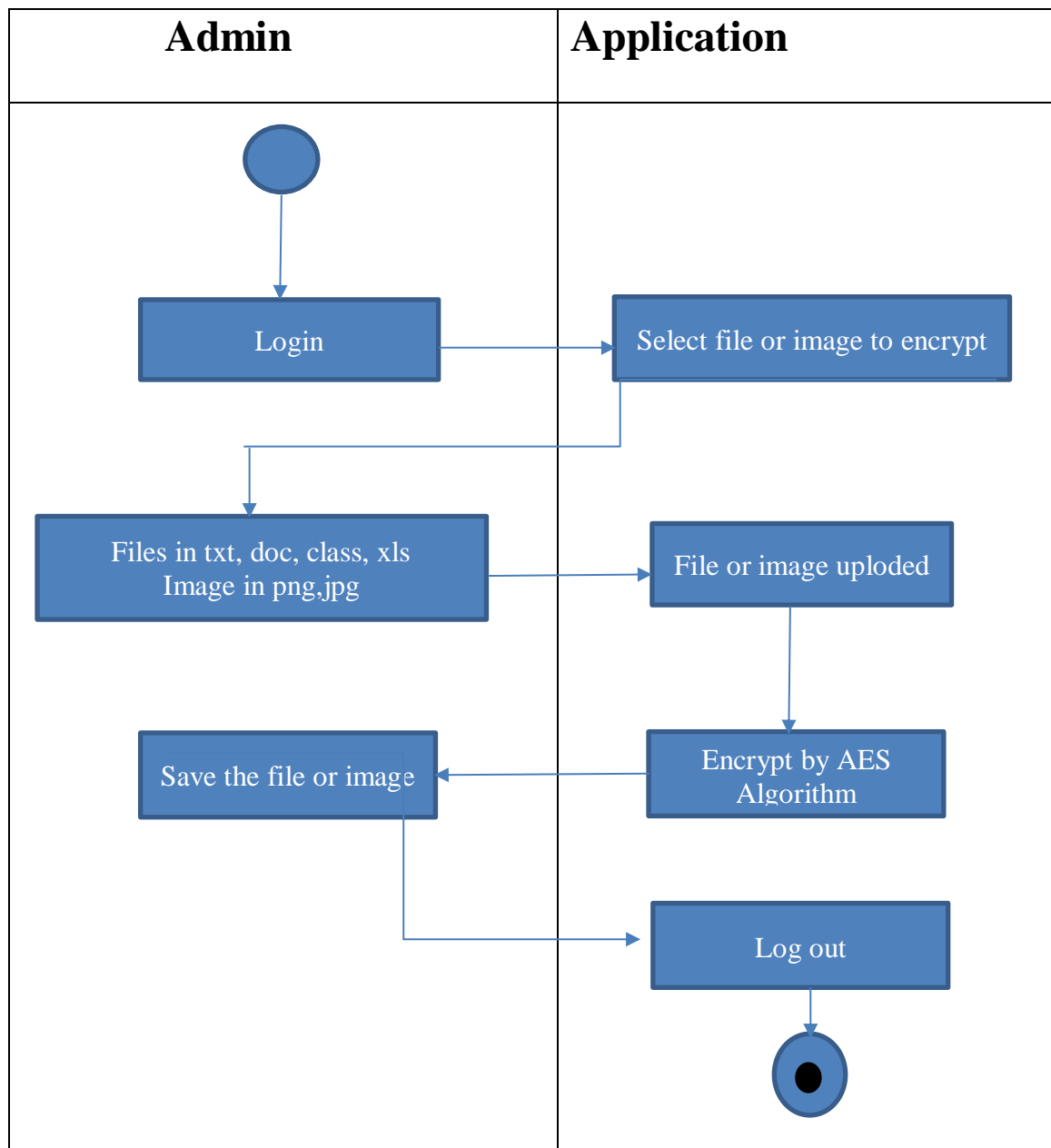


### 5.3 Architecture Diagram:

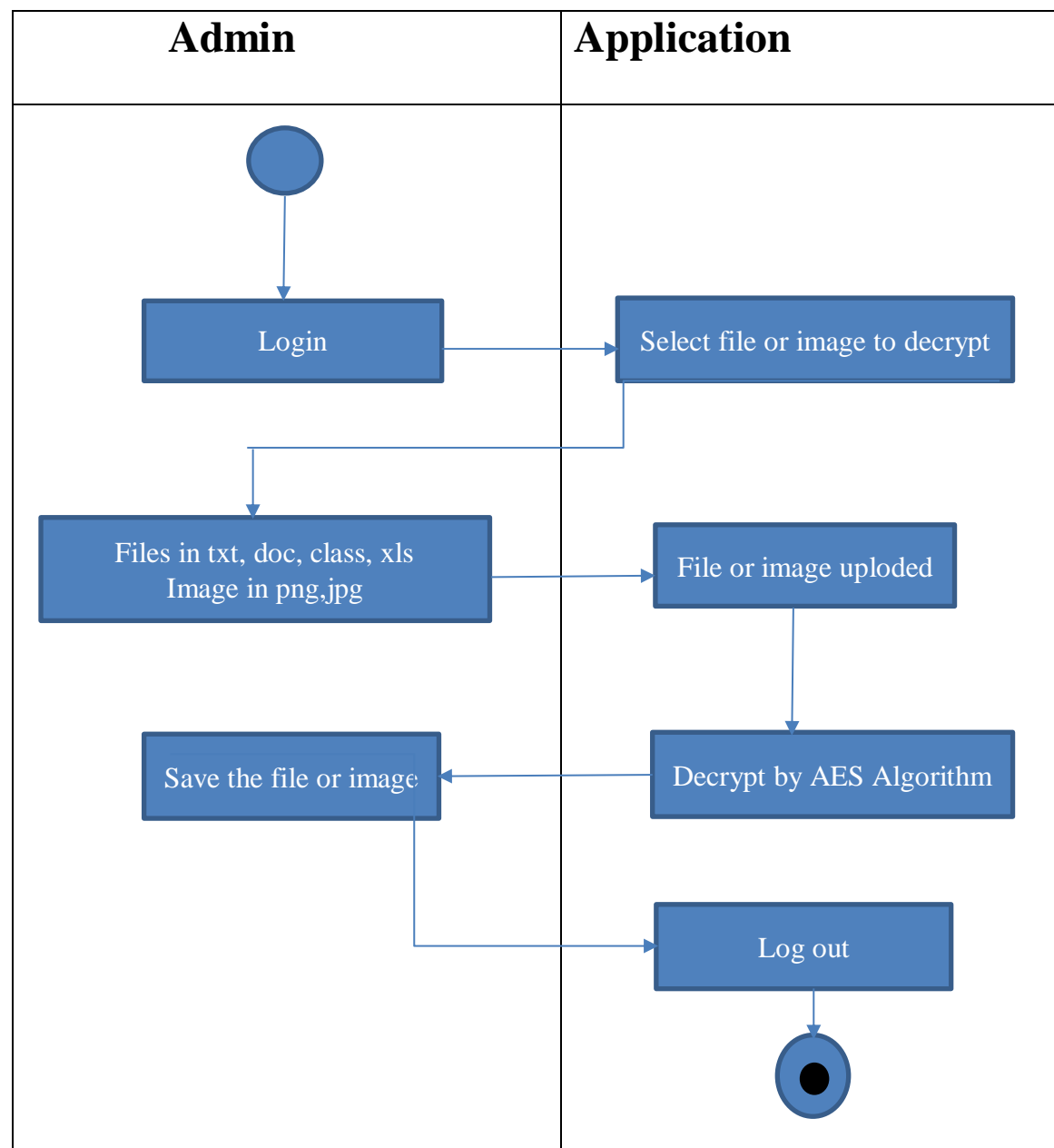


**Figure: 5.3 Architecture Diagram**

## 5.4 UML Diagram



**Figure: 5.4 Encryption**

**Figure: 5.5 Decryption**

## 6. IMPLEMENTATION DETAILS

### 6.1 Modules and their Functionalities:

- **LOGIN MODULE:**

In login module user can sign the page by using username and password and go to the home page

User Registration: The login module should provide a way for users to create an account. This typically involves collecting user information such as username, password.

Password Security: Passwords should be securely stored using file handling.

- **ENCODE:**

User can select file in form of image, text, and excels file and encode the file using Advanced Encryption standard (AES) Algorithm. Encoding is the process of converting plaintext information into ciphertext, making it unreadable to anyone without the decryption key. You can use encryption algorithms such as AES (Advanced Encryption Standard) to encode your information. The encryption key is required to decrypt the information back to its original form.

