

Syed Ukkashah CN Lab 1

23K-0055 BAI 6-A

Q1)

```
PS C:\Users\Hp> ipconfig

Windows IP Configuration

Unknown adapter Local Area Connection:
  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 . .
  IPv4 Address . . . . . : 192.168.100.92
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : 192.168.100.1

Ethernet adapter Bluetooth Network Connection:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . .

Ethernet adapter Ethernet:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . .
```

Q2)

```
PS C:\Users\Hp> ipconfig /all

Windows IP Configuration

Host Name . . . . . : LAPTOP-GL6P8N6L
Primary Dns Suffix . . .
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Unknown adapter Local Area Connection:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : TAP-ProtonVPN Windows Adapter V9
Physical Address. . . . . : 00-FF-4A-93-42-BC
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. . . . . : 52-5A-65-FE-91-AB
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. . . . . : 52-5A-65-FE-91-BB
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . . . . . : MediaTek MT7921 Wi-Fi 6 802.11ax PCIe Adapter
Description . . . . . : MediaTek MT7921 Wi-Fi 6 802.11ax PCIe Adapter
Physical Address. . . . . : 50-5A-65-FE-91-BB
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
IPv4 Address. . . . . : 192.168.100.92(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Friday, January 23, 2026 6:40:38 PM
Lease Expires . . . . . : Monday, January 26, 2026 12:54:15 AM
Default Gateway . . . . . : 192.168.100.1
DHCP Server . . . . . : 192.168.100.1
DNS Servers . . . . . : 192.168.100.1
NetBIOS over Tcpip. . . . . : Enabled

Ethernet adapter Bluetooth Network Connection:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . .
Description . . . . . : Bluetooth Device (Personal Area Network)
Physical Address. . . . . : 50-5A-65-FE-91-BA
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes

Ethernet adapter Ethernet:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . . .
Description . . . . . : Realtek Gaming GbE Family Controller
Physical Address. . . . . : 64-4E-D7-9D-67-2D
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
```

Q3)

```
PS C:\Users\Hp> hostname  
LAPTOP-GL6P8N6L
```

Q4)

```
PS C:\Users\Hp> ping google.com  
  
Pinging google.com [142.250.202.142] with 32 bytes of data:  
Reply from 142.250.202.142: bytes=32 time=39ms TTL=119  
Reply from 142.250.202.142: bytes=32 time=74ms TTL=119  
Reply from 142.250.202.142: bytes=32 time=40ms TTL=119  
Reply from 142.250.202.142: bytes=32 time=162ms TTL=119  
  
Ping statistics for 142.250.202.142:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 39ms, Maximum = 162ms, Average = 78ms
```

Reason for no connectivity could be that the device is offline, the ip address is incorrect or there is a DNS issue etc.

Q5)

