



PRACTICAL JOURNAL OF COMPUTER NETWORKS

B. TECH : Third Year

Department of Information Technology

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Branch & Section : Information Technology (IT-2)

Roll Number : 0827IT181104

Year : 3rd Year

**Department of Information Technology
AITR, Indore**

**ACROPOLIS INSTITUTE OF TECHNOLOGY
& RESEARCH, INDORE**

Department of Information Technology

CERTIFICATE

This is to certify that the experimental work entered in this journal as per the BE 3rd year syllabus prescribed by the RGPV was done by **Mr. Surayakarn Tiwari** BE 3rd year 5th semester in the **Computer Networks** Laboratory of this institute during the academic year 2020- 2021.

Signature of Head

Signature of the Faculty

Name of Department: IT Name of Laboratory: Computer Networks

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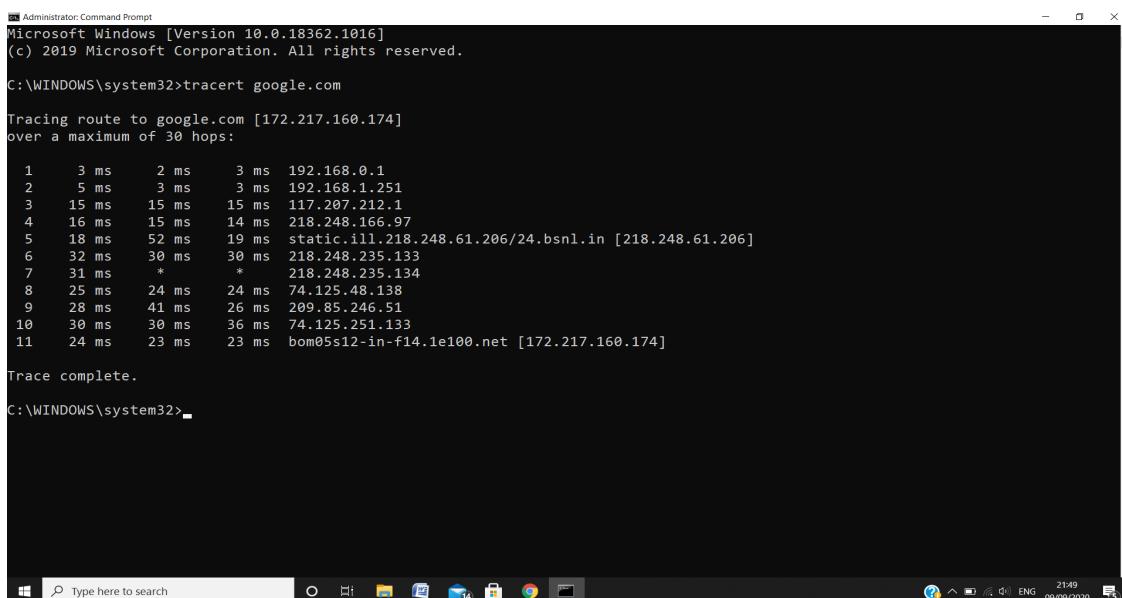
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Name of Student: Suryakaran Tiwari	Class: IT-2
Enrolment No: 0827IT181104	Batch: 2
Date of Experiment: 22-07-20	Date of Submission: 29-07-20
Remarks by faculty:	Submitted on:
Signature of student:	Grade:
Signature of Faculty:	

1. Find Out the Google, Microsoft server from your system:

A. Google:



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18362.1016]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>tracert google.com

Tracing route to google.com [172.217.160.174]
over a maximum of 30 hops:

 1   3 ms    2 ms    3 ms  192.168.0.1
 2   5 ms    3 ms    3 ms  192.168.1.251
 3  15 ms   15 ms   15 ms  117.207.212.1
 4  16 ms   15 ms   14 ms  218.248.166.97
 5  18 ms   52 ms   19 ms  static.ill1.218.248.61.206/24.bsnl.in [218.248.61.206]
 6  32 ms   30 ms   30 ms  218.248.235.133
 7  31 ms    *       *    218.248.235.134
 8  25 ms   24 ms   24 ms  74.125.48.138
 9  28 ms   41 ms   26 ms  209.85.246.51
10  30 ms   30 ms   36 ms  74.125.251.133
11  24 ms   23 ms   23 ms  bom05s12-in-f14.1e100.net [172.217.160.174]

Trace complete.

C:\WINDOWS\system32>
```

Geolocation data from [IP2Location](#) (Product: DB6, updated on 2020-8-1)

IP Address	Country	Region	City
2402:8100:385c:894c:3dcd:49b4:2dae:a8bc	India 🇮🇳	Maharashtra	Mumbai
ISP	Organization	Latitude	Longitude
Idea Cellular Limited	Not Available	19.0144	72.8479

Geolocation data from [ipinfo.io](#) (Product: API, real-time)

IP Address	Country	Region	City
2402:8100:385c:894c:3dcd:49b4:2dae:a8bc	India 🇮🇳	Madhya Pradesh	Bhopāl
ISP	Organization	Latitude	Longitude
Idea Cellular Limited	Idea Cellular Limited (adityabirla.com)	23.2547	77.4029

Geolocation data from [DB-IP](#) (Product: Full, 2020-8-1)

IP Address	Country	Region	City
2402:8100:385c:894c:3dcd:49b4:2dae:a8bc	India 🇮🇳	Delhi	New Delhi
ISP	Organization	Latitude	Longitude
Idea Cellular Ltd	Idea Cellular Limited	28.6139	77.209

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IP Address	Country	Region	City
2001:4860:0:115b::1	United States of America 	California	Mountain View
ISP	Organization	Latitude	Longitude
Google LLC	Not Available	37.3861	-122.0838

Geolocation data from ipinfo.io (Product: API, real-time)

IP Address	Country	Region	City
2001:4860:0:115b::1	United States 	California	Mountain View
ISP	Organization	Latitude	Longitude
Google LLC	Google LLC (google.com)	38.0088	-122.1175

Geolocation data from [DB-IP](https://db-ip.com) (Product: Full, 2020-8-1)

IP Address	Country	Region	City
2001:4860:0:115b::1	United States 	California	Mountain View
ISP	Organization	Latitude	Longitude
Google LLC	Google LLC	37.4225	-122.084

B. Microsoft:

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18362.1016]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>tracert microsoft.com

Tracing route to microsoft.com [104.215.148.63]
over a maximum of 30 hops:

 1  4 ms   4 ms   4 ms  192.168.0.1
 2  3 ms   3 ms   3 ms  192.168.1.251
 3  16 ms  14 ms  14 ms  117.287.232.1
 4  15 ms  16 ms  15 ms  218.248.166.97
 5  15 ms  14 ms  14 ms  static.ill1.218.248.106.62/24.bsn1.in [218.248.106.62]
 6  *       *       *       Request timed out.
 7  24 ms   24 ms   24 ms  218.248.235.198
 8  29 ms   24 ms   24 ms  ae67-0.ier01.bom02.ntwk.msn.net [104.44.13.142]
 9  26 ms   *       23 ms  ae21-0.ear01.bom02.ntwk.msn.net [104.44.232.249]
10  79 ms   80 ms   79 ms  be-20-0.ibr01.bom02.ntwk.msn.net [104.44.23.233]
11  89 ms   87 ms   100 ms  be-5-0.ibr01.maa02.ntwk.msn.net [104.44.18.238]
12  91 ms   92 ms   90 ms  be-10-0.ibr01.sg2.ntwk.msn.net [104.44.28.48]
13  100 ms  102 ms  110 ms  ae102-0.icr02.sg2.ntwk.msn.net [104.44.11.184]
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  *       *       *       Request timed out.
23  *       *       *       Request timed out.
24  *       *       *       Request timed out.
25  *       *       *       Request timed out.
26  *       *       *       Request timed out.
27  *       *       *       Request timed out.
28  *       *       *       Request timed out.
29  *       *       *       Request timed out.
30  *       *       *       Request timed out.

Trace complete.

C:\WINDOWS\system32>
```

