MITS Internship

Easy project -13

File Encryption/ Decryption Tool

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Introduction

- A file encryption/decryption tool is used to protect sensitive files by converting them into an unreadable format.
- Only users with the correct password/key can decrypt and access the file.
- This ensures confidentiality, data protection, and security.

Objective

01. Allows users to encrypt files using a password

02. Allows users to decrypt files back to readable form using the same password

03. Prevents unauthorized access to sensitive information

Technologies Used

- **Language**: Python
- **Libraries**:
  tkinter (for GUI)
  cryptography (for encryption using Fernet)
  hashlib, base64 (for password-based key generation)
- **Platform**: Desktop Application

How It Works

01

User selects a file using the GUI.

02

User enters a password.

03

A secure key is generated from the password.

04

File is encrypted using the key (saved as .encrypted).

05

File can be decrypted using the same password to restore it.

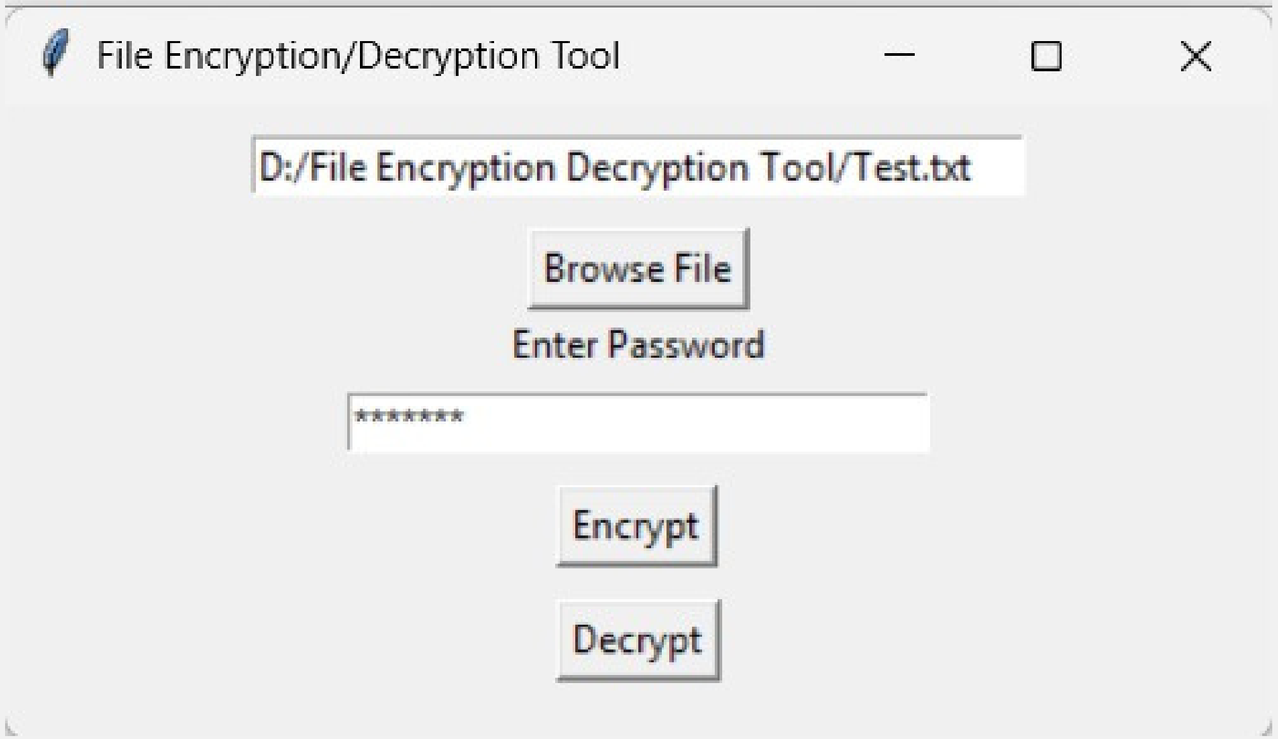
Encryption Process

- Converts the file into a secure format using AES encryption via the Fernet module.
- Encrypted files are saved with .encrypted extension.
- File becomes unreadable without the password/key.

