A PROJECT REPORT ON

ReverseX Cipher

Course Code: CSE 361
Course Tittle: Mathematical Analysis for Computer Science
Department: Computer Science & Engineering
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ReverseX Cipher

1. Introduction

The "ReverseX Cipher" is a symmetric-key cryptography algorithm employing the XNOR operation for encryption and decryption. It reverses the plaintext before applying XNOR encryption with a designated key. Decryption reverses the process, first applying XNOR decryption and then reversing the ciphertext to recover the original plaintext.

2. Encryption Algorithm

Algorithm Description

1. Input: Plaintext and encryption key.
2. **Reverse the plaintext.**
3. **Perform XNOR encryption** between the reversed plaintext and the key.
4. Output: Encrypted text.

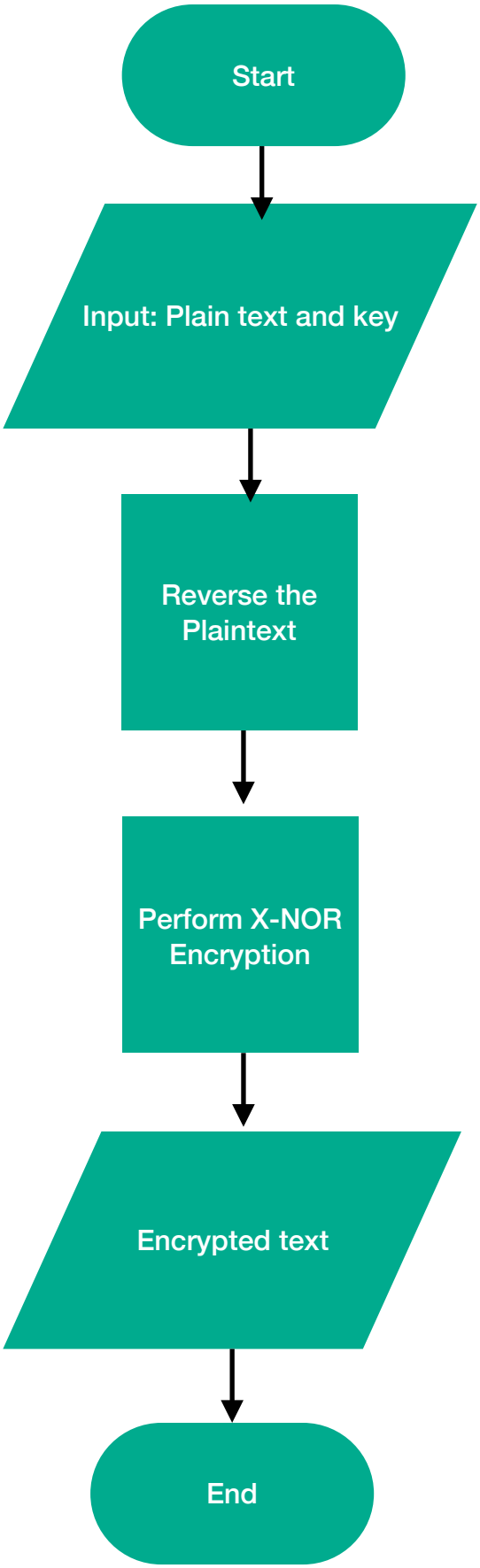
3. Decryption Algorithm

Algorithm Description

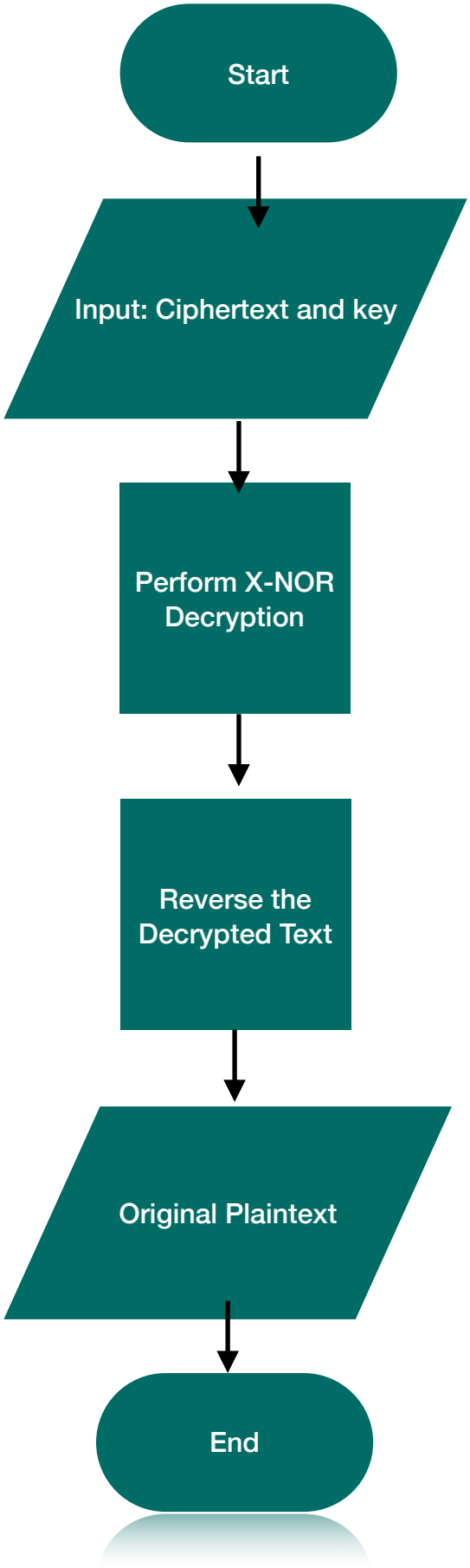
1. Input: Ciphertext and decryption key.
2. **Perform XNOR decryption** between the ciphertext and the key.
3. **Reverse the decrypted text** to obtain the original plaintext.
4. Output: Decrypted text.

4. Flowcharts

Encryption Flowchart



Decryption Flowchart



5. Experimental Example