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Geolocation data from [IP2Location](#) (Product: DB6, updated on 2020-8-1)

IP Address	Country	Region	City
2402:8100:385c:894c:3dcd:49b4:2dae:a8bc	India 	Maharashtra	Mumbai
ISP	Organization	Latitude	Longitude
Idea Cellular Limited	Not Available	19.0144	72.8479

Geolocation data from [ipinfo.io](#) (Product: API, real-time)

IP Address	Country	Region	City
2402:8100:385c:894c:3dcd:49b4:2dae:a8bc	India 	Madhya Pradesh	Bhopal
ISP	Organization	Latitude	Longitude
Idea Cellular Limited	Idea Cellular Limited (adityabirla.com)	23.2547	77.4029

Geolocation data from [DB-IP](#) (Product: Full, 2020-8-1)

IP Address	Country	Region	City
2402:8100:385c:894c:3dcd:49b4:2dae:a8bc	India 	Delhi	New Delhi
ISP	Organization	Latitude	Longitude
Idea Cellular Ltd	Idea Cellular Limited	28.6139	77.209

Geolocation data from [IP2Location](#) (Product: DB6, updated on 2020-8-1)

IP Address	Country	Region	City
106.79.232.5	India 	Madhya Pradesh	Pithampur
ISP	Organization	Latitude	Longitude
Idea Cellular Limited	Not Available	22.6020	75.6965

Geolocation data from [ipinfo.io](#) (Product: API, real-time)

IP Address	Country	Region	City
106.79.232.5	India 	Madhya Pradesh	Indore
ISP	Organization	Latitude	Longitude
Idea Cellular Limited	Idea Cellular Limited (ideadialertones.com)	22.7179	75.8333

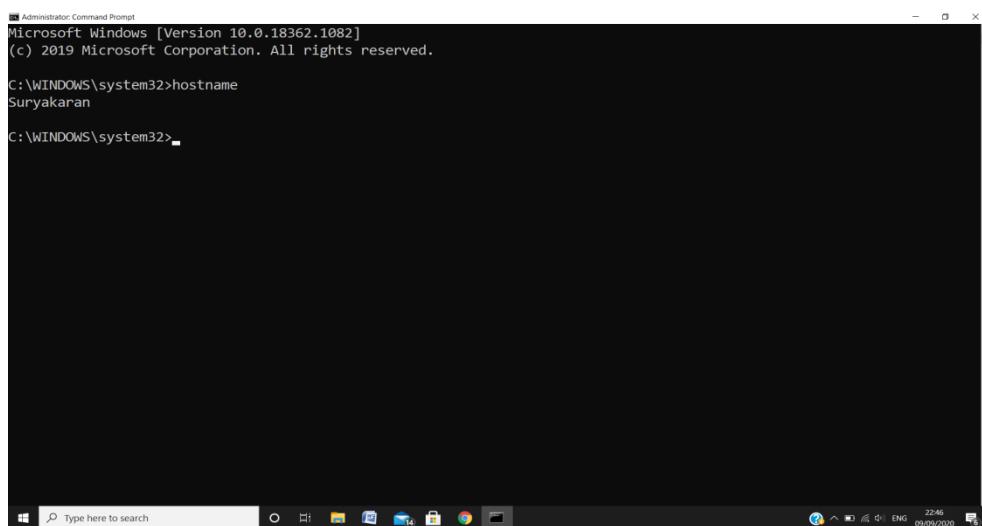
Geolocation data from [DB-IP](#) (Product: Full, 2020-8-1)

IP Address	Country	Region	City
106.79.232.5	India 	Delhi	New Delhi
ISP	Organization	Latitude	Longitude
Idea Cellular Ltd	Idea Cellular Ltd	28.6139	77.209

Name of Student: Suryakaran Tiwari	Class: IT-2
Enrolment No: 0827IT181104	Batch: 2
Date of Experiment: 22-07-20	Date of Submission: 29-07-20
Remarks by faculty:	Submitted on:
Signature of student:	Grade:
Signature of Faculty:	

2. Run the following commands and show the output for each command

1. Hostname:

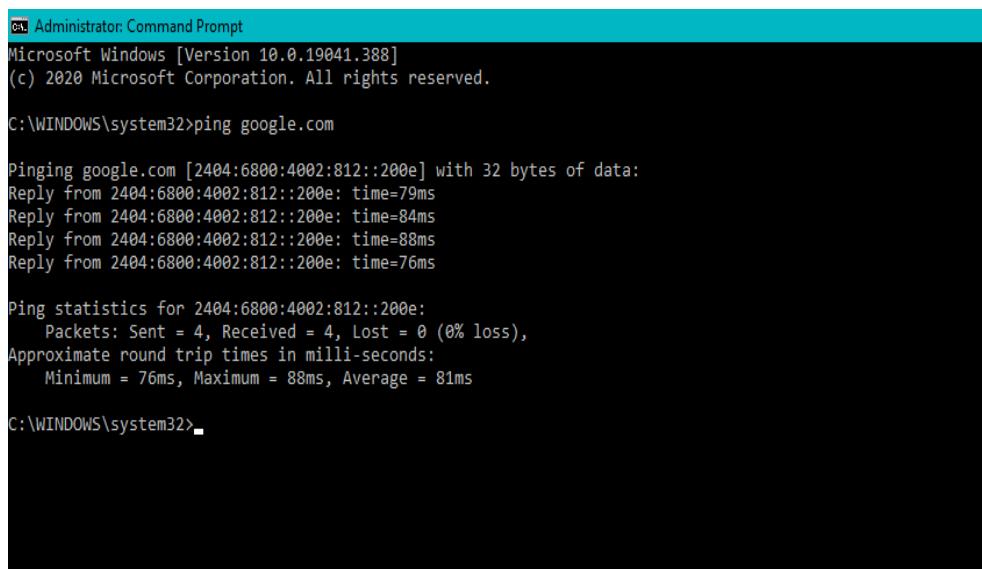


```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18362.1082]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>hostname
Suryakaran

C:\WINDOWS\system32>
```

2. Ping:



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19041.388]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>ping google.com

Pinging google.com [2404:6800:4002:812::200e] with 32 bytes of data:
Reply from 2404:6800:4002:812::200e: time=79ms
Reply from 2404:6800:4002:812::200e: time=84ms
Reply from 2404:6800:4002:812::200e: time=88ms
Reply from 2404:6800:4002:812::200e: time=76ms

Ping statistics for 2404:6800:4002:812::200e:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 76ms, Maximum = 88ms, Average = 81ms

C:\WINDOWS\system32>
```

3. Arp:

```
C:\ Administrator: Command Prompt
address resolution protocol (ARP).

ARP -s inet_addr eth_addr [if_addr]
ARP -d inet_addr [if_addr]
ARP -a [inet_addr] [-N if_addr] [-v]

-a          Displays current ARP entries by interrogating the current
           protocol data. If inet_addr is specified, the IP and Physical
           addresses for only the specified computer are displayed. If
           more than one network interface uses ARP, entries for each ARP
           table are displayed.
-g          Same as -a.
-v          Displays current ARP entries in verbose mode. All invalid
           entries and entries on the loop-back interface will be shown.
inet_addr   Specifies an Internet address.
-N if_addr  Displays the ARP entries for the network interface specified
           by if_addr.
-d          Deletes the host specified by inet_addr. inet_addr may be
           wildcarded with * to delete all hosts.
-s          Adds the host and associates the Internet address inet_addr
           with the Physical address eth_addr. The Physical address is
           given as 6 hexadecimal bytes separated by hyphens. The entry
           is permanent.
eth_addr    Specifies a physical address.
if_addr     If present, this specifies the Internet address of the
           interface whose address translation table should be modified.
           If not present, the first applicable interface will be used.

