

SECERATIVE

Submitted in partial fulfilment of the requirements of the degree of

BACHELOR OF COMPUTER ENGINEERING

By

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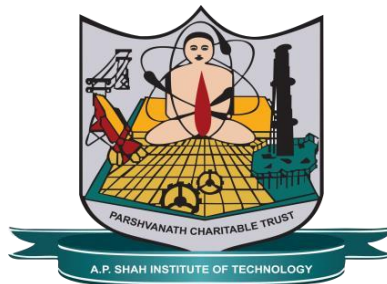
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A.P SHAH INSTITUTE OF TECHNOLOGY, THANE

(2021 – 2022)



A.P SHAH INSTITUTE OF TECHNOLOGY

CERTIFICATE

This is to certify that the Mini Project 1B entitled “Secerative” is a bonafide work of **“Smit Panchal (20102027), Amit Nara (20102067), Bhavesh Pawar (20102069), Ujjwal Pal (20102054)”** submitted to the University of Mumbai in partial fulfillment of the requirement for the award of the degree of **Bachelor of Engineering in Computer Engineering**

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A.P SHAH INSTITUTE OF TECHNOLOGY

Project Report Approval for SE

This Mini project report entitled *Secerative* by *Smit Panchal, Amit Nara, Bhavesh Pawar, Ujjwal Pal* is approved for the degree of *Bachelor of Engineering in Computer Engineering, 2021-22.*

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Declaration

We declare that this written submission represents my ideas in my own words and where others ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Date :

ABSTRACT

Nowadays in this modern world privacy has become a very important and necessary topic for the users of various applications and websites. The user's concern towards his/her own online privacy is growing day by day.

Thus we need a tool to protect the privacy of the users by encrypting the data that the user's don't want to show to anyone accidentally. This is where our website Secerative comes in use. Our website provides options to encrypt text as well as file that the user want to keep secret.

Our website provides user options to either paste text in a textbox that they want to encrypt or upload the file that they want to encrypt , and then with a simple click they get the encrypted text or file thus helping to protect data of the user.

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1. INTRODUCTION

Secerative is a python backend framework Django based web application which mainly covers the job of encryption and decryption of data , it can be various file formats such as word , excel , text or it can be just plain text which can contain numbers as well as special characters.

Encryption is a means of securing digital data using one or more mathematical techniques, along with a password or "key" used to decrypt the information. The encryption process translates information using an algorithm that makes the original information unreadable.

The above mention of original information unreadability gives the users of this web application a competitive edge in the market as their information exchange is unreadable by any unwanted third party , thus making the working environment more safe and secure thus ensuring future growth.

2. LITERATURE SURVEY

Nowadays, with the current addition of some newly invented methods in cryptanalysis, it is noticeable that information security is the elixir. In this paper, we used the encryption methods of the AES and MD5 following some steps in the encryption process to produce an outcome of file that will, as a result, be hashed and strongly decrypted. This method is also used to encrypt the messages as well. [1] It is reflected that the AES specifies the Rijndael algorithm, which is a symmetric block cipher that can process data blocks of 128 bits, using cipher keys with lengths of 128, 192, and 256 bits

The 4 main components of this process are –

1. The flag
2. The key's Hash
3. The status encrypted
4. The encrypted data

To secure your important data or files with the help of simple encryption and decryption. With this method, the person holding the decryption key can access the important data

To get status encrypted we use AES (Advanced Encryption Standard) and to get password we use MD5.[2] Cryptography plays a vital role in ensuring data security through various aspects like authentication, confidentiality, data integrity, etc. AES It can secure both sensitive and unclassified materials. To get status encrypted we use AES and to get password we use MD5 The security of communication is a crucial issue on World Wide Web. It is about confidentiality, integrity, and authentication during access of important data.

Ankit Fadia and Jaya Bhattacharjee [3] describe how to encrypt data in such a way so as to protect it from outsiders. It describes the definition of encryption and decryption and explanation of how encryption works with the growing need to safeguard one's privacy in communication and transaction. They explained the concept of developing a key details, cryptography, the most popular encryption algorithms, how encryption works, digital signature, digital certificates, and most importantly.

