Cipher Decipher

AI Model Development

Time: 60 mins

Introduction

In this class, the student/s will learn to cipher and decipher the data using caesar cipher algorithm.

New Commands Introduced

- find() Finds the first occurrence of the specified value.
- request.method() Gets the method used to make the request .

Vocabulary

- **Cipher** is a method of securing a message so as to conceal its meaning.
- **Decipher** is a method of getting back the concealed message.

Learning Objectives

Student/s should be able to:

- ***Explain*** *the usage of cipher and decipher data for security.*
- ***Demonstrate*** the working of caesar cipher algorithm.
- ***Implement*** the caesar ciper algorithm to cipher and decipher the block data.

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Activities

1. **Class Narrative:** *(2 mins)*
    - Set the narrative of the class with student/s that the transaction details are all public, we must encrypt it so that it can not be exploited.
2. **Concept Introduction Activity:** *(5 mins)*
    - Let student(s) try and explore the activity to understand the meaning of cipher and decipher.
    - Explain student(s) how the caesar cipher algorithm works.
    - Encourage students to divide the task into smaller missions:

- Create the Cipher function
- Create the Decipher function
- Display the Ciphered and Deciphered data

3. **Activity 1: Create the Cipher function** *(25 mins)*

   Teacher Activity: *(15 mins)*

- Enquire student(s) to find the pattern between the original data and ciphered data.
- Explain the working of the caesar cipher algorithm:
  - function takes 2 parameters (text/number to be ciphered and the key).
  - check for each character in the original text and shift it up using the key.
  - explain the use of %(modulo operator) so that the index doesn't go out of range.
- Demonstrate how to create the cipher function for numbers.
- Demonstrate how to call the cipher function to see the numbers entered ciphered.

  Student Activity: *(10 mins)*

- Guide the student/s to create the cipher function and add conditions to cipher the lower letters and capital letters

Activity 2: Create the Decipher function *(8 mins)*

- Explain student(s) how to decipher the ciphered text by shifting down instead of up.
- Guide the student(s) to create the function for decipher by doing small changes in the cipher function.

Activity 3: Display the Ciphered and Deciphered data *(10 mins)*

Teacher Activity: *(5 mins)*

- Recall how we create HTML div element to show a block of data.
- Demonstrate by writing the code to show the ciphered data block: sender data, receiver data, and amount on the screen.

Student Activity: *(5 mins)*

- Guide the student(s) to replicate the same for deciphered data.

4. **Introduce the Post class project:** *(2 min)*

- Use the concepts learned in the class to cipher and decipher the username and password of a signup form.

5. **Test and Summarize the class learnings:** *(5 mins)*

- Check for understanding through quizzes and summarize learning after respective missions.
- Summarize the overall class learning towards the end of the class.

6. **Additional activities:**
    - Encourage the student/s to cipher the special characters
    - Encourage the student/s to.use the string as a key to cipher and decipher the text
7. **State the Next Class Objective:** *(1 min)*
    - In the next class, student/s will learn to encrypt and decrypt the data using public and private keys.

U.S. Standards:

CSTA: 2-AP-11, 2-AP-12, 2-AP-13, 2-AP-14, 2-AP-19

Links Table		
Activity	**Activity Name**	**Link**
Class Presentation	Cipher Decipher	https://s3-whjr-curriculum-uploads.whjr.online/38e1aee8-55fc-4576-813c-19ed87197db4.html
Explore Activity	Caesar cipher algorthm	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS
Teacher Activity 1	Cipher the Text	https://github.com/Tynker-Blockchain/TNK-M11-C82-TAS-BP
Teacher Reference: Teacher Activity 1 Solution	Cipher the Text: Solution	https://github.com/Tynker-Blockchain/TNK-M11-C82-TAS
Student Activity 1	Cipher the Text	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS-BP
Teacher Reference: Student Activity 1 Solution	Cipher the Text: Solution	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS
Student Activity 2	Decipher the Text	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS-BP
Teacher Reference: Student Activity 2 Solution	Decipher the Text: Solution	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS
Teacher Activity 3	Display the Ciphered and Deciphered Text	https://github.com/Tynker-Blockchain/TNK-M11-C82-TAS-BP
Teacher Reference: Teacher Activity 3 Solution	Display the Ciphered and Deciphered Text : Solution	https://github.com/Tynker-Blockchain/TNK-M11-C82-TAS
Student Activity 3	Display the Ciphered and	https://github.com/Tynker-Blockchain/T

	Deciphered Text	NK-M11-C82-SAS-BP
Teacher Reference: Student Activity 3 Solution	Display the Ciphered and Deciphered Text : Solution	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS
Student's Additional Activity 1	Cipher the Special Characters	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS-BP
Teacher Reference: Student's Additional Activity 1 Solution	Cipher the Special Characters: Solution	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS
Student's Additional Activity 2	Use String as a Key	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS-BP
Teacher Reference: Student's Additional Activity 2 Solution	Use String as a Key: Solution	https://github.com/Tynker-Blockchain/TNK-M11-C82-SAS
Post Class Project	Cipher the Username and Password	https://github.com/Tynker-Blockchain/TNK-M11-C82-PCP-BP
Teacher Reference: Post Class Project Solution	Cipher the Username and Password: Solution	https://github.com/Tynker-Blockchain/TNK-M11-C82-PCP