Example:
> arp -s 157.55.85.212  00-aa-00-62-c6-09 .... Adds a static entry.
> arp -a                  .... Displays the arp table.

C:\WINDOWS\system32>arp -a

Interface: 192.168.43.243 --- 0xd
  Internet Address      Physical Address      Type
  192.168.43.17        26-09-8d-d8-7b-7d    dynamic
  192.168.43.255       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-fc     static
  239.255.255.250      01-00-5e-7f-ff-fa  static
  255.255.255.255      ff-ff-ff-ff-ff-ff  static
```

4. Tracert:

```
C:\ Administrator: Command Prompt

C:\WINDOWS\system32>tracert google.com

Tracing route to google.com [2404:6800:4009:80e::200e]
over a maximum of 30 hops:

 1  1 ms    1 ms    2 ms  2409:4043:2d8a:747a::a1
 2  *         *         * Request timed out.
 3  66 ms   37 ms   49 ms  2405:200:384:eeee:20::776
 4  61 ms   48 ms   45 ms  2405:200:801:1200::1038
 5  69 ms   46 ms   48 ms  2405:200:801:1200::103b
 6  82 ms   58 ms   58 ms  2405:200:801:200::31b
 7  82 ms   55 ms   57 ms  2001:4860:1:1::167a
 8  *         *         * Request timed out.
 9  86 ms   *         *         2001:4860:0:1::122b
10  59 ms   57 ms   67 ms  bom07s20-in-x0e.1e100.net [2404:6800:4009:80e::200e]

Trace complete.

C:\WINDOWS\system32>
```

5. Netstat:

```

Administrator: Command Prompt
Microsoft Windows [Version 10.0.18362.1082]
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C:\WINDOWS\system32>netstat -a

Active Connections

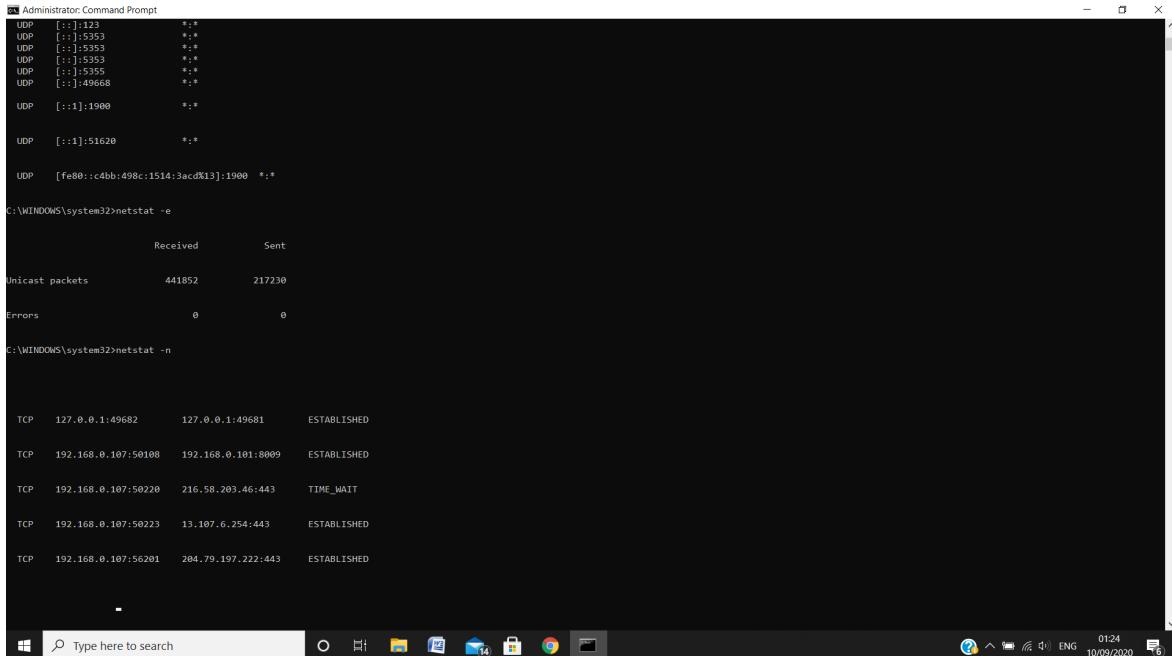
  Proto  Local Address        Foreign Address      State
  TCP    0.0.0.0:80          Suryakaran:0          LISTENING
  TCP    0.0.0.0:135         Suryakaran:0          LISTENING
  TCP    0.0.0.0:443         Suryakaran:0          LISTENING
  TCP    0.0.0.0:445         Suryakaran:0          LISTENING
  TCP    0.0.0.0:7869        Suryakaran:0          LISTENING
  TCP    0.0.0.0:1306        Suryakaran:0          LISTENING
  TCP    0.0.0.0:5940        Suryakaran:0          LISTENING
  TCP    0.0.0.0:7250        Suryakaran:0          LISTENING
  TCP    0.0.0.0:7680        Suryakaran:0          LISTENING
  TCP    0.0.0.0:8733        Suryakaran:0          LISTENING
  TCP    0.0.0.0:10247       Suryakaran:0          LISTENING
  TCP    0.0.0.0:13060       Suryakaran:0          LISTENING
  TCP    0.0.0.0:13060       Suryakaran:0          LISTENING
  TCP    0.0.0.0:49654       Suryakaran:0          LISTENING
  TCP    0.0.0.0:49655       Suryakaran:0          LISTENING
  TCP    0.0.0.0:49666       Suryakaran:0          LISTENING
  TCP    0.0.0.0:49667       Suryakaran:0          LISTENING
  TCP    0.0.0.0:49668       Suryakaran:0          LISTENING
  TCP    0.0.0.0:49671       Suryakaran:0          LISTENING
  TCP    127.0.0.1:3307      Suryakaran:0          LISTENING
  TCP    127.0.0.1:5354      Suryakaran:0          LISTENING
  TCP    127.0.0.1:5939      Suryakaran:0          LISTENING
  TCP    127.0.0.1:49681     cbs:49681           ESTABLISHED
  TCP    127.0.0.1:49682     cbs:49681           ESTABLISHED
  TCP    127.0.0.1:49683     cbs:49684           ESTABLISHED
  TCP    127.0.0.1:49684     cbs:49683           ESTABLISHED
  TCP    192.168.0.107:139   Suryakaran:0          LISTENING
  TCP    192.168.0.107:50108 192.168.0.101:8009  ESTABLISHED
  TCP    192.168.0.107:50115 52.139.250.253:https ESTABLISHED
  TCP    192.168.0.107:50129 sc-in:f188:5228  ESTABLISHED
  TCP    192.168.0.107:50132 sc-in:f189:https  TIME_WAIT
  TCP    192.168.0.107:50133 http7s-in:f14:https TIME_WAIT
  TCP    192.168.0.107:50220 http10-in:f46:https TIME_WAIT
  TCP    192.168.0.107:50221 sc-in:f189:https  ESTABLISHED
  TCP    192.168.0.107:50222 a-0001:https  ESTABLISHED
  TCP    192.168.0.107:50223 13.107.6.254:https ESTABLISHED
  TCP    192.168.0.107:50224 a-0001:https  ESTABLISHED
  TCP    192.168.0.107:56199 52.96.79.66:https ESTABLISHED
  TCP    192.168.0.107:56200 13.107.3.254:https ESTABLISHED
  TCP    192.168.0.107:56201 204.79.197.222:https ESTABLISHED
  TCP    192.168.0.107:56262 13.107.4.254:https ESTABLISHED
  TCP    192.168.0.107:56203 13.107.42.254:https ESTABLISHED
  TCP    192.168.137.1:139   Suryakaran:0          LISTENING
  TCP    [::]:180              Suryakaran:0          LISTENING

