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Subject	Computer Communication and Networks (CCN)
Experiment No.	1
Aim	Use and Interpret basic Networking Utilities.
Command No.1	**nslookup:** **Application:** Nslookup is a command-line tool that allows querying DNS servers to retrieve domain name or IP addresses. It is largely used in order to debug and diagnose DNS-related problems, just by checking the resolution of domain names into IP addresses and vice versa. Nslookup is used by network administrators since it allows verifying the accuracy of DNS records, suspicious domains, and ensuring correct domain resolution. The command may be useful in resolving DNS errors during the process of debugging network configuration issues as it offers information regarding the status of DNS servers along with their responses. In summary, nslookup is a useful utility for gaining a better understanding of and getting help with DNS-related problems.

Command No.2	**Ipconfig:**
	Application:
	The **ifconfig** command shows network interface configuration and network interface information that includes the IP address and network-relevant parameters. This works on systems with Unix-like operating systems. Alternatively, the use of the **iwconfig** commands allows configuration and disclosure of information about the wireless network interfaces, which include parameters such as signal strength and encryption if needed.

Command No.3	**Ping:** **Application:** The ping command is used to check the possible links between two network devices through sending a small data packet and measuring the round-trip time of how data travels from a source to a destination and back. It is widely used for troubleshooting network errors and host response analysis in a network.

Command No. 4	**Traceroute:**
	
	![Terminal window showing traceroute output]
	
	students@students-HP-280-G3-SFF-Business-PC:~$ traceroute google.com
	traceroute to google.com (216.239.38.120), 64 hops max
	  1 172.16.30.1 0.368ms 0.385ms 0.350ms
	  2 103.124.122.209 0.659ms 0.452ms 0.445ms
	  3 10.10.54.65 0.811ms 0.616ms 0.700ms
	  4 103.167.177.201 1.584ms 1.456ms 1.106ms
	  5 103.77.108.82 2.529ms 2.966ms 30.556ms
	  6 * * *
	  7 216.239.38.120 1.544ms 1.485ms 1.412ms
	students@students-HP-280-G3-SFF-Business-PC:~$ traceroute instagram.com
	traceroute to instagram.com (31.13.79.174), 64 hops max
	  1 172.16.30.1 0.366ms 0.365ms 0.371ms
	  2 103.124.122.209 0.673ms 0.465ms 0.448ms
	  3 10.10.54.65 0.793ms 0.524ms 0.525ms
	  4 103.167.177.201 2.046ms 1.170ms 1.216ms
	  5 103.77.108.135 1.286ms 1.673ms 0.928ms
	  6 157.240.52.209 1.118ms 1.124ms 0.950ms
	  7 157.240.36.21 1.185ms 0.940ms 0.913ms
	  8 31.13.79.174 1.087ms 1.139ms 0.948ms
	students@students-HP-280-G3-SFF-Business-PC:~$
	
	Application:
	Traceroute is a command that allows you to trace the path that packets followed from your destination as you seen the intermediate network devices (routers) they linked through. It enables network troubleshooting by pinpointing the precise points of fault or delay in the communication channel.
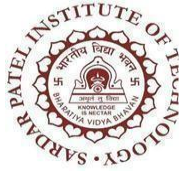
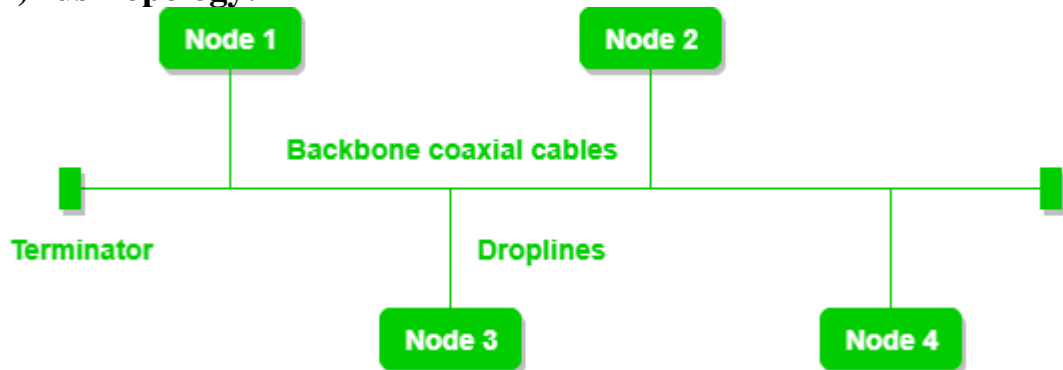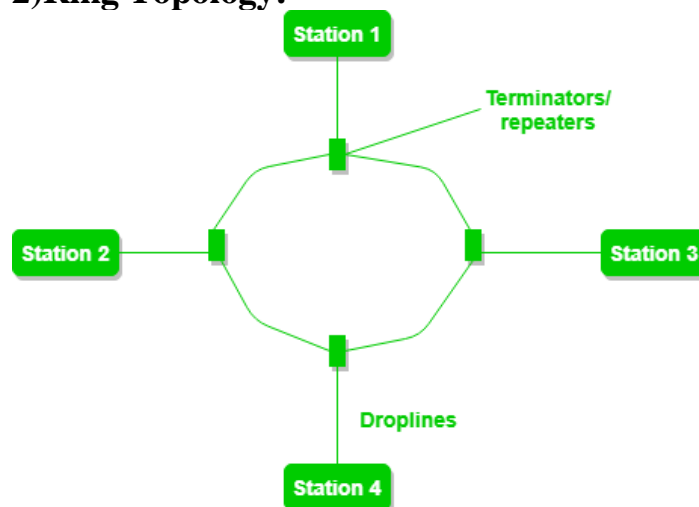|	
What is Topology?	Network Topology is an arrangement with which computer systems or network devices are connected to each other. There are two types of Topologies:- **a)Physical Topology:-** A Physical Topology describes the way in which the computers or nodes are connected with each other in a computer network. **b)Logical Topology:-** A logical Topology describes the way, data flows from one computer to another. There are mainly six types of Network Topology:- **1)Bus Topology:-** Bus topology is a network type in which every computer and network device is connected to a single cable. **2)Ring Topology:-** In Ring Topology, each computer is connected to exactly two other computers.
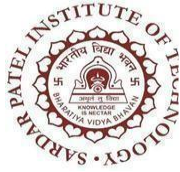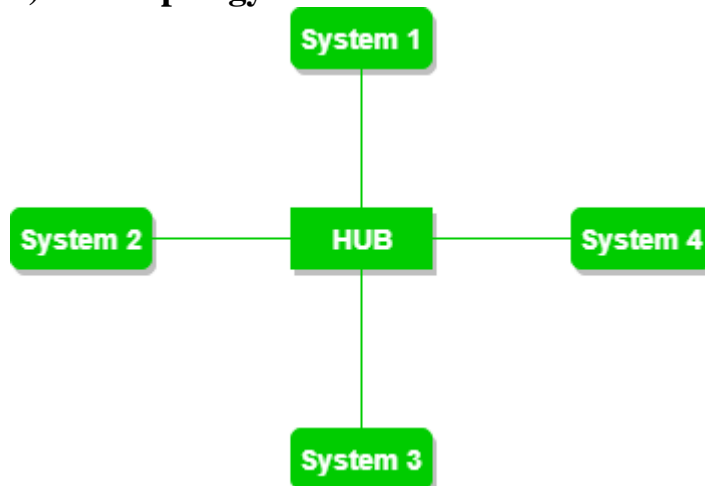
3)Star Topology:-