- **DECODE:**

To decode secret writing, you need to know the specific encoding method that was used. There are numerous encoding techniques, such as AES and more. Without knowing the exact method employed, it is challenging to provide a specific decoding process so it may be able to assist you further in deciphering it.

- **WHATSAPP LINK:**

User can send a files through WhatsApp web application. Once you have created a WhatsApp URL, you can simply copy and paste it across various channels. You can forward them on messages, include them on social media pages, email newsletters or even in your click to WhatsApp ad campaigns.

- **CONTACT:**

If any problem occurs then user can contact developer. A contact module on a website is a feature that allows visitors to easily get in touch with the website owner or administrator. It typically includes a form or a set of fields where users can enter their contact information and a message.

## 7. TESTING

### INTRODUCTION

The development of software involves a series of production activities where opportunities of injection of human fallibilities are enormous. Error may begin to occur at the very inception of the process.

Testing is the process of executing the program with the intent of finding an error. A good test case is one that which has high probability of finding an as yet undiscovered error. A successful test is one that uncovers an as yet undiscovered error.

### System Test

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

### White Box Testing

White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is purpose. It is used to test areas that cannot be reached from a black box level.

### Black Box Testing

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box .you cannot “see” into it. The test provides inputs and responds to outputs without considering how the software works.

## **Test Items**

This test plan applies to each part of our project as well as overall integration testing. For each module, the input and output will be tested on validity. This will also require that each function supporting the modules be tested similarly. After each module is tested the final project has to be tested. [8][9]

## **Test Plan**

Test planning was planned as soon as the requirement specifications were prepared. Detail definition of test cases was started as soon as the design of components was finished.

The first test plan executed generally focuses on individual components, and then the focus shifts towards the larger components. Module testing will be used for each unit. An overall system test will be executed after integration.

## **Unit Testing**

Unit testing focuses verification effort on the smallest unit of software design- the software component or module. Using the component-level design description as a guide, important control path are tested to uncover errors within the boundary of module. The relative complexity of test and uncovered errors is limited by the constrained scope established for unit testing. The unit testing is white-box oriented, and the step can be conducted in parallel for multiple components.

## **Integration Testing**

Integration testing exercises several units that have been combined to form a module, subsystem or system. Integration testing focuses on the interfaces between units, to make sure the unit together. The nature of this phase is certainly 'white box', as we must have certain knowledge of the units to recognize if we have been successfully in fusing then together in the module.

## **Performance testing**

In software engineering, performance testing is testing that is performed to determine how fast some aspect of a system performs under a particular workload. This phase includes testing of the entire application as whole in order to ensure that the application function successfully as a coherent unit without errors and breakup points.

### **Item Pass/Fail criteria**

- For unit level:

A unit level test is placed if each module satisfies the following conditions:

All test cases completed: Each function returns the expected output for given input.

- For integration level:

All unit level plans completed successfully for all test cases.

All modules integrated together gives valid result

- For performance level:

The monitoring application as a whole gives valid result for all possible operations.

Performance results for the entire application are within acceptable limits.



