Assignment 0:

Installation and Exploration of Packet tracer tool on windows machines.

Ping

It is a command-line utility that acts as a test to see if a networked device is reachable. When a ping command is issued, an echo request packet is sent to the address specified. When the remote host receives the echo request, it responds with an echo reply packet. The ping command sends several echo requests, around 4- 5. The result of each echo request is displayed, showing whether the request received a successful response, how many bytes were received in response, the Time to Live (TTL), and how long the response took to receive, along with statistics about packet loss and round-trip times.

Syntax – ping [target IP/target host name]

Output:

Microsoft Windows [Version 10.0.19042.1165]

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C:\Users\prajakta>ping 127.0.0.1

Pinging 127.0.0.1 with 32 bytes of data:

Reply from 127.0.0.1: bytes=32 time<1ms TTL=128

Reply from 127.0.0.1: bytes=32 time<1ms TTL=128

Reply from 127.0.0.1: bytes=32 time<1ms TTL=128

Reply from 127.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 127.0.0.1:

   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\prajakta>ping www.google.com

Pinging www.google.com [172.217.166.164] with 32 bytes of data:

Reply from 172.217.166.164: bytes=32 time=9ms TTL=118

Reply from 172.217.166.164: bytes=32 time=11ms TTL=118

Reply from 172.217.166.164: bytes=32 time=11ms TTL=118

Reply from 172.217.166.164: bytes=32 time=9ms TTL=118

Ping statistics for 172.217.166.164:

   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

   Minimum = 9ms, Maximum = 11ms, Average = 10ms

Ipconfig

The command displays basic details about the current device's IP address, subnet

mask, and default gateway. If you have to see full information, then type on

command prompt config-all and then you will see full information. There are also

choices to assist you in resolving DNS and DHCP issues.

Syntax – ipconfig

C:\Users\prajakta>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

   Media State . . . . : Media disconnected

   Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . : Media disconnected

   Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . : Media disconnected

   Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix . :

   Link-local IPv6 Address . . . . . : fe80::55a:f7f7:f30d:5314%15

   IPv4 Address. . . . . : 192.168.0.105

   Subnet Mask . . . . : 255.255.255.0

   Default Gateway . . . . : 192.168.0.1

C:\Users\prajakta>ipconfig/all

Windows IP Configuration

Host Name . . . . : LAPTOP-KUJJV6NP

Primary Dns Suffix . . . . :

Node Type . . . . : Hybrid

IP Routing Enabled. . . . . : No

WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

Media State . . . . : Media disconnected

Connection-specific DNS Suffix . :

Description . . . . : Realtek PCIe GbE Family Controller

Physical Address. . . . . : E8-D8-D1-ED-B2-0E

DHCP Enabled. . . . . : Yes

Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 1:

Media State . . . . : Media disconnected

Connection-specific DNS Suffix . :

Description . . . . : Microsoft Wi-Fi Direct Virtual Adapter

Physical Address. . . . . : 42-5B-D8-69-79-07

DHCP Enabled. . . . . : Yes

Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 2:

Media State . . . . : Media disconnected

Connection-specific DNS Suffix . :

Description . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2

Physical Address. . . . . : C2-5B-D8-69-79-07

DHCP Enabled. . . . . : Yes

Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . :

Description . . . . : Realtek RTL8822BE 802.11ac PCIe Adapter

Physical Address. . . . . : 40-5B-D8-69-79-07

DHCP Enabled. . . . . : Yes

Autoconfiguration Enabled . . . . : Yes

Link-local IPv6 Address . . . . . : fe80::55a:f7f7:f30d:5314%15(Preferred)

IPv4 Address. . . . . : 192.168.0.105(Preferred)

Subnet Mask . . . . : 255.255.255.0

Lease Obtained. . . . . : 13 September 2021 2:38:05 PM

Lease Expires . . . . : 13 September 2021 9:38:05 PM

Default Gateway . . . . : 192.168.0.1

DHCP Server . . . . : 192.168.0.1

DHCPv6 IAID . . . . : 222321624

DHCPv6 Client DUID. . . . . : 00-01-00-01-25-A1-9C-84-E8-D8-D1-ED-B2-0E

DNS Servers . . . . : 192.168.0.1

NetBIOS over Tcpip. . . . . : Enabled

Tracert

The tracert command is a command which is used to get the network packet being sent and received and the number of hops required for that packet to reach to target. It provides several details about the path that a packet takes from the source to the specified destination.

