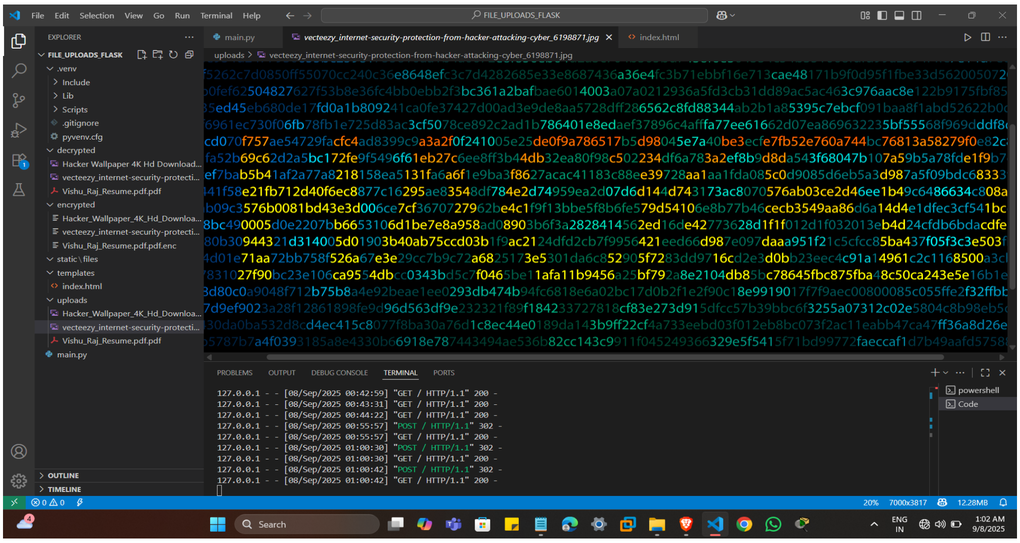
Cybersecurity Internship Project Report

Project Title: Secure File Sharing System

This report documents my work during my cybersecurity internship with Future Intern. The project undertaken was titled **Secure File Sharing System**. The objective of this project was to design and implement a secure file sharing mechanism using Flask (Python) and AES encryption to ensure confidentiality and integrity of files.

Project Overview:
The Secure File Sharing System allows users to upload files through a web interface. Once uploaded, the files are automatically encrypted using the AES encryption algorithm, stored securely in an encrypted folder, and can later be decrypted for safe retrieval. This system demonstrates how cryptographic methods can be integrated into web applications to protect sensitive data from unauthorized access.

Technology Stack: - Python (Flask Framework) - AES Encryption (Crypto.Cipher library) - HTML (Frontend Interface) - VS Code for Development - Localhost Testing via Flask Server