## 8. SNAPSHOTS/ GUI

### 8.1. Login:

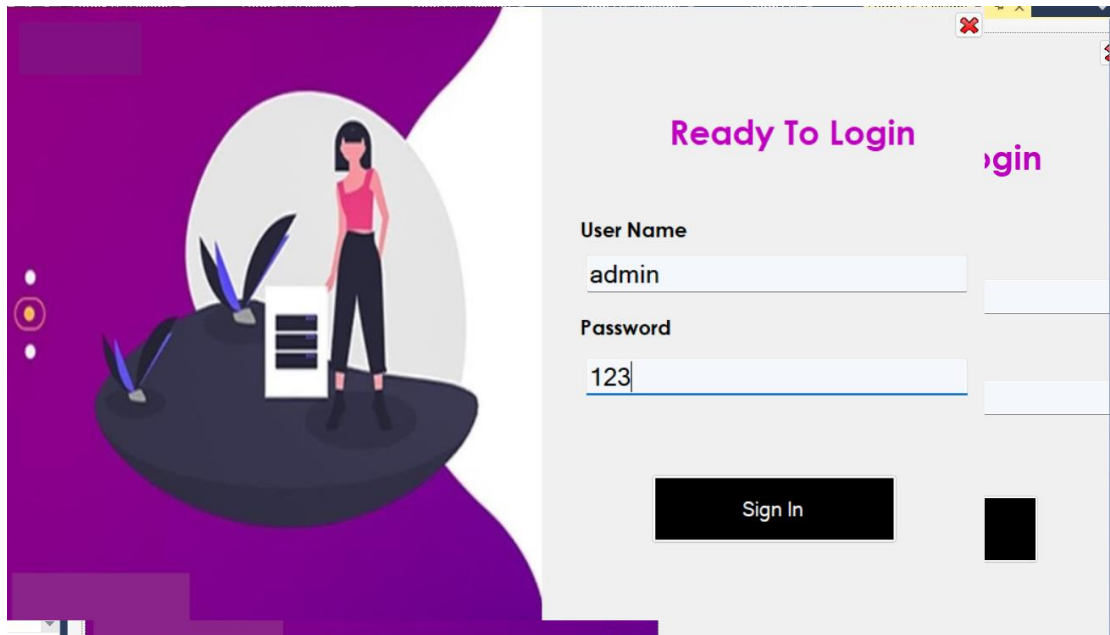


Figure 8.1 Login

### 8.2 Home page:

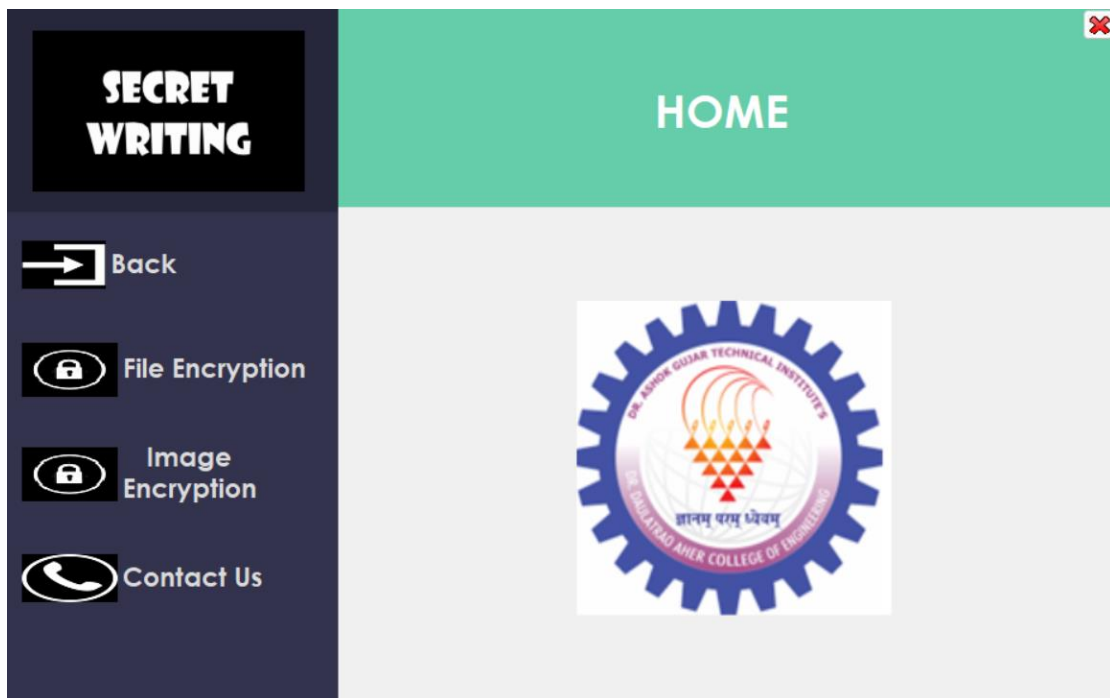


Figure 8.2 Home Page

### 8.3 File Encryption:

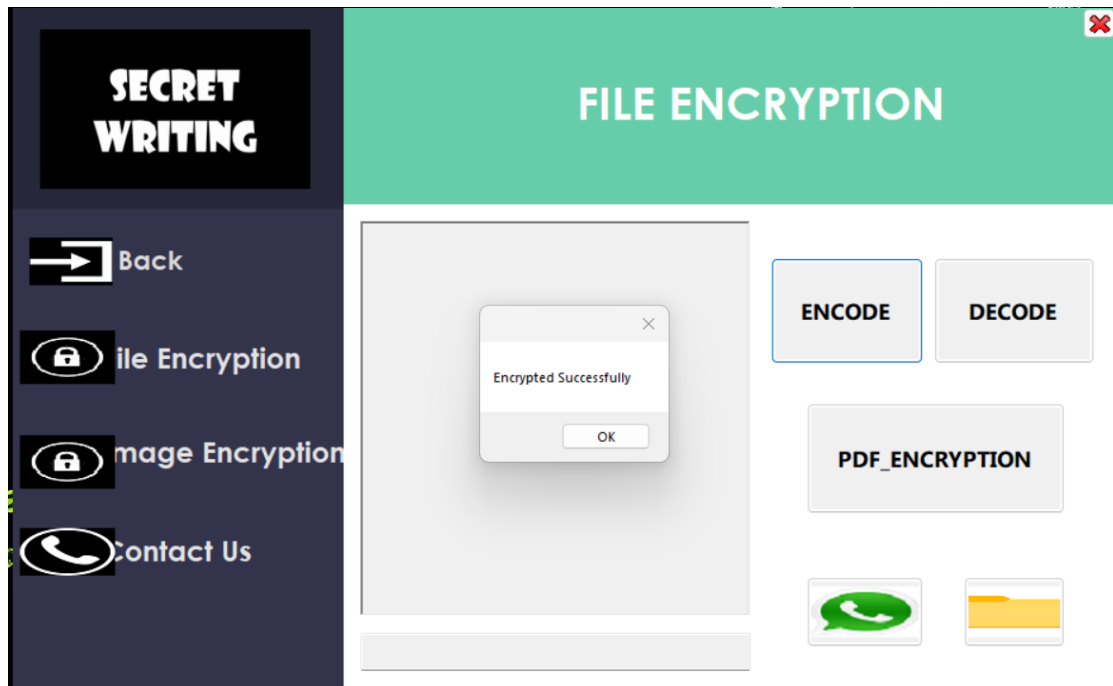


Figure 8.3 File Encryption

### 8.4 File Decryption:

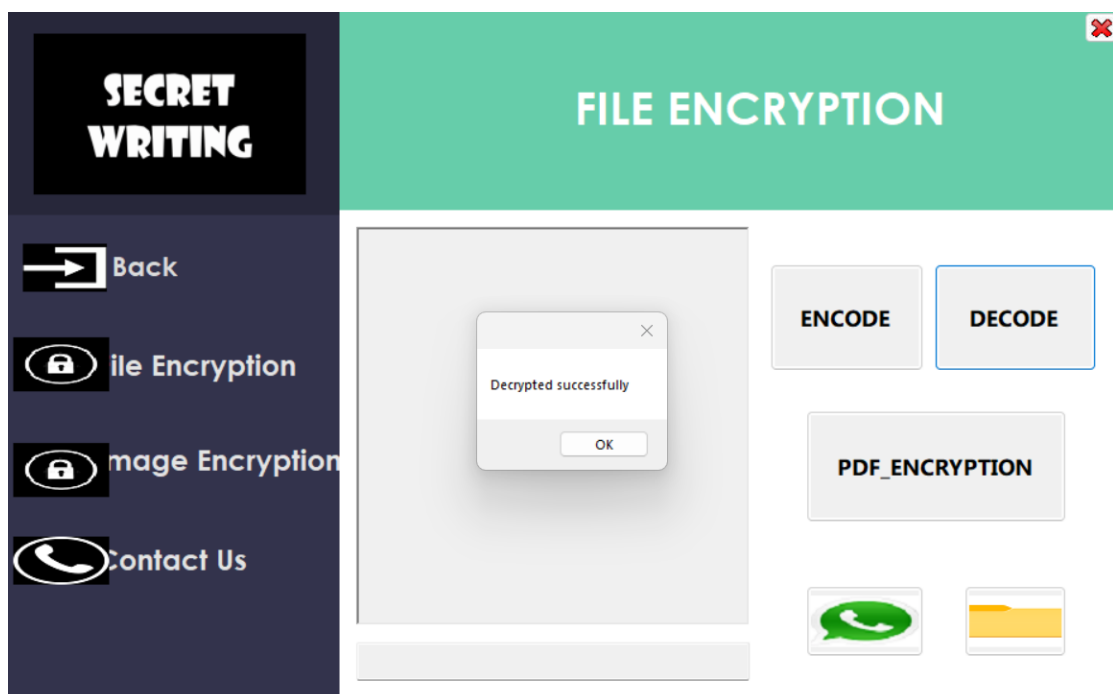


Figure 8.4 File Decryption

## 8.5 PDF Encryption

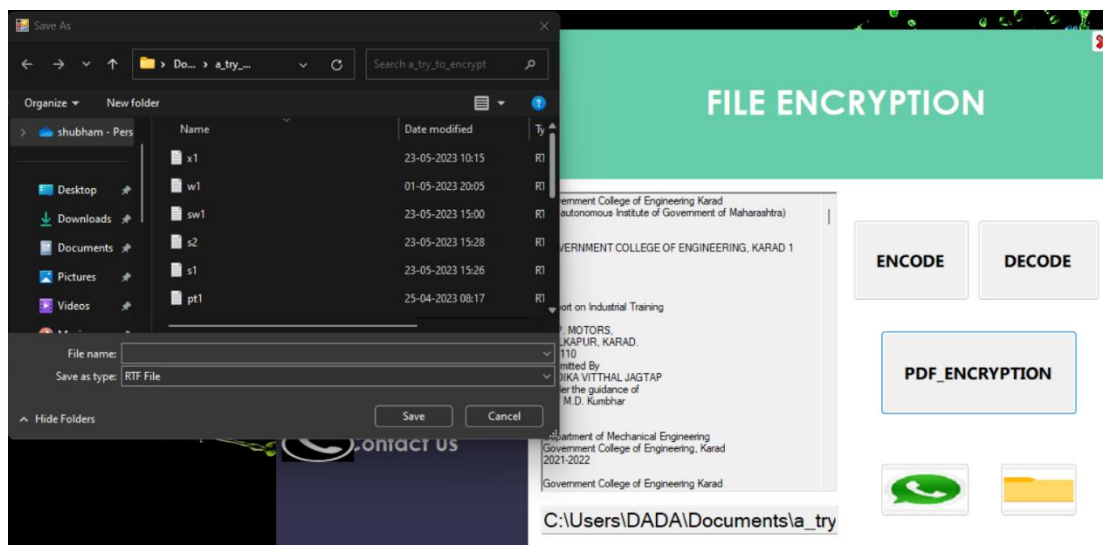


Figure 8.5 PDF Encryption

## 8.6 Image Encryption

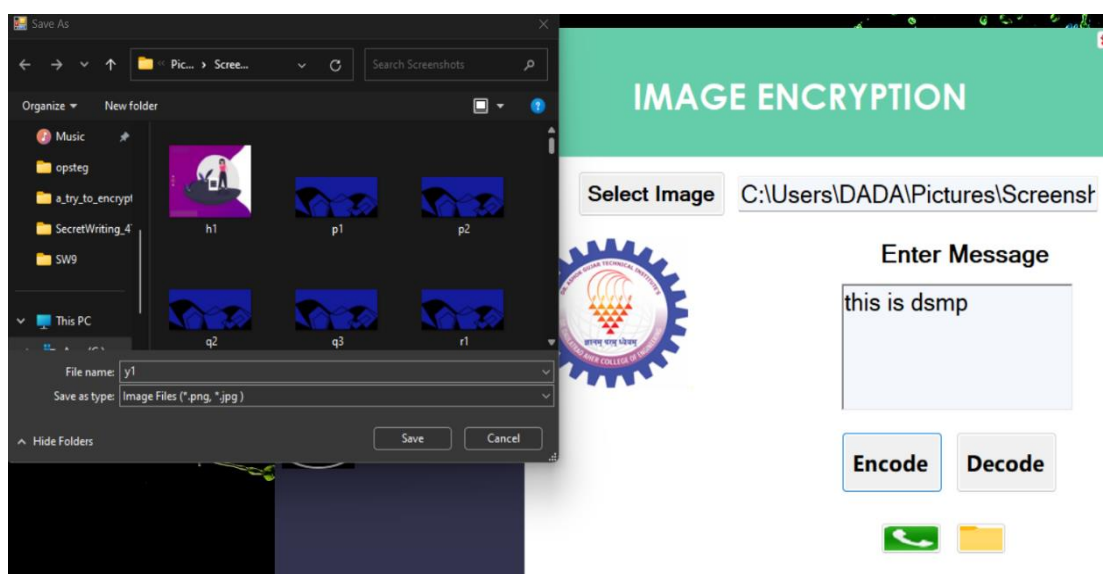


Figure 8.6.1 Image Encryption

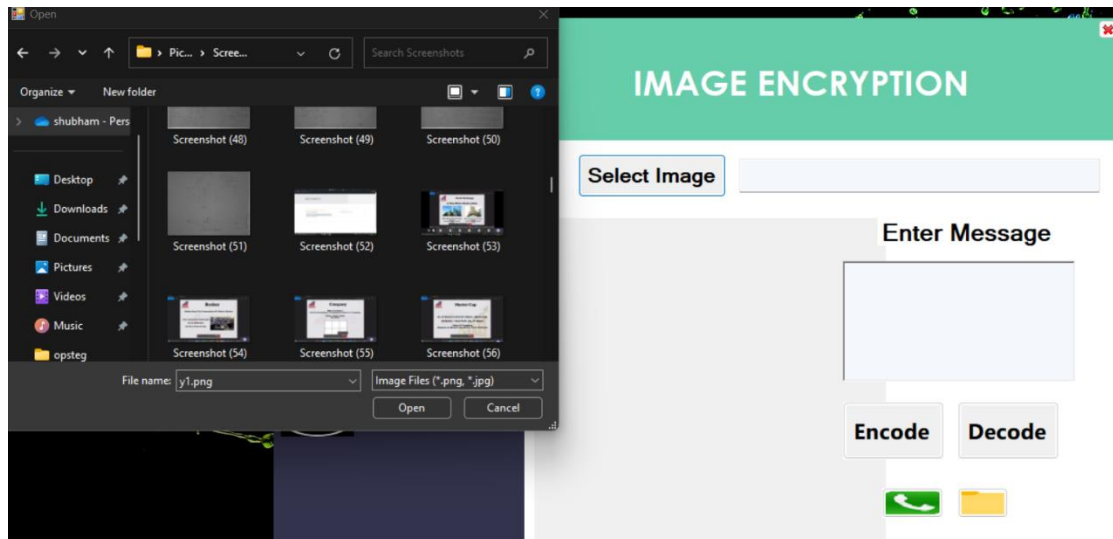


Figure 8.6.2 Image Encryption



Figure 8.6.3 Image Encryption

