Mini Project

Cipher Riddle Challenge - A Python Game

ITP-MINOR-AUGUST.

S.Harineesri

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Introduction:

The Cipher Riddle Challenge is an interactive Python-based game that combines the excitement of solving riddles with the thrill of deciphering ciphers. This project presents an engaging and educational gaming experience designed to test players problem-solving skills and enhance their knowledge in the fields of cryptography and wordplay.

Objective of the project:

The primary objective of the Cipher Riddle Challenge project is to create an enjoyable and educational game that serves several purposes:

1. Educational Value: The game aims to provide players with a hands-on experience in deciphering various types of ciphers, promoting an understanding of cryptography concepts.
2. Enhancing Logic and Creativity: By solving complex riddles and ciphers, players are encouraged to think critically and creatively, enhancing their problem-solving abilities.

3. Python Programming Practice: This project serves as an opportunity to apply and improve Python programming skills, including string manipulation, randomization, and user interaction.

4. Enjoyment and Engagement: Beyond the educational aspects, the Cipher Riddle Challenge offers an enjoyable and engaging gaming experience for users of all ages.

5. Exploration and Learning: Players have the chance to explore a variety of ciphers and riddles, expanding their knowledge in both cryptography and wordplay.

Overall, the project's objective is to create a fun and informative game that stimulates intellectual curiosity and encourages lifelong learning.

Case Study:

The Cipher Riddle Challenge project was inspired by a passion for puzzles, cryptography, and programming. The decision to create a game that combines these interests stemmed from the recognition of the following factors:

- The appeal of puzzles and riddles as both entertainment and cognitive exercises.
- The growing interest in cryptography and its relevance in the digital age.

- The desire to provide an interactive learning experience that makes coding and problem-solving accessible and enjoyable to a broad audience.

The project's planning and design involved careful selection of riddles and ciphers, ensuring they cater to various difficulty levels and appeal to a diverse player base. It also entailed the development of an intuitive user interface, striking a balance between usability and visual appeal.

Game Overview:

The Cipher Riddle Challenge is designed as a text-based game that immerses players in a world of mystery and encryption. The game's core features include:

- A Collection of Riddles: Players encounter a diverse set of riddles, each concealed behind a unique cipher.
- Cipher Decryption: To unveil the riddles, players must decipher the ciphers using various techniques.
- Interactive Gameplay: Players can interact with the game by entering their answers, requesting clues, or skipping challenges.
- Randomization: The game offers an element of surprise, with random riddles and ciphers presented to keep the experience fresh.
- Scoring System: A scoring system tracks player progress, encouraging them to solve as many challenges as possible.

The game provides an engaging environment for users to test their problem-solving skills and expand their knowledge of ciphers and riddles.

Code Implementation:

