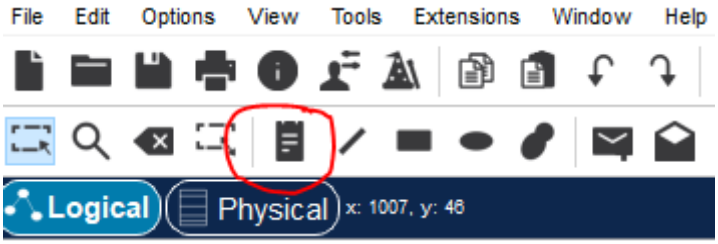
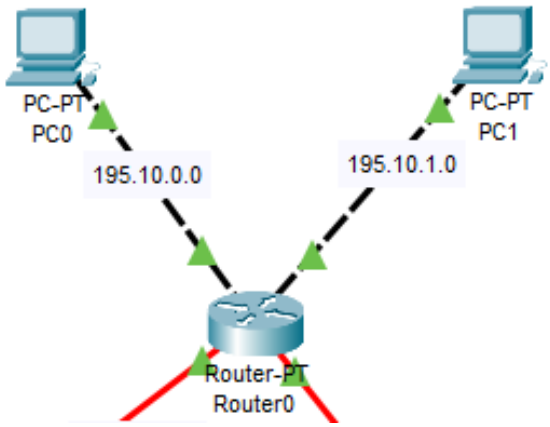
Week 7 – RIP Exercises using Packet Tracer

Exercise 1) – This question is NOT marked but you are expected to submit your answer in the quiz.

After completing the network configuration, **it is important** to identify the number of different networks your created. Based on the information you used and entered during the configuration process, create a screenshot of your network and display add to it all the different network addresses you have used. You can do this by using the "**Note**" function available on Packet Tracer (see image below).



For example, there is a network between **PC0** and **Router0**. This network's address is **195.10.0.0 /24**. Add a note on your PT design with the network's address and the network prefix. This should look like the following:



Workout all network addresses you have used, add them on your network design as notes, take a screenshot and attach it to your lab book.

Exercise 2) – This question will be marked.

In this exercise you are asked **a)** to retrieve the routing table of **Router3**, explain its contents and **b)** identify the changes to that occur to it when the link between **Router3** and **Router2** fails.

a. Left click on **Router3**, open the **CLI** tab and:
    i. If the prompt on CLI shows as **Router>**, then type **enable** and press Enter. The prompt should change to **Router#**. Then type **show ip route**.
    ii. Take a screenshot of the produced table and paste it into your lab book. **EXPLAIN** the type of information every column provides and **DISCUSS** the network related information from the contents of the **Router3** ROUTING TABLE.

b. Left click on **Router3** and open the **Config** tab. Select the **serial interface** on Router2 which the serial connection from **Router3** connects to. Deactivate the serial interface by unticking the box next to the **Port Status** parameter. This will lead to the failure of the link between **Router3** and **Router2**. Return to the **CLI** tab and retrieve again the routing table of **Router3**. Take a screenshot and attach it to your lab book. If your prompt shows as **Router(config-if)#** then type **exit** and then **ENTER** twice to return to the expected prompt, **Router#**
    i. **IDENTIFY** the changes to the contents of the routing table for **Router 3** and **JUSTIFY** these changes. **Do not simply say, because the serial interface failed.**

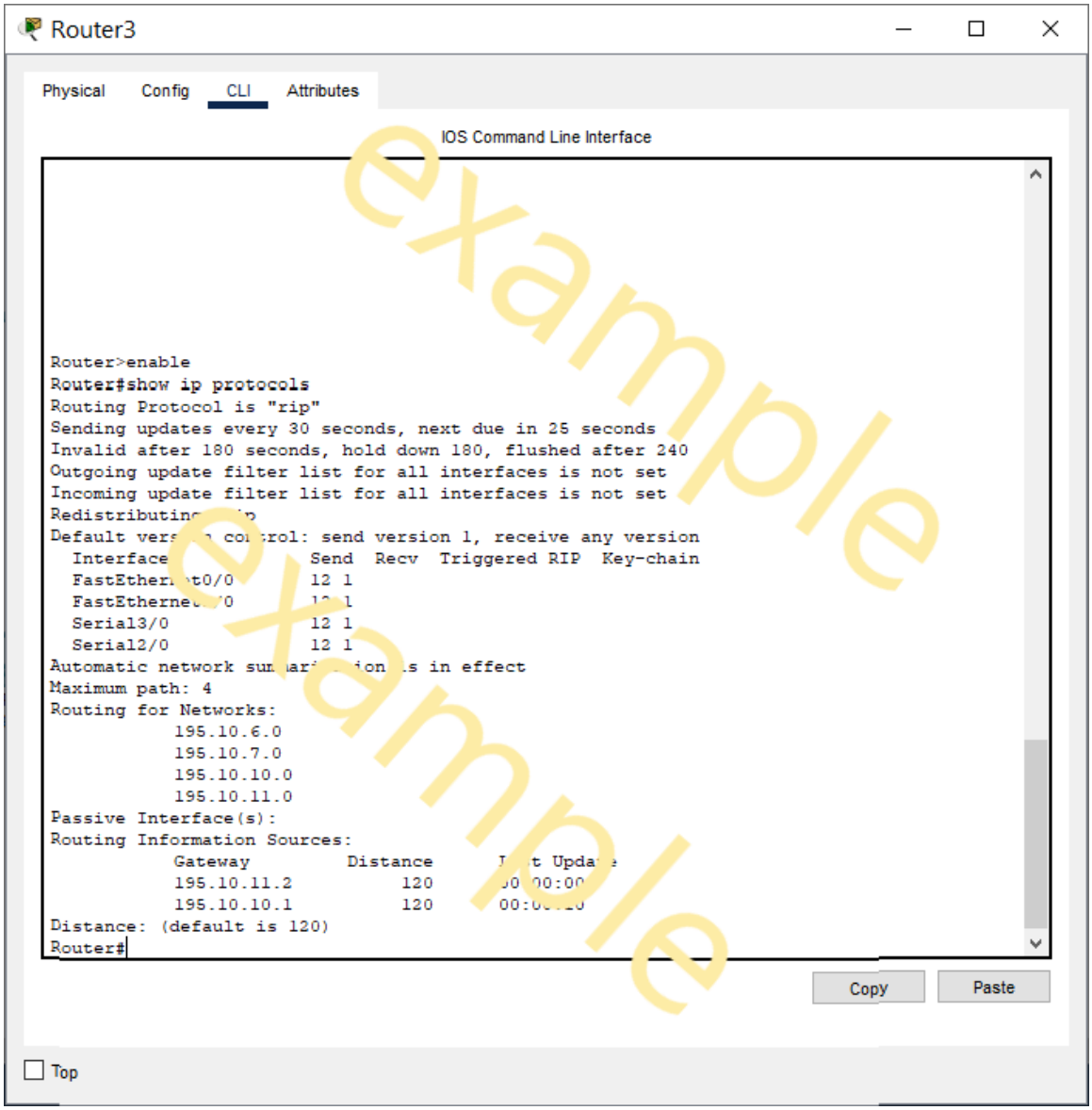
Make sure you reactivate the serial interface of Router 2 once you finish with Exercise 1