  TCP    [::]:10955          Suryakaran:0          LISTENING
  TCP    [::]:49655          Suryakaran:0          LISTENING
  TCP    [::]:49667          Suryakaran:0          LISTENING
  TCP    [::]:49668          Suryakaran:0          LISTENING

  UDP    0.0.0.0:123          *:*                  LISTENING
  UDP    0.0.0.0:5353         *:*                  LISTENING
  UDP    0.0.0.0:5353         *:*                  LISTENING
  UDP    0.0.0.0:62824        *:*                  LISTENING
  UDP    127.0.0.1:51623      *:*                  LISTENING
  UDP    192.168.0.107:1900   *:*                  LISTENING
  UDP    192.168.0.107:51622  *:*                  LISTENING
  UDP    192.168.137.1:67    *:*                  LISTENING
  UDP    192.168.137.1:68    *:*                  LISTENING
  UDP    192.168.137.1:137   *:*                  LISTENING
  UDP    192.168.137.1:5353  *:*                  LISTENING
  UDP    [::]:5353           *:*                  LISTENING
  UDP    [::]:5355           *:*                  LISTENING

```

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```
Administrator: Command Prompt
C:\> netstat -an | find "ESTABLISHED"
TCP 127.0.0.1:49682 127.0.0.1:49681 ESTABLISHED
TCP 192.168.0.107:50108 192.168.0.101:8009 ESTABLISHED
TCP 192.168.0.107:50220 216.58.203.46:443 TIME_WAIT
TCP 192.168.0.107:50223 13.107.6.254:443 ESTABLISHED
TCP 192.168.0.107:56201 284.79.197.222:443 ESTABLISHED

C:\> netstat -e
          Received          Sent
Unicast packets    441852     217230
Errors           0          0
C:\> netstat -n

TCP 127.0.0.1:49682 127.0.0.1:49681 ESTABLISHED
TCP 192.168.0.107:50108 192.168.0.101:8009 ESTABLISHED
TCP 192.168.0.107:50220 216.58.203.46:443 TIME_WAIT
TCP 192.168.0.107:50223 13.107.6.254:443 ESTABLISHED
TCP 192.168.0.107:56201 284.79.197.222:443 ESTABLISHED
```

6. Ipconfig:

```
C:\> ipconfig
Windows IP Configuration

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

Ethernet adapter Ethernet 2:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 4:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 6:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:
  Connection-specific DNS Suffix . :
  IPv6 Address. . . . . : 2409:4043:2d8a:747a:158e:e9b:1442:6d7
  Temporary IPv6 Address. . . . . : 2409:4043:2d8a:747a:cc29:8983:3d28:7e00
  Link-local IPv6 Address . . . . . : fe80::158e:e9b:1442:6d7%13
  IPv4 Address. . . . . : 192.168.43.243
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : fe80::2409:8dff:fed8:7b7d%13
                                         192.168.43.17
```

7. Ipconfig all:

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```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18362.1082]
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C:\WINDOWS\system32>ipconfig/all

Windows IP Configuration

 Host Name . . . . . : Suryakaran
 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. . . . . : 10-62-E5-C8-A0-60
 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 #3
 Physical Address. . . . . : 76-40-BB-51-BB-71
 DHCP Enabled. . . . . : Yes
 Autoconfiguration Enabled . . . . . : Yes

Wireless LAN adapter Local Area Connection* 4:

 Connection-specific DNS Suffix . . . . . :
 Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #4
 Physical Address. . . . . : 74-40-BB-51-BB-71
 DHCP Enabled. . . . . : No
 Autoconfiguration Enabled . . . . . : Yes
 Link-local IPv6 Address . . . . . : fe80::cabb:40bc:1514:3acd%13(PREFERRED)
 IPv4 Address. . . . . : 192.168.137.1(PREFERRED)
 Subnet Mask . . . . . : 255.255.255.0
 Default Gateway . . . . . :
 DHCPIPv6 IID . . . . . : 141836475
 DHCPIPv6 Client DUID. . . . . : 00-01-00-01-22-C6-FA-A1-10-62-E5-C8-A0-60
 DNS Servers . . . . . : fec0:0:0:ffff::1%1
                         fec0:0:0:ffff::2%1
                         fec0:0:0:ffff::3%1
 NetBIOS over Tcpip. . . . . : Enabled

Wireless LAN adapter Wi-Fi:

Administrator: Command Prompt
Type here to search 01:25 ENG 10/09/2020
```

```
Administrator: Command Prompt
Wireless LAN adapter Wi-Fi:

 Connection-specific DNS Suffix . . . . . :
 Description . . . . . : Realtek RTL8723DE 802.11b/g/n PCIe Adapter
 Physical Address. . . . . : 74-40-BB-51-BB-71
 DHCP Enabled. . . . . : Yes
 Autoconfiguration Enabled . . . . . : Yes
 Link-local IPv6 Address . . . . . : fe80::b178:5e91:a248:9ba%11(PREFERRED)
 IPv4 Address. . . . . : 192.168.0.107(PREFERRED)
 Subnet Mask . . . . . : 255.255.255.0
 Lease Obtained. . . . . : 09 September 2020 10:19:41 PM
 Lease Expires . . . . . : 11 September 2020 12:19:15 AM
 Default Gateway . . . . . : 192.168.0.1
 DHCP Server . . . . . : 192168123
 DHCPIPv6 IID . . . . . : 00-01-00-01-22-C6-FA-A1-10-62-E5-C8-A0-60
 DNS Servers . . . . . : 192.168.0.1
 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. . . . . : 74-40-BB-51-BB-72
 DHCP Enabled. . . . . : Yes
 Autoconfiguration Enabled . . . . . : Yes

C:\WINDOWS\system32>
```

8. Getmac:

```
C:\WINDOWS\system32>getmac

Physical Address      Transport Name
=====
00-26-37-BD-39-42    Media disconnected
6C-C2-17-EF-52-F7    Media disconnected
9C-AD-97-5B-79-3F    \Device\Tcpip_{76D5D71D-0708-4877-B1D2-0CE32612675B}

C:\WINDOWS\system32>
```

9. Nbtstat:

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18362.1082]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>nbtstat -n

Ethernet:
NodeIpAddress: [0.0.0.0] Scope Id: []
    No names in cache

Bluetooth Network Connection:
NodeIpAddress: [0.0.0.0] Scope Id: []
    No names in cache

Wi-Fi:
NodeIpAddress: [192.168.0.107] Scope Id: []
    NetBIOS Local Name Table
    Name          Type        Status
    SURYAKARAN   <0>: UNIQUE  Registered
    SURYAKARAN   <0>: UNIQUE  Registered
    WORKGROUP    <0>: GROUP   Registered

Local Area Connection* 1:
NodeIpAddress: [0.0.0.0] Scope Id: []
    No names in cache

Local Area Connection* 4:
NodeIpAddress: [192.168.137.1] Scope Id: []
    NetBIOS Local Name Table
    Name          Type        Status
    SURYAKARAN   <0>: UNIQUE  Registered
    SURYAKARAN   <0>: UNIQUE  Registered
    WORKGROUP    <0>: GROUP   Registered

C:\WINDOWS\system32>
```

```
C:\WINDOWS\system32>nbtstat -r

NetBIOS Names Resolution and Registration Statistics
-----

Resolved By Broadcast = 0
Resolved By Name Server = 0

Registered By Broadcast = 438
Registered By Name Server = 0

C:\WINDOWS\system32>nbtstat -R
Successful purge and preload of the NBT Remote Cache Name Table.

C:\WINDOWS\system32>nbtstat -s

Ethernet 2:
NodeIpAddress: [0.0.0.0] Scope Id: []
    No Connections

Ethernet:
NodeIpAddress: [0.0.0.0] Scope Id: []
    No Connections

Wi-Fi:
NodeIpAddress: [192.168.43.243] Scope Id: []
    No Connections

Local Area Connection* 4:
NodeIpAddress: [0.0.0.0] Scope Id: []
    No Connections

Local Area Connection* 6:
NodeIpAddress: [0.0.0.0] Scope Id: []
    No Connections
```