FILE_UPLOADS_FLASK
main.py
vecteezy_internet-security-protection-from-hacker-attacking-cyber_6198871.jpg
index.html
uploads > vecteezy_internet-security-protection-from-hacker-attacking-cyber_6198871.jpg
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
powershell
Code

```
f5262c7d0850ff55070cc240c36e8648efc3c7d4282685e33e8687436a36e4fc3b71ebbf16e713cae48171b9f0d95f1fbe33d562005072
b0fef62504827627f53b8e36fc4bb0ebb2f3bc361a2bafbae6014003a07a0212936a5fd3cb31dd89ac5ac463c976aac8e122b9175fbf85
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8bc490005d0e2207bb6653106d1be7e8a958ad08903b6f3a2828414562ed16de42773628d1f1f012d1f032013eb4d24cfdb6bdacdfe
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4d01e71aa72bb758f526a67e3e29cc7b9c72a6825173e5301da6c852905f7283dd9716cd2e3d0bb23eec4c91a14961c2c1168500a3c
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5787b7a4f0393185a8e4330b66918e787443494ae536b82cc143c9911f045249366329e5f5415f71bd99772faeccaf1d7b49aafd5758
```
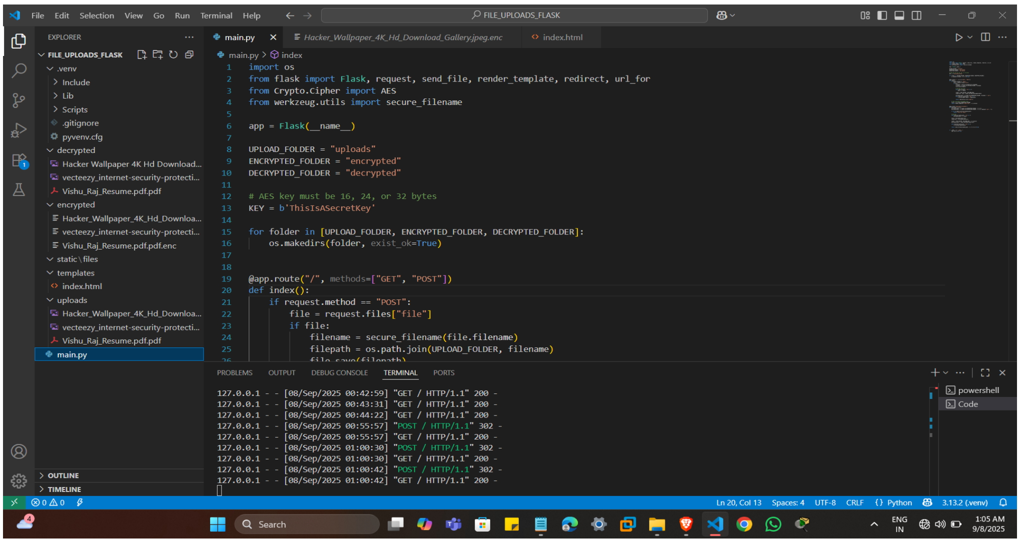

```
127.0.0.1 - - [08/Sep/2025 00:42:59] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [08/Sep/2025 00:43:31] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [08/Sep/2025 00:44:22] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [08/Sep/2025 00:55:57] "POST / HTTP/1.1" 302 -
127.0.0.1 - - [08/Sep/2025 00:55:57] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [08/Sep/2025 01:00:30] "POST / HTTP/1.1" 302 -
127.0.0.1 - - [08/Sep/2025 01:00:30] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [08/Sep/2025 01:00:42] "POST / HTTP/1.1" 302 -
127.0.0.1 - - [08/Sep/2025 01:00:42] "GET / HTTP/1.1" 200 -
```

This image shows the encrypted hexadecimal representation of the uploaded files after AES encryption. The encryption ensures data confidentiality.



```python
import os
from flask import Flask, request, send_file, render_template, redirect, url_for
from Crypto.Cipher import AES
from werkzeug.utils import secure_filename

app = Flask(__name__)

UPLOAD_FOLDER = "uploads"
ENCRYPTED_FOLDER = "encrypted"
DECRYPTED_FOLDER = "decrypted"

# AES key must be 16, 24, or 32 bytes
KEY = b'ThisIsASecretKey'

for folder in [UPLOAD_FOLDER, ENCRYPTED_FOLDER, DECRYPTED_FOLDER]:
    os.makedirs(folder, exist_ok=True)


@app.route("/", methods=["GET", "POST"])
def index():
    if request.method == "POST":
        file = request.files["file"]
        if file:
            filename = secure_filename(file.filename)
            filepath = os.path.join(UPLOAD_FOLDER, filename)
```

```
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```
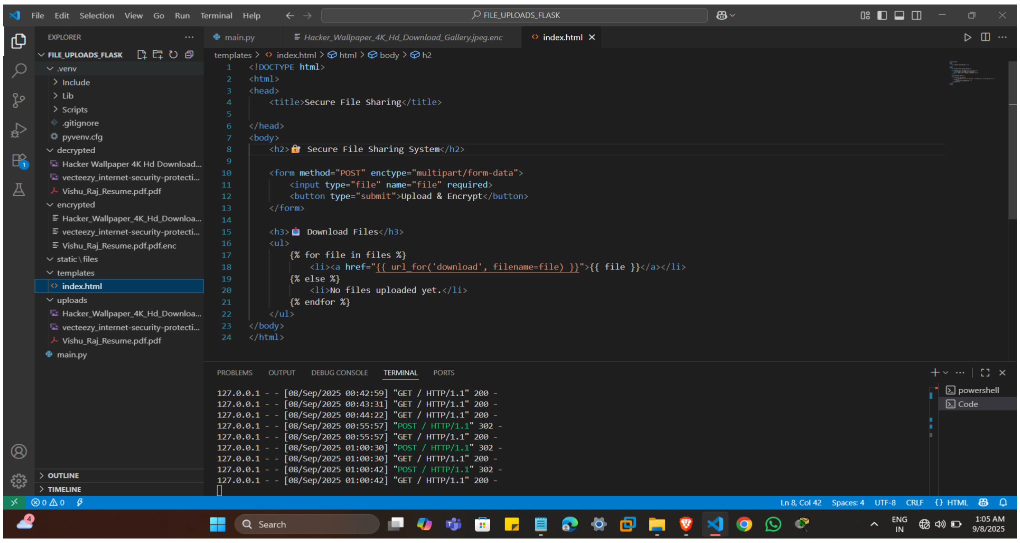

This screenshot displays the main Flask backend (main.py) where the AES encryption, file upload, and storage functionalities are implemented.