Test Case

Plain Text	Key	Encrypted Text
MESSI	10	Xcbu|

Encryption Process

Step	Operation	Explanation	Result
1	Reverse plaintext	Reverse the characters of the plaintext "MESSI".	ISSEM
2	XNOR with key '10'	Perform XNOR operation between each character and the key '10'.	xcbu|

Decryption Process

Step	Operation	Explanation	Result
1	XNOR with key '10'	Perform XNOR operation between each character of “xcbul”	and the key '10'
2	Reverse decrypted text	Reverse the characters of the decrypted text "ISSEM".	MESSI

Explanation:

- **Encryption Process:**
  - **Reverse plaintext:** "MESSI" reversed becomes "ISSEM".
  - **XNOR with key '10':** Perform XNOR operation between each character of "ISSEM" and the key '10', resulting in “xcbu|".
- **Decryption Process:**
  - **XNOR with key '10':** Perform XNOR operation between each character of "xcbu|" and the key '10', reversing the encryption process to retrieve "ISSEM".
  - **Reverse decrypted text:** Reverse "ISSEM" back to "MESSI", recovering the original plaintext.

This table and explanation detail how the encryption and decryption algorithms work step-by-step with the given plaintext "MESSI" and key "10".

6. Source Code

Code for HTML (*Index.html)*

index.html > ...

