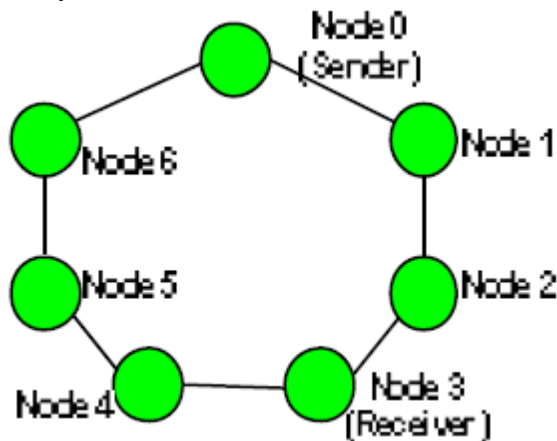


Instructions:

UPLOAD THE PDF FILE THAT CONTAINS CODE AND SCREENSHOT OF SAMPLE INPUT/OUTPUT(SHOULD BE CLEAR, ATLEAST 2 SAMPLE RUNS ARE NEEDED)

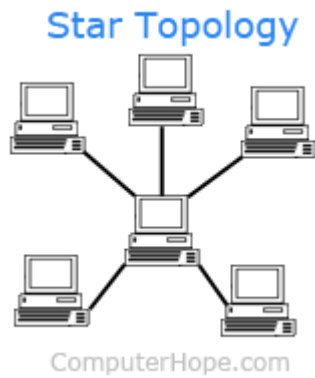
1. a. Implement C program to generate Hamming code word in the sender side using odd Parity for the 8 bit Data Word
b. Write a TCP client/server program to read the numbers in the client side and sort the numbers in the ascending order in server side and return the result in client side.
2. a. If the bit sequence 101001100 is received at the host, assume the CRC code polynomial as $x^4 + x^2 + 1$. Implement a program in C to Check, is there an error with this transmission
b. Write a socket program (UDP) to extract the substring from the string on the server side when a string is passed from the client side
3. a Simulate the topology of the below network in the packet tracer and connect necessary network device to achieve the above topology.



- b. Implement Selective Repeat ARQ in C program for the scenario
 - (i) For $m=4$, Calculate the Sender Window Size and Receiver Window Size
 - (ii) Assume that sender wants to transmit 8 frames
Within each timeout period, 4 frames can be transmitted, Suppose 3rd frame is lost and acknowledgement for 7th frame .
- 4.a .Calculate the checksum for the UDP header which is of fixed 8 bytes.

Source port number 16 bits	Destination port number 16 bits
Total length 16 bits	Checksum 16 bits

- b. Simulate the star topology with middle node as the receiver and any one of the other nodes as sender and generate the traffic in the packet tracer



5. a. Implement Go back N ARQ in C program for the scenario

(i) For $m=3$, Calculate the Sender Window Size and Receiver Window Size

(ii) Assume that sender wants to transmit 10 frames

Within each timeout period, 2 frames can be transmitted, Suppose 2rd frame is lost and acknowledgement for 6th frame is lost

b. Write a TCP socket program to perform encryption on client side and decryption on the server side. The encryption should be performed in the following logic: a letter in the string should be replaced by fifth successive letter (eg: a → f, b → g and so on)

6. a. Write a c program to implement Simple ARQ mechanism.

b. Write a socket program to pass any three integer values from client to server and print the greatest of the three numbers on the client side.

S.No	REGISTER NO	Q.NO
1	18BCB0134	6
2	19BCE0058	5
3	19BCE0166	4
4	19BCE0269	3
5	19BCE0294	2
6	19BCE0400	1
7	19BCE0456	2
8	19BCE0458	3
9	19BCE0498	4
10	19BCE0502	5
11	19BCE0521	6
12	19BCE0532	1
13	19BCE0618	3
14	19BCE0684	4
15	19BCE0807	5
16	19BCE0810	6
17	19BCE0829	2
18	19BCE0832	1
19	19BCE0964	4
20	19BCE0982	5
21	19BCE0995	6
22	19BCE2000	3
23	19BCE2003	2
24	19BCE2008	1
25	19BCE2030	5
26	19BCE2064	6
27	19BCE2076	4
28	19BCE2095	3
29	19BCE2201	2
30	19BCE2221	1
31	19BCE2237	2
32	19BCE2246	4
33	19BCE2275	6
34	19BCE2315	1
35	19BCE2340	3
36	19BCE2370	5
37	19BCE2451	4
38	19BCE2468	6
39	19BCE2540	1
40	19BCE2580	5
41	19BCE2630	3
42	19BCE2636	1
43	19BCE2667	4
44	19BCE2672	5
45	19BCE2689	6

46	19BCE2691	1
47	19BCI0001	2
48	19BCI0036	3
49	19BCI0102	1
50	19BCI0166	4
51	19BCI0173	5
52	19BCI0184	6
53	19BCI0191	1
54	19BCI0198	2
55	19BCI0231	3
56	19BCI0266	6
57	19BCT0043	4
58	19BCT0080	2
59	19BCT0110	1
60	19BCT0122	3
61	19BCT0134	5
62	19BCT0145	1
63	19BDS0013	2
64	19BDS0037	3
65	19BDS0147	4