10. Nslookup:

```
Microsoft Windows [Version 10.0.19041.388]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>nslookup google.in
Server: dns.google
Address: 8.8.8.8

Non-authoritative answer:
Name: google.in
Addresses: 2404:6800:4009:801::2004
           172.217.174.228

C:\WINDOWS\system32>
```

11. Route:

```
C:\WINDOWS\system32>route PRINT
=====
Interface List
  3...6c c2 17 ef 52 f7 .....Realtek PCIe FE Family Controller
  8...00 26 37 bd 39 42 .....PdaNet Broadband Adapter
  9...9c ad 97 5b 79 39 .....Microsoft Wi-Fi Direct Virtual Adapter #3
  15...9c ad 97 5b 79 3a .....Microsoft Wi-Fi Direct Virtual Adapter #5
  13...9c ad 97 5b 79 3f .....Ralink RT3290 802.11bgn Wi-Fi Adapter
  1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
Network Destination      Netmask        Gateway        Interface Metric
          0.0.0.0          0.0.0.0    192.168.43.17  192.168.43.243    55
          127.0.0.0         255.0.0.0   On-link        127.0.0.1     331
          127.0.0.1         255.255.255.255 On-link        127.0.0.1     331
  127.255.255.255  255.255.255.255 On-link        127.0.0.1     331
          192.168.43.0       255.255.255.0 On-link        192.168.43.243    311
  192.168.43.243       255.255.255.255 On-link        192.168.43.243    311
  192.168.43.255       255.255.255.255 On-link        192.168.43.243    311
          224.0.0.0          240.0.0.0   On-link        127.0.0.1     331
          224.0.0.0          240.0.0.0   On-link        192.168.43.243    311
  255.255.255.255     255.255.255.255 On-link        127.0.0.1     331
  255.255.255.255     255.255.255.255 On-link        192.168.43.243    311
=====
Persistent Routes:
  None
=====
IPv6 Route Table
=====
Active Routes:
If Metric Network Destination      Gateway
  13      71 ::/0             fe80::2409:8dff:fed8:7b7d
  1      331 ::1/128          On-link
  13      71 2409:4043:2d8a:747a::/64 On-link
  13      311 2409:4043:2d8a:747a:158e:e9b:1442:6d7/128
                                         On-link
  13      311 2409:4043:2d8a:747a:cc29:8983:3d28:7e00/128
                                         On-link
  13      311 fe80::/64          On-link
  13      311 fe80::158e:e9b:1442:6d7/128
                                         On-link
```

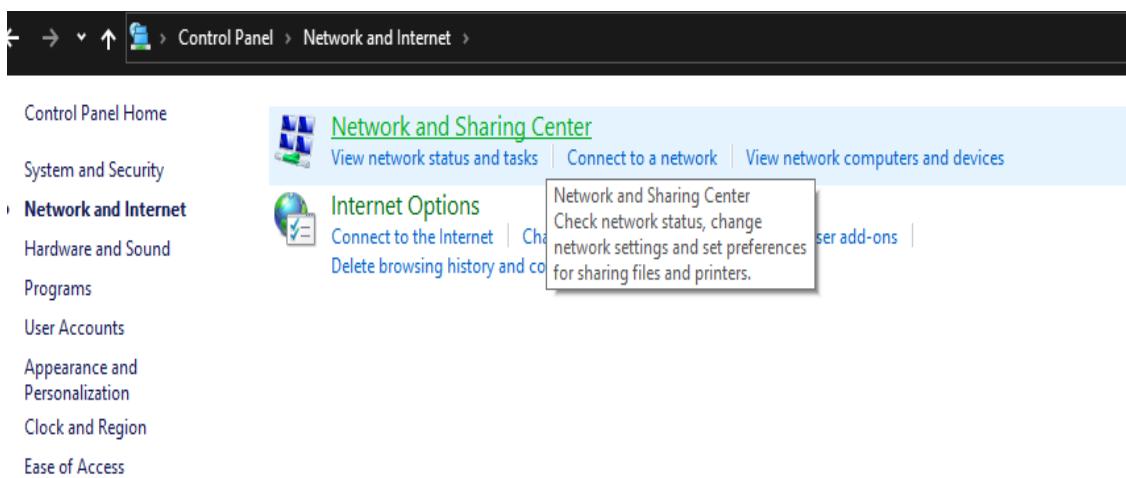
Name of Student: Suryakaran Tiwari	Class: IT-2
Enrolment No: 0827IT181104	Batch: 2
Date of Experiment: 22-07-20	Date of Submission: 29-07-20
Remarks by faculty:	Submitted on:
Signature of student:	Grade:
Signature of Faculty:	

3. Configure Wired LAN network:

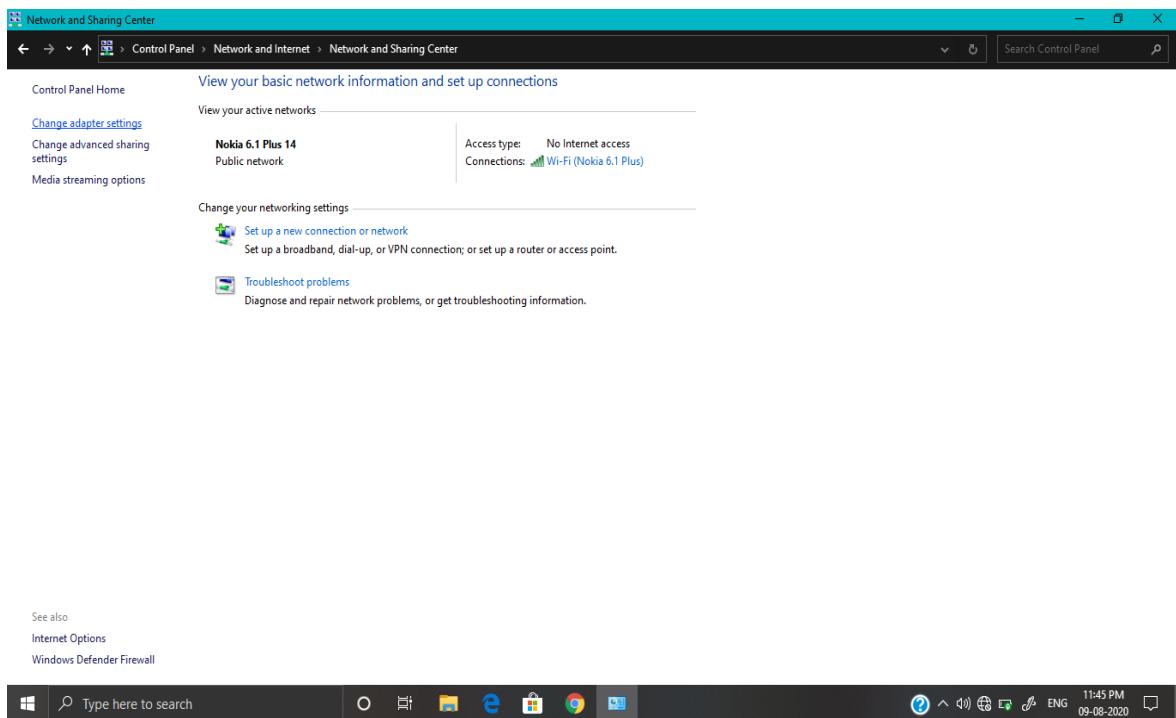
- a. Open control panel and select network and internet:



