**Department of ICT**

**Faculty of Technology**

**University of Ruhuna**

**Computer Networks – ICT1253** **Level 1 - Semester 2**

**Lab Sheet 10** **|2022**

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**Goals:**

Understand routing table and routing protocols

**Note:**

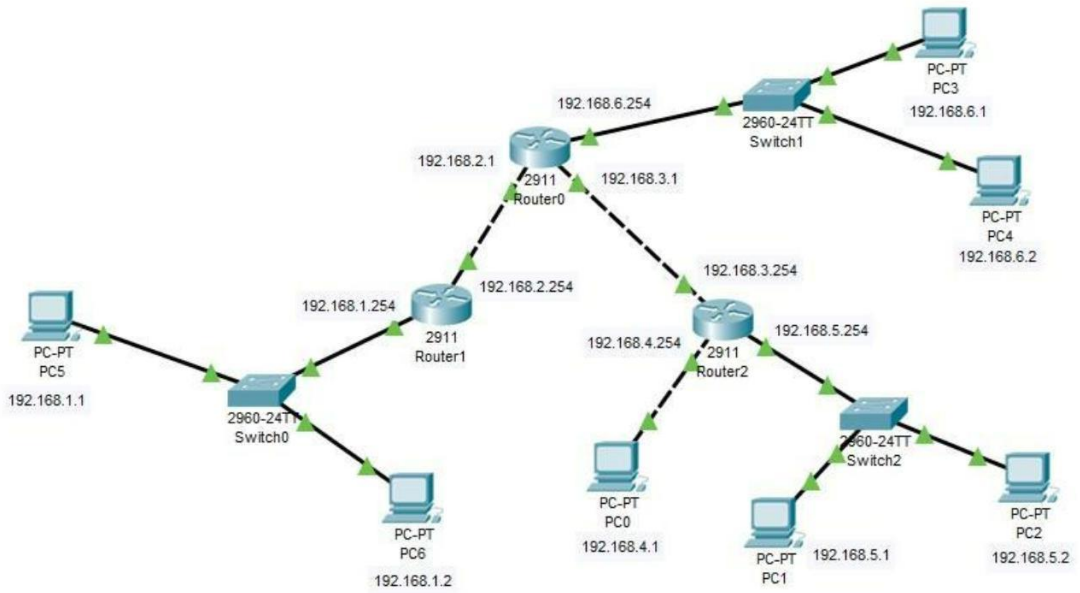
In computer networking a routing table, or routing information base (RIB), is a data table stored in a router or a networked computer that lists the routes to particular network destinations, and in some cases, metrics (distances) associated with those routes. The routing table contains information about the topology of the network immediately around it. The construction of routing tables is the primary goal of routing protocols. Static routes are entries made in a routing table by non-automatic means and which are fixed rather than being the result of some network topology "discovery" procedure.

**Exercise 1:**

1. Read the document about parts of routing table.
2. Read the document about routing algorithms.

**Exercise 2:**

1. Open Cisco packet tracer.
2. Add devices to the workspace.



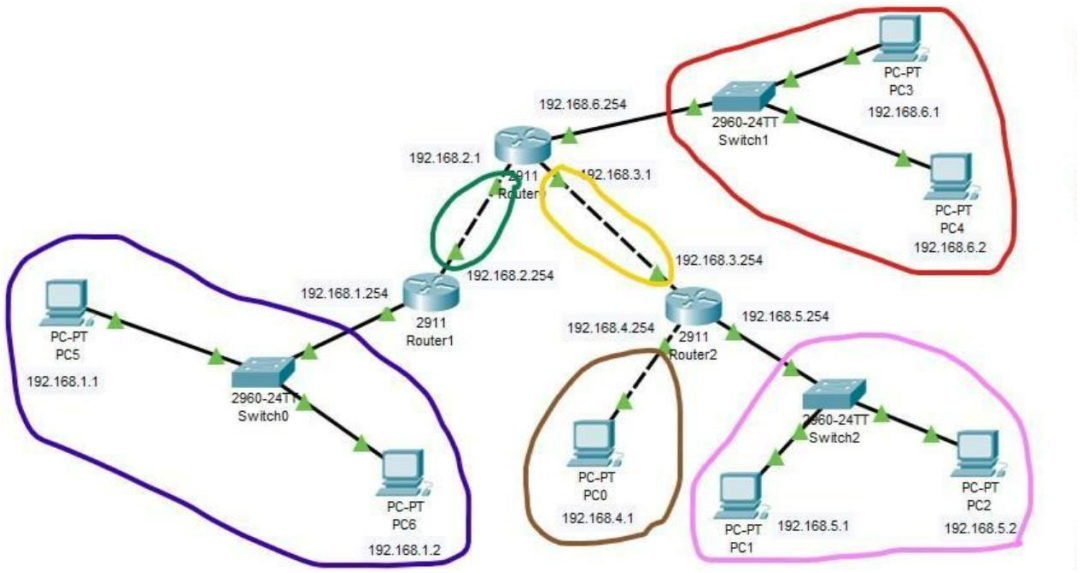

3. Connect those using proper cables.
4. Assign IP addresses to relevant PCs and routers.
5. Save router configurations. **(IMPORTANT!)**

```
Router# copy running-config startup-config
```

6. Ping between PCs. Then save the workspace.

**Exercise 3:**

1. Consider following image and answer questions below and submit.



A. State how many networks, PCs in the image.

B. What are the network address of the above no. of networks?

C. State the IP addresses of the interfaces that are inside the route of PC5 to PC2.

D. State the IP addresses of the interfaces that are inside the route of PC0 to PC4.

E. Router automatically adds entries to routing table which are directly connected to the router. What are the routing table entries before entering static route information?

F. What are the routing table entries to connect all the PCs to the network?

2. Complete the configuration by adding static routes to routers.

```
Router(config)#ip route <network_address> <netmask> <next_hop>
```

3. Ping between PC5 and PC2. Also try other PCs.

4. Check routing table.

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M -
mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF
inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E
- EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia -
IS-IS inter area
```

```
       * - candidate default, U - per-user static route, o -
ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.68.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.68.1.0/24 is directly connected,
GigabitEthernet0/1
L       192.68.1.254/32 is directly connected,
GigabitEthernet0/1
     192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected,
GigabitEthernet0/0
L       192.168.2.254/32 is directly connected,
GigabitEthernet0/0
S    192.168.4.0/24 [1/0] via 192.168.2.1
```

5. Save the workspace.

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