Decryption Process

- Reads the encrypted file.
- Decrypts it using the same password-derived key.
- Saves the result as .decrypted file.

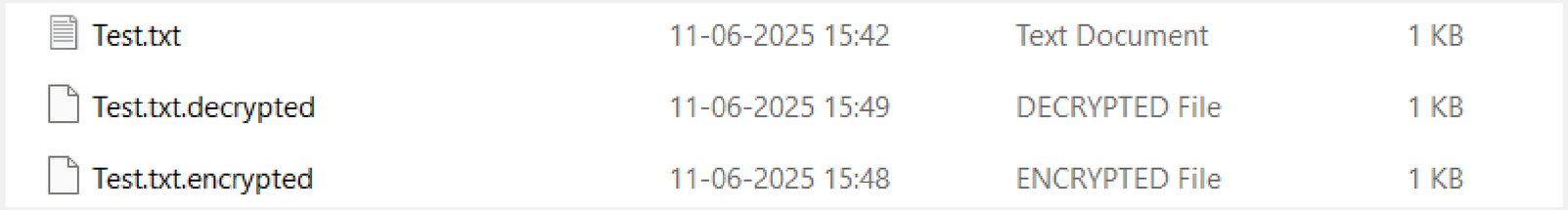
Output



GitHub Link: Code and output

Output Examples

Original file: test.txt
After encryption: test.txt.encrypted
After decryption: test.txt.decrypted



Test.txt	11-06-2025 15:42	Text Document	1 KB
Test.txt.decrypted	11-06-2025 15:49	DECRYPTED File	1 KB
Test.txt.encrypted	11-06-2025 15:48	ENCRYPTED File	1 KB

Future Enhancements

- Add password strength validation
- Support for folder encryption
- Export as .EXE for Windows use
- Add cloud backup integration
- Show progress bar/status

Advantages

- Easy to use
- Secure file protection with password-based encryption
- Lightweight and fast
- Cross-platform (can run on any OS with Python)

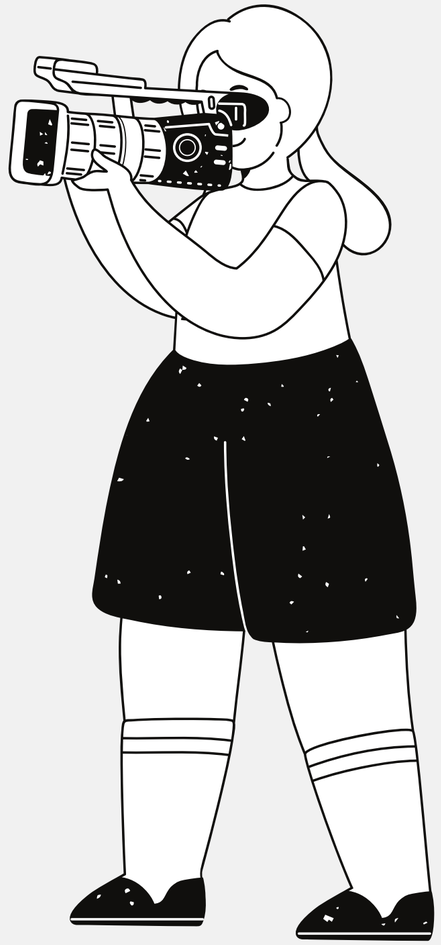
GUI Overview

Simple and minimal interface using tkinter

- Features:
  - File browsing
  - Password input
  - Encrypt and Decrypt buttons
  - Success/error notifications

Conclusion

- This project demonstrates the importance of securing files in today's digital age.
- Simple yet effective tool using Python for encryption and decryption.
- Easy interface ensures usability for even non-technical users.



Thank you very much!