## 8.7 WhatsApp link:

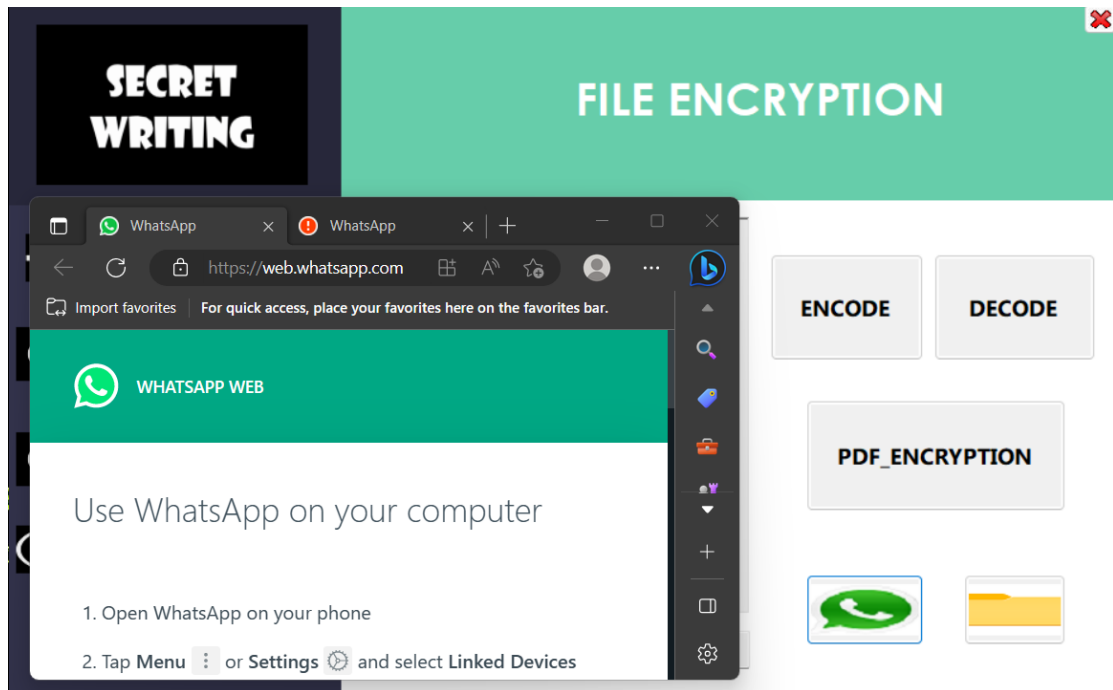


Figure 8.7 Whatsapp link

## 8.8 Folder:

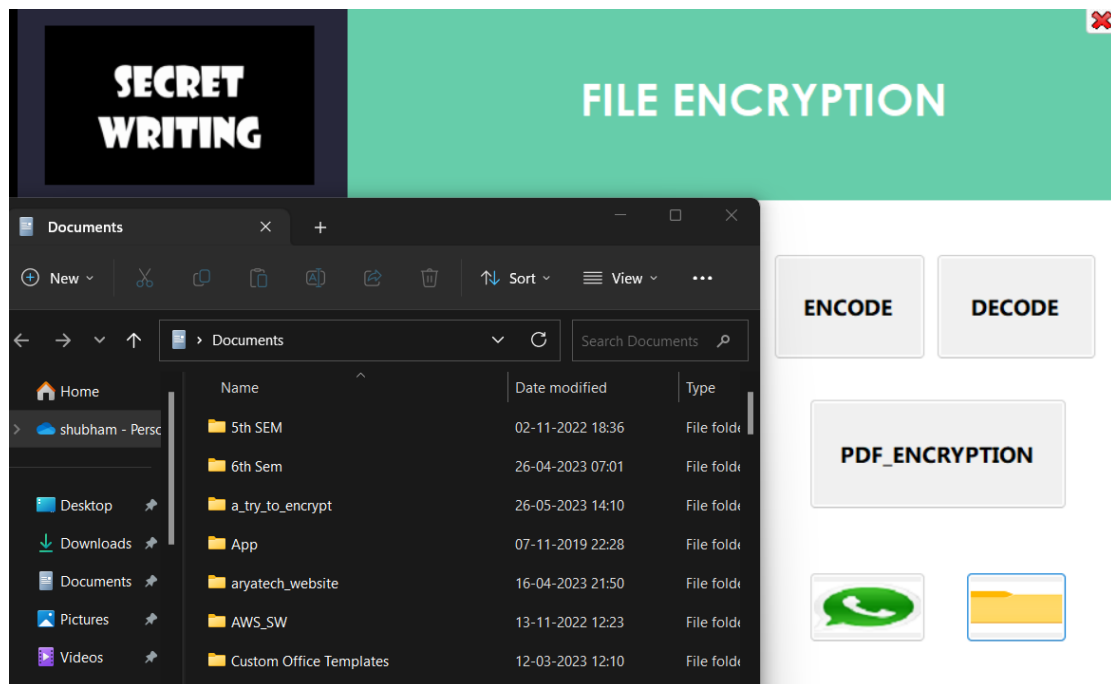


Figure 8.8 Folder

## 9. CONCLUSION

The proposed application provide authentication while sending and receiving the file it also provides confidentiality. Secret writing helps to hide the information. In conclusion, the secret writing project has proven to be an engaging and intriguing endeavor. Through this project, we have accomplished our objectives, which may have included confidential communication, cryptography practice, during sending and receiving files. Also, the secret writing project has been a rewarding