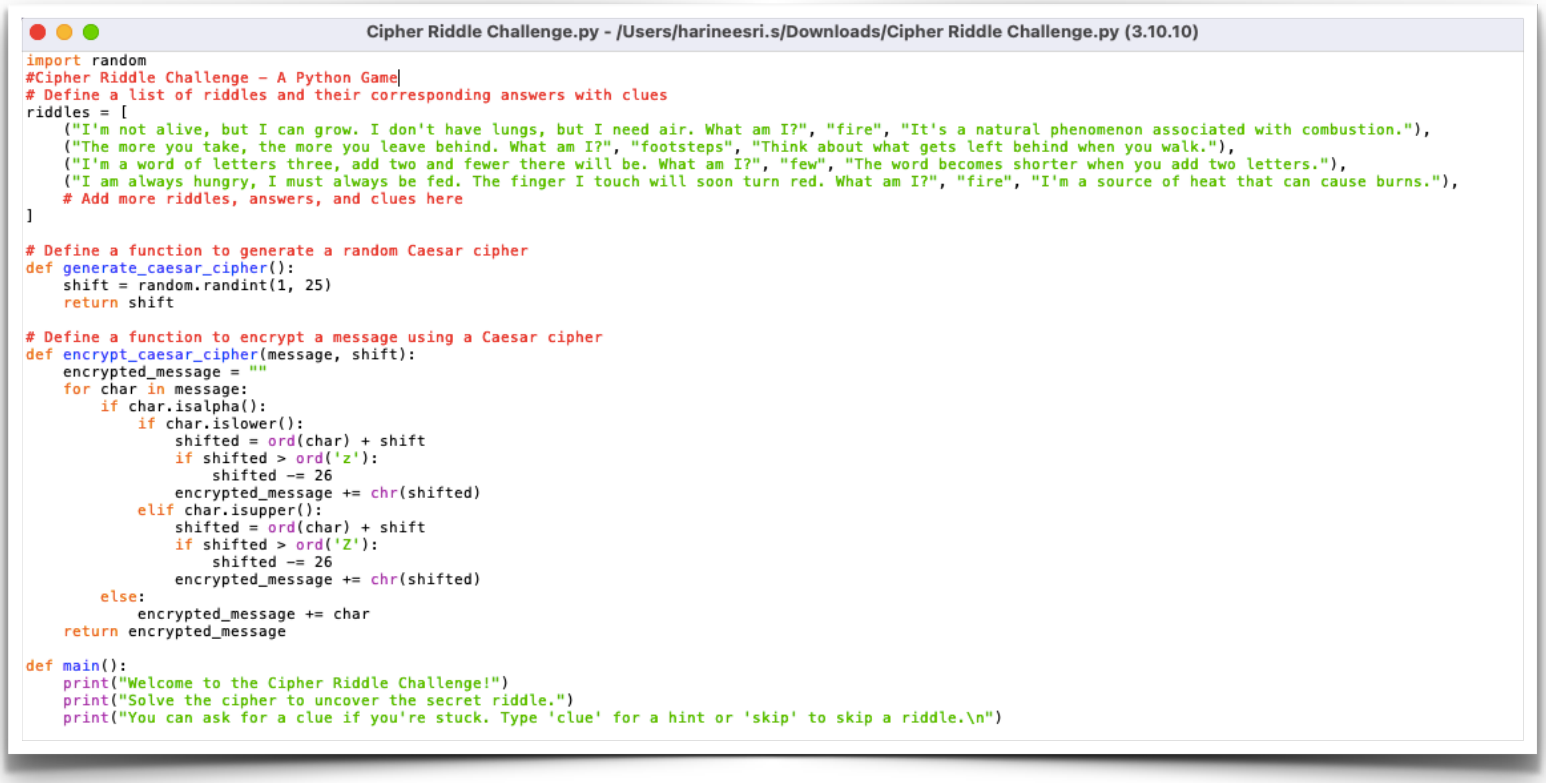
The implementation of the Cipher Riddle Challenge involves Python programming and cryptography concepts. Key aspects of the code include:

- Random Cipher Generation: The game generates random ciphers, ensuring that each playthrough offers a unique experience.
- Cipher Decryption Logic: Players can decipher ciphers using a variety of methods, such as Caesar ciphers, providing a hands-on introduction to cryptography.
- User Interaction: The game incorporates user input for answers and provides hints and clues when requested.
- Scoring System: A scoring mechanism tracks player performance and encourages continuous engagement.
- Code Structure: The code is organized into functions and modules to maintain readability and facilitate future enhancements.

