TITLE OF THE APPLICATION

Encryption and Decryption Tool

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1. Application Functionality:

The "Encryption and Decryption Tool" is a JavaScript application crafted to offer users a simple and efficient method for encrypting and decrypting messages using a specified numerical key. The tool features an easy-to-use interface that allows users to effortlessly engage with the encryption and decryption functions.

Decryption:

To decrypt a message, users can input a coded message into the “Encrypted Text” box and choose a numerical key in the “Key” box. After clicking the “Decode” button, the application runs a decoding process that transforms the encrypted message back into its original, readable format. The outcome of the decoding process is displayed in the “Result” section, providing users with immediate and clear feedback.

Encryption:

To encrypt a message, users need to enter the plaintext message and a numerical encryption key in the “plaintext” and “encryptKey” fields, respectively. After clicking the “Encrypt” button, an algorithm is employed to convert the plain, unsecured message into a safe and coded version. The resulting encrypted message is then displayed in the “encryptResult” area.

Scope:

The application is geared towards simple text protection and recovery for English letters (both in upper and lower case). It employs a straightforward Caesar cipher technique.

Limitation:

Constrained to English letters. Exclusively works with a numeric key for both encoding and decoding. The basic Caesar cipher might not offer advanced security.

User Interface:

Built for user-friendly interactions, the interface strikes a balance between simplicity and visual appeal. It neatly separates decryption and encryption tasks into distinct sections, "Decryption Result" and "Encryption Result," ensuring a clear and organized experience. The design aims to be straightforward, making it easy for users to navigate and understand the process effortlessly.

Responsive Design:

Tailored for convenience, the application features a responsive design that effortlessly adjusts to different devices. Whether you're using a desktop, tablet, or smartphone, the interface dynamically accommodates varying screen sizes. This adaptability ensures that the visibility and functionality remain top-notch, providing users with an optimal experience regardless of the device they choose. It's all about making the tool easily accessible and user-friendly, no matter where you are or what device you're using.

The "Encryption and Decryption Tool" not only provides a seamless and user-friendly experience but also ensures simplicity for individuals seeking effortless message security. This tool distinguishes itself not just for its ease of use but also for its thoughtful design that prioritizes accessibility and convenience. Users, regardless of their familiarity with encryption processes, can easily navigate the interface, making it a go-to solution for encoding and decoding messages. The straightforward design enhances user engagement and effectiveness, offering a reliable and efficient tool for safeguarding communication. Additionally, continuous updates and support contribute to a reliable user experience, ensuring that the tool remains a trustworthy resource for message security.

1. Code Analysis

// Function for decrypting the input text

function decrypt () {

// Retrieve the encrypted text and decryption key from the input fields

var ciphertext = document.getElementById("ciphertext").value;

var decryptKey = parseInt(document.getElementById("decryptKey").value);

// Initialize an empty string to store the decrypted message

var decrypted\_message = "";

// Loop through each character in the ciphertext

for (var i = 0; i < ciphertext.length; i++) {

var char = ciphertext[i];

// Check if the character is an English alphabet

if (char.match(/[a-zA-Z]/)) {

// Check if the character is a lowercase alphabet

if (char.match(/[a-z]/)) {

// Decrypt the lowercase alphabet using the Caesar cipher formula

decrypted\_char = String.fromCharCode((char.charCodeAt(0) - 'a'.charCodeAt(0) - decryptKey + 26) % 26 + 'a'.charCodeAt(0));

} else {

// Decrypt the uppercase alphabet using the Caesar cipher formula

decrypted\_char = String.fromCharCode((char.charCodeAt(0) - 'A'.charCodeAt(0) - decryptKey + 26) % 26 + 'A'.charCodeAt(0));

}

// Append the decrypted character to the result string

decrypted\_message += decrypted\_char;

} else {

// If the character is not an English alphabet, keep it unchanged

decrypted\_message += char;

}

}

// Display the decrypted message on the web page

var decryptResultElement = document.getElementById("decryptResult");

decryptResultElement.textContent = "Decrypted message: " + decrypted\_message;

decryptResultElement.classList.add("fade-in");

decryptResultElement.style.display = "block";

// Hide the encryption result

var encryptResultElement = document.getElementById("encryptResult");

encryptResultElement.style.display = "none";

}

1. Discussion

In the process of creating the Encryption and Decryption Tool, several key aspects were learned: Web Development Skills: Improved HTML, CSS, and JavaScript skills for creating interactive and responsive user interfaces. Algorithm Implementation: Gained experience in implementing a simple encryption/decryption algorithm (Caesar cipher) using JavaScript. Event Handling: Learned about handling user input and triggering actions through button clicks. DOM Manipulation: Developed skills in manipulating the Document Object Model (DOM) to dynamically update and display results.

1. References

Links to websites or resources that were used during the development of the Encryption and Decryption Tool:

Bootstrap Documentation:

<https://getbootstrap.com/docs/4.1/getting-started/introduction/>

jQuery Documentation:

<https://jquery.com/>

MDN Web Docs:

<https://developer.mozilla.org/en-US/>