William Stallings [4] describes in different Part at his book: Part One: Provides a survey of symmetric encryption, including classical and modern algorithms at. The emphasis is on the two most important algorithms, the Data Encryption Standard (DES) and the Advanced Encryption Standard (AES).

3. PROBLEM DEFINITION

- As the awareness about privacy is increasing rapidly among the users , the need for encryption of data and encrypted data is also growing.
- Thus our website helps users to tackle this problem of encryption of their data.
- Secerative provides features to encrypt text and file's which makes the the data of many users secured by encrypting it so no third party can access restricted data.

4. OBJECTIVES

Encryption plays an important role in securing many different types of information technology (IT) assets. It provides the following:

1. **Confidentiality** - Confidentiality encodes the message's content. The definition of confidentiality is the state of being secret or of keeping secrets. An example of confidentiality is when a lawyer is not able to reveal the secrets of his clients because he has a duty to keep those secrets to himself.
2. **Authentication** - Authentication verifies the origin of a message. Authentication is the process of determining whether someone or something is, in fact, who or what it says it is. Authentication technology provides access control for systems by checking to see if a user's credentials match the credentials in a database of authorized users or in a data authentication server.
3. **Integrity** - Integrity proves the contents of a message have not been changed since it was sent. The objective is to enable organizations to maintain data confidentiality and integrity, resulting in more robust information security.

5. SCOPE

- The scope of this project is quite vast as the need for encryption of data is growing day by day as awareness regarding user privacy is increasing.
- Text encryption feature is not only limited to just words , it can also encrypt numbers and special characters.
- File encryption feature can also encrypt word files and .csv files in addition to just plain and simple text files.
- The need for strong data encryption won't go away, and the encryption challenges will only increase

6. EXISTING SYSTEM / PROJECT

There are some existing Encryption softwares which are both free as well as paid.

Some existing systems are –

Free –

1. AxCrypt –

AxCrypt by Axantum Software is a free program that lets you protect your files by encrypting them.

2. Microsoft OneDrive –

It offers a “personal vault,” AES 256-bit encryption and the free use of Office 365 with most OneDrive storage plans.

Paid –

1. VeraCrypt –

VeraCrypt is an encryption program that performs several different functions. The most basic VeraCrypt implementation uses encrypted volumes, which are just folders with unbreakable passwords.

2. Folder Lock –

Folder Lock is a software that can lock directories and files. This folder locker for PC application enables you to set a password to access drives. It can sync and encrypted backup files.

7. TECHNOLOGY STACK

7.1. Frontend

- **HTML** - HTML, in full hypertext markup language, a formatting system for displaying material retrieved over the Internet. HTML code ensures the proper formatting of text and images for your Internet browser. Without HTML, a browser would not know how to display text as elements or load images or other elements.
- **CSS** - Cascading Style Sheets (CSS) is a stylesheet language used to describe the presentation of a document written in HTML or XML . CSS describes how elements should be rendered on screen, on paper, in speech, or on other media.
- **JAVASCRIPT** - Javascript is used by programmers across the world to create dynamic and interactive web content like applications and browsers. JavaScript is so popular that it's the most used programming language in the world, used as a client-side programming language by 97.0% of all websites.
- **BOOTSTRAP** - Bootstrap is a potent front-end framework used to create modern websites and web apps. It's open-source and free to use, yet features numerous HTML and CSS templates for UI interface elements such as buttons and forms. Bootstrap also supports JavaScript extensions.

7.2. Backend

- **PYTHON** - Python is a computer programming language often used to build websites and software, automate tasks, and conduct data analysis. Python is a general-purpose language, meaning it can be used to create a variety of different programs and isn't specialized for any specific problems.
- **DJANGO** - Django is a high-level Python web framework that enables rapid development of secure and maintainable websites. Built by experienced developers, Django takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It is free and open source, has a thriving and active community, great documentation, and many options for free and paid-for support.

7.3. Database

- **SQLite** - SQLite is pretty fast. In some cases, literally orders of magnitude faster than, say, Postgres, which comes up as a go-to alternative among Django users. As someone pointed out, it also supports lots of concurrency. It's a matter of whether your app falls under the 'some cases' or not. It is a lightweight relational database included with the Python distribution. So by default, Django automatically connects an SQLite database to your project.

