

# Computer Networks

## LAB#01 Task(1)



**23K-2001**

**BCS-5J**

Q1:

```
Command Prompt
C:\Users\memuz>hostname
Muzammil_Sidd

C:\Users\memuz>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : 
    IPv6 Address. . . . . : 2400:adc1:16f:a300::1
    IPv6 Address. . . . . : 2400:adc1:16f:a300:3e10:9181:8f8c:c0f
    Temporary IPv6 Address. . . . . : 2400:adc1:16f:a300:2c52:4157:b12f:b2ea
    Link-local IPv6 Address . . . . . : fe80::ded9:f416:248d:2598%3
    IPv4 Address. . . . . : 192.168.18.197
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::1%3
                                192.168.18.1

Wireless LAN adapter Wi-Fi:

    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  . : 

C:\Users\memuz>
```

Q2:

```
Command Prompt
C:\Users\memuz>ipconfig /all

Windows IP Configuration

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

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . :
Description . . . . . : Realtek PCIe GbE Family Controller
Physical Address. . . . . : 30-24-A9-88-9C-A8
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
IPv6 Address. . . . . : 2400:adc1:16f:a300::1(Preferred)
Lease Obtained. . . . . : Monday, September 1, 2025 10:47:48 PM
Lease Expires . . . . . : Tuesday, September 2, 2025 10:47:48 PM
IPv6 Address. . . . . : 2400:adc1:16f:a300:3e10:9181:8f8c:c0f(Preferred)
Temporary IPv6 Address. . . . . : 2400:adc1:16f:a300:2c52:4157:b12f:b2ea(Preferred)
Link-local IPv6 Address . . . . . : fe80::ded9:f416:248d:2598%3(Preferred)
IPv4 Address. . . . . : 192.168.18.197(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Monday, September 1, 2025 10:47:49 PM
Lease Expires . . . . . : Tuesday, September 2, 2025 12:17:48 AM
Default Gateway . . . . . : fe80::1%3
                          192.168.18.1
DHCP Server . . . . . : 192.168.18.1
DHCPv6 IAID . . . . . : 70263977
DHCPv6 Client DUID. . . . . : 00-01-00-01-2E-CE-7B-A6-30-24-A9-88-9C-A8
DNS Servers . . . . . : fe80::1%3
                          192.168.18.1
                          fe80::1%3
NetBIOS over Tcpi. . . . . : Enabled

Wireless LAN adapter Wi-Fi:

Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :
Description . . . . . : Intel(R) Wireless-AC 9560 160MHZ
Physical Address. . . . . : C8-E2-65-CB-D6-E4
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. . . . . : C8-E2-65-CB-D6-E5
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
```

Q3:

```
Command Prompt

C:\Users\memuz>hostname
Muzammil_Sidd

C:\Users\memuz>|
```

Q4:

```
Command Prompt

C:\Users\memuz>hostname
Muzammil_Sidd

C:\Users\memuz>netstat -an | find "80"
TCP      0.0.0.0:7680          0.0.0.0:0            LISTENING
TCP      127.0.0.1:58956       127.0.0.1:58980       ESTABLISHED
TCP      127.0.0.1:58980       127.0.0.1:58956       ESTABLISHED
TCP      [::]:7680            [::]:0                LISTENING
TCP      [2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60406 [2a03:2880:f267:c5:face:b00c:0:7260]:5222 ESTABLISHED
TCP      [2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60634 [2a00:1450:4018:806::200a]:443 ESTABLISHED
TCP      [2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60636 [2a00:1450:4018:80f::200e]:443 ESTABLISHED
TCP      [2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60639 [2a00:1450:4018:806::200a]:443 ESTABLISHED
TCP      [2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60645 [2a00:1450:4018:806::200a]:443 ESTABLISHED
UDP      [fe80::ded9:f416:248d:2598%3]:1900 *: *
UDP      [fe80::ded9:f416:248d:2598%3]:50600 *: *

C:\Users\memuz>netstat -an | find "27"
TCP      0.0.0.0:27036         0.0.0.0:0            LISTENING
TCP      127.0.0.1:27060       0.0.0.0:0            LISTENING
TCP      127.0.0.1:58954       0.0.0.0:0            LISTENING
TCP      127.0.0.1:58956       0.0.0.0:0            LISTENING
TCP      127.0.0.1:58956       127.0.0.1:58980       ESTABLISHED
TCP      127.0.0.1:58958       0.0.0.0:0            LISTENING
TCP      127.0.0.1:58958       127.0.0.1:58979       ESTABLISHED
TCP      127.0.0.1:58979       127.0.0.1:58958       ESTABLISHED
TCP      127.0.0.1:58980       127.0.0.1:58956       ESTABLISHED
TCP      127.0.0.1:60019       127.0.0.1:60020       ESTABLISHED
TCP      127.0.0.1:60020       127.0.0.1:60019       ESTABLISHED
TCP      127.0.0.1:60021       127.0.0.1:60022       ESTABLISHED
TCP      127.0.0.1:60022       127.0.0.1:60021       ESTABLISHED
TCP      192.168.18.197:60070 185.25.183.36:27035 ESTABLISHED
TCP      [2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60617 [2606:4700:4400::6812:2715]:443 ESTABLISHED
UDP      0.0.0.0:27036         *: *
UDP      127.0.0.1:1900        *: *
UDP      127.0.0.1:50603       *: *
UDP      127.0.0.1:57481       127.0.0.1:57481
UDP      192.168.18.197:27036 *: *

C:\Users\memuz>|
```

