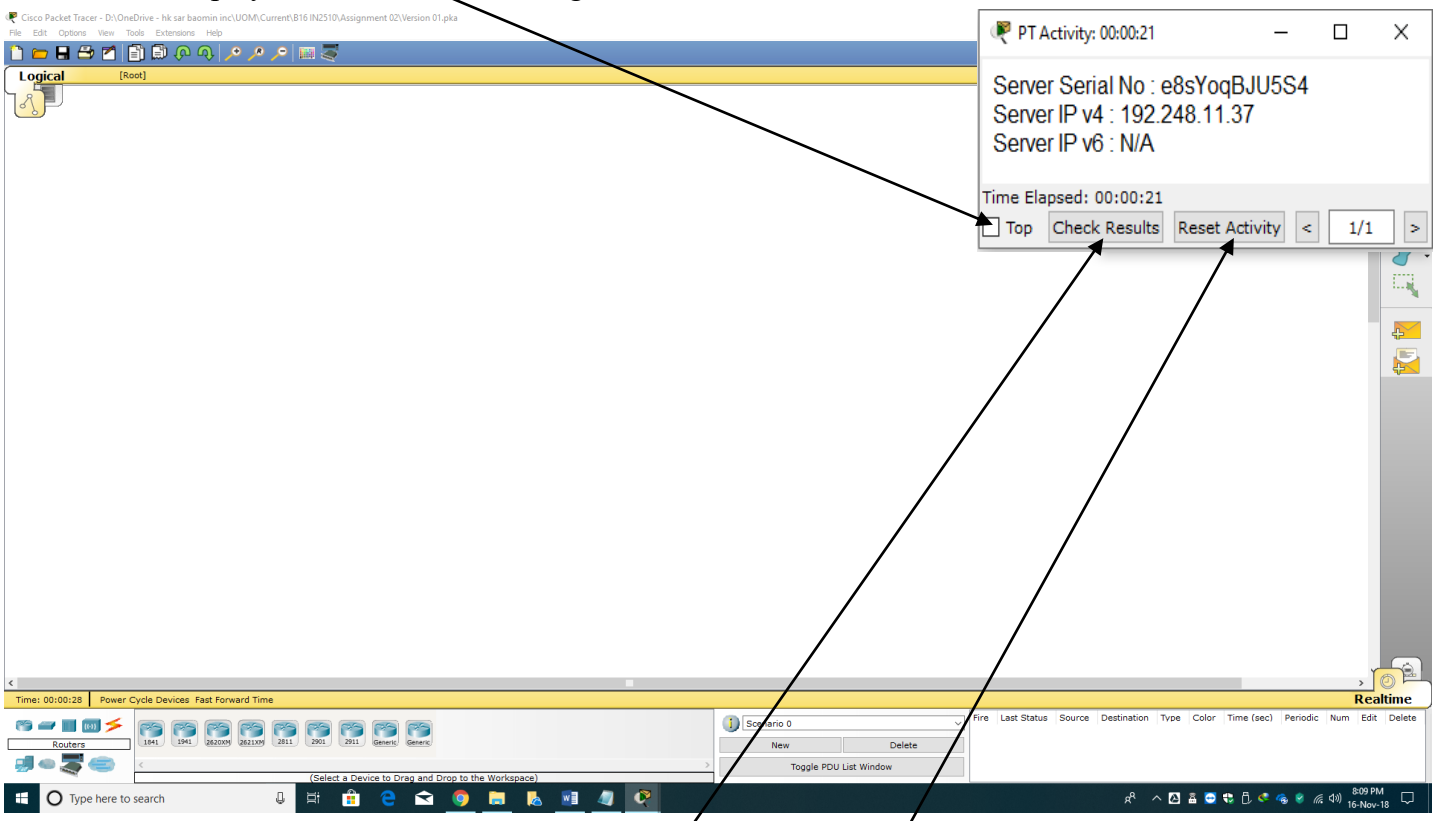
Faculty of Information Technology, University of Moratuwa
Bsc. (Hons) in Information Technology
Computer Networks – IN 2510 – Assignment
Level 2, Semester 2