PS C:\Users\Hp> netstat -ano				
Active Connections				
Proto	Local Address	Foreign Address	State	PID
TCP	0.0.0.0:135	0.0.0.0:0	LISTENING	1848
TCP	0.0.0.0:445	0.0.0.0:0	LISTENING	4
TCP	0.0.0.0:1521	0.0.0.0:0	LISTENING	6940
TCP	0.0.0.0:5040	0.0.0.0:0	LISTENING	11620
TCP	0.0.0.0:7680	0.0.0.0:0	LISTENING	22296
TCP	0.0.0.0:8080	0.0.0.0:0	LISTENING	6940
TCP	0.0.0.0:49664	0.0.0.0:0	LISTENING	1572
TCP	0.0.0.0:49665	0.0.0.0:0	LISTENING	1404
TCP	0.0.0.0:49666	0.0.0.0:0	LISTENING	2436
TCP	0.0.0.0:49667	0.0.0.0:0	LISTENING	3724
TCP	0.0.0.0:49668	0.0.0.0:0	LISTENING	3824
TCP	0.0.0.0:49669	0.0.0.0:0	LISTENING	6764
TCP	0.0.0.0:49672	0.0.0.0:0	LISTENING	1544
TCP	0.0.0.0:49678	0.0.0.0:0	LISTENING	6988
TCP	0.0.0.0:54012	0.0.0.0:0	LISTENING	16324
TCP	0.0.0.0:57621	0.0.0.0:0	LISTENING	16324
TCP	127.0.0.1:7768	0.0.0.0:0	LISTENING	16324
TCP	127.0.0.1:49670	0.0.0.0:0	LISTENING	6940
TCP	192.168.100.92:139	0.0.0.0:0	LISTENING	4
TCP	192.168.100.92:49412	4.213.25.242:443	ESTABLISHED	7104
TCP	192.168.100.92:51504	66.102.1.188:5228	ESTABLISHED	17968
TCP	192.168.100.92:51786	206.189.34.215:443	ESTABLISHED	16064
TCP	192.168.100.92:52271	23.109.135.254:443	CLOSE_WAIT	16064
TCP	192.168.100.92:52354	35.186.224.33:443	ESTABLISHED	17968
TCP	192.168.100.92:52859	40.99.70.194:443	ESTABLISHED	16784
TCP	192.168.100.92:52924	170.249.210.18:443	CLOSE_WAIT	16064
TCP	192.168.100.92:53174	103.20.212.14:443	ESTABLISHED	16064
TCP	192.168.100.92:54434	172.241.7.174:443	CLOSE_WAIT	16064
TCP	192.168.100.92:54874	35.186.224.33:443	ESTABLISHED	16324
TCP	192.168.100.92:55838	142.250.187.67:443	TIME_WAIT	0
TCP	192.168.100.92:56190	208.103.161.1:443	ESTABLISHED	18700
TCP	192.168.100.92:57108	140.82.113.26:443	ESTABLISHED	16064
TCP	192.168.100.92:57942	172.241.7.174:443	CLOSE_WAIT	16064
TCP	192.168.100.92:58226	66.102.1.188:5228	ESTABLISHED	16064
TCP	192.168.100.92:58254	170.249.210.18:443	TIME_WAIT	0
TCP	192.168.100.92:58533	104.199.241.202:4070	ESTABLISHED	16324
TCP	192.168.100.92:58778	23.109.135.100:443	CLOSE_WAIT	16064
TCP	192.168.100.92:59134	172.241.7.213:443	CLOSE_WAIT	16064
TCP	192.168.100.92:59957	208.103.161.1:443	ESTABLISHED	18700
TCP	192.168.100.92:60401	104.18.39.21:443	ESTABLISHED	16064
TCP	192.168.100.92:60562	57.144.149.32:443	ESTABLISHED	17828
TCP	192.168.100.92:61570	178.63.62.50:443	TIME_WAIT	0
TCP	192.168.100.92:62622	195.201.164.251:443	ESTABLISHED	16064
TCP	192.168.100.92:63474	185.199.109.154:443	TIME_WAIT	0
TCP	192.168.100.92:64264	52.111.240.5:443	ESTABLISHED	28564
TCP	192.168.100.92:64267	52.111.240.5:443	ESTABLISHED	28564
TCP	192.168.100.92:64279	172.241.7.244:443	CLOSE_WAIT	16064
TCP	192.168.100.92:64537	139.45.195.5:443	ESTABLISHED	16064
TCP	[::]:135	[::]:0	LISTENING	1848
TCP	[::]:445	[::]:0	LISTENING	4
TCP	[::]:1521	[::]:0	LISTENING	6940
TCP	[::]:7680	[::]:0	LISTENING	22296
TCP	[::]:8080	[::]:0	LISTENING	6940
TCP	[::]:49664	[::]:0	LISTENING	1572
TCP	[::]:49665	[::]:0	LISTENING	1404
TCP	[::]:49666	[::]:0	LISTENING	2436
TCP	[::]:49667	[::]:0	LISTENING	3724
TCP	[::]:49668	[::]:0	LISTENING	3824
TCP	[::]:49669	[::]:0	LISTENING	6764
TCP	[::]:49672	[::]:0	LISTENING	1544
TCP	[::]:49678	[::]:0	LISTENING	6988
TCP	[::]:1521	[::]:49677	ESTABLISHED	6940
TCP	[::]:149677	[::]:1521	ESTABLISHED	6988
UDP	0.0.0.0:500	*.*	*	7048
UDP	0.0.0.0:1900	*.*	*	16324
UDP	0.0.0.0:4500	*.*	*	7048
UDP	0.0.0.0:5050	*.*	*	11620
UDP	0.0.0.0:5353	*.*	*	14548
UDP	0.0.0.0:5353	*.*	*	16064
UDP	0.0.0.0:5353	*.*	*	16324
UDP	0.0.0.0:5353	*.*	*	16324
UDP	0.0.0.0:5353	*.*	*	2336
UDP	0.0.0.0:5355	*.*	*	2336
UDP	0.0.0.0:49744	142.250.203.14:443	*	16064
UDP	0.0.0.0:50335	142.250.187.74:443	*	16064
UDP	0.0.0.0:50947	*.*	*	16324
UDP	0.0.0.0:51875	104.18.32.47:443	*	16064
UDP	0.0.0.0:52088	172.64.155.209:443	*	16064
UDP	0.0.0.0:54306	142.250.187.78:443	*	16064
UDP	0.0.0.0:55251	142.250.202.123:443	*	16064
UDP	0.0.0.0:57621	*.*	*	16324
UDP	0.0.0.0:58612	142.250.203.163:443	*	16064
UDP	0.0.0.0:59603	142.250.202.110:443	*	16064
UDP	0.0.0.0:60295	*.*	*	2336
UDP	0.0.0.0:60652	142.250.187.68:443	*	16064
UDP	0.0.0.0:61605	*.*	*	16064
UDP	0.0.0.0:61606	*.*	*	16064
UDP	0.0.0.0:61607	*.*	*	16064
UDP	0.0.0.0:61608	*.*	*	16064
UDP	0.0.0.0:61609	*.*	*	16064
UDP	0.0.0.0:61610	*.*	*	16064

