

Review

Assignment Project Exam Help

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COMP90007 Internet Technologies
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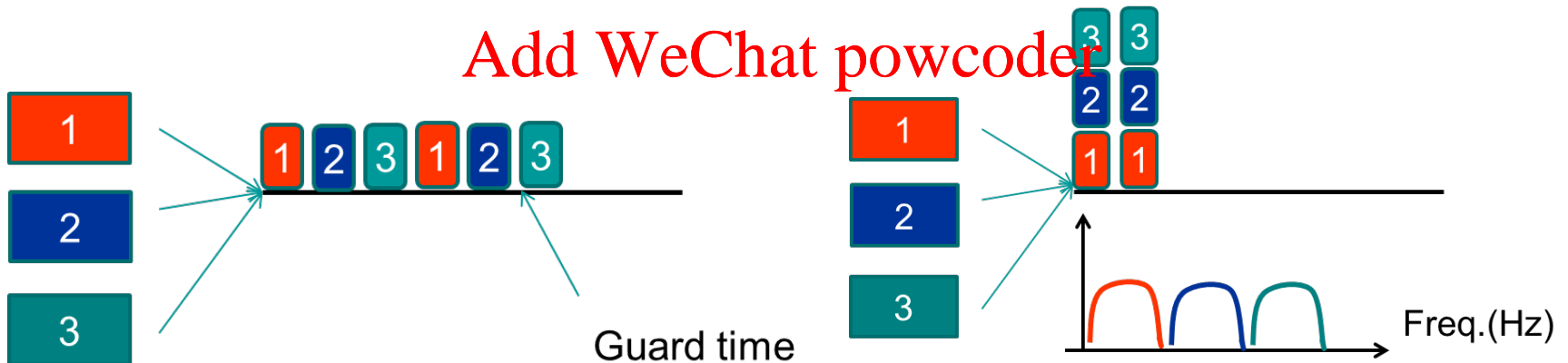
Medium Access Control (1)

- MAC sub-layer is used to assist in resolving transmission conflicts
- Static channel allocation
 - ❑ Time division multiplexing
 - ❑ Frequency division multiplexing

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Medium Access Control (2)

- Contention
 - ALOHA, Slotted ALOHA
 - Carrier Sense Multiple Access: 1-persistent, non-persistent, p-persistent, with collision detection
- Collision Free: bit map, binary countdown
- Limited Contention: adaptive tree walk
- Wireless LANs: MACA

Data Link Layer

- **Reliable, efficient** communication of “**frames**” between two adjacent machines.
- Functions of the data link layer:
 - Provide a well-defined service interface to network layer
 - Handling transmission errors
 - Data flow regulation

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Framing

- Methods:

- Character (Byte) count
- Flag bytes with byte stuffing
- Start and end flags with bit stuffing

- Most data link protocols use a combination of character count and one other method

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Error Control

- Error Control
 - **Detecting** errors
 - Parity
 - Checksum
 - Cyclical Redundancy Check (CRC)
 - **Correcting** errors
 - Hamming Code

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Flow Control

- ❑ The **fast senders vs slow receivers** problem requires a solution
- **Feedback based flow control: ack**
 - ❑ Stop and wait
 - ❑ Sliding window: go-back-N, selective repeat

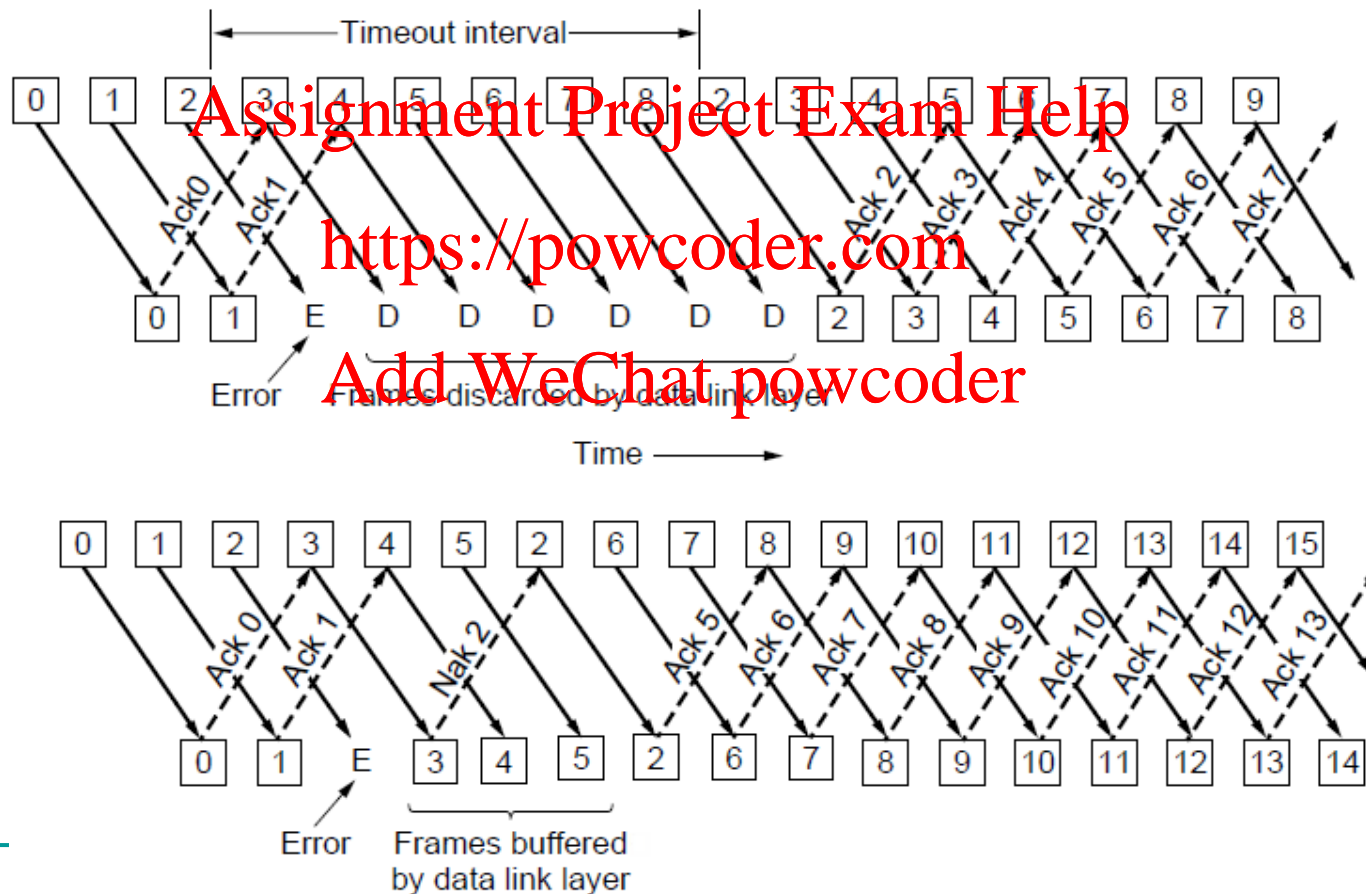
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Go-Back-N vs. Selective Repeat