8. BENEFITS AND APPLICATIONS

8.1. Benefits for Society

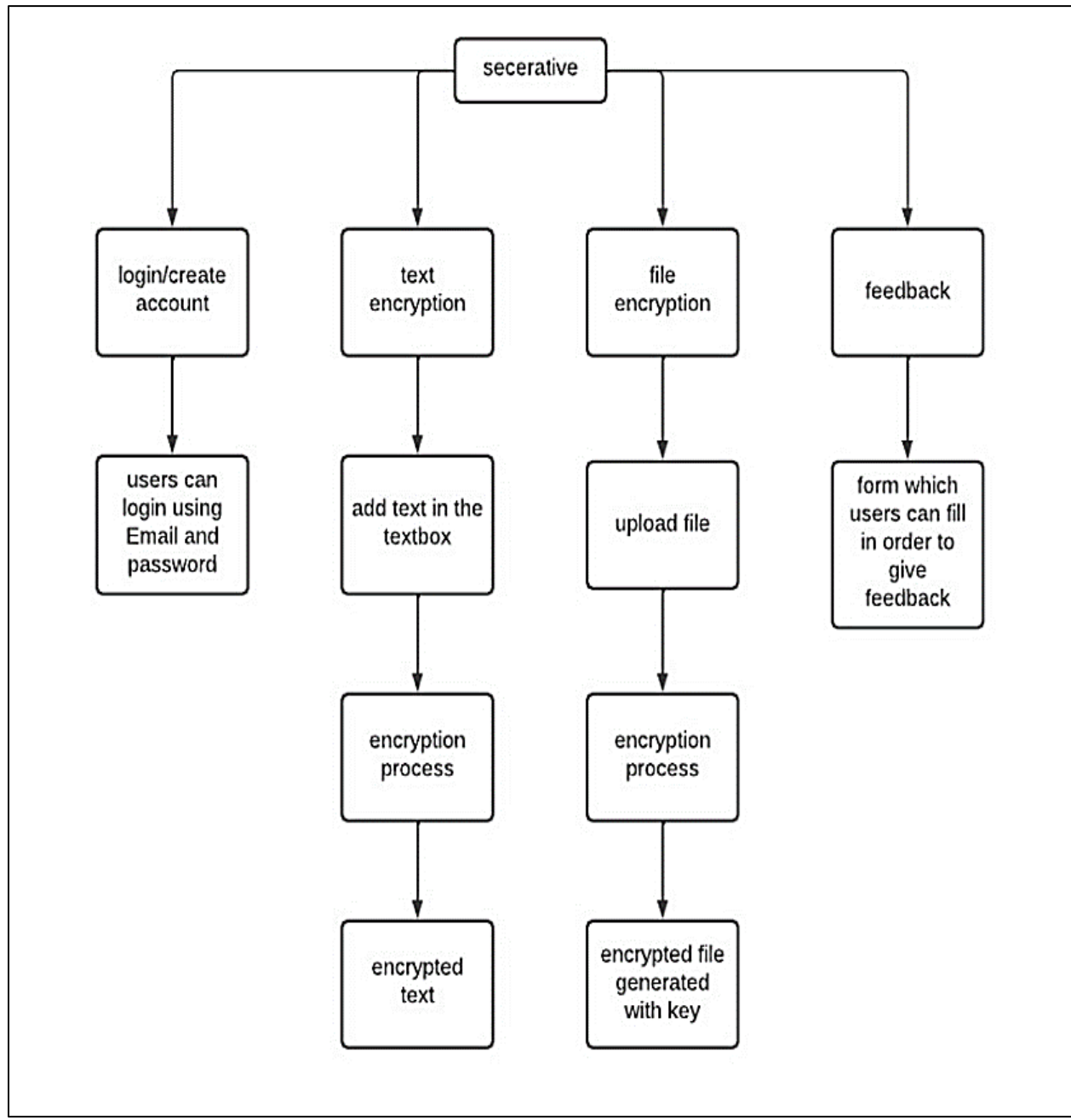
- Encryption is Cheap to Implement
- Encryption Can Save You from Regulatory Fines
- Encryption Can Help to Protect Remote Workers
- Encryption Increases the Integrity of Our Data
- Encryption Can Increase Consumer Trust

