

Q1 Commands**10 Points**

List the commands used in the game to reach the ciphertext.

go, go, read

Q2 Cryptosystem**10 Points**

What cryptosystem was used in this level?

Vigenere Cipher

Q3 Analysis**20 Points**

What tools and observations were used to figure out the cryptosystem?

NOTE: Failing to provide proper analysis would result in zero marks for this assignment.

In the cipher text, there were words like 'nnyvng', 'cjjwg', 'rbbufqwi', which when trying to use a Simple Substitution Cipher, couldn't be deciphered properly as there aren't any logically correct english words which have such repetition of characters (like nn in 'nnyvng'). Besides the upon further observation of the caveman's picture, counting the number of lines horizontally would give a particular key (top-down and bottom-up) (I first counted the number of horizontal lines as key which didn't give meaningful results either, then jumped to counting number of lines horizontally). Guessing it to be Vigenere Cipher and using this key to try to decrypt some

messages gave meaningful results when bottom-up key was used whereas it wasn't giving readable results in top-down approach. Hence the cryptosystem was Vigenere Cipher and the key used was the number of horizontal lines from bottom-up in the caveman statue (Key: 'jcyjffcccb'). An important thing to note here is that spaces are preserved. Also 0-a, 1-b, ... and so on till 25-z.

Q4 Decryption Algorithm

15 Points

Briefly describe the decryption algorithm used. Also mention the plaintext you deciphered. (Use less than 350 words)

Let $C(i)$ be i -th Crypted Ciphertext,
 $P(i)$ be i -th Plaintext and
 $K(i)$ be i -th letter of the key (after concatenation).
 First concatenate the key (jcyjffcccb) until it matches the number of letters in the ciphertext. Also preserve spaces.
 Then use the following standard Vigenere decryption formula for decrypting the Ciphertext to Plaintext. (Assume 0-a, 1-b, ... 25-z)

$$P(i) = [C(i) - K(i)] \bmod 26$$
 Basically convert i th ciphertext into its corresponding number, convert i th key letter into corresponding number and then subtract both of them. Convert the resulting number into the corresponding english letter. If the number becomes <0 , jump to 25 in a cyclic manner (mod 26 ensures cyclic nature of Vigenere Cipher). Doing so for all letters, we get the following plaintext:
 "Be wary of the next chamber, there is very little joy there.
 Speak out the password "the_cave_man_be_pleased" to go through.
 May you have the strength for the next chamber. To find the exit,
 you first will need to utter magic words there."

Q5 Password


10 Points

What was the final command used to clear this level?

```
the_cave_man_be_pleased
```

Q6 Codes**0 Points**

Upload any code that you have used to solve this level


 No files uploaded

Q7 Team Name**0 Points**

```
team_7
```

Assignment 2**● Graded****Group**

RASHMI BHIKAJI WAGHMARE
CHANDEKAR VIDISH VIJAY
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Total Points**55 / 65 pts****Question 1**[Commands](#)**10 / 10 pts**

Question 2[Cryptosystem](#)**10 / 10 pts****Question 3**[Analysis](#)**15 / 20 pts****Question 4**[Decryption Algorithm](#)**10 / 15 pts****Question 5**[Password](#)**10 / 10 pts****Question 6**[Codes](#)**0 / 0 pts****Question 7**[Team Name](#)**0 / 0 pts**