

CA169 Assignment 1 Lab Report

Submit these pages onwards.

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MODULE CODE:	CA169
DEGREE: [CA EC ECSA PSSD]	CA
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Declaration

In submitting this project, I declare that the project material, which I now submit, is my own work. Any assistance received by way of borrowing from the work of others has been cited and acknowledged within the work. I make this declaration in the knowledge that a breach of the rules pertaining to project submission may carry serious consequences.

Answer Sheets

Ipconfig exercise

IP address of the machine	136.206.17.155
MAC address	50-9A-4C-3D-8C-52

Ping exercise 1

What is displayed?

- Ping commands are displayed with their descriptions along with the usage options for ping.

```
C:\Windows\system32\cmd.exe

C:\Users\umerm2>ping

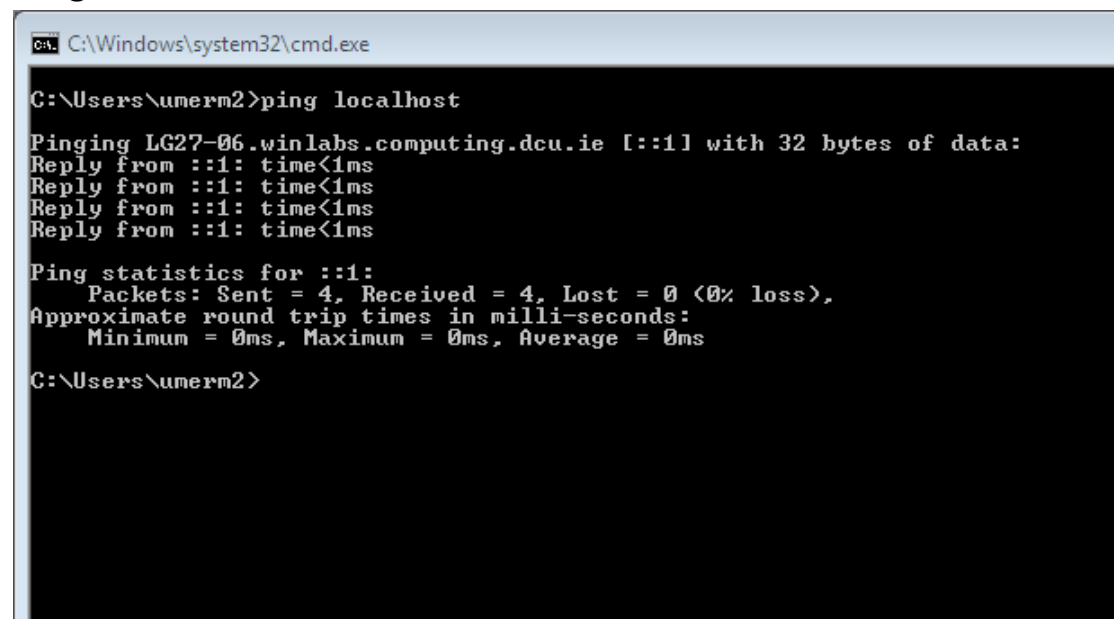
Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS]
           [-r count] [-s count] [[-j host-list] ! [-k host-list]]
           [-w timeout] [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -t           Ping the specified host until stopped.
                  To see statistics and continue - type Control-Break;
                  To stop - type Control-C.
    -a           Resolve addresses to hostnames.
    -n count     Number of echo requests to send.
    -l size      Send buffer size.
    -f           Set Don't Fragment flag in packet (IPv4-only).
    -i TTL       Time To Live.
    -v TOS       Type Of Service (IPv4-only. This setting has been deprecated
                  and has no effect on the type of service field in the IP Header).
    -r count     Record route for count hops (IPv4-only).
    -s count     Timestamp for count hops (IPv4-only).
    -j host-list Loose source route along host-list (IPv4-only).
    -k host-list Strict source route along host-list (IPv4-only).
    -w timeout   Timeout in milliseconds to wait for each reply.
    -R           Use routing header to test reverse route also (IPv6-only).
    -S srcaddr   Source address to use.
    -4           Force using IPv4.
    -6           Force using IPv6.

C:\Users\umerm2>_
```