Python Code:

```
import random
# Define a list of riddles and their corresponding answers with clues
riddles = [
    ("I'm not alive, but I can grow. I don't have lungs, but I need air. What am I?", "fire", "It's a natural phenomenon associated with combustion."),
    ("The more you take, the more you leave behind. What am I?", "footsteps", "Think about what gets left behind when you walk."),
    ("I'm a word of letters three, add two and fewer there will be. What am I?", "few", "The word becomes shorter when you add two letters."),
    ("I am always hungry, I must always be fed. The finger I touch will soon turn red. What am I?", "fire", "I'm a source of heat that can cause burns."),
   ]
# Define a function to generate a random Caesar cipher
def generate_caesar_cipher():
    shift = random.randint(1, 25)
    return shift
# Define a function to encrypt a message using a Caesar cipher
def encrypt_caesar_cipher(message, shift):
    encrypted_message = ""
    for char in message:
        if char.isalpha():
            if char.islower():
                shifted = ord(char) + shift
                if shifted > ord('z'):
                    shifted -= 26
                encrypted_message += chr(shifted)
            elif char.isupper():
                shifted = ord(char) + shift
                if shifted > ord('Z'):
                    shifted -= 26
                encrypted_message += chr(shifted)
        else:
            encrypted_message += char
    return encrypted_message

def main():
    print("Welcome to the Cipher Riddle Challenge!")
    print("Solve the cipher to uncover the secret riddle.")
    print("You can ask for a clue if you're stuck. Type 'clue' for a hint or 'skip' to skip a riddle.\n")

    while True:
        # Select a random riddle and its answer
        riddle, answer, clue = random.choice(riddles)
        # Generate a random Caesar cipher
        shift = generate_caesar_cipher()

        # Encrypt the riddle using the Caesar cipher
        encrypted_riddle = encrypt_caesar_cipher(riddle, shift)

        print("Here's your cipher:")
        print(encrypted_riddle)

        attempts = 0
        max_attempts = 3

        while attempts < max_attempts:
            guess = input("Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: ").lower()

            if guess == answer:
                print("Congratulations! You solved the riddle.")
                break
            elif guess == 'skip':
                print("The answer was: ", answer)
                break
            elif guess == 'clue':
                attempts += 1
                print("Here's your clue: " + clue)
            else:
                attempts += 1
                print("Sorry, that's not correct.")

        if attempts == max_attempts:
            print("Out of attempts. The answer was: ", answer)

        play_again = input("Play again? (yes/no): ").lower()
        if play_again != "yes":
            break

    print("Thank you for playing the Cipher Riddle Challenge!")

if __name__ == "__main__":
    main()
```

Screenshots:



Cipher Riddle Challenge.py - /Users/harineesri.s/Downloads/Cipher Riddle Challenge.py (3.10.10)

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#Cipher Riddle Challenge - A Python Game
# Define a list of riddles and their corresponding answers with clues
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    ("The more you take, the more you leave behind. What am I?", "footsteps", "Think about what gets left behind when you walk."),
    ("I'm a word of letters three, add two and fewer there will be. What am I?", "few", "The word becomes shorter when you add two letters."),
    ("I am always hungry, I must always be fed. The finger I touch will soon turn red. What am I?", "fire", "I'm a source of heat that can cause burns."),
    # Add more riddles, answers, and clues here
]