UDP	0.0.0.0:61611	*:*	16064
UDP	0.0.0.0:61612	*:*	16064
UDP	0.0.0.0:61613	*:*	16064
UDP	0.0.0.0:61614	*:*	16064
UDP	0.0.0.0:61615	*:*	16064
UDP	0.0.0.0:61616	*:*	16064
UDP	0.0.0.0:61617	*:*	16064
UDP	0.0.0.0:61618	*:*	16064
UDP	0.0.0.0:61619	*:*	16064
UDP	0.0.0.0:61620	*:*	16064
UDP	0.0.0.0:61621	*:*	16064
UDP	0.0.0.0:61622	*:*	16064
UDP	0.0.0.0:61623	*:*	16064
UDP	0.0.0.0:61624	*:*	16064
UDP	0.0.0.0:62257	*:*	2336
UDP	0.0.0.0:63032	142.250.200.170:443	16064
UDP	0.0.0.0:64539	35.186.224.26:443	17968
UDP	0.0.0.0:65270	*:*	2336
UDP	127.0.0.1:1900	*:*	1432
UDP	127.0.0.1:10030	*:*	23636
UDP	127.0.0.1:49665	127.0.0.1:49665	6972
UDP	127.0.0.1:54335	*:*	1432
UDP	127.0.0.1:62498	*:*	19424
UDP	127.0.0.1:63033	127.0.0.1:63033	28564
UDP	192.168.100.92:137	*:*	4
UDP	192.168.100.92:138	*:*	4
UDP	192.168.100.92:1900	*:*	1432
UDP	192.168.100.92:2177	*:*	11452
UDP	192.168.100.92:54334	*:*	1432
UDP	[::]:500	*:*	7048
UDP	[::]:4500	*:*	7048
UDP	[::]:5353	*:*	16324
UDP	[::]:60295	*:*	2336
UDP	[::]:61606	*:*	16064
UDP	[::]:61608	*:*	16064
UDP	[::]:61610	*:*	16064
UDP	[::]:61612	*:*	16064
UDP	[::]:61614	*:*	16064
UDP	[::]:61616	*:*	16064
UDP	[::]:61618	*:*	16064
UDP	[::]:61620	*:*	16064
UDP	[::]:61622	*:*	16064
UDP	[::]:61624	*:*	16064
UDP	[::]:62257	*:*	2336
UDP	[::]:65270	*:*	2336
UDP	[::1]:1900	*:*	1432
UDP	[::1]:54333	*:*	1432

Q6)

From the screenshot we can see that the ip address is 64.233.170.147

And it took 22 hops

```
PS C:\Users\Hp> tracert www.google.com

Tracing route to www.google.com [64.233.170.147]
over a maximum of 30 hops:

 1  96 ms    81 ms    80 ms  10.2.0.1
 2  120 ms   99 ms    90 ms  irb-498.as14-10g.wc01.sg.m247.ro [217.113.171.1]
 3  123 ms   116 ms   134 ms  146.70.4.71
 4  80 ms    81 ms    81 ms  ae101-3101.bb1.wc01.sg.m247.ro [193.27.15.64]
 5  163 ms   82 ms    81 ms  173.194.124.60
 6  92 ms    80 ms    84 ms  209.85.253.241
 7  113 ms   164 ms   85 ms  172.253.66.204
 8  83 ms    113 ms   137 ms  216.239.35.174
 9  205 ms   81 ms    81 ms  209.85.250.37
10  88 ms    80 ms    80 ms  142.251.247.197
11  *         *         *      Request timed out.
12  *         *         *      Request timed out.
13  *         *         *      Request timed out.
14  *         *         *      Request timed out.
15  *         *         *      Request timed out.
16  *         *         *      Request timed out.
17  *         *         *      Request timed out.
18  *         *         *      Request timed out.
19  *         *         *      Request timed out.
20  *         *         *      Request timed out.
21  *         *         *      Request timed out.
22  82 ms    80 ms    80 ms  sg-in-f147.1e100.net [64.233.170.147]

Trace complete.
```

Q7) network reaches the device through its IP address but it doesn't recognize the "blue machine" name due to it not being registered on the DNS server

Q8) in home installation we usually use a straight through cable since it can be used to connect devices to computers, monitors, gaming consoles, etc.

Q9) yes it is possible to connect Switch to another Switch or a router to a PC using a straight-through cable since most modern equipment supports auto MDIX which automatically adjusts the cable connections

Q10) PTCL Setup

Standard home broadband with bundled services

Internet provider is PTCL (Pakistan Telecommunication Company Limited)

PTCL modem-router combo (usually a VDSL/ADSL modem with Wi-Fi)

Connected devices: Family smartphones and laptops, Smart TV Box (wired for IPTV), two personal laptops

It uses star topology. Bundled services include tv box, wifi and phone connection Single point of failure (if modem fails, all services stop). Wi-Fi coverage often limited to 2-3 rooms. Speed varies during peak hours. Built-in NAT and firewall

Typical issues include weak wifi connection, slow browsing, iptv lagging, tv box not working properly etc.