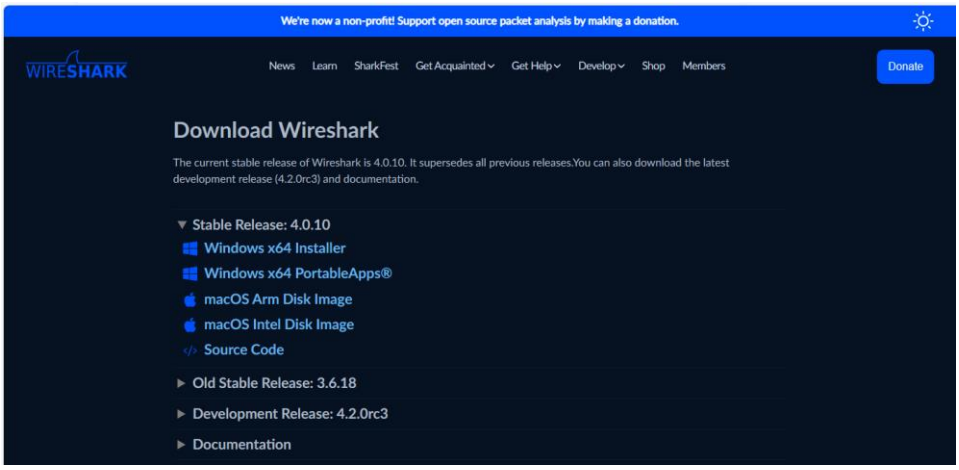
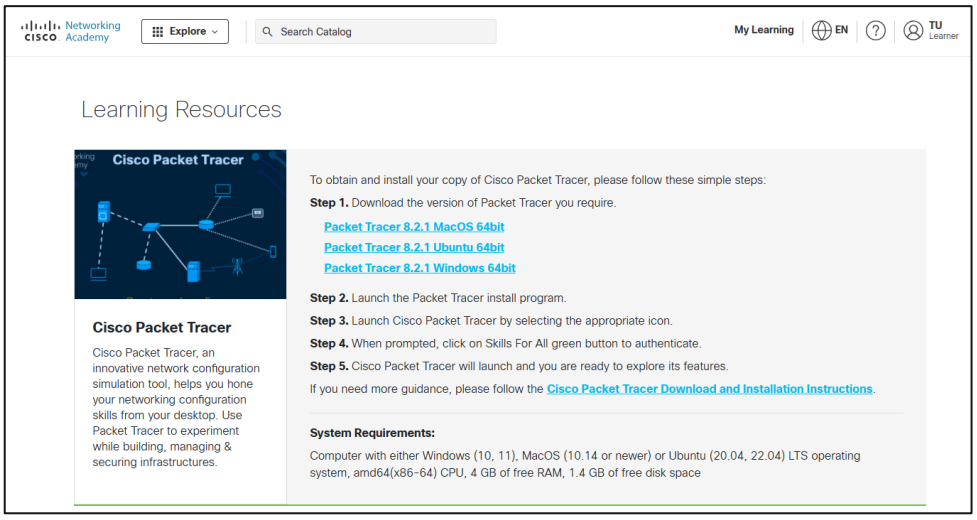
Network test tools and network design simulation (individual assignment)

0. Environment

- Ubuntu 20.04 LTS **(recommended)**
- Wireshark 4.0.10
  you can download it from this URL: https://www.wireshark.org/download.html



- Cisco Packet Tracer 8.2.1
  you can download it from this URL: https://skillsforall.com/resources/lab-downloads



you may need to register for an account

1. Network Test Tool Use – Linux basic network test commands and wireshark packet capture experiment 【50 points, complete it alone】

A. **[10 points]** Be proficient in using commands such as ifconfig, ping, nslookup, arp, netstat, traceroute, etc., and try to explain what protocol they are all done with.

B. **[15 points]** Capture TCP/UDP packets and use them to explain the TCP/UDP connection process.

C. **[15 points]** Use the wireshark (GUI) and the Tshark (command) packet capture tool to grab ARP, ICMP, DNS, HTTP, TCP, UDP, etc., and parse the packet information content in the packet. (The

contents of the bag you caught may not be the same as what you learned, please explain why?)

