1. Implement a hybrid network, using packet tracer consisting of Star and Mesh, each having 5 nodes. Use IP range 192.168.0.x. Draw the diagram and write down the steps.

2. Implement a hybrid network, using packet tracer consisting of BUS and Ring, each having 5 nodes. Use IP range 10.20.0.x. Draw the diagram and write down the steps.

3. Implement a DHCP Server, using packet tracer consisting of a star topology with 5 nodes, having ip ranges 172.12. 30. x. Draw the diagram and write down the steps.
4. Implement a DNS + Web Server using packet tracer. Draw the diagram and write down the steps. The web server should display the demo website www.netlab.in.
5. Implement a router, using a packet tracer connecting two network groups 192.168.0.x and 172.23.45.x, each having a star topology with 4 nodes.
6. Implement a router, using a packet tracer connecting two network groups 10.10.0.x and 172.0.45.x, each having a star topology with 4 nodes. The addresses should be dynamically assigned by a DHCP server.
7. Implement a parity bit encoder using C that will encode the data 101011 using Even/Odd parity as per user's choice. Write the code, output and verify the result using pen and paper.
8. Implement a parity bit checker using C that will encode the data 10001011 using Even/Odd parity as per user's choice. Write the code, output and verify the result using pen and paper.
9. Implement a 4-bit checksum encoder using C that will encode the data 11011011. Write the code, encoded data and verify the result using pen and paper.
10. Implement a 4-bit checksum checker using C that will check the data 110110110111. Write the code, encoded data and verify the result using pen and paper.
11. Implement a CRC encoder using C that will encode the data **1001010** using Divisor **1101**. Write the code, encoded data and verify the result (**CRC=101**) using pen and paper.
12. Implement a CRC checker using C that receives the data **1001010001** using Divisor **1101**. Write the code, encoded data and verify the result (**CRC=bad**) using pen and paper.
13. Implement a Hamming encoder using C that will encode the data **1001101**. Write the code, encoded data and verify the result (**10011100101**) using pen and paper.
14. Implement a Hamming encoder using C that receives the data **10010100101**. Write the code, encoded data and verify the result (**Error in 7th bit**) using pen and paper.