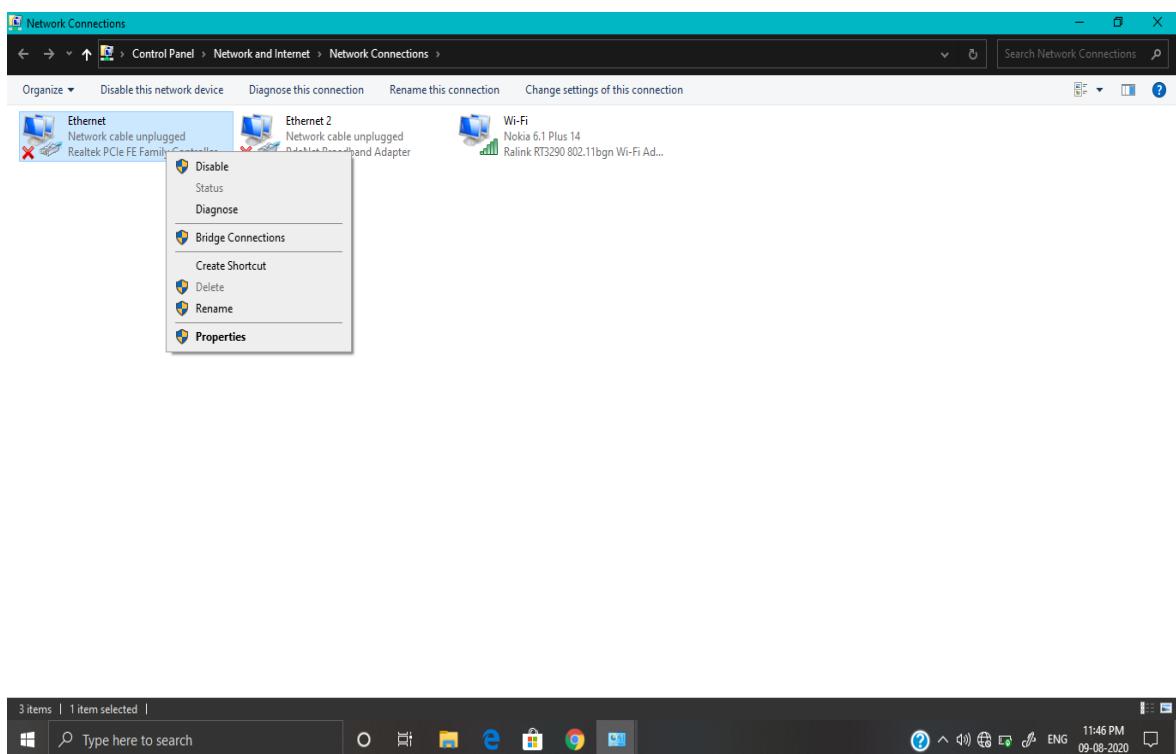
- b. Then select network and sharing center:



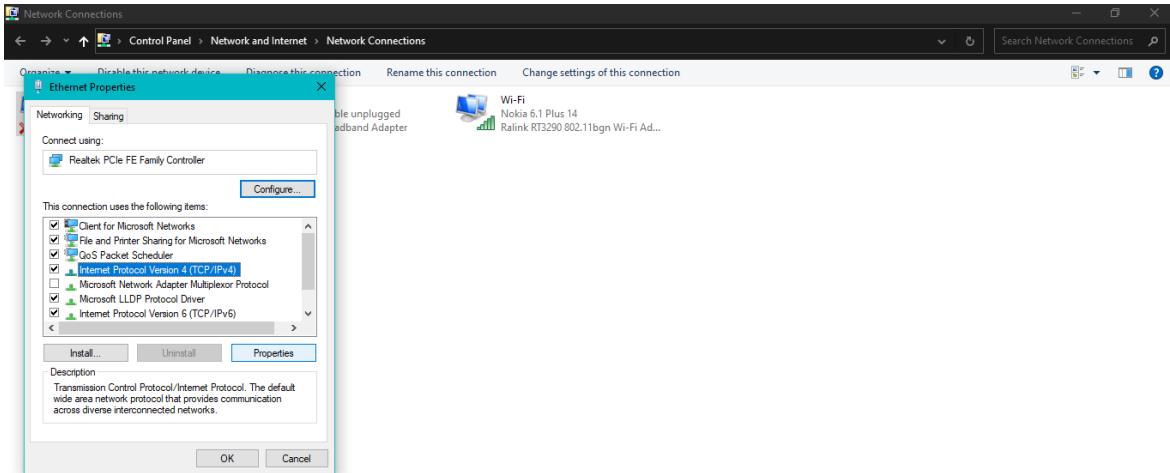
c. Click change adapter settings:



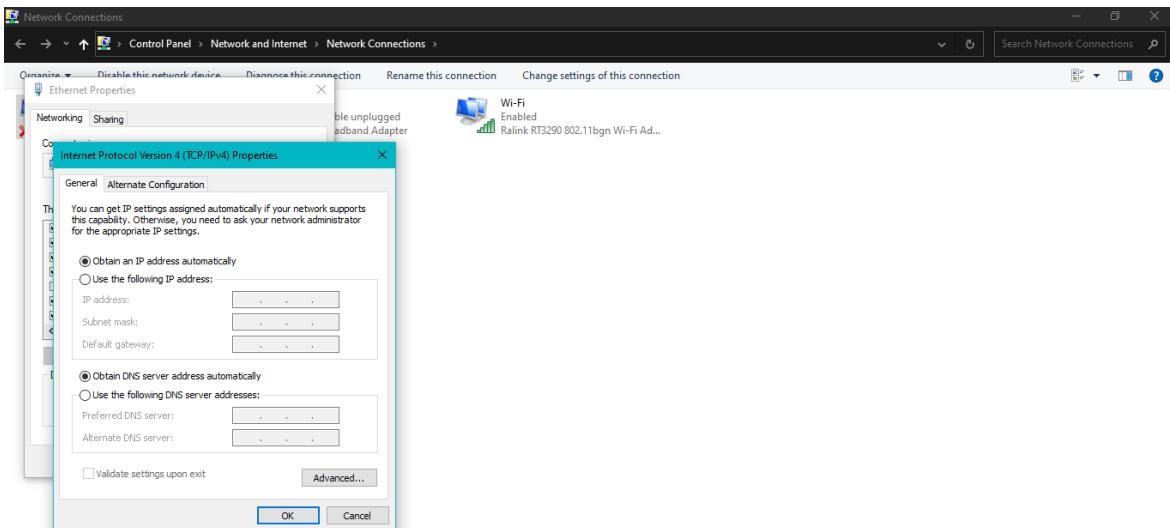
d. Right click on ethernet:



e. Go to properties:



f. Open Internet protocol 4 properties:



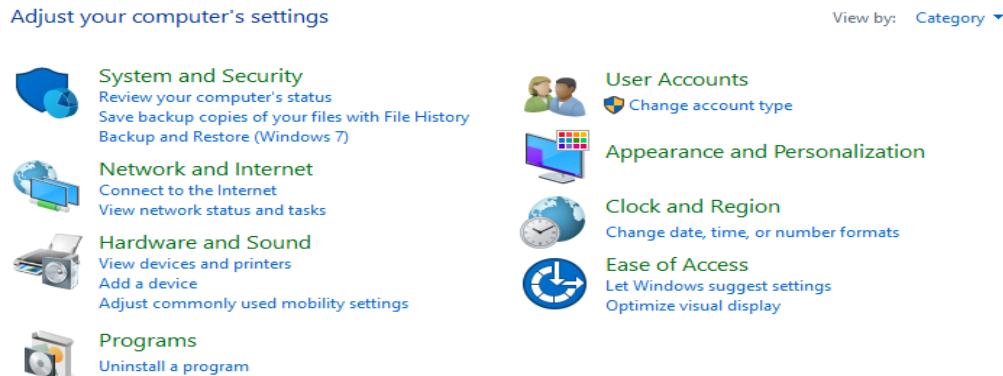
g. And then configure the details according to your ISP's instructions.