D. **[10 points]** By capturing packets, explain the process of encapsulating and decapsulating packet.

Please write the above question into a report named by name-id-network-test.pdf, Includes description, command output and images (including screenshots of your packet capture using wireshark)

2. Network Design Simulation – Use Cisco Packet Tracer to complete network simulation experiment 【50 points, complete it alone】

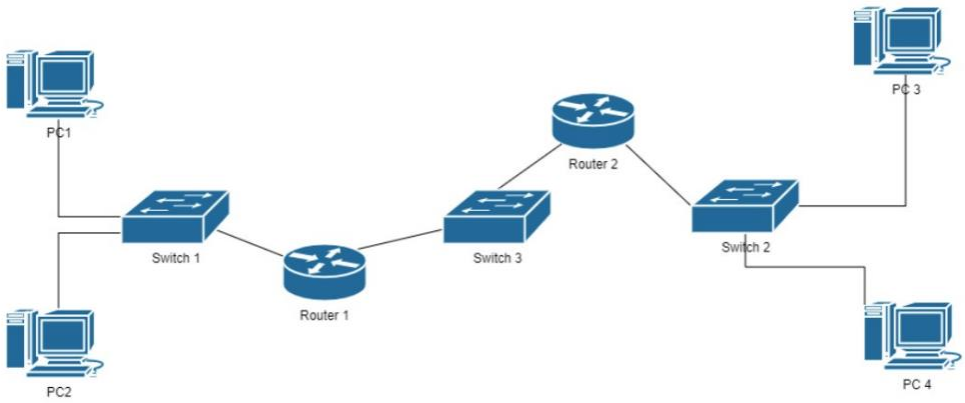
Step 1: use Cisco Packet Tracer to complete the network topology design and configure the network.

Step 2: network connectivity verification and conclusion analysis.

Follow the preceding two steps to complete the network topology shown in the following 2 tasks.

Please write about the process you completed and the results of your tests in your report named by name-id-simulation.pdf, and you are encouraged to include any difficulties you encountered. (20 points)

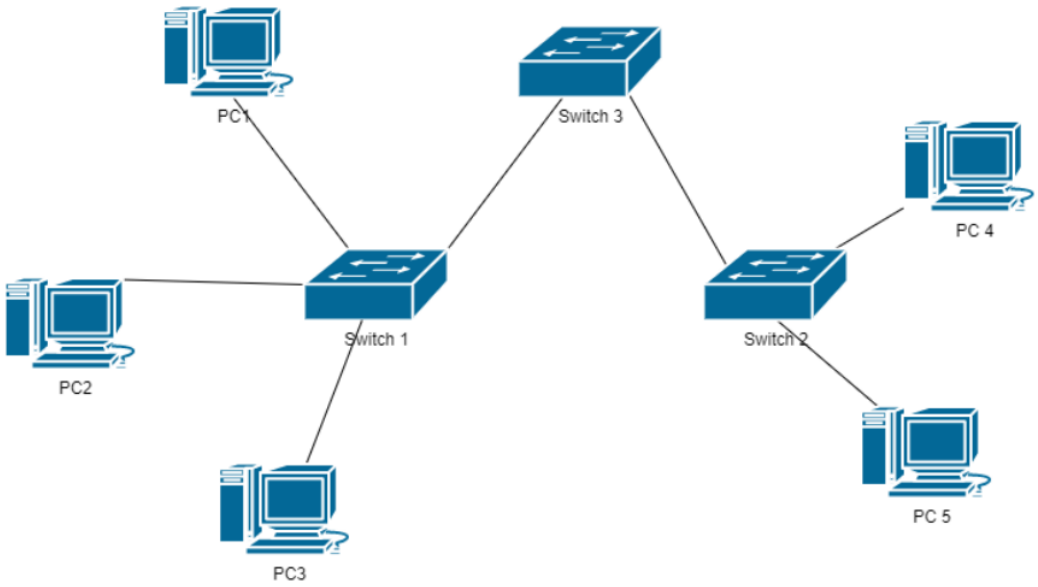
Task 1:



device		IP
Router 1	Interface0	192.168.1.1/24
	Interface1	192.168.2.1/24
Router 2	Interface0	192.168.2.2/24
	Interface1	192.168.3.1/24
PC 1		192.168.1.10/24
PC 2		192.168.1.11/24
PC 3		192.168.3.10/24
PC 4		192.168.3.11/24

Please save the file as name-id-task1.pkt (10 points). Ensure that your configuration is completed successfully and that we can assess successfully. Please write your name and student number in the blank areas of the packet tracer and make sure they are saved together in the .pkt file

Task 2:



device	IP	vlan
PC 1	192.12.10.11	10
PC 2	192.12.10.12	10
PC 3	192.12.20.13	20
PC 4	192.12.10.14	10
PC 5	192.12.20.15	20

- VLANs are helpful in the administration of logical groups, allowing members of a group to be easily moved, changed or added. This activity focuses on creating and naming VLANs and assigning access ports to specific VLANs.

Please save the file as name-id-task2.pkt (20 points). Ensure that your configuration is completed successfully and that we can assess successfully. Please write your name and student number in the blank areas of the packet tracer and make sure they are saved together in the .pkt file

3. Reference

https://www.netacad.com/courses/packet-tracer (it is highly recommended that you learn how to use the Cisco Packet Tracer via this URL)

4. Submit

- **Due on 23:59, 8 Dec. 2024**
- Please compress all files and name as **name-id.zip**
- **Cheating or abuses will not be tolerated**