Ping exercise 2

Ping localhost



```
C:\Windows\system32\cmd.exe

C:\Users\umerm2>ping localhost

Pinging LG27-06.winlabs.computing.dcu.ie [::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\umerm2>
```

1. What information is returned?
2. What is the localhost?

Answer 1

- First line shows the hostname and the IP address of the local host along and it is telling us that it has pinged the localhost with 32 bytes of data.
- The next four line shows us the reply received from localhost and how long it took to get a reply which is known as the round-trip time.
- The last few lines shows us the statistics of the packets which were sent, and it tells us how many of them were sent and received successfully and how many were lost along with the information of their round-trip times in milliseconds.

Answer 2

- LG27-06.winlabs.computing.dcu.ie in my case, is the hostname of the machine which is being used by a user currently.

Ping the IP address **89.207.56.140** or the address **216.58.211.163**

```
C:\Windows\system32\cmd.exe
C:\Users\umern2>ping 89.207.56.140

Pinging 89.207.56.140 with 32 bytes of data:
Reply from 89.207.56.140: bytes=32 time=1ms TTL=55
Reply from 89.207.56.140: bytes=32 time=2ms TTL=55
Reply from 89.207.56.140: bytes=32 time=2ms TTL=55
Reply from 89.207.56.140: bytes=32 time=2ms TTL=55

Ping statistics for 89.207.56.140:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\Users\umern2>
```

```
C:\Windows\system32\cmd.exe
C:\Users\umern2>ping 216.58.211.163

Pinging 216.58.211.163 with 32 bytes of data:
Reply from 216.58.211.163: bytes=32 time=4ms TTL=53
Reply from 216.58.211.163: bytes=32 time=1ms TTL=53
Reply from 216.58.211.163: bytes=32 time=1ms TTL=53
Reply from 216.58.211.163: bytes=32 time=1ms TTL=53

Ping statistics for 216.58.211.163:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 4ms, Average = 1ms

C:\Users\umern2>
```

Explain output here, item by item.

- 1st line tells us that we are pinging the IP address 89.207.56.140 by sending 32 bytes of data.
- Lines 2-5 shows us the reply from that IP address of those sent packets, their size in bytes, the time for the reply and the time to live limit for those packets which was 55ms and it tells it to abandon any packets which takes any longer time than time to live.
- Lines 6-7 tells us the amounts of packets sent (4) and received (4) and how many are lost (0) with percentage in this process.
- Line 8-9 tells us the min(1ms) and max(2ms) and the average(1ms) time taken those round trips

- 1st line tells us that we are pinging the IP address 216.58.211.163 by sending 32 bytes of data.
- Lines 2-5 shows us the reply from that IP address of those sent packets, their size in bytes, the time for the reply and the time to live limit for those packets which was 53ms and it tells it to abandon any packets which takes any longer time than time to live.
- Lines 6-7 tells us the amounts of packets sent (4) and received (4) and how many are lost (0) with percentage in this process.
- Line 8-9 tells us the min(1ms) and max(1ms) and the average(1ms) time taken those round trips took.

- URL: <https://www.rte.ie/>
- Owner: Irish Government
- Phone No: (01) 208 3434
- Postal Address: RTÉ, Donnybrook, Dublin 4
- Extras: n/a
- Explanation: Using Wikipedia and other websites.