Name of Student: Suryakaran Tiwari	Class: IT-2
Enrolment No: 0827IT181104	Batch: 2
Date of Experiment: 19-08-20	Date of Submission: 26-08-20
Remarks by faculty:	Submitted on:
Signature of student:	Grade:
Signature of Faculty:	

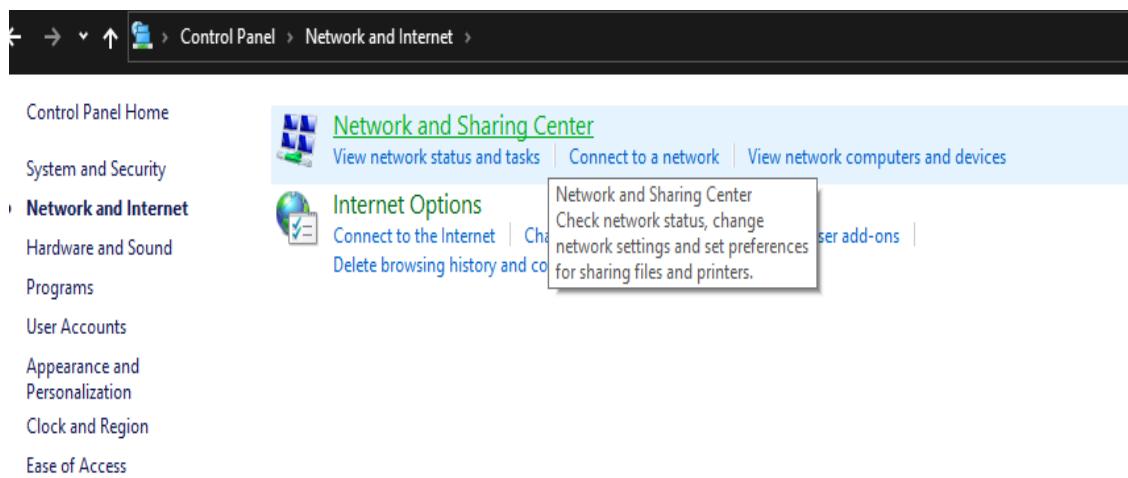
4. How to communicate with two system and share the data:

First connect both the devices with a LAN cable

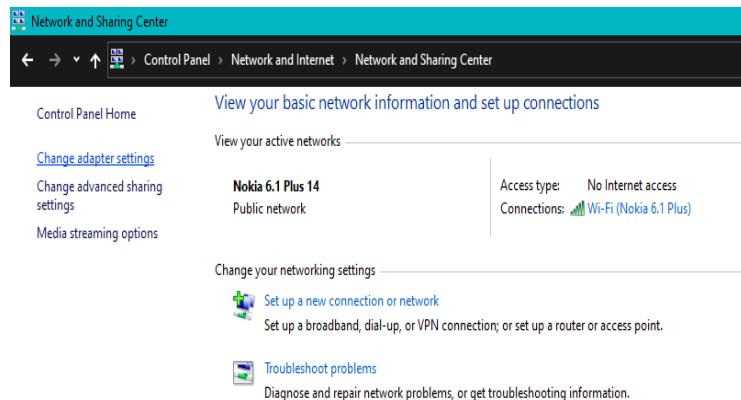
- Open control panel and select network and internet:



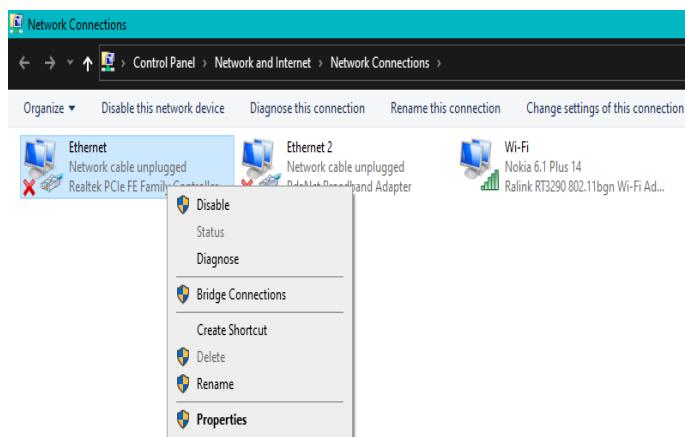
- Then select network and sharing center:



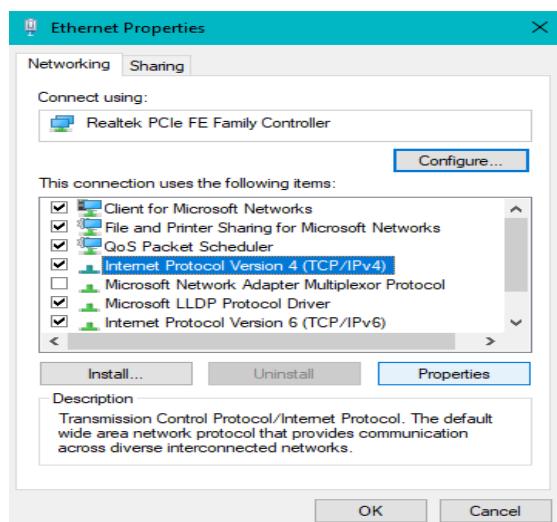
c. Click change adapter settings:



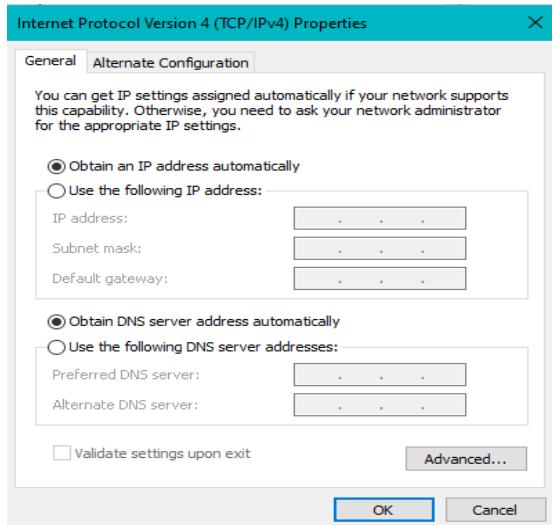
d. Right click on ethernet:



e. Go to properties:



- f. Open Internet protocol 4 properties:



- g. Use the following IP address and configure on both devices:

PC 1	PC 2
Ip address: 192.168.1.1	Ip address: 192.168.1.2
Subnet mask: 225.225.255.0	Subnet mask: 225.225.255.0
Default gateway: 192.168.1.2	Default gateway: 192.168.1.1
DNS server: 8.8.8.8	DNS server: 8.8.8.8

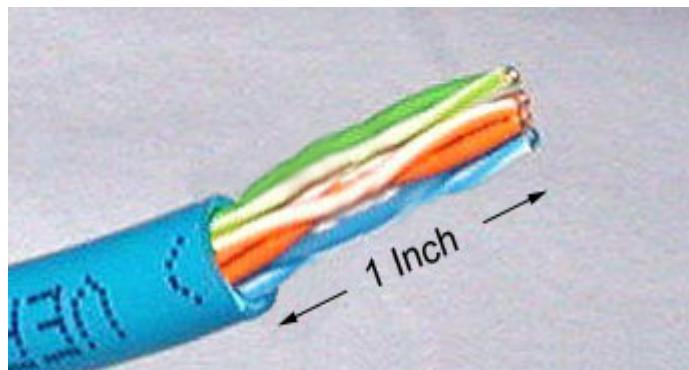
- h. Right-click on “This PC,” and choose “Properties.” Click on “Change settings -> Change.” This reveals the window with the name of the work group. The value for the workgroup name should be the same for both PCs. By default, the workgroup name will be WORKGROUP, but you can change it to any name you like.
- i. Right-click on the drive you want to share. Scroll to the “Give access to” option and click “Advanced Sharing.” Under the sharing tab, click the “Advanced Sharing” button.
- j. This reveals the advanced sharing window. Check the “Share this folder” checkbox and click “Apply -> OK.”
- k. At this stage, we have successfully connected the two Windows computers to share your drives between them.