# Define a function to generate a random Caesar cipher
def generate_caesar_cipher():
    shift = random.randint(1, 25)
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def encrypt_caesar_cipher(message, shift):
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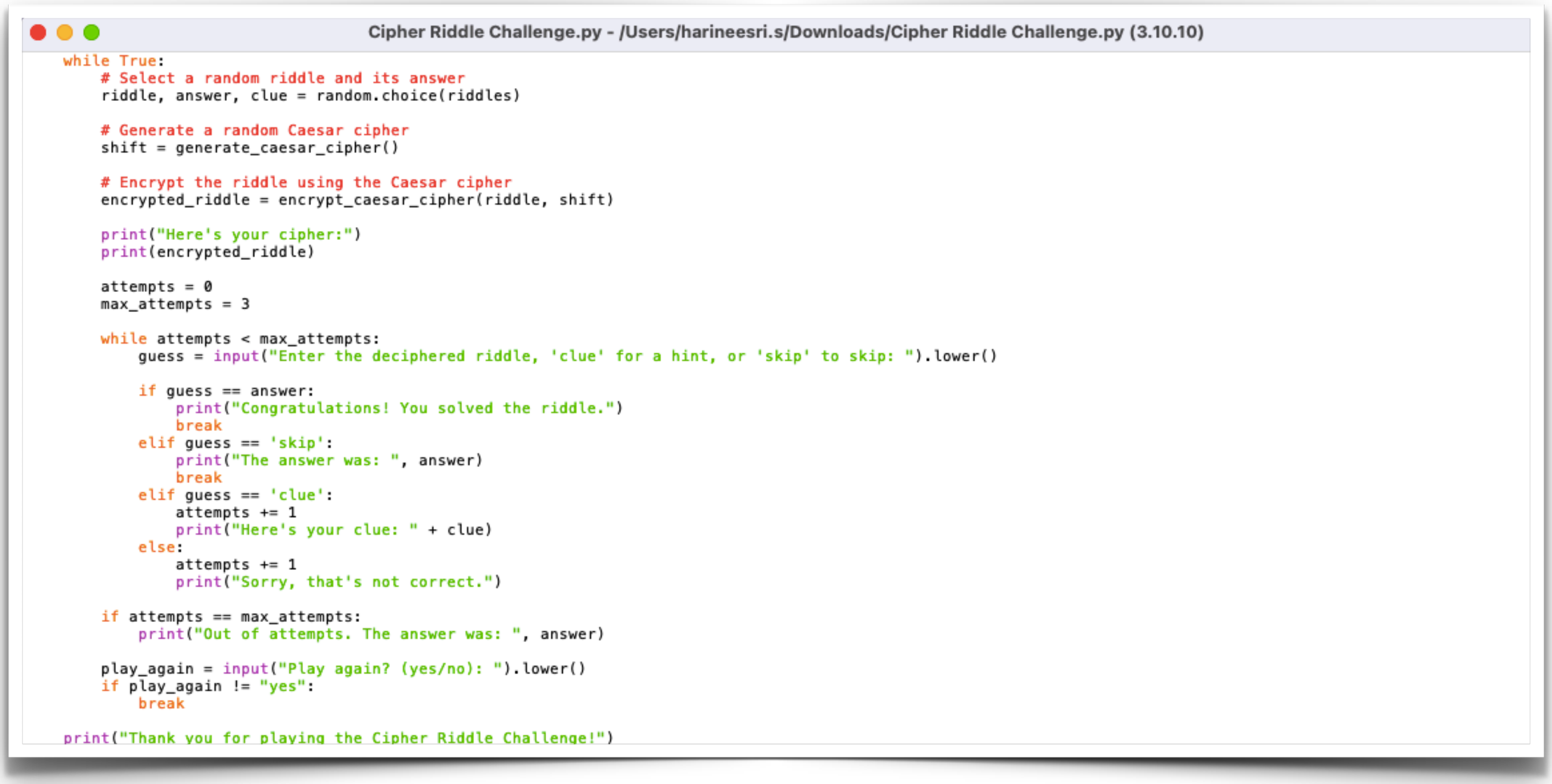

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                attempts += 1
                print("Here's your clue: " + clue)
            else:
                attempts += 1
                print("Sorry, that's not correct.")