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Symmetric-Key Encryption Demo</title>
    <link rel="stylesheet" href="styles.css">
</head>
<body>
    <div class="container">
        <div class="box" id="encryptBox">
            <h2>Encrypt</h2>
            <textarea id="plaintext" placeholder="Enter text to encrypt"></textarea>
            <input type="password" id="encryptionKey" placeholder="Enter encryption key">
            <button onclick="encrypt()">Encrypt</button>
            <textarea id="encrypted" placeholder="Encrypted text will appear here" readonly></textarea>
        </div>
        <div class="box" id="decryptBox">
            <h2>Decrypt</h2>
            <textarea id="ciphertext" placeholder="Enter text to decrypt"></textarea>
            <input type="password" id="decryptionKey" placeholder="Enter decryption key">
            <button onclick="decrypt()">Decrypt</button>
            <textarea id="decrypted" placeholder="Decrypted text will appear here" readonly></textarea>
        </div>
    </div>

    <script src="script.js"></script>
</body>
</html>

```

Figure 6.1 Source Code for *Index.html*

Code for *CSS (styles.css)*

Figure 6.2.1 Source Code for *styles.css*

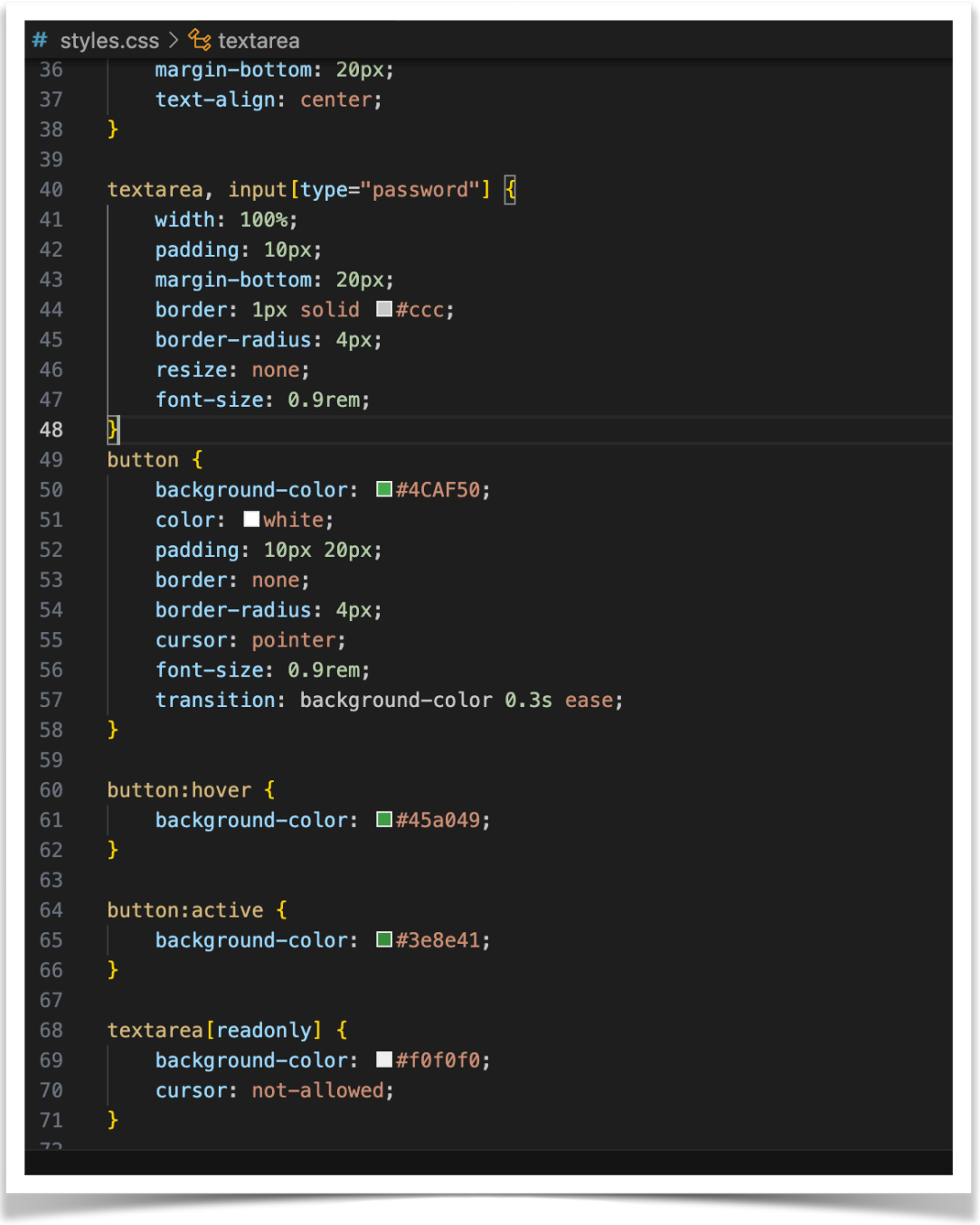


Figure 6.2.2 Source Code for *styles.css*

Source Code for JAVA SCRIPT (*script.js)*

