
CS641 - Assignment 2

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Text on the wall :

**"As you move closer to the boulder, you realize that it has
something written on it!**

**Wiping the dust from the boulder with your hand - and getting
your hand very dirty in the process - you see strange symbols
on the boulder -- it appears like some code:**

... . -.-. .- -.-. .- -.-.

**The spirit of Cave Man is the keeper of the chamber.
To navigate through the chamber, you must pay respect
to him first. When you bow down, you hear a faint voice-
"You have been blessed, my child. Keep in mind that
you must always believe in yourself and PLAY FAIR".**

**TR XYCB MH AFC MUVY EOHPTCS, AFCSS TE QCSI NTYIMS TNA AFCSC.
EMRBH XAA VAFR MIUCQPUH "LMRL_CCETOT" FN HM AKUXAHK. OTA WANA
OTXT FFU EISCWNAF HME BFU MCVA UGTOTRE. BM HYLE IFU UVTY ANE
HBSEI QYOQM OUVSF AM EAFTE PYHYS XNSKE IFUSC."**

Cryptanalysis

- **Commands to get to cipher**

go -> go -> read

- **Figuring out the Cryptosystem**

After the first "go" command, we found a Morse code on the boulder which meant SECURITY in English and then after paying our respect to the spirit of Cave Man, we got a message which included PLAY FAIR at the end. So we thought it might be a hint for the cryptosystem used in the cipher text. So we took a guess that "security" is the key and generated the 5*5 key square:

S E C U R
I T Y A B

D F G H K
L M N O P
Q V W X Z

Using this we manually decrypt the cipher text using the algorithm given in the next question.

- **Decryption Algorithm**

After getting the cryptosystem and the key, we decrypted using the following method:

- Generated the 5*5 square grid; firstly the key followed by rest English alphabets in order except 'J'
- split the cipher text in pairs of 2 letters; then for each pair
 - if both letters in same columns, took the letter one above and if the topmost letter picked, then the bottom most letter was taken
 - if both letters in same row, took the letter one left and if the leftmost letter picked, then the right most letter was taken
 - if none of the above is valid, then make a rectangle of the letters and horizontal opposite corner letters were taken
- as during ciphering, the pairs with same letters were broken, so the 'X' obtained after decrypting was omitted in these pairs of same letters
- 'JOY' came out as 'IOY' after deciphering due to omission of 'J' in the grid and it was subsequently corrected manually.

Final plaintext was:

'BE WARY OF THE NEXT CHAMBER, THERE IS VERY LITTLE JOY THERE. SPEAK OUT THE PASSWORD OPEN_SESAME 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.'

- **Password**

OPEN_SESAME