8.2. Applications

- You Can Use It Across a Variety of Devices
- It Helps You Stay Safer When Working Remotely
- Encryption Is a Privacy Safeguard
- Encryption Could Provide a Competitive Advantage

9. SYSTEM DESIGN

9.1. Flow Diagram



9.2. Project Design

Our Encryption Website will have majorly focuses on two parts :

1. Text encryption –

There is a separate section for text encryption wherein there is an input text box which when filled with some text gives the encrypted text in a new page as a result.

2. File encryption –

There is a separate section for file encryption wherein there is an input section to upload file which then gets encrypted when clicked on the submit button and gives a downloadable link for the resultant encrypted file. The user-Interface is very easy to understand and minimal in design.

10. MODULES

1. Registration Module –

This module contains of two sub modules which are login and sign up . First the user goes to the sign up module if he or she does not have an account and the after making an account the user is directed to the login page where they put in their logging credentials to log into the website.

2. Text Encryption –

The text encryption module takes in plain text as input from the user and encrypts it using key references from a .csv file which is stored in the project folder.

3. Text Decryption –

This module does the opposite of the previous module and decrypts the encrypted text using the same key . the decrypted text is given by the user in the textbox provided.

4. File Encryption –

The file encryption module takes in a file as an input and encrypts it using a key which is stored in the project folder just like text encryption. It takes text,word and excel files as inputs.

5. File Decryption –

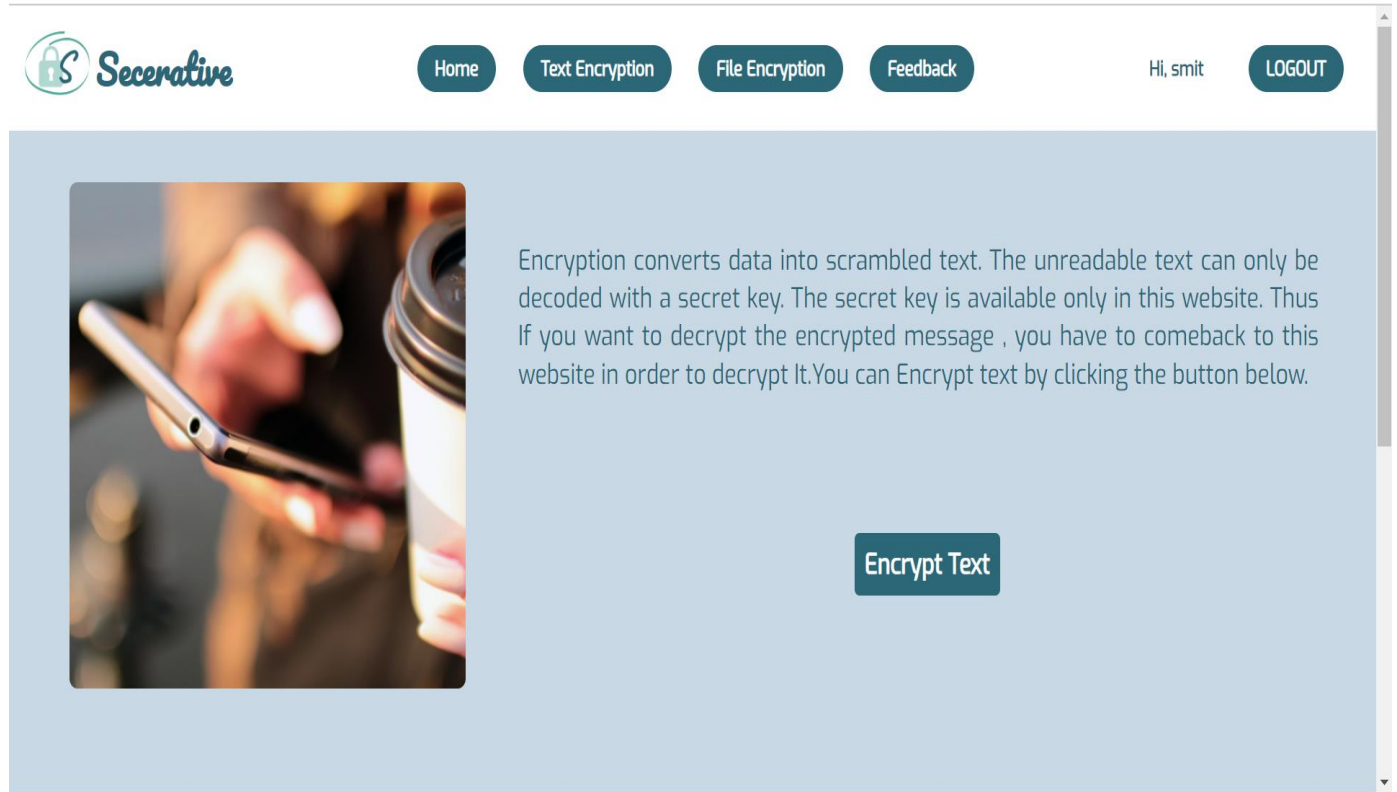
File decryption module does the reverse of the previous module and decrypts the encrypted file using the same key to decrypt the contents of the file and writing it on the file and giving a downloadable link for the file.