- URL: <https://www.google.ie/>
- Owner: Larry Page and Sergey Brin
- Phone No: (01) 543 1000
- Postal Address: Gordon House, Barrow St, Dublin 4
- Extras: n/a
- Explanation: Using Wikipedia and other websites

Exercise 3

Paste window 1

```
C:\Windows\system32\cmd.exe

C:\Users\umerm2>ping www.bbc.co.uk

Pinging www.bbc.net.uk [212.58.246.95] with 32 bytes of data:
Reply from 212.58.246.95: bytes=32 time=15ms TTL=48
Reply from 212.58.246.95: bytes=32 time=15ms TTL=48
Reply from 212.58.246.95: bytes=32 time=15ms TTL=48
Reply from 212.58.246.95: bytes=32 time=15ms TTL=48

Ping statistics for 212.58.246.95:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 15ms, Maximum = 15ms, Average = 15ms

C:\Users\umerm2>
```

Paste window 2

```
C:\Windows\system32\cmd.exe

C:\Users\umerm2>ping www.schlitterbahn.com

Pinging www.schlitterbahn.com [198.101.143.177] with 32 bytes of data:
Reply from 198.101.143.177: bytes=32 time=96ms TTL=110
Reply from 198.101.143.177: bytes=32 time=95ms TTL=110
Reply from 198.101.143.177: bytes=32 time=96ms TTL=110
Reply from 198.101.143.177: bytes=32 time=96ms TTL=110

Ping statistics for 198.101.143.177:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 95ms, Maximum = 96ms, Average = 95ms

C:\Users\umerm2>
```

	Website 1	Website 2
Name of the website pinged	www.bbc.co.uk	www.schlitterbahn.com
What is the IP address returned?	212.58.246.95	198.101.143.177
What is the TTL figure?	48	110
Average round trip time	15ms	95ms

Your comments on administrative information that you found by searching on the Internet about the websites from experiment 3. Things like, who owns it, phone numbers, email addresses, registered addresses etc, anything at all that tells us about the website and its administration.

Website 1: www.bbc.co.uk

Admin Name: Domain Manager

Admin Organisation: British Broadcasting Corporation

City: London

Phone: +44 02080083539

Email: newswatch@bbc.co.uk

Website 2: www.schlitterbahn.com

Name/Organisation: Schlitterbahn Waterpark and Resorts

Address: 33261 State Park Road 100, South Padre Island, Texas 78597

Phone: (855) 923-7543

Email: onlinehelp@schlitterbahn.com

Exercise 4: Netstat exercise

Number of packets received by workstation: 39149 packets

```
C:\Windows\system32\cmd.exe

C:\Users\umerm2>netstat -es
Interface Statistics

              Received              Sent
Bytes          176873956          12152056
Unicast packets    141580           66745
Non-unicast packets  16500           1876
Discards           0              0
Errors             0              0
Unknown protocols  0

IPv4 Statistics

Packets Received           = 39149
Received Header Errors     = 0
Received Address Errors    = 19
Datagrams Forwarded        = 0
Unknown Protocols Received = 0
Received Packets Discarded  = 321
Received Packets Delivered  = 39531
Output Requests            = 16837
Routing Discards           = 0
Discarded Output Packets    = 0
Output Packet No Route     = 0
Reassembly Required        = 0
Reassembly Successful       = 0
Reassembly Failures        = 0
Datagrams Successfully Fragmented = 0
Datagrams Failing Fragmentation = 0
Fragments Created          = 0
```