```html
<!DOCTYPE html>
<html>
<head>
    <title>Secure File Sharing</title>

</head>
<body>
    <h2>🔐 Secure File Sharing System</h2>

    <form method="POST" enctype="multipart/form-data">
        <input type="file" name="file" required>
        <button type="submit">Upload & Encrypt</button>
    </form>

    <h3>📥 Download Files</h3>
    <ul>
        {% for file in files %}
            <li><a href="{{ url_for('download', filename=file) }}">{{ file }}</a></li>
        {% else %}
            <li>No files uploaded yet.</li>
        {% endfor %}
    </ul>
</body>
</html>
```

```
127.0.0.1 - - [08/Sep/2025 00:42:59] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [08/Sep/2025 00:43:31] "GET / HTTP/1.1" 200 -
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127.0.0.1 - - [08/Sep/2025 01:00:42] "GET / HTTP/1.1" 200 -
```
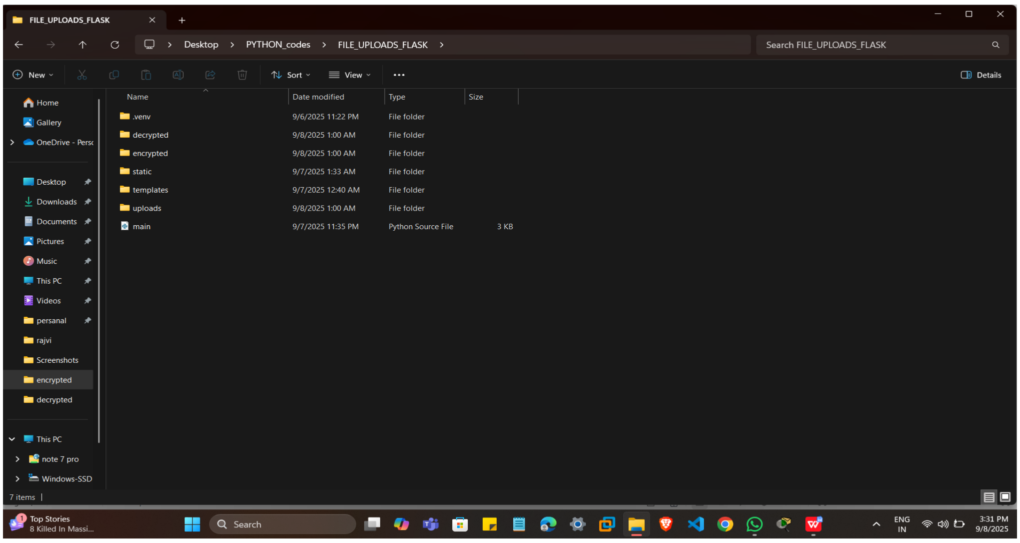
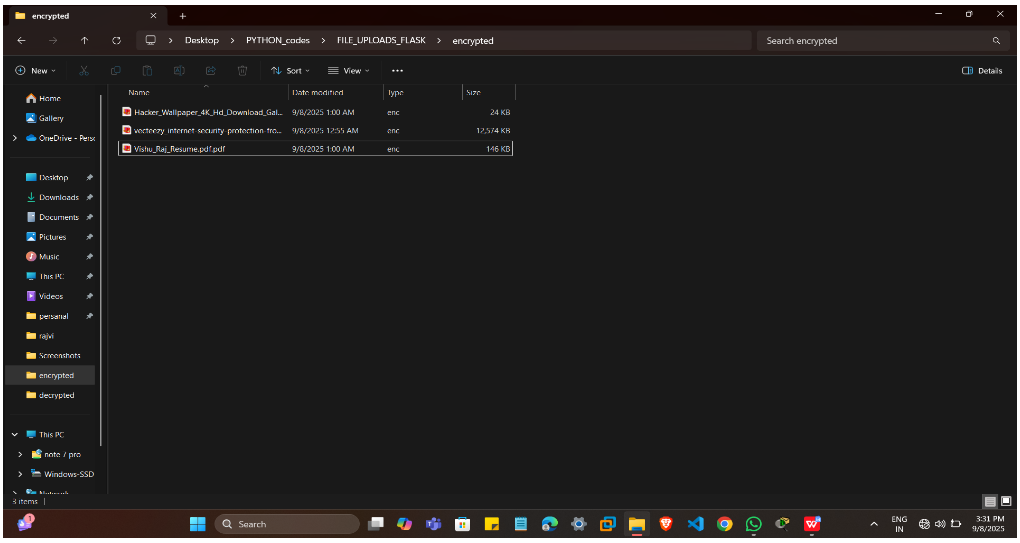

This screenshot shows the HTML template (index.html) that provides the frontend interface for users to upload files securely.



Desktop > PYTHON_codes > FILE_UPLOADS_FLASK

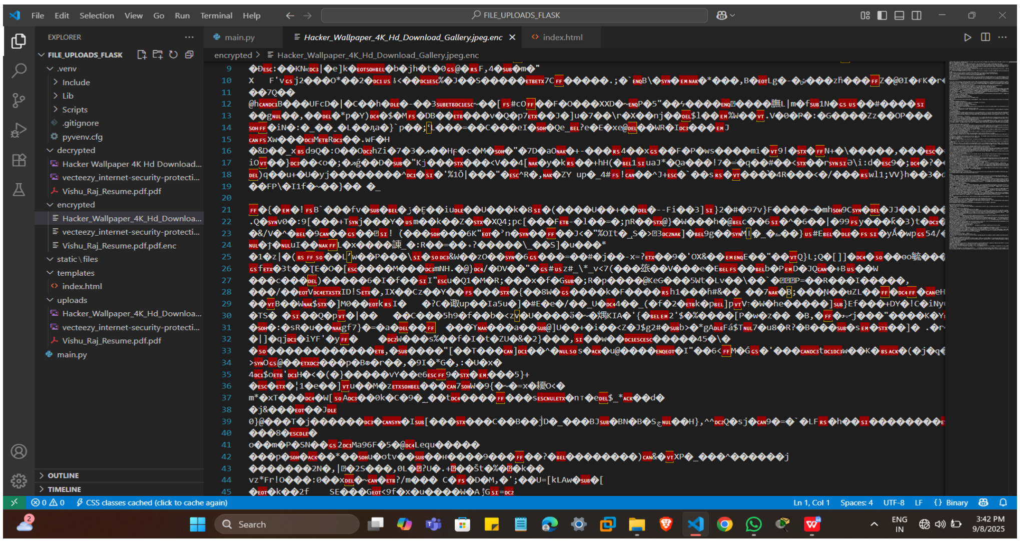
Name	Date modified	Type	Size
.venv	9/6/2025 11:22 PM	File folder	
decrypted	9/8/2025 1:00 AM	File folder	
