

**Set 1**

Q1 Simulate and implement Go-back N sliding window protocol.

Q2 Draw the sender and receiver windows for a system using Go-back-N ARQ, where a 3 bit field is used and given the following: (a) Frame 0 is sent; Frame 0 is acknowledged. (b) Frames 1 and 2 are sent; Frames 1 and 2 are acknowledged. (c) Frames 3, 4, and 5 are sent; Frames 3 and 4 is acknowledged; Timer for Frame 5 expires. (d) Frames 5, 6, and 7 are sent; Frames 5 through 7 are acknowledged.

**Set 2**

Q1 Simulate and implement Selective Repeat sliding window protocol.

Q2 A computer is using a sliding window of size 7. Complete the following sequence numbers for 20 frames: 0, 1, 2, . . . , X, 0, 1, 2, ..... (a) Go-Back-N (b) Selective Repeat.

**Set 3**

Q1 Simulate Classful Addressing by taking the IP address (Dotted-Decimal notation) as input and print the corresponding class.

Q2 Suppose a network with IP Address 192.16.0.0. is divided into 2 subnets, find number of hosts per subnet. Also for the first subnet, find-

1. Subnet Address
2. First Host ID
3. Last Host ID
4. Broadcast Address

**Set 4**

Q1 Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.

Q2 A bit stream 1101011011 is transmitted using the standard CRC method. The generator polynomial is  $x^4+x+1$ . What is the actual bit string transmitted?

**Set 5**

Q1 Simulate Hamming code for a given input message.

Q2 A 12-bit hamming code whose hexadecimal value is 0xE4F arrives at a receiver. What was the original value in hexadecimal? Assume that not more than 1 bit is in the error.

**Set 6**

Q1 Simulate and implement stop and wait protocol for noisy channel.

Q2 In Stop and wait protocol every 4th packet is lost and we need to send total 10 packets so how many transmission it took to send all the packets?

### Set 7

Q1 Simulate and implement go back n sliding window protocol.

Q2 In GB3 if every 5th packet is lost & we need to send 10 packets so how many retransmissions are required ?

### Set 8

Q1 Simulate and implement selective repeat sliding window protocol.

Q2 Consider a  $128 \times 10^3$  bits/sec satellite communication link with one way propagation delay of 150 msec. Selective Retransmission (repeat) protocol is used on this link to send data with a frame size of 1 KB. Neglect the transmission time of acknowledgement. The minimum number of bits required for the sequence number field to achieve 100% utilization is \_\_\_\_\_.

### Set 9

Q1 Simulate Classful Addressing by taking the IP address (Dotted-Decimal notation) as input and print the corresponding class.

Q2

A router has the following (CIDR) entries in its routing table:

Address/mask	Next hop
135.46.56.0/22	Interface 0
135.46.60.0/22	Interface 1
192.53.40.0/23	Router 1
default	Router 2

For each of the following IP addresses, what does the router do if a packet with that address arrives?

- a. (a) 135.46.63.10
- b. (b) 135.46.57.14
- c. (c) 135.46.52.2
- d. (d) 192.53.40.7
- ~~e.~~ (e) 192.53.56.7

### Set 10

Q1 Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.

Q2 A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is  $x^3+1$ .

1. What is the actual bit string transmitted?
2. Suppose the third bit from the left is inverted during transmission. How will receiver detect this error?

**Set 11**

Q1 Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.

Q2 In CRC checksum method, assume that given frame for transmission is 1101011011 and the generator polynomial is  $G(x) = x^4 + x + 1$ . After implementing CRC encoder, find the encoded codeword that will be transmitted by the sender.

**Set 12**

Q1 Simulate and implement Go-back N sliding window protocol.

Q2 Draw the sender and receiver windows for a system using Go-back-N ARQ, where a 3 bit field is used and given the following: (a) Frame 0 is sent; Frame 0 is acknowledged. (b) Frames 1 and 2 are sent; Frames 1 and 2 are acknowledged. (c) Frames 3, 4, and 5 are sent; Frames 3 and 4 is acknowledged; Timer for Frame 5 expires. (d) Frames 5, 6, and 7 are sent; Frames 5 through 7 are acknowledged.

**Set 13**

Q1 Simulate and implement Selective Repeat sliding window protocol.

Q2 A computer is using a sliding window of size 7. Complete the following sequence numbers for 20 frames: 0, 1, 2, . . . , X, 0, 1, 2, ..... (a) Go-Back-N (b) Selective Repeat.

**Set 14**

Q1 Simulate Classful Addressing by taking the IP address (Dotted-Decimal notation) as input and print the corresponding class.

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- a) Subnet Address
- b) First Host ID
- c) Last Host ID
- d) Broadcast Address

**Set 15**

Q1 Simulate Classful Addressing by taking the IP address (Dotted-Decimal notation) as input and print the corresponding class.

Q2 In a class B, network on the internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts per subnet?

**Set 16**

Q1 Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.

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**Set 17**

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**Set 19**

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**Set 20**

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Q2 In GB3 if every 5th packet is lost & we need to send 10 packets so how many retransmissions are required ?

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Q1 Simulate and implement selective repeat sliding window protocol.

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### Set 23

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Q2 A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is  $x^3+1$ .

- 3. What is the actual bit string transmitted?
- 4. Suppose the third bit from the left is inverted during transmission. How will receiver detect this error?

### Set 24

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Q2 In CRC checksum method, assume that given frame for transmission is 1101011011 and the generator polynomial is  $G(x) = x^4 + x + 1$ . After implementing CRC encoder, find the encoded codeword that will be transmitted by the sender.

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