6. Feedback Module –

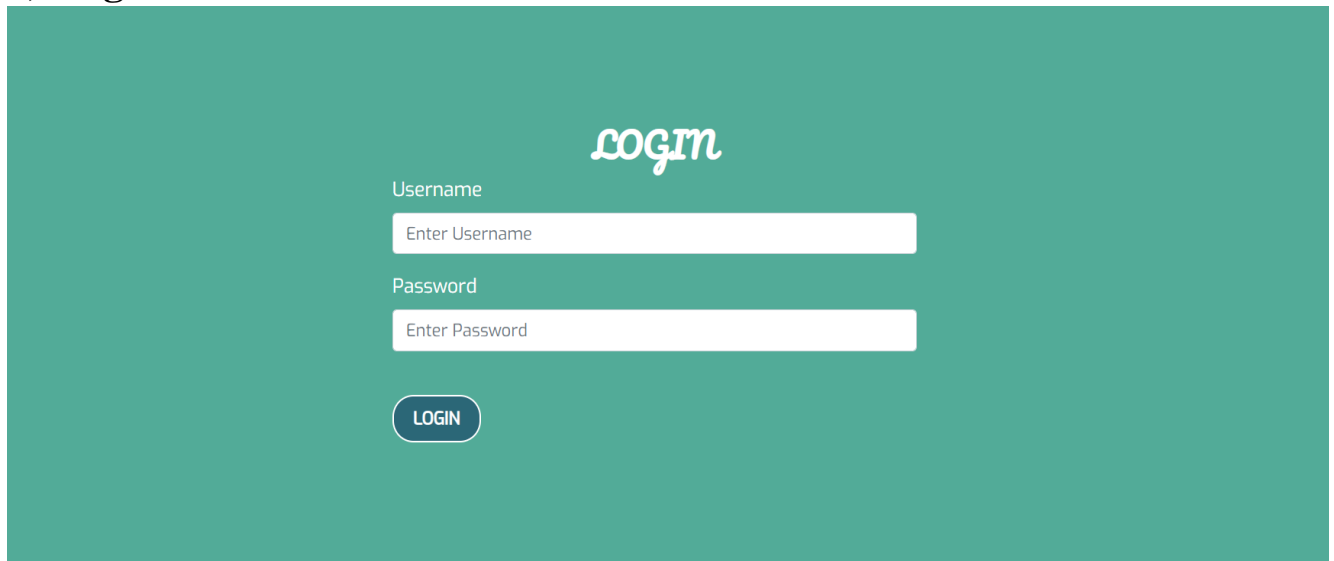
The feedback module consists of a feedback form which is directly connected to the database and which asks user for their name, email and the feedback that they have to give.

