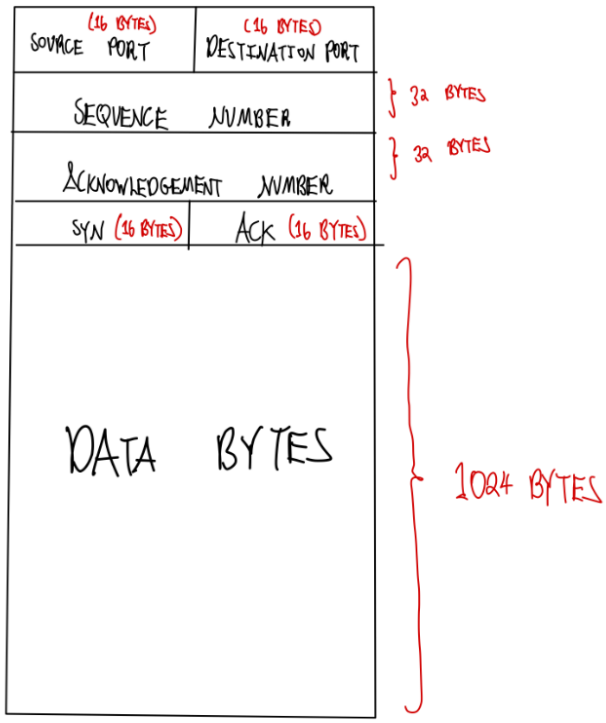
Project 3 - Transport Layer

Summary of the System

For the transport layer project, I designed and implemented a **Selective Repeat** system on top of UDP. Specifically, I designed my system in a way that the SERVER uses a sliding window to send at most **10 packets** to the client at a given time and the window begins at the earliest unacknowledged packet. The system resends data for packets that have not been acknowledged after 0.01s. The design utilizes dictionaries to store which packets have been acknowledged to avoid sending unnecessary packets on the network. On the client side, a byte array is used to store the file bytes for incoming packets in order to store information from packets that are not sent in order.

Final Protocol Design

- Packet Format: Packets were sent by packing information into the **struct** object in Python. Each packet contains 1024 bytes of data from the requested file and additional overhead for the headers for the packet
  Visualization of packet:



- State Transition diagram of system: