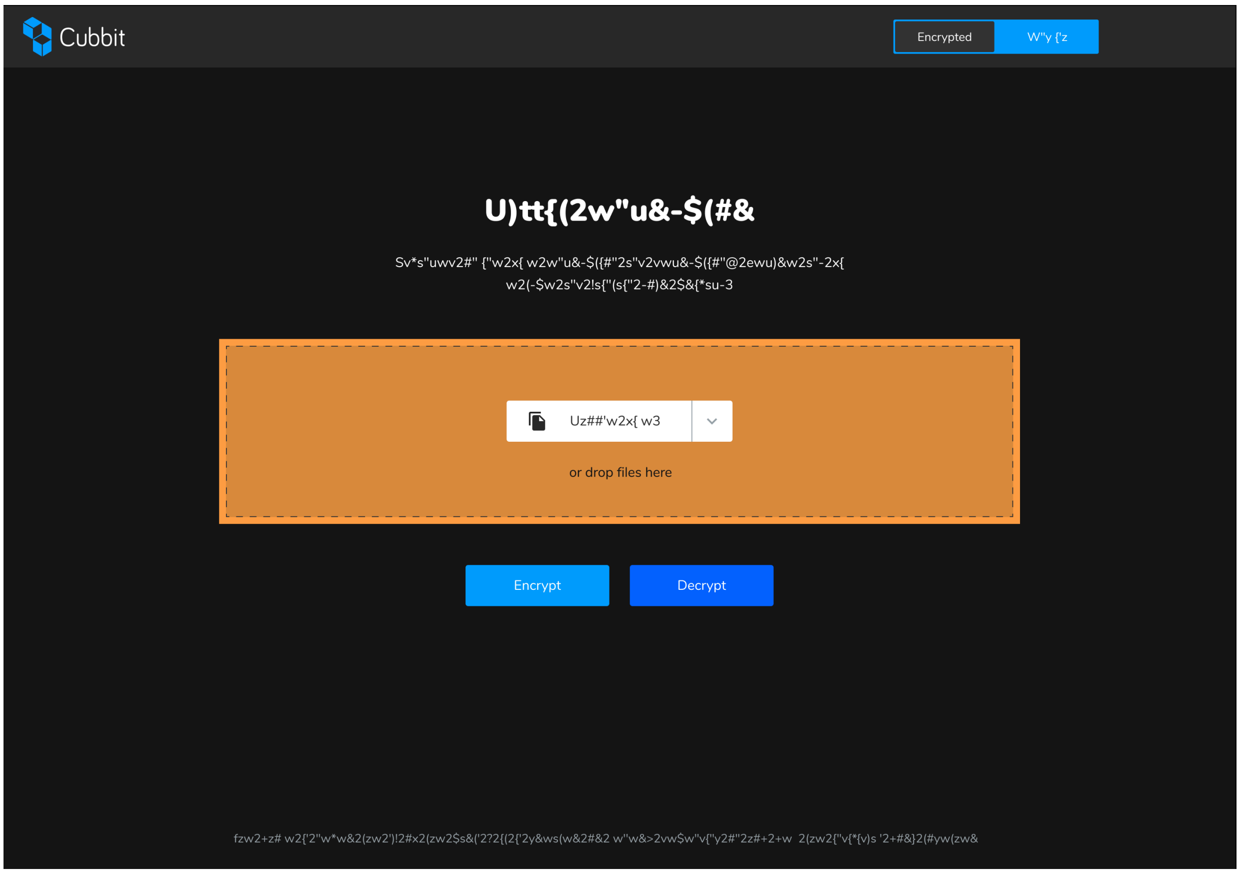
Cubbit frontend developer test project

This document is part of the Cubbit HR process and is meant to be a tool to prove the candidate's ability to structure a brand new project that meets the company standards.

Cubbit encryptor project description

Cubbit is designing a brand new product to let its users encrypt and decrypt files on the web. The web application has to reflect Cubbit's standards in terms of:

- User experience
- Security
- Performances



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Therefore the perfect candidate can implement a solution that reflects the standards above, quickly and with particular attention to details.

Requirements

With Cubbit encryptor, users can:

- **encrypt a file** with the following steps:
  - The user selects a plain file on his/her computer from the given input or dragging it on the orange area
  - The user clicks the `Encrypt` button
  - Cubbit encryptor encrypts the given file using a random AES256 key
  - Cubbit encryptor displays the generated key as a base64 string so the user can copy it to decrypt back the file later
  - The user can download the encrypted file by clicking a button
- **decrypt a file** with the following steps:
  - The user selects an encrypted file from his/her computer from the given input or dragging it on the orange area
  - The user clicks the `Decrypt` button
  - The user inserts the needed key to decrypt the file in the input provided
  - The user can download the plain file back clicking the button `Decrypt and Download`
- **change the app language**: see the bonus section

Design (link)

The Cubbit team has already provided a design for the Cubbit encryptor's interface to reflect the company standards. At the **following link** [link to figma] the candidate can find **all the assets** he/she needs to implement the whole application (to download the assets select them and choose `Export` from the right panel)

Bonus points

As the business is growing fast, the app needs to be designed with **multilingual support** in mind. To test this functionality all the copy provided in the assets **has been encrypted** with a custom cipher designed by the Cubbit team. Bonus points for the exercise will be applied if the candidate can **decrypt the encrypted text** and make it interchangeable with the encrypted one through the language dropdown.

The Cubbit cipher

The algorithm used to encrypt the text in the design was a block cipher with the following rules: The alphabet is restricted between ASCII codes 32 (" ") and 125 ("}") included. If you are not familiar with ASCII give a look at http://www.asciitable.com/ and https://en.wikipedia.org/wiki/ASCII The algorithm's encryption and decryption processes expect a key in the form of a string and a message (also a string). In pseudocode:

```
string encrypt(string key, string message)
{
    // body
}

string decrypt(string key, string message)
{
    // body
}
```

Here are the encryption steps:

1. The message is split in chunks of `length key.size`
2. Each chunk is `reversed` (eg. asdfg --> gfdsa)
3. For each chunk:
    i. Each character is shifted upwards by n positions` where n is the sum

of the ASCII decimal codes of the encryption key

ii. If the selected code exceeds the alphabet's length it must be reassigned from the alphabet start (e.g using the modulo operator 🤓)

iii. After the operation, each chunk has to be `reversed back again`

Some examples:

- titanic -> `({(s"{u`
- minecraft -> `!{"wu&sx(`
- javascript -> `|s*s'u&{$(`

The given encrypted message was generated following the above steps using **frontend** as key. Now it is your time to write the decryption algorithm to reverse the process!

Hard technical requirements

- Typescript
- React
- Redux

Nice technologies to see in action

- Styled components
- Web Workers

Where to put the code

Feel free to create your own git repository to host the code. It is important for us to examine your git proficiency as well. When you feel ready, just email us with a link to it. It's that simple.