

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)

```
Connection-specific DNS Suffix . : 
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-B8
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:

Connection-specific DNS Suffix . : 
Description . . . . . : MediaTek MT7921 Wi-Fi 6 802.11ax PCIe Adapter
Physical Address. . . . . : 50-5A-65-FE-91-B8
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   6940
    TCP    127.0.0.1:49670         0.0.0.0:0               LISTENING   4
    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    [::]:49677              [::]: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    0.0.0.0:49754           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.wco1.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.wco1.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 it's 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.