      In Star Topology, all the nodes are connected to a centralized hub. In this, Centralized Hub is 'The Server' and other peripheral devices are 'Clients'.
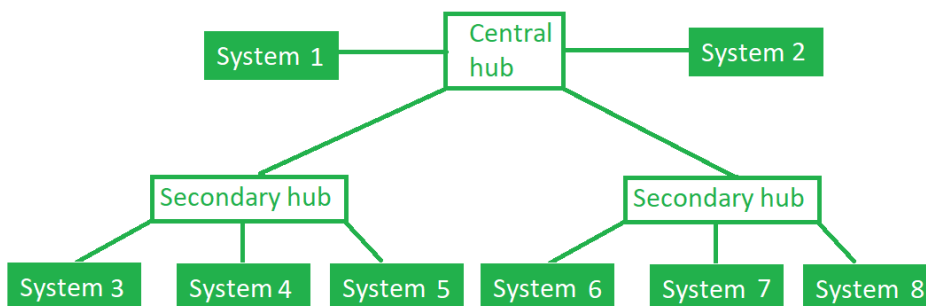
4)Mesh Topology:-
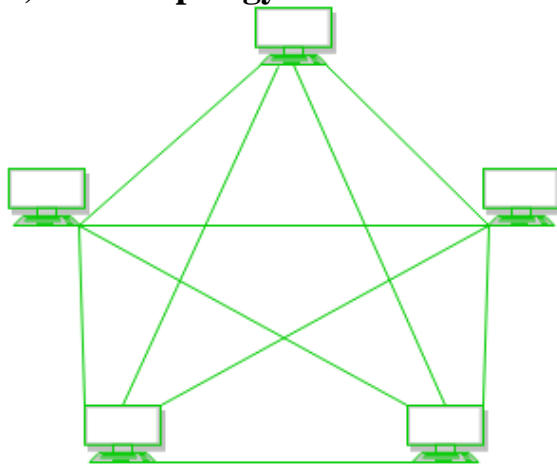
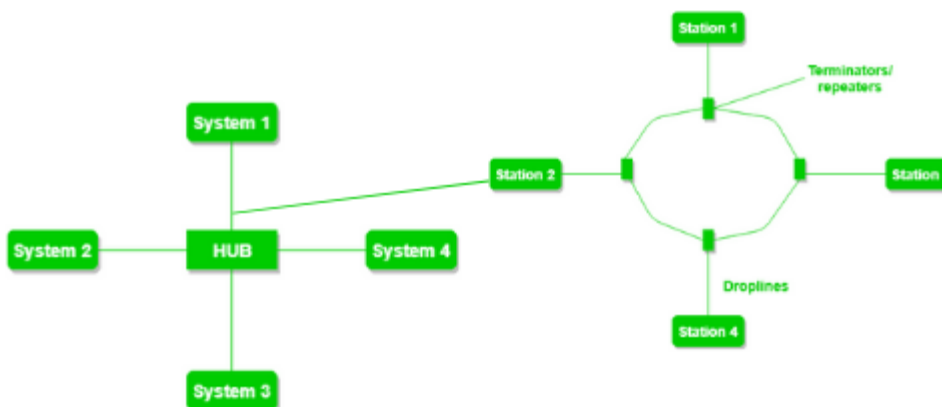   In Mesh Topology, all the nodes are interconnected with each other.

5)Tree Topology:-

In Tree Topology, all the nodes are directly or indirectly connected to main bus cable. It is the combination of Bus Topology and Star Topology.

6)Hybrid Topology:-

In Hybrid Topology, a computer topology is combination of two or more topologies.

Conclusion	Hence by completing this experiment I came to know about basic networking commands and network topologies in communication networks.