encrypted	9/8/2025 1:00 AM	File folder	
static	9/7/2025 1:33 AM	File folder	
templates	9/7/2025 12:40 AM	File folder	
uploads	9/8/2025 1:00 AM	File folder	
main	9/7/2025 11:35 PM	Python Source File	3 KB

This image displays the folder structure of the project including uploads, encrypted, and decrypted directories for file management.



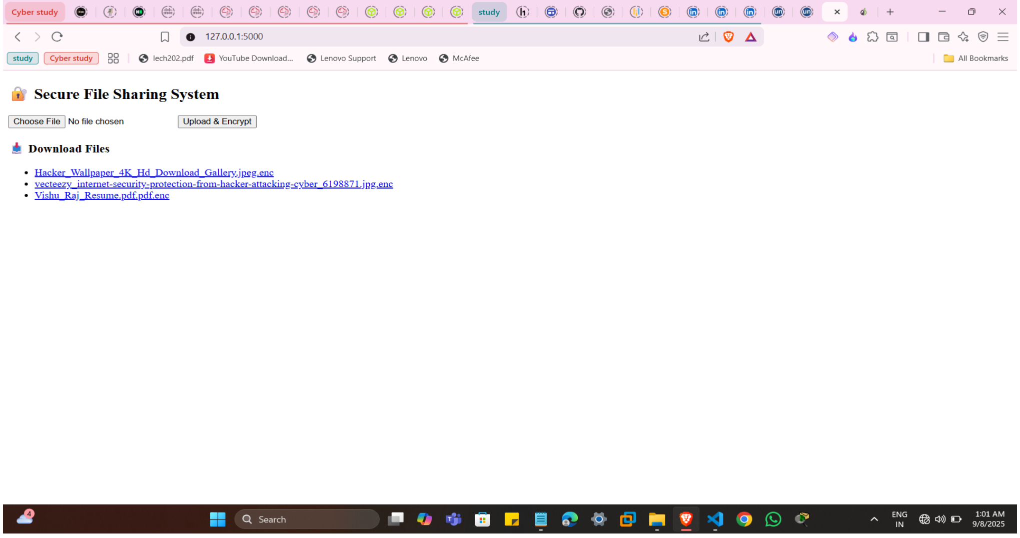
Name	Date modified	Type	Size
Hacker_Wallpaper_4K_Hd_Download_Gal...	9/8/2025 1:00 AM	enc	24 KB
vecteezy_internet-security-protection-fro...	9/8/2025 12:55 AM	enc	12,574 KB
Vishu_Raj_Resume.pdf.pdf	9/8/2025 1:00 AM	enc	146 KB

This screenshot shows the encrypted files stored with '.enc' extension, ensuring they cannot be read without proper decryption.



File Edit Selection View Go Run Terminal Help
FILE_UPLOADS_FLASK
EXPLORER
main.py
Hacker_Wallpaper_4K_Hd_Download_Gallery.jpeg.enc
index.html
encrypted > Hacker_Wallpaper_4K_Hd_Download_Gallery.jpeg.enc
FILE_UPLOADS_FLASK
.venv
Include
Lib
Scripts
.gitignore
pyvenv.cfg
decrypted
Hacker Wallpaper 4K Hd Download...
vecteezy_internet-security-protecti...
Vishu_Raj_Resume.pdf.pdf
encrypted
Hacker_Wallpaper_4K_Hd_Downloa...
vecteezy_internet-security-protecti...
Vishu_Raj_Resume.pdf.pdf.enc
static\files
templates
index.html
uploads
Hacker_Wallpaper_4K_Hd_Downloa...
vecteezy_internet-security-protecti...
Vishu_Raj_Resume.pdf.pdf
main.py
OUTLINE
TIMELINE
CSS classes cached (click to cache again)
Ln 1, Col 1 Spaces: 4 UTF-8 LF Binary

This image displays the binary content of an encrypted file, which appears as unreadable characters ensuring security.



🔐 Secure File Sharing System

Choose File No file chosen

Upload & Encrypt

📥 Download Files

- Hacker_Wallpaper_4K_Hd_Download_Gallery.jpeg.enc
- vecteezy_internet-security-protection-from-hacker-attacking-cyber_6198871.jpg.enc
- Vishu_Raj_Resume.pdf.pdf.enc

This screenshot shows the web interface running on localhost where users can upload files and access encrypted files for download.

Conclusion:

The Secure File Sharing System project successfully demonstrated the integration of cryptographic techniques into web applications. This internship provided valuable hands-on experience in applying cybersecurity principles such as encryption, data confidentiality, and secure file transfer. The system can be further extended by adding user authentication, role-based access control, and deployment on a cloud platform for real-world use cases.