# CS 447-002 Networks and Data Communications
## Spring 2024
## Quiz #6 on March 18, 2024 (SOLUTIONS)

Your Last Three Digits: _____

(please do NOT write all of your student ID or your name)

Grade: _____

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(1) Define local area networks ("LANs") by answering the following issues:

- (a) Primary purpose: for offering direct/physical connectivity to each host computer (connectivity to any computer networks, such as LANs, WANs, the Internet, and/or intranets)
- (b) Size: up to approximately 300 feet
- (c) Ownership: single ownership (individual owners, corporate, or organizations)

(2) Define internet (the Internet) by answering the following issues:

- (a) Primary purpose: for inter-connecting networks (primarily WANs) owned by long-distance carriers (i.e., ISPs)
- (b) Size: world-wide
- (c) Ownership: no single ownership (i.e., no one owns the Internet)

(3) What are "repeaters"?

Repeaters (including repeater hubs) are the network connection devices that "reform signals (distorted/partially corrupted signals are "restored")" and forward the restored (cleaned up) signals to another (other) LAN(s) or host computer(s) to extend the size (length) of LANs or (network) cables.

(4)  What is the primary advantage of "switch" (compared with "repeaters")?

The primary advantages of switches are (any one of the followings):

- Switches do not broadcast, which eliminates unnecessary network traffic ("traffic localizer").  This property of switches prevents waste of network transmission bandwidth which may be wasted otherwise.

- Since switches can possibly set up multiple transmission paths inside of a switch, (network) transmission throughput at a switch is usually better (higher) than that of a repeater hub.

- Since switches will transmit (forward) network traffic (packets) only if its destination exists (if you are not a receiver, you will not see it), switches improve safety (security).

(5) What particular problem in CSMA does CSMA/CD solve and how?

CSMA/CD eliminates the time (wasted time) a transmitting host needs to wait for its timer to expire before the transmitting host computer can starts its retransmission when a packet collision occurs.