

Introduction to Cryptography

This exploration sheet contains some codebreaking puzzles. During the session, we will learn about different cryptography techniques, and also how to break them. As a precursor, you can try deciphering the secret messages given here.

Our aim is to learn and enjoy the art of codebreaking. This joy will be lost if we resort to technology prematurely. Solve the challenges without resorting to computers or the internet.

Challenge 1: The following list contains five words written in a secret code. Find the next two words in the sequence, and write them in the same code.

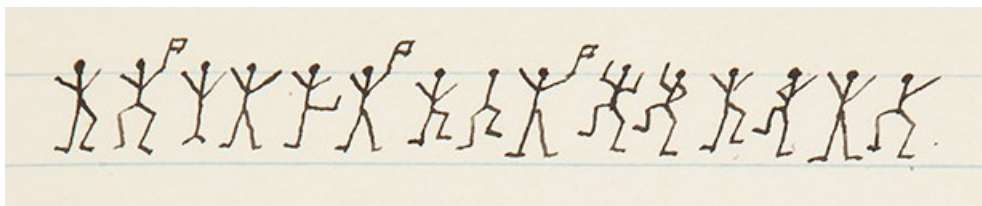
- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

Bonus: Write your name using this secret code.

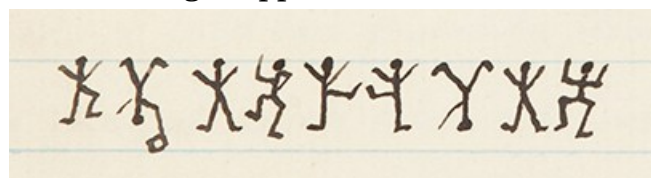
Challenge 2: The Adventure of the Dancing Men

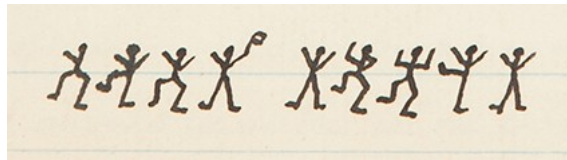
Secret codes appear in one of Sherlock Holmes mysteries. Holmes successfully decodes the messages to solve a murder. Can you also decode these messages?

A man named Hilton Cubitt shows up at Baker Street. He says he found some strange drawings on his house, which made his wife Elsie very scared. This is the first message.

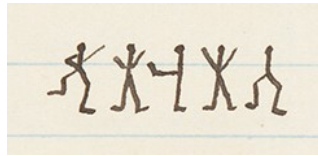


A few days later, these two messages appear in front of Cubitt's window.

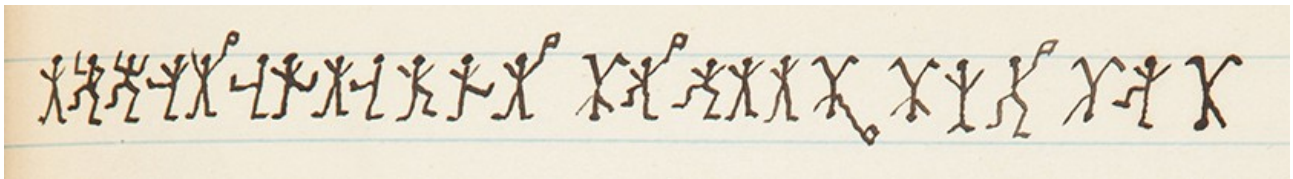




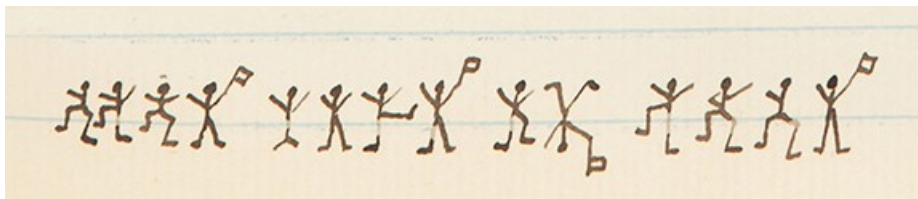
The above two messages appear again. In addition, there is another message. It is the beginning of a sentence which the writer abandoned midway to escape being found out.



A few days later, the next message appears. When Holmes sees this, he realizes that Cubitt and his wife are in danger.



As he had foreseen, both Cubitt and his wife are both shot. Holmes then sends the following message, which makes the shooter voluntarily show up.



Decipher all of the messages given above. The first message contains the name of the murderer. How did Holmes crack the secret code?

Challenge 3:

Here is a list of the first ten cube numbers

1, 8, 27, 64, 125, 216, 343, 512, 729, 1000.

Here are the same ten numbers when expressed in Ngkolmpu, language spoken in New Guinea. The numbers are listed in random order. Can you match the correct number to the correct expressions?

eser tarumpao yuow ptae eser traowo eser

eser traowo yuow

naempr

naempr ptae eser traowo eser

naempr tarumpao yuow ptae yuow traowo naempr

naempr traowo yempoka

tarumpao

yempoka tarumpao yempoka ptae naempr traowo yempoka

yuow ptae yempoka traowo tampui

yuow tarumpao yempoka ptae naempr traowo yuow

Challenge 4:

Corpus text

- Spread love everywhere you go. Let no one ever come to you without leaving happier. -Mother Teresa
- The only thing we have to fear is fear itself. -Franklin D. Roosevelt
- Darkness cannot drive out darkness: only light can do that. Hate cannot drive out hate: only love can do that. -Martin Luther King Jr.
- Do one thing every day that scares you. -Eleanor Roosevelt
- Well done is better than well said. -Benjamin Franklin
- The best and most beautiful things in the world cannot be seen or even touched - they must be felt with the heart. -Helen Keller
- It is during our darkest moments that we must focus to see the light. -Aristotle
- Do not go where the path may lead, go instead where there is no path and leave a trail. -Ralph Waldo Emerson
- Be yourself; everyone else is already taken. -Oscar Wilde
- You must be the change you wish to see in the world. -Mahatma Gandhi

Relative Frequency

