OS & NW
QUIZ-8

SNEHAL KUMAR
2019101003

Q.1. In operating system, we have developed a producer and consumer paradigm to communicate.

A: A producer produces information which is sent to buffer and consumer consumes item from buffer.
Usually producer and consumer are in different computers, connected through long communication channel.
Communication between two computers can have transmission in both ways unlike this paradigm. There is no mutual exclusion in communication.
There is interprocess communication which ~~has~~ can have dynamic allocation while producer consumer has a fixed buffer size.
A Computer communication can have independent transmission channel opposed to common queue in paradigm.
The similarity lies in the transmission of data from one computer to another following a similar path through the channel.

Q.2. Suppose there is a change in the service provided at layer k. How does this impact

A: In a layered system, a service in layer x uses primitives provided by lower levels (<x). A service relates to an interface between two layers, where the lower level provides service to the upper layer. If any change is made in layer k, the services in layer k-1 will not be impacted but the services in layer k+1 (higher) will have to be reimplemented according to the changes.

Q.3. What will happen if we send the digital bits without modulation?

A: Modulation is the process of converting between bits and signals. If bits are not modulated, we would need very high powered transmitters to allow the bits to travel over longer distances. The intensity of signal decreases over distance with addition of multipath fading interference. Modulation helps to send signals over longer distances with reasonable sized receivers.
Also, with frequency modulation, there is added advantage of having less errors during transmission.
Thus modulation provides a means to transmit bits over long distance without error and new interference.

Q4 Explain the tradeoff between 'Go-Back N' Sliding Window Protocol and "Selective Repeat"

A: Using "Go-Back N" protocol is easier to implement;
- Go Back N needs simple strategy for receiver and requires only 1 frame.
- It wastes link bandwidth for errors with large windows. Entire window needs to be retransmitted.
- The acknowledge type is cumulative.

Selective Repeat:
- It is more complex due to buffering at receiver and multiple timers at sender.
- It has more efficient use of link bandwidth as only lost frame are resent with lower error rates.
- The receiver requires window size of N.
- Acknowledgement type is individual.
- The Sequence numbers should be atleast 2x that of window for correctness.

Q.5. Why Non persistance CSMA Protocol gives better performance than 1-persistant CSMA

A: ∘ Non persistance CSMA sends frame when channel is idle and waits for random amount.
∘ 1-persistent CSMA sends frame with probability 1 when channel is idle and continously sense channels for transmission during waiting.
∘ Non-persistent CSMA has less chance of collisions due to this.
∘ It also has better utilization than 1-persistent since all stations check for channel simultaneously.
∘ The delay low load is longer as it only checks randomly when channel is busy.

Non persistent reduces efficiency but reduces chance of collision and overall performs better 1-persistent.