Exercise 3)

This exercise attempts to evaluate your understanding of the advertising and learning processes the Routing Information Protocol (RIP) uses. The first step is to verify the RIP configuration using the **show ip protocols** command, as demonstrated in the example below. You will be using **Router3** to answer this exercise.

The example below shows the output of the **show ip protocols** command for **Router3** and it includes detailed information of its RIP configuration.

Left-click on **Router3** and click on the **CLI tab**. If the prompt shows **Router>** type **enable** to go into **Privileged** mode. Your prompt should have changed to **Router#**. Type **show ip protocols**. The RIP configuration for **Router3** will appear on your screen. Take a screenshot of the configuration as it will help you to answer this exercise.



Review the information in the **show ip protocols** output from the above example. First, you see the following:

```
Sending updates every 30 seconds, next due in 25 seconds
```

This indicates that RIP is advertising routes every 30 seconds, R3 received an update 5 seconds ago and the next update will be sent out in 25 seconds.

Verify the next update for your **Router 3**. Try the show ip protocols command after waiting a few moments. Confirm that it gives you different times for the next update due.

Moving on, next on the **show ip protocols** output, you get the following:

```
Invalid after 180 seconds, hold down 180, flushed after 240
```

This means that if **R3** does not receive an update from **R2** for 180 seconds or more, it marks the routes advertised by **R2** as being unusable. If **R3** still doesn't receive an update from **R2** after 240

seconds, **R3** removes the routing table entries that it received from R2. This line also shows that the hold-down timer is set to 180.

The next interesting line indicates that the default configuration for RIP is to send RIP-1 updates and to receive both RIP-1 and RIP-2 updates.

```
Default version control: send version 1, receive any version
```

The last lines verify that RIP is configured for networks

195.10.6.0, 195.10.7.0, 195.10.10.0 and 195.10.11.0.

Each of these networks will be advertised in RIP routing updates.

- Open the CLI for **Router3** and execute the following two commands in configuration mode:
  - If your prompt shows **Router>** type **enable**, enter, and then type **configure terminal**. Your prompt should change to **Router(config)#**
  - Type **service timestamps debug datetime msec** and press **Enter**.
  - Type **exit** and press enter to return to Privileged mode.
  - Type **debug ip rip events** and press enter. Wait a few moments…
- You have set **Router3** to debug mode and you can watch in real time the exchange of the routing tables between **Router3** and its neighbours.
- Once the debug mode has run for **30-40 seconds**, copy and paste the following command into your CLI terminal to end the debug mode.
  - **no debug ip rip events** and press Enter.

You are expected to provide evidence for the following tasks into your lab book.

A. **Copy and paste** into your lab book the routing information **Router3** SENDS and RECEIVES during the **first 30 seconds** update, through its **SERIAL** interfaces **ONLY**.
B. Identify the router(s) which **Router3** exchanges information with.
C. Identify the IP address **Router3** uses **as destination** to SEND the routing updates. Why is it using that specific address?

Commands and configuration modes:

The CISCO routers we are using have **four different configuration modes** and, in each mode, only specific commands can be executed:

Router> - USER EXEC mode active on CLI prompt

Router# - PRIVILEGED EXEC mode active on CLI prompt

Router(config)# - GLOBAL CONFIGURATION mode active on CLI prompt

Router(config-if)# - INTERFACE CONFIGURATION mode active on CLI prompt

From configuration mode	To configuration mode	Command to use
User EXEC	Privileged EXEC – Router#	enable
Privileged EXEC	User EXEC	exit
Privileged EXEC	Global Configuration	configure terminal
Global Configuration	Privileged EXEC	exit
Global Configuration	Interface Configuration	interface <interface name+number>
Interface Configuration	Global Configuration	exit

More info here: https://w7cloud.com/packet-tracer-cisco-commands-list-cli-basic/