Q5:

```
Command Prompt
C:\Users\memuz>netstat -e
Interface Statistics

                Received                Sent
Bytes          2230756600             1207000236
Unicast packets    1264472             6380324
Non-unicast packets    6336             38932
Discards          408              0
Errors            0              0
Unknown protocols    0

C:\Users\memuz>
```

Q6:

```
Command Prompt

C:\Users\memuz>tracert www.github.com

Tracing route to github.com [20.207.73.82]
over a maximum of 30 hops:

  1    1 ms    6 ms    2 ms  192.168.18.1
  2    4 ms    5 ms    6 ms  202.163.100.245
  3    3 ms    2 ms    3 ms  192.168.230.33
  4    3 ms    2 ms    2 ms  192.168.94.73
  5    3 ms    3 ms    7 ms  192.168.4.29
  6   25 ms    5 ms    3 ms  192.168.67.106
  7    *      *      22 ms  192.168.62.18
  8   29 ms   25 ms   26 ms  msft-decix-02-dxb30.ntwk.msn.net [185.1.8.32]
  9   28 ms   26 ms   28 ms  ae23-0.icr01.dxb21.ntwk.msn.net [104.44.41.123]
 10   60 ms    *      61 ms  be-120-0.ibr02.dxb21.ntwk.msn.net [104.44.22.113]
 11    *      63 ms    *      51.10.19.120
 12   60 ms    *      61 ms  51.10.19.186
 13   60 ms   61 ms   60 ms  51.10.9.255
 14   60 ms   60 ms   60 ms  104.44.31.134
 15   61 ms   60 ms   60 ms  be-1-0.ibr02.pnq21.ntwk.msn.net [104.44.18.34]
 16   60 ms   60 ms   60 ms  ae122-0.rwa02.pnq21.ntwk.msn.net [104.44.11.254]
 17    *      *      *      Request timed out.
 18    *      *      *      Request timed out.
 19    *      *      *      Request timed out.
 20    *      *      *      Request timed out.
 21   60 ms   59 ms   60 ms  20.207.73.82

Trace complete.

C:\Users\memuz>
```

```
Command Prompt

C:\Users\memuz>tracert classroom.google.com

Tracing route to classroom.google.com [2a00:1450:4018:80f::200e]
over a maximum of 30 hops:

  1    <1 ms    <1 ms    <1 ms  2400:adc1:0:6fa3:8c0a:919d:ced6:6881
  2    3 ms    5 ms    3 ms  2001:4538:a001:f008::2
  3    3 ms    2 ms    2 ms  2001:4538:a001:8::1
  4    4 ms    2 ms    2 ms  2001:4538:a001:d8::1
  5   28 ms   24 ms    3 ms  2001:4538:a001:c7::1
  6   20 ms   20 ms   20 ms  2001:4538:bb:3::2
  7    *      *      *      Request timed out.
  8   17 ms   17 ms   17 ms  2a00:1450:84c2::1
  9   20 ms   19 ms   19 ms  2001:4860:0:1::3988
 10   17 ms   17 ms   16 ms  2001:4860:0:1::7d99
 11   20 ms   19 ms   20 ms  lcmcta-ah-in-x0e.1e100.net [2a00:1450:4018:80f::200e]

Trace complete.
```

**Q7:**

There can be two reasons why a ping to the hostname fails: either the system cannot resolve the hostname to an IP address (DNS issue), or the machine name is not registered in the DNS file.

**Q8:**

Crossover Cable is used when the order of the wires on both ends of the RJ45 connector is different.

**Q9:**

Yes.

**Q10:**

Yes, but straight-through cable should be used instead as crossover cables are used for connecting similar devices.

**Q11:**

Yes.

Q12:

```
C:\Users\memuz>arp -a

Interface: 192.168.18.197 --- 0x3
Internet Address      Physical Address      Type
192.168.18.1          44-a1-91-9a-33-76     dynamic
192.168.18.255        ff-ff-ff-ff-ff-ff     static
224.0.0.22            01-00-5e-00-00-16     static
224.0.0.251           01-00-5e-00-00-fb     static
224.0.0.252           01-00-5e-00-00-fc     static
239.255.255.250       01-00-5e-7f-ff-fa     static
255.255.255.255       ff-ff-ff-ff-ff-ff     static

C:\Users\memuz>
```



Q13:

Command Prompt				
C:\Users\memuz>netstat -ano				
Active Connections				
Proto	Local Address	Foreign Address	State	PID
TCP	0.0.0.0:135	0.0.0.0:0	LISTENING	1508
TCP	0.0.0.0:445	0.0.0.0:0	LISTENING	4
TCP	0.0.0.0:5040	0.0.0.0:0	LISTENING	9828
TCP	0.0.0.0:7680	0.0.0.0:0	LISTENING	5668
TCP	0.0.0.0:27036	0.0.0.0:0	LISTENING	4936
TCP	0.0.0.0:49664	0.0.0.0:0	LISTENING	1216
TCP	0.0.0.0:49665	0.0.0.0:0	LISTENING	1044
TCP	0.0.0.0:49666	0.0.0.0:0	LISTENING	1992
TCP	0.0.0.0:49667	0.0.0.0:0	LISTENING	2748
TCP	0.0.0.0:49669	0.0.0.0:0	LISTENING	5536
TCP	0.0.0.0:49688	0.0.0.0:0	LISTENING	1168
TCP	127.0.0.1:27060	0.0.0.0:0	LISTENING	4936
TCP	127.0.0.1:58954	0.0.0.0:0	LISTENING	17340
TCP	127.0.0.1:58956	0.0.0.0:0	LISTENING	4936
TCP	127.0.0.1:58956	127.0.0.1:58980	ESTABLISHED	4936
TCP	127.0.0.1:58958	0.0.0.0:0	LISTENING	4936
TCP	127.0.0.1:58958	127.0.0.1:58979	ESTABLISHED	4936
TCP	127.0.0.1:58979	127.0.0.1:58958	ESTABLISHED	9936
TCP	127.0.0.1:58980	127.0.0.1:58956	ESTABLISHED	9936
TCP	127.0.0.1:60019	127.0.0.1:60020	ESTABLISHED	10312
TCP	127.0.0.1:60020	127.0.0.1:60019	ESTABLISHED	10312
TCP	127.0.0.1:60021	127.0.0.1:60022	ESTABLISHED	14848
TCP	127.0.0.1:60022	127.0.0.1:60021	ESTABLISHED	14848
TCP	192.168.18.197:139	0.0.0.0:0	LISTENING	4
TCP	192.168.18.197:60067	54.166.110.74:443	ESTABLISHED	2992
TCP	192.168.18.197:60070	185.25.183.36:27035	ESTABLISHED	4936
TCP	192.168.18.197:60832	140.82.114.26:443	ESTABLISHED	10312
TCP	192.168.18.197:60876	34.107.243.93:443	ESTABLISHED	10312
TCP	192.168.18.197:60886	34.120.208.123:443	ESTABLISHED	10312
TCP	192.168.18.197:60916	3.229.29.197:443	CLOSE_WAIT	2992
TCP	192.168.18.197:60917	52.2.244.83:443	CLOSE_WAIT	2992
TCP	192.168.18.197:60925	142.250.202.194:443	TIME_WAIT	0
TCP	192.168.18.197:60940	142.250.202.226:443	ESTABLISHED	10312
TCP	[::]:135	[::]:0	LISTENING	1508
TCP	[::]:445	[::]:0	LISTENING	4
TCP	[::]:7680	[::]:0	LISTENING	5668
TCP	[::]:49664	[::]:0	LISTENING	1216
TCP	[::]:49665	[::]:0	LISTENING	1044
TCP	[::]:49666	[::]:0	LISTENING	1992
TCP	[::]:49667	[::]:0	LISTENING	2748
TCP	[::]:49669	[::]:0	LISTENING	5536
TCP	[::]:49688	[::]:0	LISTENING	1168
TCP	[::1]:42050	[::]:0	LISTENING	1080
TCP	[::1]:49670	[::]:0	LISTENING	6040
TCP	[2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60016	[2603:1040:a06:6::]:443	ESTABLISHED	6340
TCP	[2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60018	[2603:1040:a06:6::]:443	ESTABLISHED	6204
TCP	[2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60406	[2a03:2880:f267:c5:face:b00c:0:7260]:5222	TIME_WAIT	0
TCP	[2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60617	[2606:4700:4400::6812:2715]:443	ESTABLISHED	10312
TCP	[2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60623	[2a00:1450:4018:811::2003]:443	ESTABLISHED	10312
TCP	[2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60853	[2a00:1450:4018:80d::200a]:443	TIME_WAIT	0
TCP	[2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60906	[2a00:1450:4018:812::2002]:443	TIME_WAIT	0
TCP	[2400:adc1:16f:a300:2c52:4157:b12f:b2ea]:60909	[2a00:1450:4018:80f::200e]:443	TIME_WAIT	0

Q14:

```
Command Prompt

C:\Users\memuz>nslookup 224.0.0.22
Server: UnKnown
Address: fe80::1

Name: igmp.mcast.net
Address: 224.0.0.22

C:\Users\memuz>ping igmp.mcast.net

Pinging igmp.mcast.net [224.0.0.22] with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 224.0.0.22:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\memuz>ping localhost

Pinging Muzammil_Sidd [::1] with 32 bytes of data:
Reply from ::1: time<1ms
Reply from ::1: time<1ms
Reply from ::1: time<1ms
Reply from ::1: time<1ms

Ping statistics for ::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\memuz>
```

There are multiple reasons for no connectivity such as:

Wrong IP or hostname. - The host is offline. - Firewall blocking ICMP. - Network cable damaged or misconfigured.