and enriching experience, allowing us to develop skills, stimulate creativity, and explore the fascinating world of hidden messages.

## 10. FUTURE SCOPE

In the future we can provide more advanced security to the data, where no hacker can decrypt it using any other tools.

Also, we can add voice assistant which can encrypt and decrypt the data.

- **Cybersecurity:** With the increasing number of cyber threats and data breaches, the demand for robust encryption techniques is higher than ever. The future will likely bring more advanced encryption algorithms and protocols to protect digital assets.
- **Internet of Things (IoT):** As more devices become interconnected through the IoT, the need for secure communication between them becomes crucial. Secret writing can ensure the confidentiality and integrity of data transmitted between IoT devices, protecting against unauthorized access or tampering.
- **Blockchain and cryptocurrencies:** Blockchain technology, which underlies cryptocurrencies like Bitcoin, relies on encryption to secure transactions and maintain the integrity of the distributed ledger.
- **Quantum-resistant cryptography:** To counter this threat, the future of secret writing lies in developing quantum-resistant encryption techniques that can withstand attacks from powerful quantum computers.
- **Privacy-preserving technologies:** As concerns about privacy increase, there is a growing demand for techniques that allow secure communication while preserving the privacy of individuals. Secret writing can enable privacy-preserving technologies such as secure multiparty computation, secure data sharing, and anonymous communication networks.
- **Biometric encryption:** Future advancements may include techniques that securely store and process biometric data while protecting it from unauthorized access.

## 11. REFERENCES

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[3] Cryptography and network security Atul Kahate TMGH.

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