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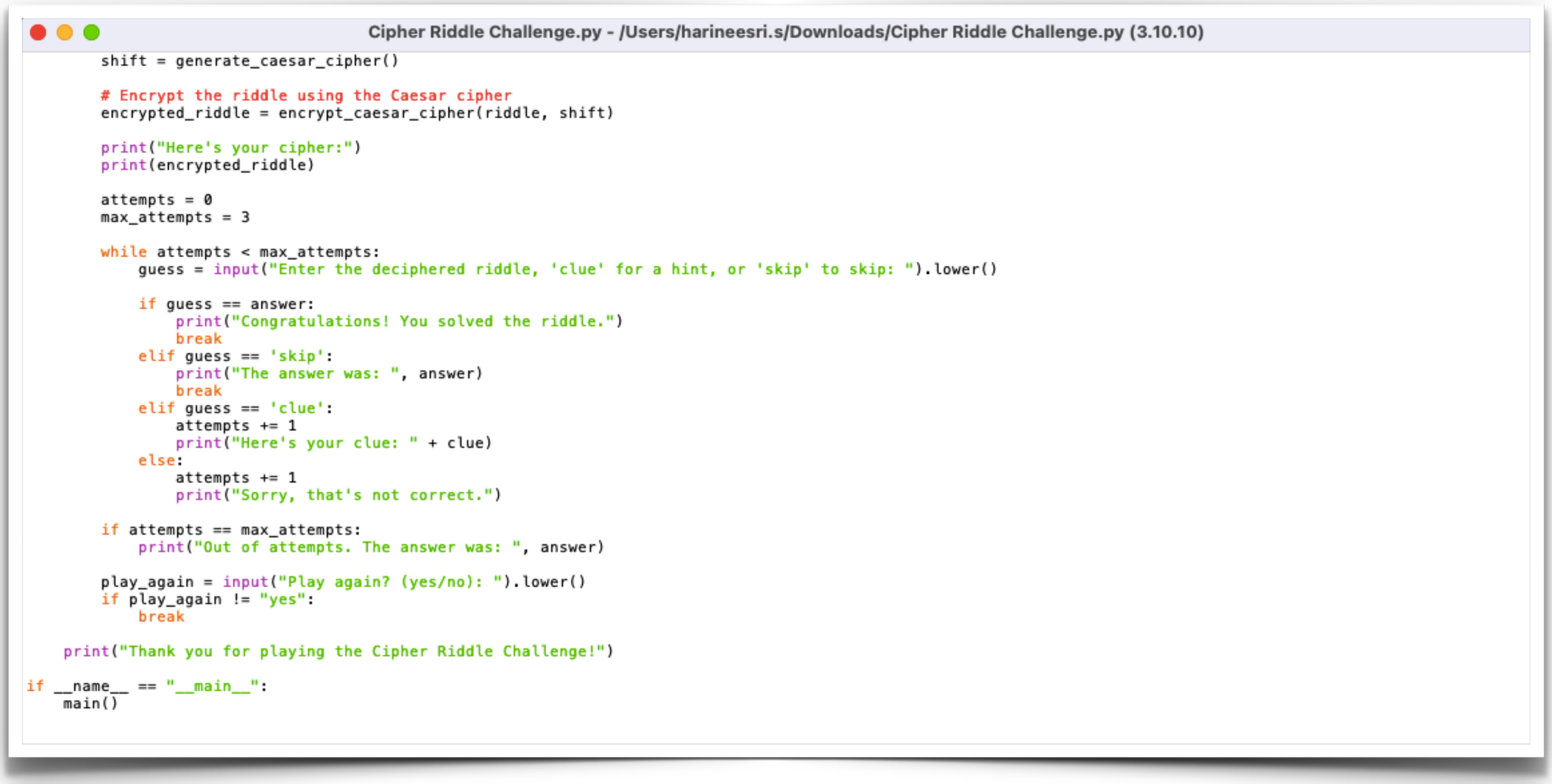

