


Data Communications

Framing

Data link layer protocols are responsible for grouping data into frames before transmission. Each frame besides data includes information about the sender, receiver, size of data, etc. Meanwhile the frames should include special characters/patterns to indicate their starting and ending. These patterns which are called frame delimiters should not occur in the data. Whenever the delimiter pattern occurs in data, we insert an extra character/bit into data to avoid misinterpretations.

Assume 01111110 is used as frame delimiter. We insert an extra 0 bit after 5 consecutive 1s in data. Design a state diagram to detect delimiters and also to remove inserted 0 bits at the receiver.

Use the following symbols:

1- To show a state use: 

2- To show state transition use : 

List all states used in your design and justify the use of each one with a one sentence description.