Syntax – tracert `required ip/required hostname`

Output –

C:\Users\prajakta>tracert www.google.com

Tracing route to www.google.com [172.217.166.164]
over a maximum of 30 hops:

```
 1    6 ms    2 ms   10 ms  192.168.0.1
 2    9 ms    4 ms    7 ms  103.153.167.118
 3   10 ms    4 ms   95 ms  103.153.167.117
 4    *       *       *     Request timed out.
 5   11 ms    6 ms  107 ms  72.14.196.76
 6   11 ms    7 ms    7 ms  209.85.241.175
 7   11 ms    6 ms   50 ms  74.125.253.107
 8    5 ms    7 ms    6 ms  bom07s20-in-f4.1e100.net [172.217.166.164]
```

Trace complete.

Hostname:

The command displays the current device's hostname. To communicate with each and other, the computer needs a unique address. A hostname can

be alphabetic or alphanumeric and contain specific symbols used specifically to define a specific node or device in the network.

Syntax – hostname

C:\Users\prajakta>hostname

LAPTOP-KUJJV6NP

NetStat

The command displays all the connection and ports, it shows the executable involved in each connection or hearing port. The netstat provides the statistics and information in the use of the current TCP-IP Connection network about the protocol.

Syntax – netstat

C:\Users\prajakta>netstat

Active Connections

Proto	Local Address	Foreign Address	State
TCP	192.168.0.105:49681	20.198.162.78:https	ESTABLISHED
TCP	192.168.0.105:49915	ec2-65-2-117-88:https	ESTABLISHED
TCP	192.168.0.105:49916	91.108.23.100:https	ESTABLISHED
TCP	192.168.0.105:50103	bom12s13-in-f3:https	ESTABLISHED
TCP	192.168.0.105:52845	bom12s20-in-f5:https	ESTABLISHED
TCP	192.168.0.105:53330	ec2-65-0-200-43:https	ESTABLISHED
TCP	192.168.0.105:53488	sc-in-f188:5228	ESTABLISHED
TCP	192.168.0.105:53558	bom07s33-in-f14:https	ESTABLISHED
TCP	192.168.0.105:53938	bom12s06-in-f14:https	ESTABLISHED
TCP	192.168.0.105:54514	bom07s16-in-f10:https	ESTABLISHED

```
TCP   192.168.0.105:55055   ec2-65-0-200-43:https  ESTABLISHED

TCP   192.168.0.105:56157   bom07s36-in-f14:https  TIME_WAIT

TCP   192.168.0.105:56158   20.44.229.112:https    ESTABLISHED

TCP   192.168.0.105:56168   52.98.123.242:https    TIME_WAIT

TCP   192.168.0.105:56517   sl-in-f189:https       ESTABLISHED

TCP   192.168.0.105:56697   bom12s12-in-f3:https   ESTABLISHED

TCP   192.168.0.105:56878   bom07s15-in-f10:https  ESTABLISHED

TCP   192.168.0.105:57995   hkg12s10-in-f42:https  ESTABLISHED

TCP   192.168.0.105:58701   ec2-65-0-200-43:https  ESTABLISHED

TCP   192.168.0.105:60008   bom07s32-in-f14:https  ESTABLISHED

TCP   192.168.0.105:60252   ec2-65-0-200-43:https  ESTABLISHED

TCP   192.168.0.105:60406   ec2-65-0-200-43:https  ESTABLISHED

TCP   192.168.0.105:60410   91.108.56.133:https    ESTABLISHED

TCP   192.168.0.105:60423   203.17.244.59:http     ESTABLISHED

TCP   192.168.0.105:60718   bom05s15-in-f3:https   ESTABLISHED

TCP   192.168.0.105:61046   bom07s18-in-f3:https   ESTABLISHED

TCP   192.168.0.105:61616   bom07s36-in-f14:https  ESTABLISHED

TCP   192.168.0.105:62082   117.18.232.200:https   CLOSE_WAIT

TCP   192.168.0.105:62234   20.197.71.89:https     ESTABLISHED

TCP   192.168.0.105:62502   bom12s20-in-f1:https   ESTABLISHED

TCP   192.168.0.105:62520   ec2-65-0-200-43:https  ESTABLISHED

TCP   192.168.0.105:63458   bom12s20-in-f14:https  ESTABLISHED

TCP   192.168.0.105:64457   bom07s15-in-f10:https  ESTABLISHED

TCP   192.168.0.105:64755   ec2-3-108-35-59:https  ESTABLISHED
```

Part B:

1. Explain in detail how a simple network of 2 machines can be established? Write down all the necessary steps of configuration.

Step 1: connect PCs to switch 1, connect other PC's to switch 2 using copper straight-through cable via fast Ethernet connections.

Step 2: connect both the switches using copper cross over cables via fast Ethernet connection.

Step 3: Assign a unique IP address to each PC.

Step 4: From PCs command prompt ping other PC with its ip address to ensure the successful connection established.