Assignment

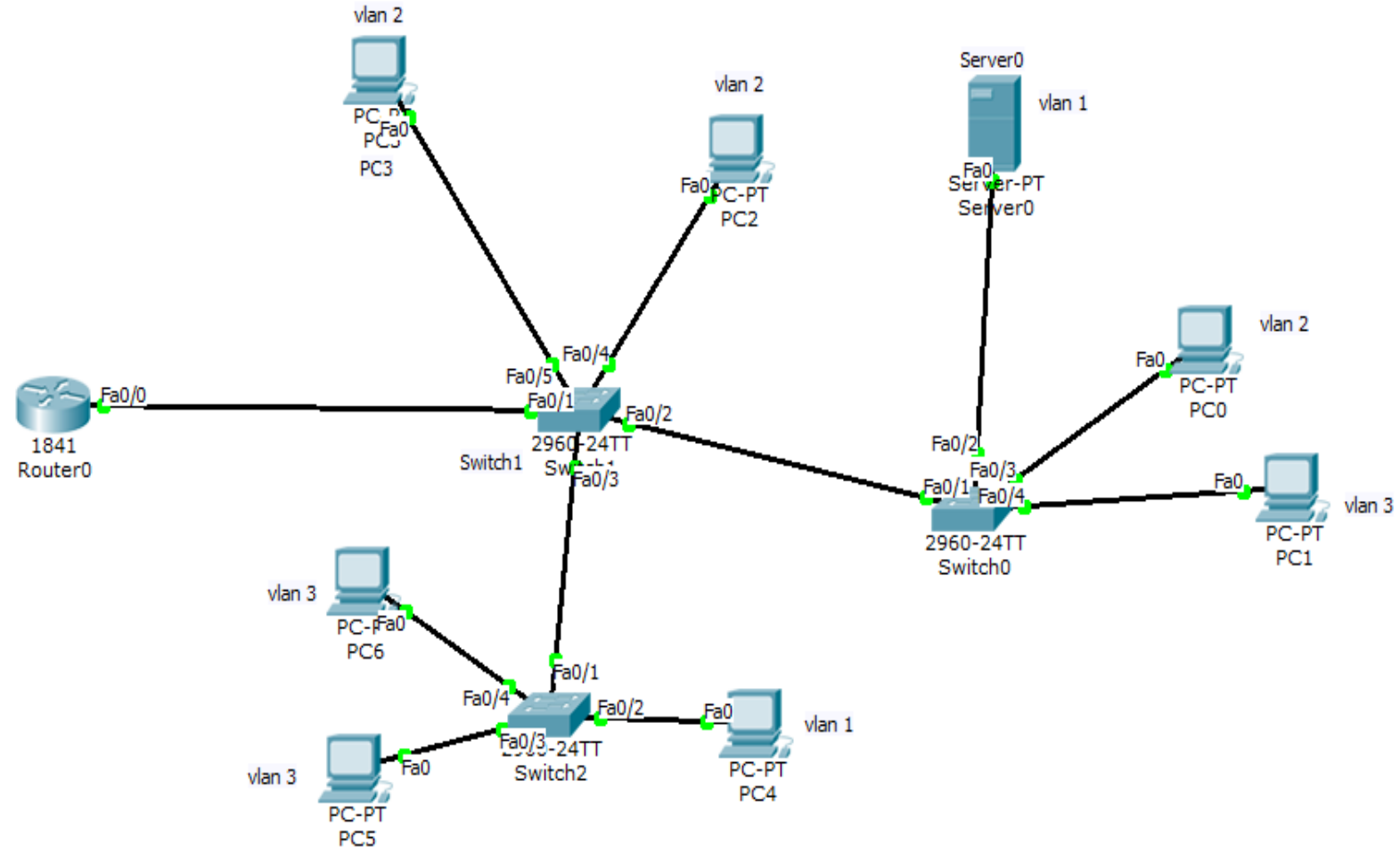
Instructions to candidates

1. Download the "Assignment04.pka" file from the Moodle and open it.
2. Tick the top icon on the instruction window and drag it to top right corner and it should be displayed on the monitor during the assessment.



3. Design the network diagram as mentioned in the question paper. (Note: device types, interface port numbers and device labels should be same as in the diagram of the question paper)
4. If your network devices (routers, switches and PCs) labels do not match with given diagram, rename the labels of those devices as per the given diagram in the question paper. (Note: you can rename labels of devices by clicking on the label name)
5. Do not click "Check Results" and "Reset Activity" buttons in the instruction window of the packet tracer.

Imagine that you are the administrator of the network for the corporation called "Global Finance". There are three divisions in this company (IT, Credit and HR). It is necessary for the company to set up three VLANs. The IT, Credit, and HR, respectively, have been given responsibility for VLAN 1, VLAN 2, and VLAN 3. You have provided a private network address for a Class C network, which is 192.168.1.0. The company needs to divide the network into three different subnets. Using the image that is provided below, please illustrate your company's sub-netted network in Cisco Packet Tracer Simulator.



Note: Consider the below requirements before you load the above network to packet tracer simulator.

You need to create 3 subnets for VLAN 1, VLAN 2 and VLAN 3. Find how many minimum number of Host bits taken into the Network bits for this purpose and find the subnet mask.
Use 1st subnet for VLAN 1 (IT), 2nd subnet for VLAN 2 (Credit) and 3rd subnet for VLAN 3 (HR).
Design IP address plan for the above VLANs according to the following guidelines.
Take 1841 router and 2960 switches. Note: all devices should be labeled as mentioned in the diagram.

1. In VLAN 1 (1st subnet), statically assign 1st and 2nd usable IP Addresses to the Server0 and PC4 respectively. (Note: No marks given for any other IP addresses)
   Statically assign default gateway and subnet mask for Server0 and PC4.
   take last usable IP Address as default gateway. (Note: No marks given for any other IP address)

2. In VLAN 2 (2nd subnet), statically assign 1st, 2nd and 3rd usable IP Addresses to the PC0, PC2 and PC3 respectively. (Note: No marks given for any other IP addresses)
   Statically assign default gateway and subnet mask for PC0, PC2 and PC3.
   take last usable IP Address as default gateway. (Note: No marks given for any other IP address)

3. In VLAN 3 (3rd subnet), statically assign 1st, 2nd and 3rd usable IP Addresses to the PC1, PC5 and PC6 respectively. (Note: No marks given for any other IP addresses)
   Statically assign default gateway and subnet mask for PC1, PC5 and PC6.
   take last usable IP Address as default gateway. (Note: No marks given for any other IP address)

4. Create above VLANs in all switches.
   Name the VLAN 2 as Credit and VLAN 3 as HR in switch1. (switch1 is the switch which connected to the router)
   Configure switch ports and assign those to relevant VLANs and trunk relevant ports as per above diagram.

5. Create 3 sub interfaces in the router fastEthernet 0/0
   Use 1st sub interface to VLAN 1, 2nd sub interface to VLAN 2 and 3rd sub interface to VLAN 3.
   Configure the router for VLANs.

6. Create **extended** access control list for the following.
   PC3 of VLAN 2 not allowed to access web server of Server0 in VLAN 1 and any other network traffic should be permitted. Note: use access list number as 100 (No marks given for **unnecessary** ACL lines.)
   Apply the access list to **most appropriate** sub interface direction in Router0.

-------End of question paper-------