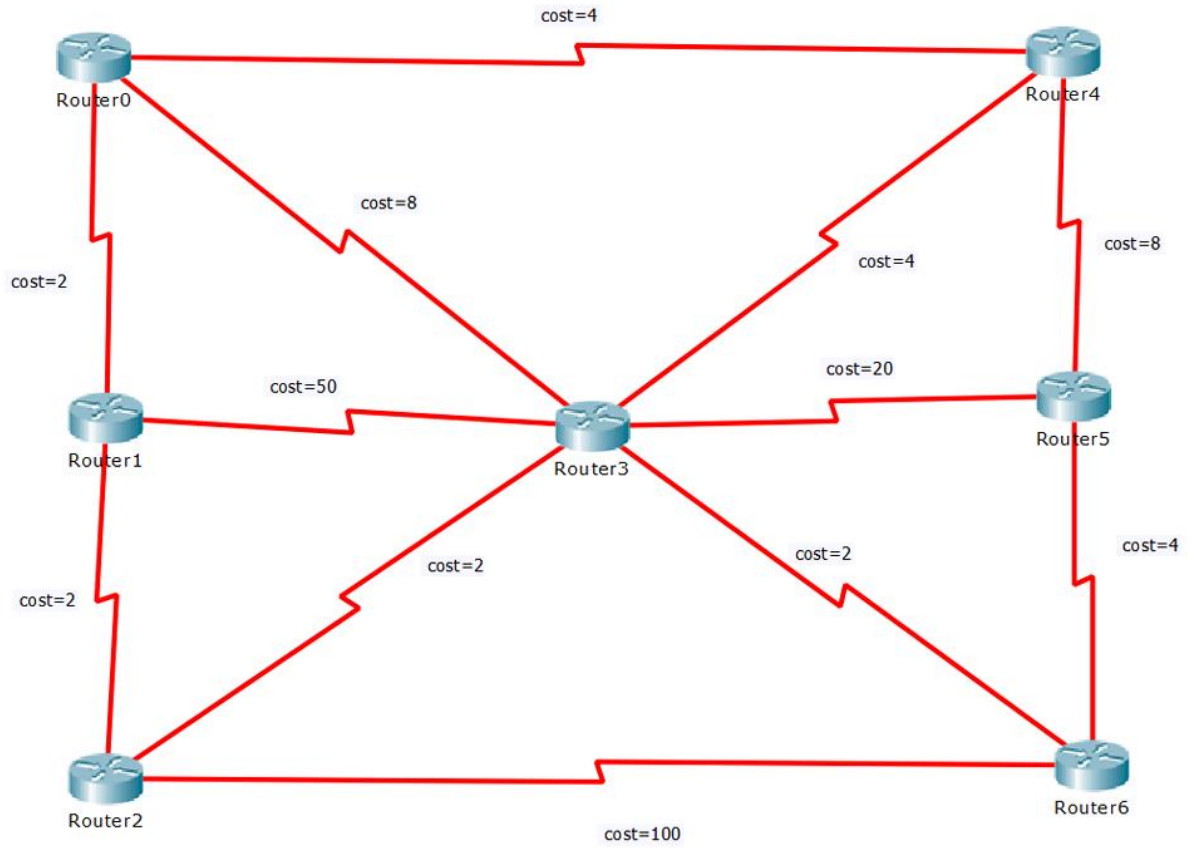
BIRZEIT UNIVERSITY

Computer Network Laboratory ENCS4130

TODO 2: Dynamic Routing 2 (Link State Routing Protocols) Open Shortest Path First (OSPF)

Given the following the topology shown in Figure.



Question 1:

1. Find the shortest path from Router 0 to Router 6 using Dijkstra's algorithm. Show your steps.
2. What is the cost of the shortest path from Router 0 to Router 6?

Question 2: Build and configure the above topology using Packet Tracer software based on the following requirements:

1. For addressing the above network use class C address 192.A.B.0 and use it to create networks (subnets) of 2 hosts each. A, and B represent the last four digits of your university ID. For example: if your university ID is 1140302 then (A = 03 = 3) and (B = 02 = 2)

2. Enable OSPF route. Assume all routers are in area 0 (backbone) 3. Configure Router 6 with a loopback IP address 7.7.7.7/24. Advertise this network into the OSPF process.

3. Don't forget to configure bandwidth values between links. These values should reflect the costs that are shown in the network diagram.

4. If a packet is sent from Router 0 to Router 7 (i.e. loopback 7.7.7.7). What routers it passes through until it reaches its destination? Use the traceroute command to test that.

5. Run the show IP route command on Router 0. From the output result. What is the cost (metric) to get from Router 0 to Router 6? Explain that.

6. What is the router-id for Router 0, and Router 6? Verify your answers

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Notes:

- You must use the command line interface (CLI) for configuring the routers.
- Ensure you use the place note icon in Packet Tracer to label all the IP addresses used in the network topology.
- All steps of your work must be clearly shown. Do not skip any configuration or verification step.
- Screenshots should include both the time and date, showing the exact time when configurations were made.
- Important: Your University ID number must be included in the solution, or a mark of zero (0) will be given.

Deadline:

- Wednesday, 16th October 2024, by 11:59 PM.

What to Submit:

- A PDF file named in the format: YourFirstName_YourIDNumber_SectionNumber**.pdf**
- A Packet Tracer file named in the format: YourFirstName_YourIDNumber_SectionNumber**.pkt**

Where to Submit:

- Submit both files to ToDo No. 2 through the ITC system.

Additional Instructions:

- If you do not submit your files in the exact format provided (PDF and Packet Tracer file with the specified naming conventions), points will be deducted from your final grade.
- Ensure all your steps are documented and clearly explain the results after each configuration. This includes showing verification commands and outputs to confirm successful configuration.

Good Luck ☺