11. IMPLEMENTATION

1) Home Screen



2) Login -



The login form is centered on a teal background. It features the word "login" in a white, cursive font at the top. Below it, there are two input fields: "Username" with the placeholder "Enter Username" and "Password" with the placeholder "Enter Password". A dark teal "LOGIN" button is positioned below the password field.

login

Username

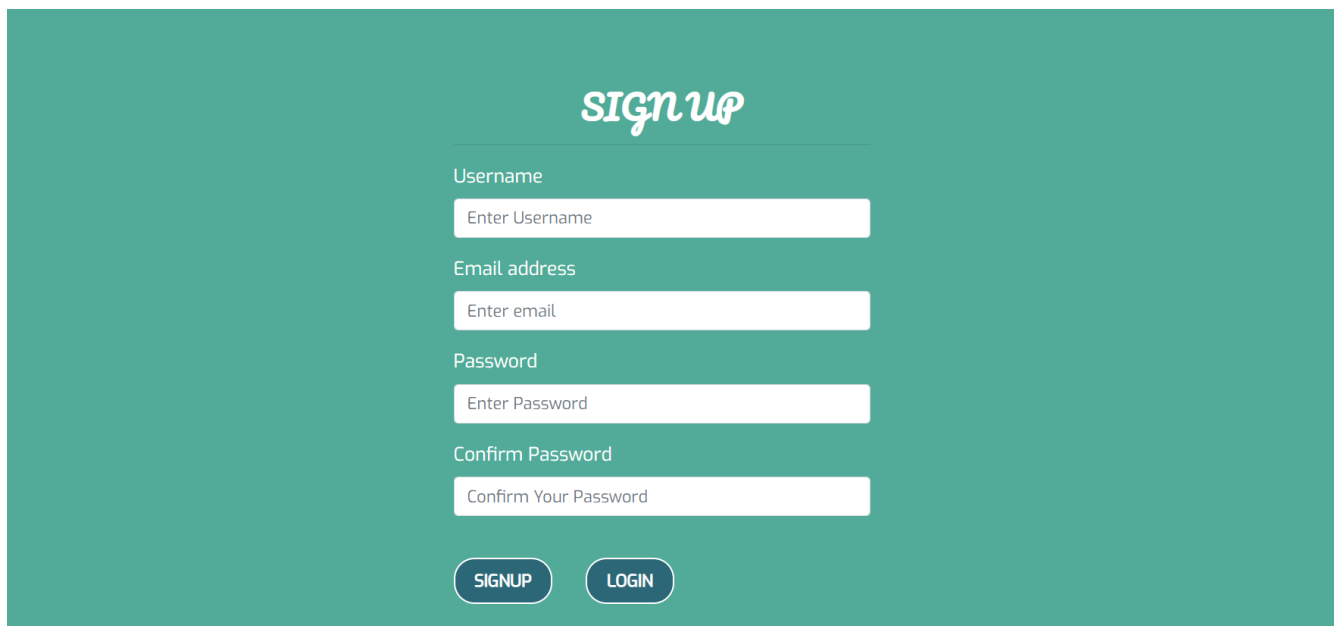
Enter Username

Password

Enter Password

LOGIN

Sign Up -



The sign up form is centered on a teal background. It features the words "sign up" in a white, cursive font at the top. Below it, there are four input fields: "Username" with the placeholder "Enter Username", "Email address" with the placeholder "Enter email", "Password" with the placeholder "Enter Password", and "Confirm Password" with the placeholder "Confirm Your Password". At the bottom, there are two dark teal buttons: "SIGNUP" and "LOGIN".

sign up

Username

Enter Username

Email address

Enter email

Password

Enter Password

Confirm Password

Confirm Your Password

SIGNUP LOGIN

3) Text Encryption Page and Output-

Text Encryption

Enter the Text you want to Encrypt

Text encryption protects individual Text or Text systems by encrypting individual characters. Encryption means converting the plain text data into some coded form

Enter the Text you want to Encrypt:

hello



Your encrypted text

68656c6c6f

Your Decrypted text

hello

4) File Encryption Page and Output-

File Encryption

Upload the file you want to Encrypt

File encryption protects individual files or file systems by encrypting them with a specific key making them accessible only to the keyholder. Encryption means converting the plain text data into some coded form