Name of Student: Suryakaran Tiwari	Class: IT-2
Enrolment No: 0827IT181104	Batch: 2
Date of Experiment: 19-08-20	Date of Submission: 26-08-20
Remarks by faculty:	Submitted on:
Signature of student:	Grade:
Signature of Faculty:	

5. How to make an Ethernet cable:

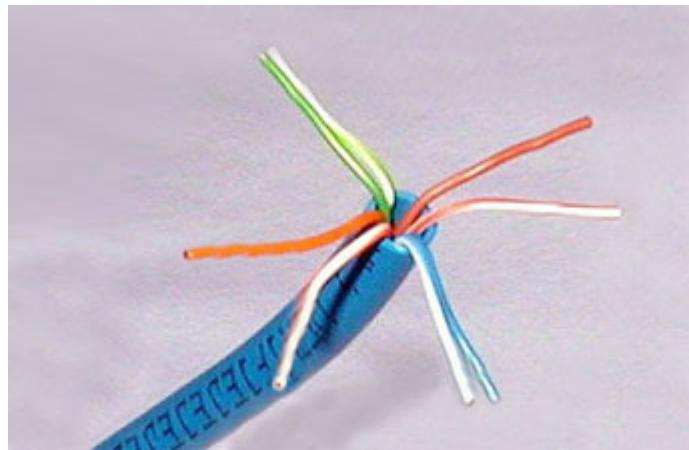
Step 1:

- Strip the cable jacket about 1.5 inch down from the end.



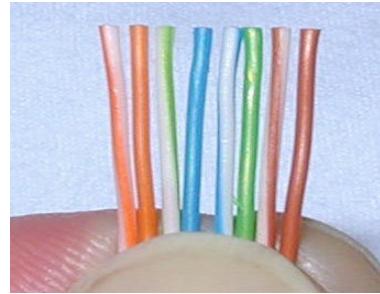
Step 2:

- Spread the four pairs of twisted wire apart. For Cat 5e, you can use the pull string to strip the jacket farther down if you need to, then cut the pull string. Cat 6 cables have a spine that will also need to be cut.



Step 3:

- Untwist the wire pairs and neatly align them in the T568B orientation. Be sure not to untwist them any farther down the cable than where the jacket begins; we want to leave as much of the cable twisted as possible.



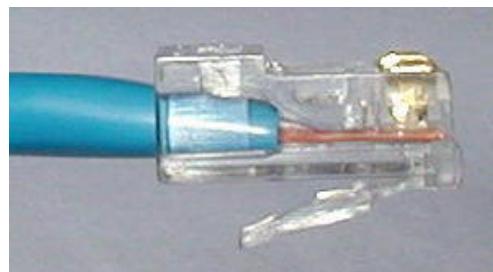
Step 4:

- Cut the wires as straight as possible, about 0.5 inch above the end of the jacket.



Step 5:

- Carefully insert the wires all the way into the modular connector, making sure that each wire passes through the appropriate guides inside the connector.



Step 6:

- Push the connector inside the crimping tool and squeeze the crimper all the way down.



Step 7:

- Repeat steps 1-6 for the other end of the cable.

Step 8:

- To make sure you have successfully terminated each end of the cable, use a cable tester to test each pin.
- When you are all done, the connectors should look like this:



- This is our required Ethernet cable.

Name of Student: Surayakaran Tiwari	Class: IT-2	
Enrolment No: 0827IT181104	Batch: 2	
Date of Experiment: 19-08-20	Date of Submission: 26-08-20	Submitted on:
Remarks by faculty:	Grade:	
Signature of student:	Signature of Faculty:	

6. Case study of LAN, MAN and WAN:

What is a Network?

A network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams.

There are three main types of networks:

- Local Area Network (LAN): It is usually a small network that is restricted to a small geographic area. A computer network available only to the residents of a building can be called a LAN.
- Wide Area Network (WAN): As the name implies, these networks cover a broad range of geographic area. WANs are used to connect LANs and other types of networks together so that users and computers can communicate with computers in other regions.
- Metropolitan Area Network (MAN): MAN is a network that connects the users with computer resources in a geographic area that is larger than LAN but not quite as large as WAN.

Features of LAN:

- Every computer has the potential to communicate with any other computers of the network.
- High degree of interconnection between computers.
- Easy physical connection of computers in a network.
- Inexpensive medium of data transmission.
- High data transmission rate.

Features of MAN:

- **Network** size generally ranges from 5 to 50 km.
- Data rates are moderate to high.
- In general, a **MAN** is either owned by a user group or by a **network** provider who sells service to users, rather than a single organization as in LAN.
- It facilitates sharing of regional resources.

Features of WAN:

- WANs have a large capacity, connecting many computers over a large area, and are inherently scalable.
- They facilitate the sharing of regional resources.
- They provide uplinks for connecting LANs and MANs to the Internet.
- Communication links are provided by public carriers like telephone networks, network providers, cable systems, satellites etc.
- Typically, they have low data transfer rate and high propagation delay, i.e. They have low communication speed.
- They generally have a higher bit error rate.

Applications of LAN:

- The first application of the LAN network is that it can be easily implemented as a server-client model network.
- As all the workstations are connected locally, if they want to pass on some internal communication, then each node can communicate with one another without having any internet connection.
- The resources like printers, hard-disk, and FAX machine can publicly use all the nodes in LAN networks.

Application of MAN:

- Various government bodies use MAN network for inter-connectivity between their department's offices situated at different locations.
- Any private firm can also use a MAN network for inter-connectivity between their offices situated at two different towns of a district. The firm can share resources like data file, images, software & hardware parts etc., with each other. Thus, it provides resource sharing over a large distance than the LAN networks.

Applications of WAN:

- Consider the case of an MNC where the head office is situated in Delhi and the regional offices are situated in Bangalore and Mumbai. Here, all are connected through a WAN network.
- The WAN networks are used for military services. The satellite mode of transmission is used in this setup. Military operations require highly secured network for communication. Thus, WAN is used in this scenario.
- Railways reservation and Airlines use WAN networks. The client nodes are situated all over the country and are connected to a centralized server node and all are connected to one network. Thus, booking can be done from anywhere in the country.

LAN	MAN	WAN
LAN or Local Area Network connects network devices in such a way that personal computer and workstations can share data, tools and programs. The group of computers and devices are connected by a switch, or stack of switches, using a private addressing scheme as defined by the TCP/IP protocol. Private addresses are unique in relation to other computers on the local network. Routers are found at the boundary of a LAN, connecting them to the larger WAN.	MAN, or Metropolitan area Network covers a larger area than that of a LAN and smaller area as compared to WAN. It connects two or more computers that are apart but resides in the same or different cities. It covers a large geographical area and may serve as an ISP (Internet Service Provider). MAN is designed for customers who need a high-speed connectivity. Speeds of MAN ranges in terms of Mbps. It is hard to design and maintain a Metropolitan Area Network.	WAN or Wide Area Network is a computer network that extends over a large geographical area, although it might be confined within the bounds of a state or country. A WAN could be a connection of LAN connecting to other LAN's via telephone lines and radio waves and may be limited to an enterprise (a corporation or an organization) or accessible to the public. The technology is high speed and relatively expensive.

Summary:

MAN, networks are very rare in use as they have lots of security issues and the installation costs are very high as well.

According to the latest trend of technology, LAN networks are most widely used for local level communications within offices and colleges while WAN is widely used in mobile and LTE long distance communications where the connectivity is based on the fibre cable.