Challenge: Let's Chat

Objective

The goal of this challenge is to connect to a chat server and receive an **overt** message. Note that chat server specifics will be provided at the beginning of the challenge. In the delays between each character of this message (beginning with the delay between the first and second characters) is a **covert** message. Of course, you already knew this. Note that the server is designed to timeout after 5 seconds of inactivity.

Once connected to the chat server (using a simple socket connection), you should expect continuous incoming data that is terminated with the string "EOF" – at which point the connection will be closed. The incoming data is, of course, the **overt** message. You must "extract" the **covert** message from the timings.

Having trouble getting the covert message? Set a debug mode that prints out the delays in between characters of the overt message and try to find a pattern (i.e., are there two unique delays?); subsequently, map the delays to 0 and 1 (or vice versa). Make sure not to consider any delays that represent the time between connecting to the server and receiving the first character of the message. Any decoded byte that proves problematic can be represented as a question mark in the message. It is possible that delays in the network require performing this process a number of times to decode the complete covert message.

When you think that you have successfully completed the challenge, send **fully** decoded covert message and **time** of the decoded covert message to your **team text channel** and @ **prof**.

Once you are done, **submit compressed folder with following files on Canvas**:
- (1) A document that provides:
  - (a) the **fully** decoded covert message;
  - (b) the specified time of the decoded covert message (note that the **covert** message will contain a time that you can specify in your text document); and
  - (c) thorough documentation of your team process as you proceeded through the challenge, including description of each team member contributions;
- (2) Any modified Python code (e.g., your chat program, Vigenere program, Binary program); and
- (3) Any other scripts or programs that you created to assist you (if applicable).

You will be graded on how well you:
- (1) Decode and decrypt the chat server IP and port (15%);
- (2) Obtain, decode, and decrypt the covert message (matching the specified time) (60%);
- (3) Document your process (20%); and
- (4) Submit the required ZIP file (5%).

GOOD LUCK!