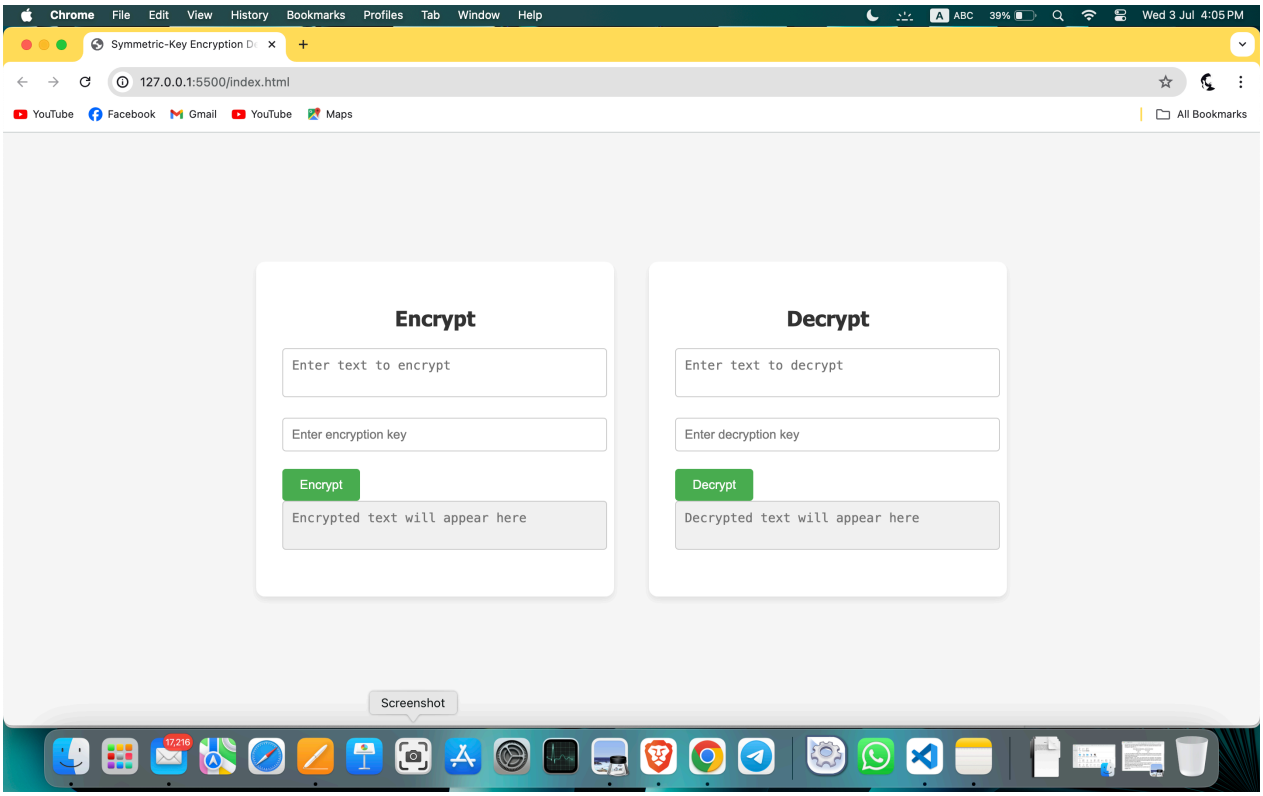
Figure 6.3.1 Source Code for *script.js*

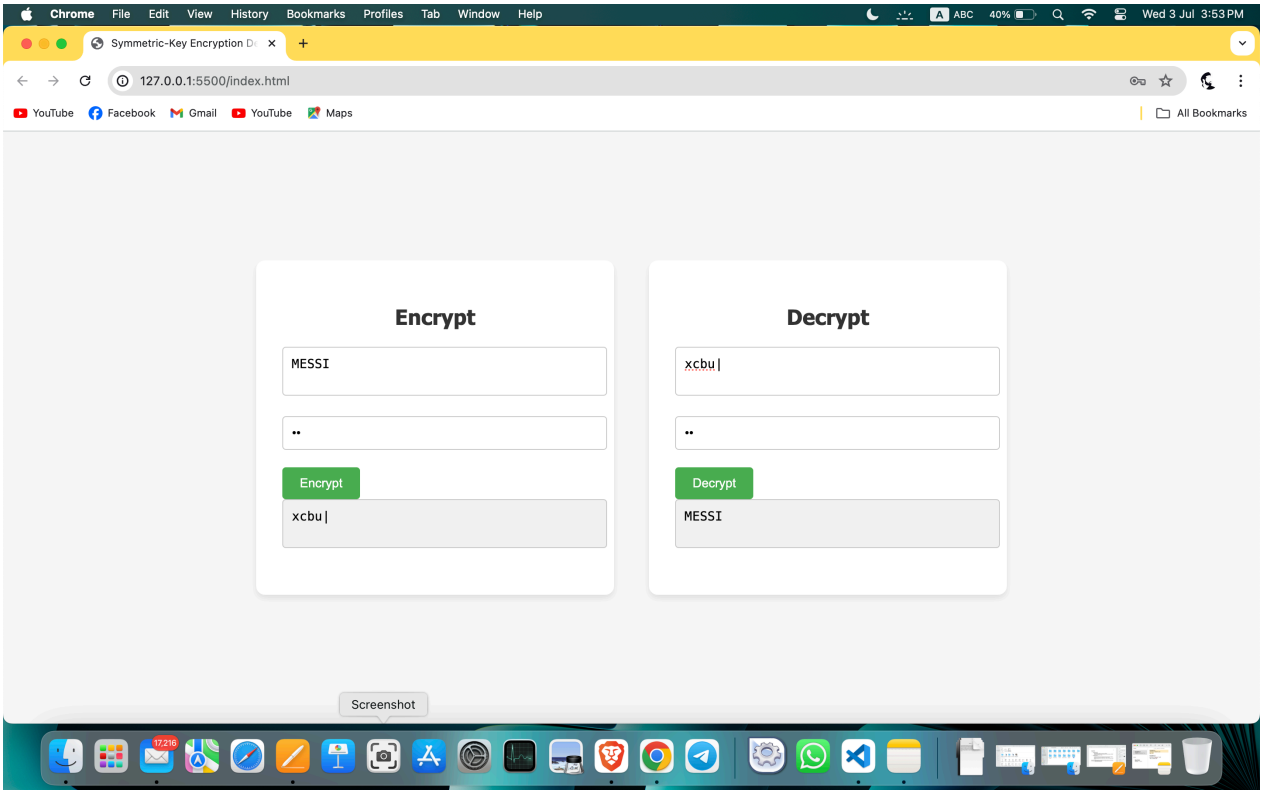
Figure 6.3.2 Source Code for *script.js*

7.Visual Representation of “ReverseX Cipher”

EXAMPLE 1:

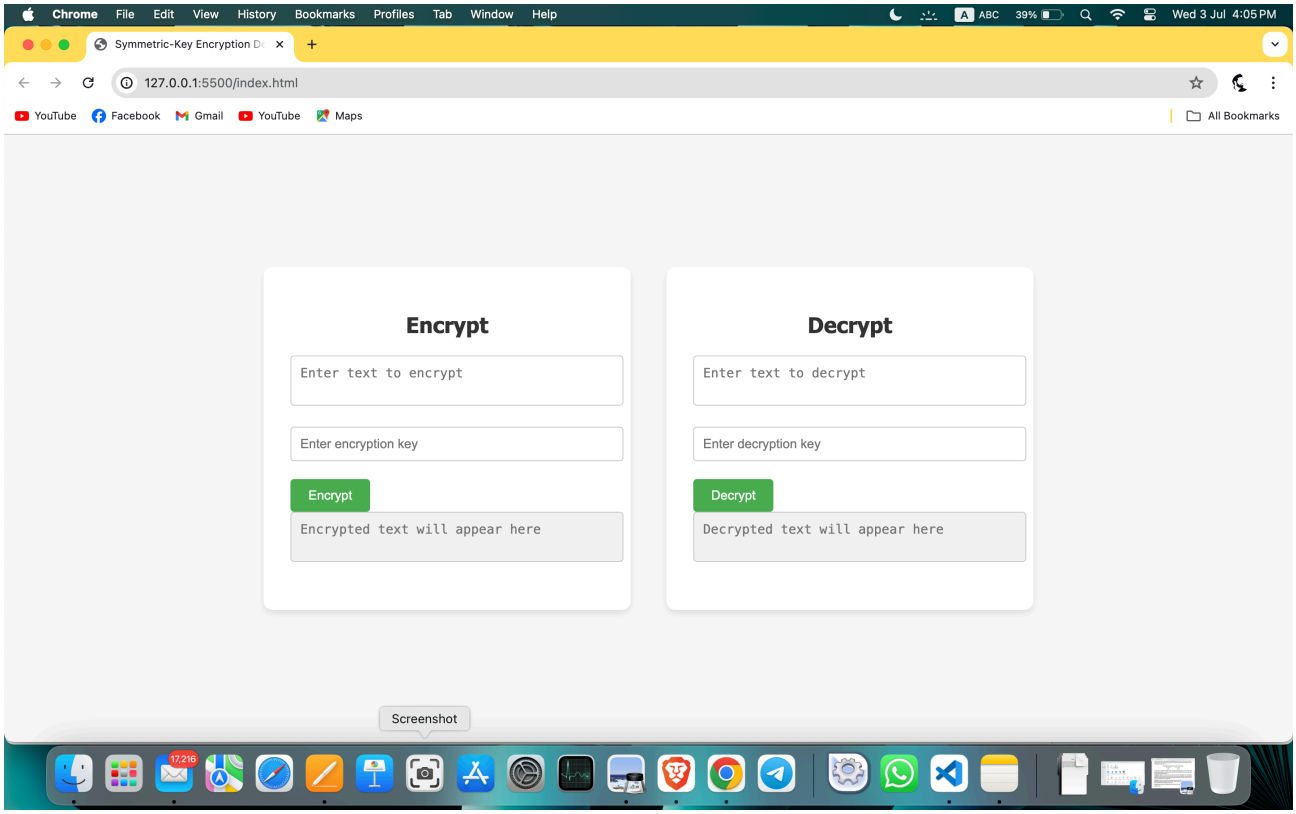
Plaintext "**MESSI**" and Key "**10**"

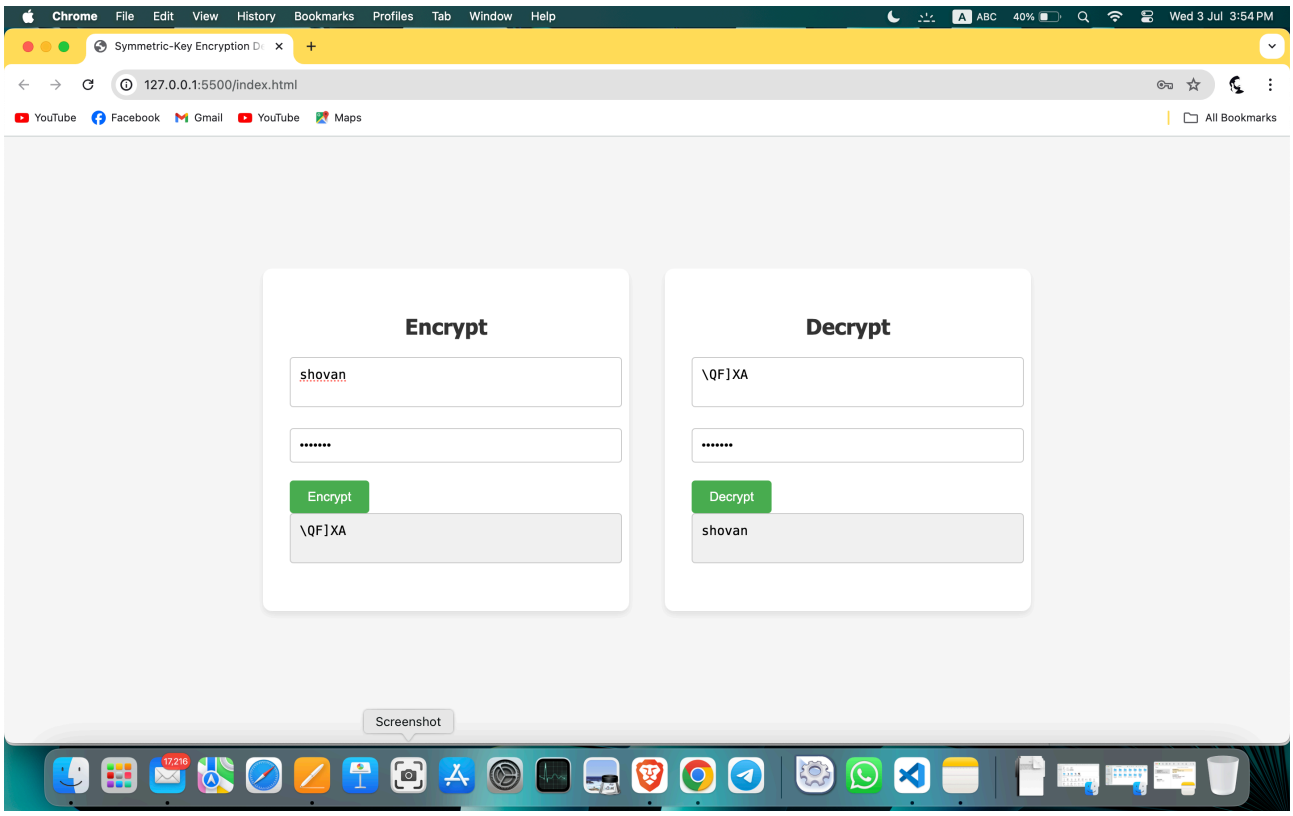




EXAMPLE 2

Plaintext “**shovan** “ and Key “**2002026**”





8. Conclusion

The ReverseX Cipher uses a mix of **reversing tex**t and the **XNOR** operation to encrypt and decrypt data. It's an interesting twist on traditional cryptography, showing potential for secure data handling.

References

[1] W. Stallings, *Cryptography and Network Security: Principles and Practice*, 7th ed. Pearson, 2017.

[2] B. Schneier, *Applied Cryptography: Protocols, Algorithms, and Source Code in C*, 2nd ed. Wiley, 1996.