

## GRADED LAB 1 (CCN F5)

### Question:

You are designing an **iterative UDP-based server** that processes incoming datagrams from multiple clients. Each client sends a sequence of numbered packets (e.g., 1, 2, 3, ...) to the server. However, due to the nature of UDP, packets may arrive out of order, be duplicated, or even get lost.

Your task is to implement the server logic to handle the following requirements iteratively (without spawning new threads or processes for each client):

1. **Packet Ordering** : Ensure that the server processes packets from each client in the correct order, even if they arrive out of sequence.
2. **Duplicate Detection** : Ignore duplicate packets sent by the same client.
3. **Missing Packet Handling** : If a packet is missing (e.g., packet #3 is lost), the server should request the client to resend only the missing packet.
4. **Iterative Design** : The server must handle multiple clients iteratively using a single thread.