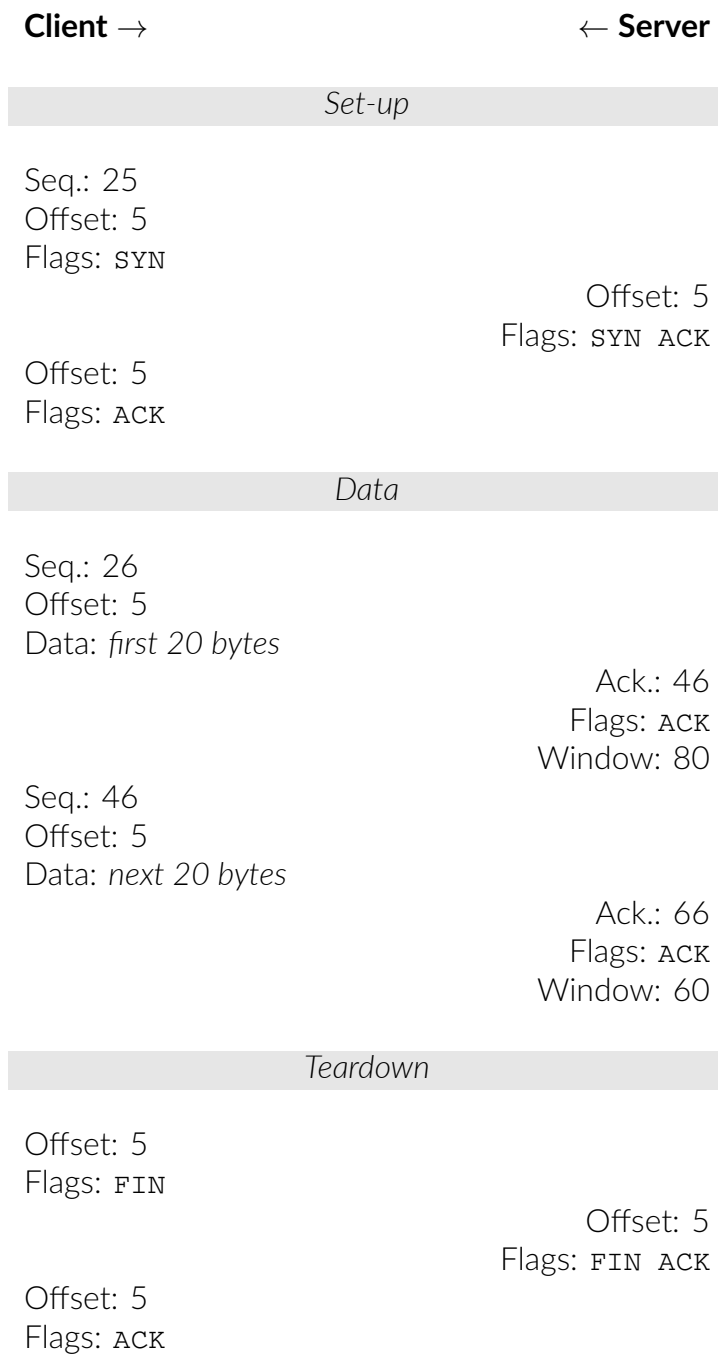# INS: Tutorial 3

Question 1

Data is sent via TCP between two hosts, both using port 9090. The data is 40 bytes long, split into two 20-byte segments. The client sets the ISN to 25. The server has a buffer size of 100 bytes and does not process data until after it is all received. No options or additional flags are set.

Client →   **← Server**

Set-up

Seq.: 25
Offset: 5
Flags: `SYN`

Offset: 5
Flags: `SYN ACK`

Offset: 5
Flags: `ACK`

Data

Seq.: 26
Offset: 5
Data: *first 20 bytes*

Ack.: 46
Flags: `ACK`
Window: 80

Seq.: 46
Offset: 5
Data: *next 20 bytes*

Ack.: 66
Flags: `ACK`
Window: 60

Teardown

Offset: 5
Flags: `FIN`

Offset: 5
Flags: `FIN ACK`

Offset: 5
Flags: `ACK`

Source/destination ports of 9090 would be present in every message.

Question 2

The pseudo-header used in the TCP checksum violates the layering principles of the Internet architecture model because it creates a dependency between protocols on separate layers, which should be completely independent of each other.