- Trade-off between efficient use of bandwidth and data link layer buffer space



Physical Layer

- The physical layer is concerned with the electrical, timing and mechanical interfaces of the network
- ❑ **Timing:** data rate, latency
- ❑ **Mechanical:** different media ...
- ❑ **Electrical:** modulations, voltage levels, signal strength ...

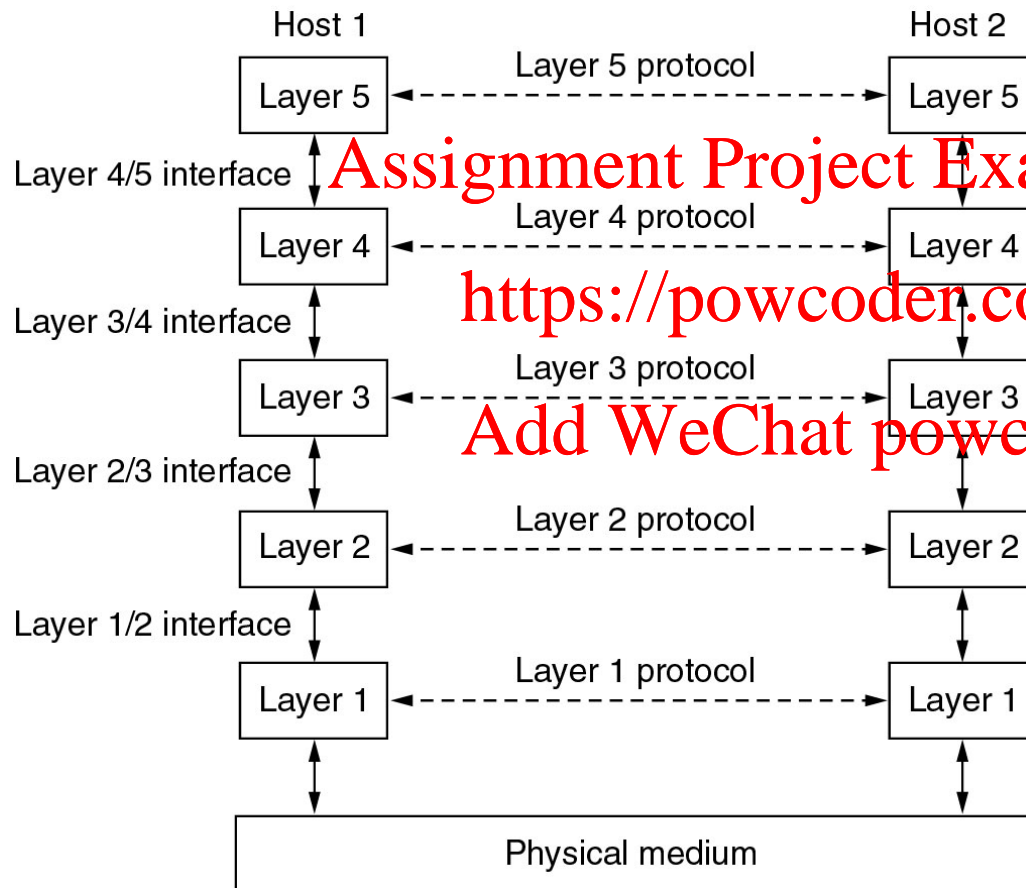
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Network Protocol Hierarchies (1)

- Layers, protocols and interfaces



Consider the network as a stack of **layers**

Each layer offers **services** to layers above it through **interface**

Protocol is an agreement between the communicating parties on how communication is to proceed

Network Protocol Hierarchies (2)

- Information flow supporting virtual communication in layer 5

