Charotar University of Science and Technology

Devang Patel Institute of Advance Technology and Research

Department of Computer Science & Engineering

Subject Name: Modern Networks

Subject Code: CS374   **Academic Year: 2021-22**

Course Outcomes (COs):

CO1 Measure and Analyse different network parameters.

CO2 Understand working of application layer protocols.

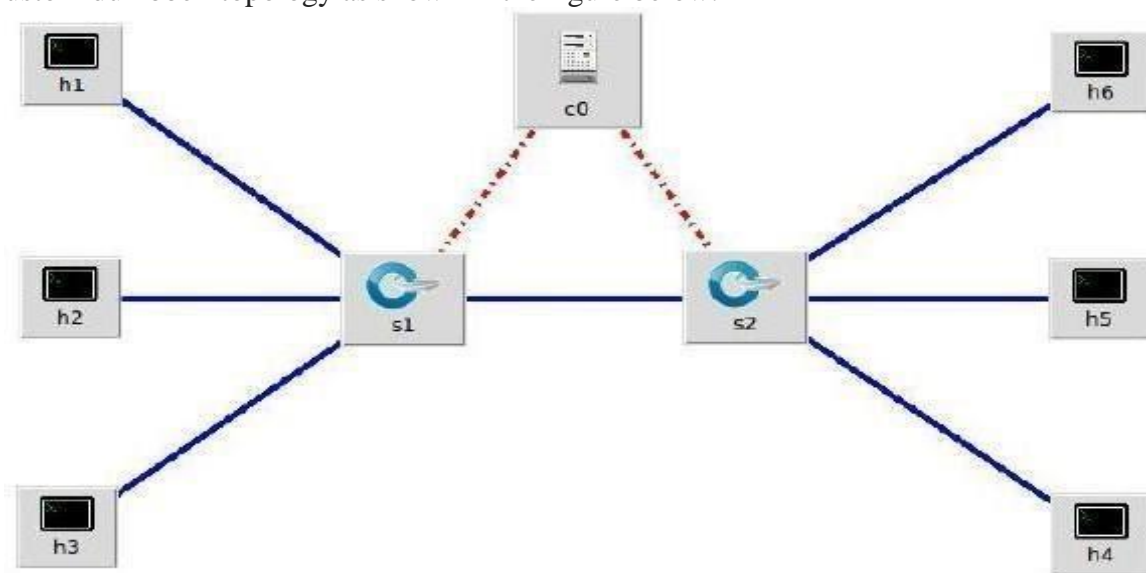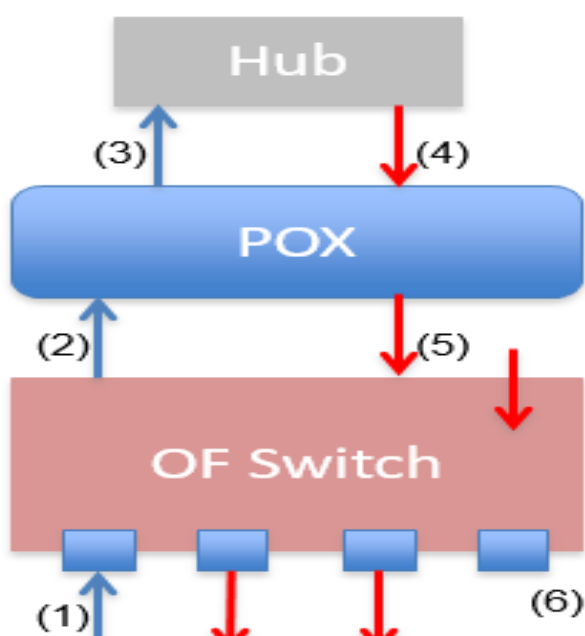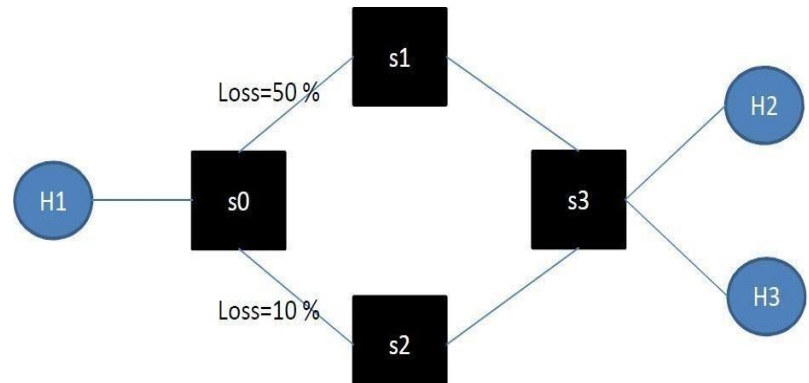**CO3** Understand and Analyse transport layer services and its impacts on data rate.