Select a file to Encrypt:

No file chosen

If you want to encrypt your file press the below button




Your encrypted file

Click here to Download: [< io.BufferedWriter name='mysample_oc3tJP1.txt'>](#)


Your Decrypted file

Click here to Download: [< io.BufferedWriter name='mysample_oc3tJP1_xg3lcxt.txt'>](#)


5) Feedback Form



Address
mumbai
india



Phone
+1234567890



Email
Secerative@gmail.com

Send us a message

If you have any queries, you can send me message from here.

Enter your name

Enter your email

Enter your message

Send Now

Back

12. CONCLUSION

Thus the creation of web application Secerative was a successful, thus helping various users around the world to protect their data from getting hacked and accessed by an unwanted third party. Protecting privacy is key to ensuring human dignity, safety and self-determination. Thus our project has achieved the functionality to do so. This web app will also help people who just need small amount of encryption in a single file or text and do not have the need for major encryption softwares in their day to day life. Secerative is free and easy to use thus can also be used by people who are not very much familiar to technology and encryption.

13. APPENDICES

Appendix-A: VS Code Download and Installation

- 1) Download the executable file from <https://code.visualstudio.com/download>
- 2) Click the option “download”.
- 3) Double click the downloaded file. Now a dialogue box appears. Select “ I accept the agreement ” . Then select “ Next ”.
- 4) Select a folder by clicking Browse or just follow the default path. Then select “ Next”.
- 5) Select the required options as per your need by clicking in the checkbox. Then select “Next”.
- 6) Select “ Install ”.
- 7) Wait a bit while it gets installed
- 8) Click “Finish” to exit Setup. Check in the check box to launch VS Code right now.
- 9) Congratulation! VS Code got installed in your system successfully. Now a new dialogue box appears. This is VS Code IDE.

10) Click New file to open a new file

Appendix-B: Running the Project

1) After copy pasting the code into the VS code editor the next step is to open a new terminal inside the VS code and type the below command –

```
python manage.py runserver
```

2) After executing the above command a production server has started and in the terminal it provides the link to the localhost server. So just click on the link in order to run the code and start the project.

```
System check identified 2 issues (0 silenced).  
May 05, 2022 - 20:04:17  
Django version 4.0.4, using settings 'secerative.settings'  
Starting development server at http://127.0.0.1:8000/  
Quit the server with CTRL-BREAK.
```

14. REFERENCES

Overall Project

- [1] <https://ieeexplore.ieee.org/document/5778802/citations#citations>
- [2] https://www.researchgate.net/publication/275517121_A_Study_and_Analysis_on_Symmetric_Cryptography
- [3] [Ankid Fadia, Jaya Bhattacharjee, “Encryption, Protecting Your Data”, Vikash Publishing House Pvt Ltd,2007, ISBN: 812592251-2](#)
- [4] <https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxha2hsYWdoZWZ8Z3g6MTRmYTdkZDQ4Y2Q2MmFhMQ>
<https://sciencenode.org/feature/the-future-of-encryption.php>

Frontend

<https://www.geeksforgeeks.org/css/>
<https://www.w3schools.com/html/>
<https://www.w3schools.com/js/>
<https://getbootstrap.com/docs/5.1/getting-started/introduction/>

Backend

<https://docs.python.org/3/tutorial/>
<https://docs.djangoproject.com/en/4.0/>

15. ACKNOWLEDGEMENT

We have great pleasure in presenting the report on Secerative. We take this opportunity to express our sincere thanks towards our guide Prof. Deepak Khachane, Department of Computer Engineering, APSIT, Thane for providing the technical guidelines and suggestions regarding line of work. We would like to express our gratitude towards her constant encouragement, support and guidance through the development of the project. We also thank the entire staff of APSIT for their invaluable help rendered during the course of this work. We wish to express our deep gratitude towards all our colleagues of APSIT for their encouragement.

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PROJECT RESOURCES

GitHub - <https://github.com/SmitPanchal61/Secerative-re>