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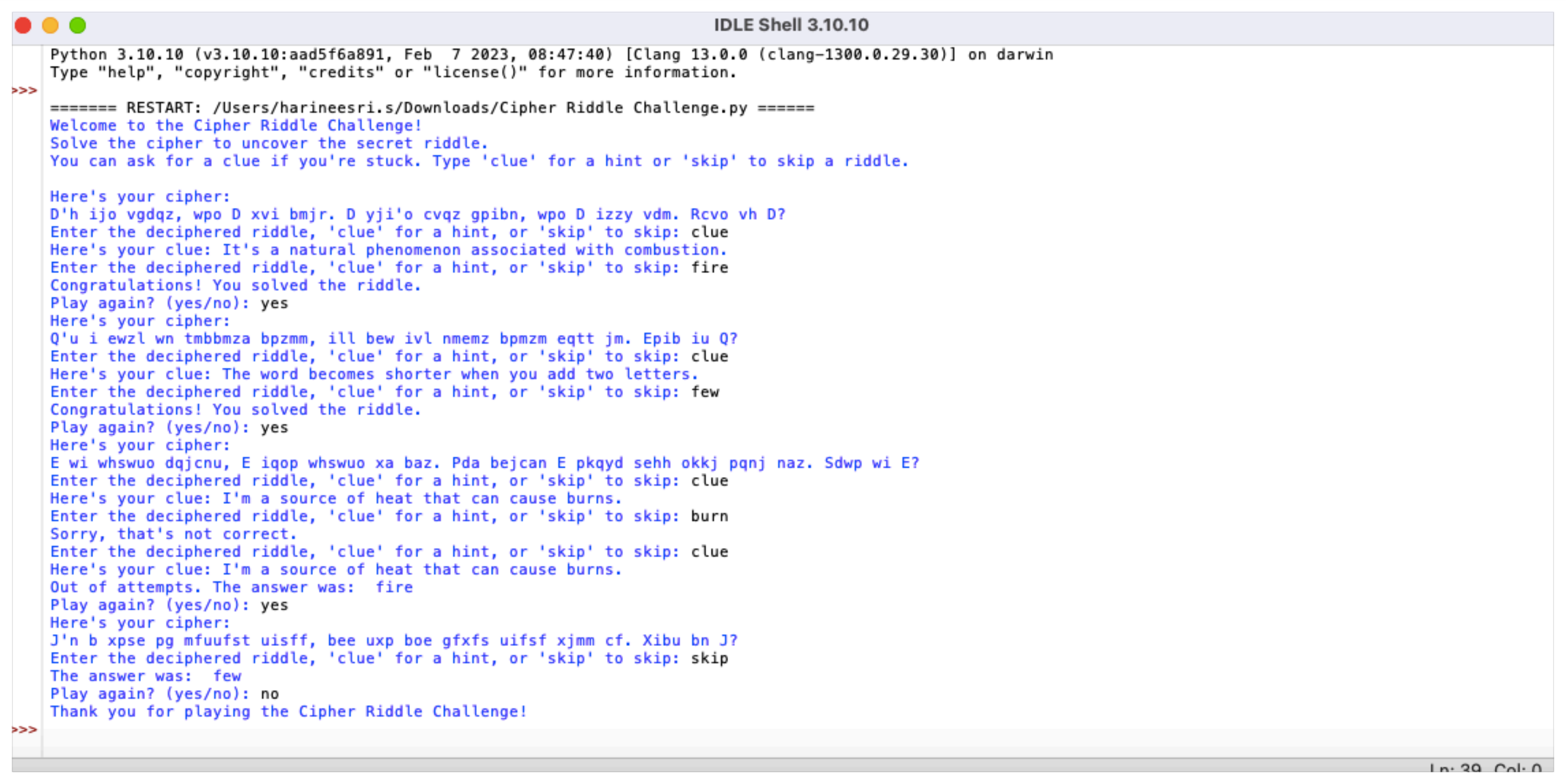
Output:



```
Python 3.10.10 (v3.10.10:aad5f6a891, Feb  7 2023, 08:47:40) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
>>> 
======= RESTART: /Users/harineesri.s/Downloads/Cipher Riddle Challenge.py ======
Welcome to the Cipher Riddle Challenge!
Solve the cipher to uncover the secret riddle.
You can ask for a clue if you're stuck. Type 'clue' for a hint or 'skip' to skip a riddle.

Here's your cipher:
D'h ijo vgdqz, wpo D xvi bmjr. D yji'o cvqz gpibn, wpo D izzy vdm. Rcvo vh D?
Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: clue
Here's your clue: It's a natural phenomenon associated with combustion.
Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: fire
Congratulations! You solved the riddle.
Play again? (yes/no): yes
Here's your cipher:
Q'u i ewzl wn tmbbmza bpzmm, ill bew ivl nmemz bpmzm eqtt jm. Epib iu Q?
Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: clue
Here's your clue: The word becomes shorter when you add two letters.
Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: few
Congratulations! You solved the riddle.
Play again? (yes/no): yes
Here's your cipher:
E wi whswuo dqjcnu, E iqop whswuo xa baz. Pda bejcan E pkqyd sehh okkj pqnj naz. Sdwp wi E?
Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: clue
Here's your clue: I'm a source of heat that can cause burns.
Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: burn
Sorry, that's not correct.
Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: clue
Here's your clue: I'm a source of heat that can cause burns.
Out of attempts. The answer was:  fire
Play again? (yes/no): yes
Here's your cipher:
J'n b xpse pg mfuufst uisff, bee uxp boe gfxfs uifsf xjmm cf. Xibu bn J?
Enter the deciphered riddle, 'clue' for a hint, or 'skip' to skip: skip
The answer was:  few
Play again? (yes/no): no
Thank you for playing the Cipher Riddle Challenge!
>>> 
```

Conclusion:

The Cipher Riddle Challenge project represents a successful fusion of education, entertainment, and coding. The game's journey from concept to implementation has been a rewarding exploration of puzzles, cryptography, and Python programming. Through this project, we have learned valuable lessons about game design, user interaction, and the importance of making learning enjoyable.

Looking forward, there is potential for further enhancements, including the addition of more riddles, ciphers, and interactive features. The Cipher Riddle Challenge is an ongoing project that can continue to evolve and captivate players while fostering a deeper understanding of cryptography and problem-solving.