CO4 Understand basic functionality of network layer devices.
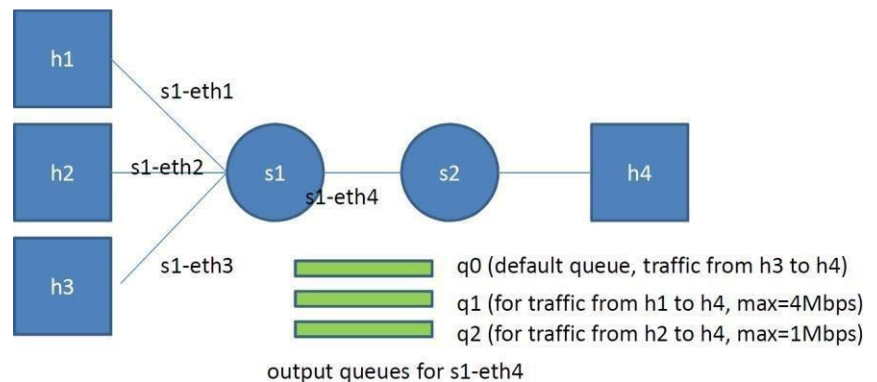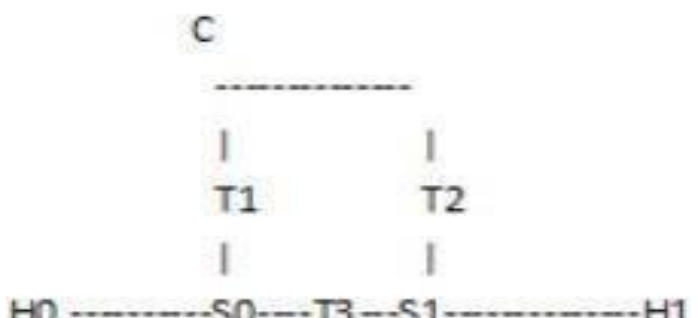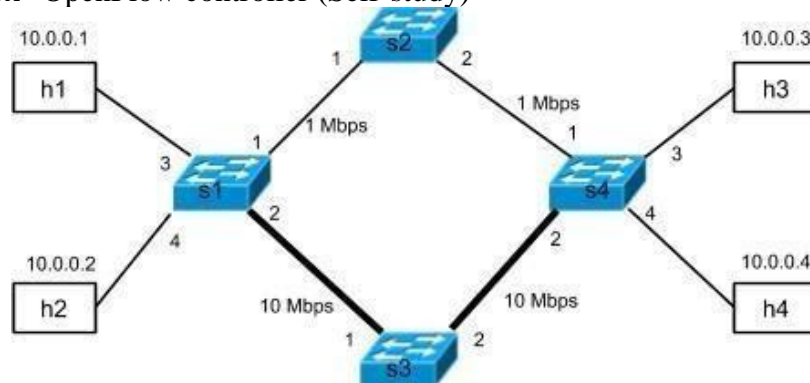
CO5 Understand functionality of multiple access protocol.

CO6 Analyse traditional network and get familiar with Software defined networking.

Practical List

Sr. No.	Aim Of the Practical	Hrs.	CO
1.	Installation and introduction of Mininet tool. Explore various features of Mininet tool.	2	1
2.	Create a network topology which connects 3 switches directly, with a host of each switch in mininet environment.	2	1, 2
3.	Create a Network Topology of 3 hosts and a switch using OpenFlow switch. 1. Find out maximum throughput (in mbps) for the OpenFlow network created using the following command: sudo mn --topo single,3 --mac --controller remote --switch ovsk –link tc,bw=30,delay=25ms 2. What is the average RTT (in ms) for host (h1) when sending ping requests to host (h2)? 3. Find out command ensures an average RTT of 60 ms between the host (h1) and host (h2) for the given network topology.	3	4,6

4.	Create a custom dumbbell topology as shown in the figure below.	3	3,4
	Keep bandwidth and delay as 50 Mbps and 5 ms for all the links. Validate your topology using dump, pingall and arp.		
5.	Implement the basic hub example using Pox controller and verify Hub behaviour with tcpdump. Also, Create the learning switch.	3	4
6.	Implement the below given topology and set different forwarding rules for each switch of the network in the Pox controller.	4	4,5

7.	Implement below given topology and set traffic to different output queues for QoS issues. output queues for s1-eth4	3	5
8.	Calculate the Latency in the pox controller. The total time consumed is Ttotal=T1+T3+T2. T1 = 0.5 * (Tb – Ta), where Ta is the time when sending out port_stats_request packet and Tb is the time when receiving port_stats_received packet. Similarly, the same method can be applied to get T2. As a consequence, T3 = Ttotal – T1 – T2.	3	5
9.	Implement Dijkstra Algorithm in RYU Controller for ring topology.	3	4
10.	Develop the given topology and Understand Network Virtualization and FlowVisor - Slice OpenFlow network using the "Pox" OpenFlow controller (Self-study) https://github.com/noise-lab/Coursera-SDN/tree/master/assignments/network-virtualization#network-virtualization-assignment	4	4