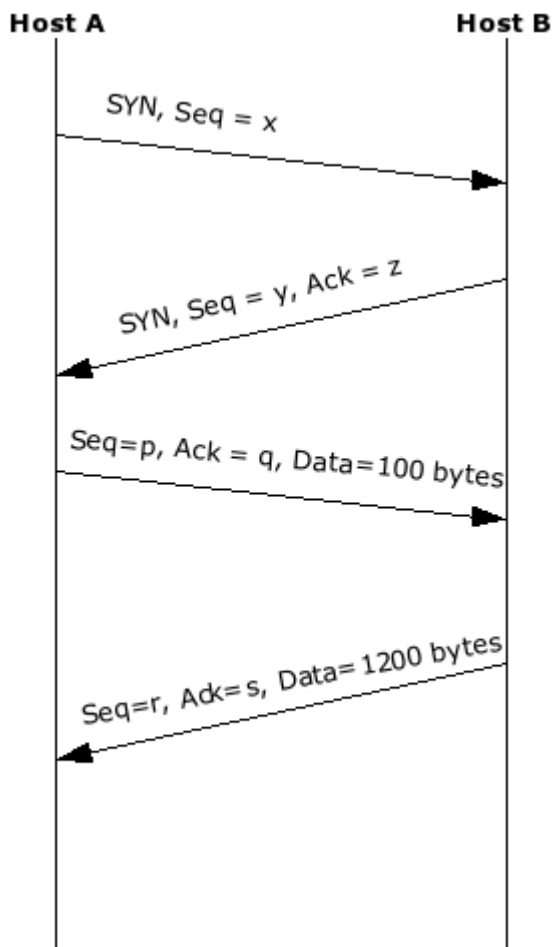


TCP Exercises

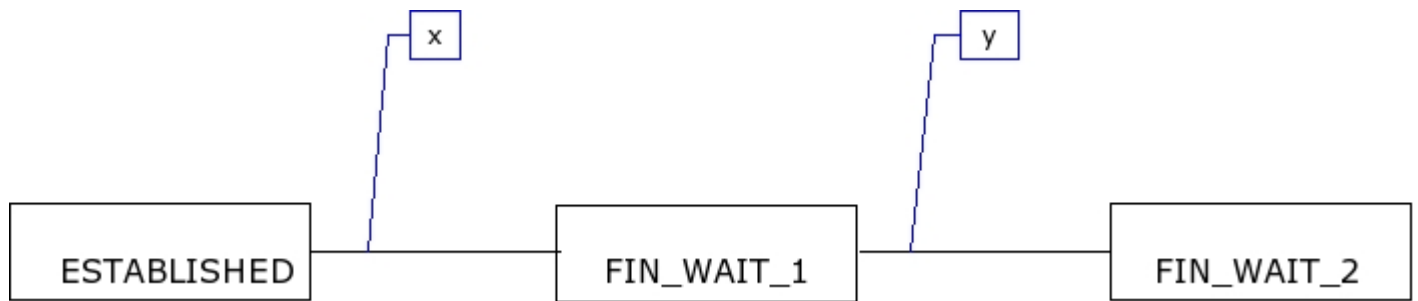
1. Consider an Ethernet frame (includes 14-byte Ethernet header and 20-byte IP header) carrying a TCP segment:

```
0800 207a 705c 0000 a283 2029 0800 4500
0030 0edb 4000 fe06 4e71 898c 0401 898c
0866 0017 8430 1692 1aed 4816 1eac 6018
2238 39d6 0000 0204 05b4 ffff a123
```

- (a) What is the length of user data in bytes?
 - (b) Who (give IP) must have done active open (send first SYN) in this connection?
 - (c) After this datagram is delivered, what would be the TCP STATES of the sender and receiver?
 - (d) If an ACK of this segment is sent, what is the maximum possible ACK value ?
2. In the following figure, if $x=1411721$ and $y=23421817$, fill in the values of z , p , q , r and s



3. The following figure shows the **state transition diagram of a host H1's** TCP connection to host H2. X and Y stand for TCP exchanges between the two hosts. Select **all** that apply:



- a. X could be H1 sending FIN flag to H2.
- b. X could be H1 sending FIN with PUSH flag to H2.
- c. X could denote H1 receiving FIN from H2.
- d. Y could be H1 receiving FIN from H2.
- e. Y could be H1 receiving ACK of its FIN from H2.
- f. Y could denote data transfer from H1 to H2.
- g. Y could denote H1 sending H2 an ACK of H2's FIN.