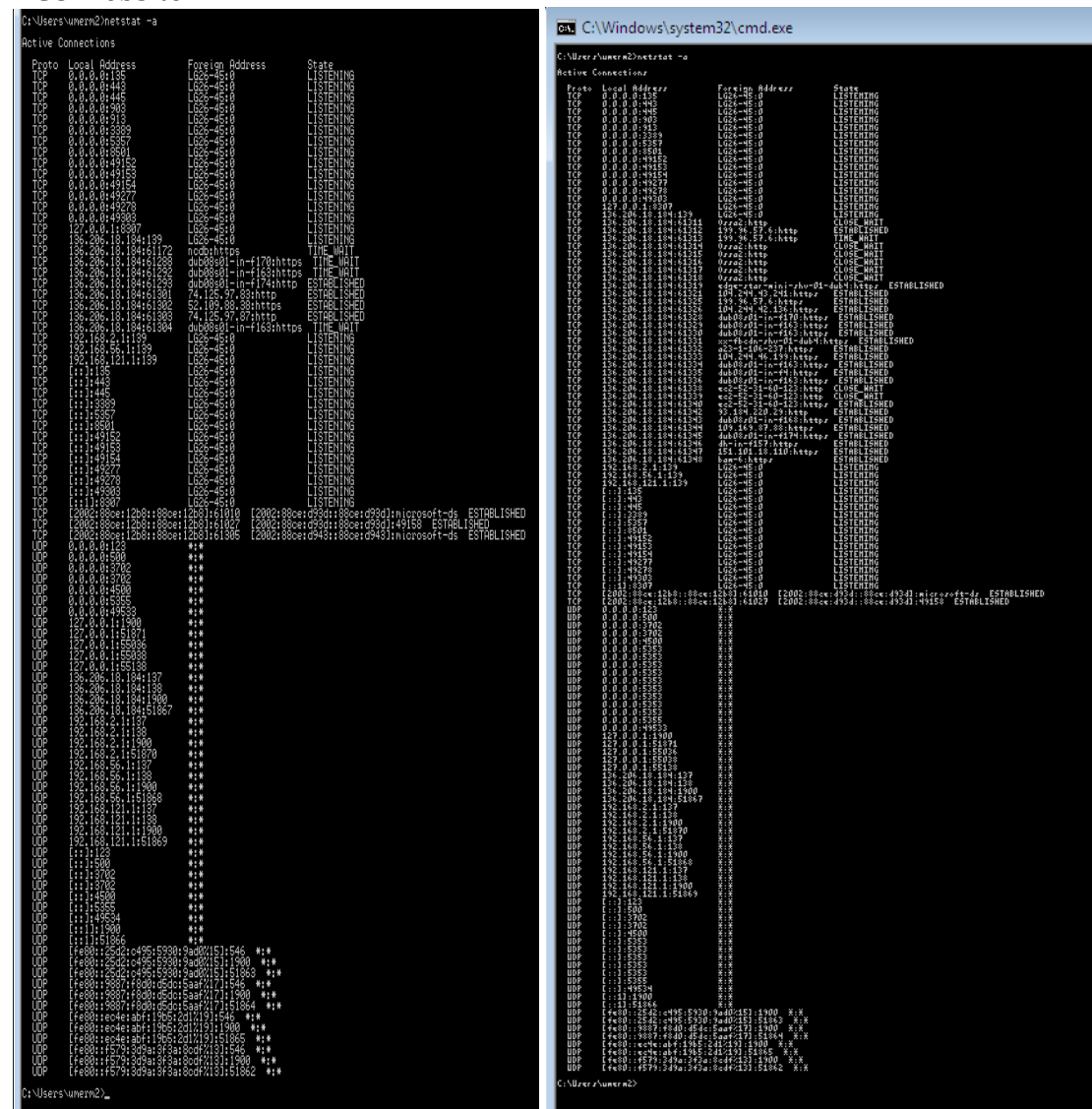
ICMP packets explained:

ICMPv4 Statistics		
	Received	Sent
Messages	6	7
Errors	0	0
Destination Unreachable	0	1
Time Exceeded	0	0
Parameter Problems	0	0
Source Quenches	0	0
Redirects	0	0
Echo Replies	6	0
Echos	0	6
Timestamps	0	0
Timestamp Replies	0	0
Address Masks	0	0
Address Mask Replies	0	0
Router Solicitations	0	0
Router Advertisements	0	0

ICMPv6 Statistics		
	Received	Sent
Messages	13	80
Errors	0	0
Destination Unreachable	0	0
Packet Too Big	0	0
Time Exceeded	0	0
Parameter Problems	0	0
Echos	0	60
Echo Replies	0	0
MLD Queries	0	0
MLD Reports	0	0
MLD Dones	0	0
Router Solicitations	0	12
Router Advertisements	0	0
Neighbor Solicitations	0	4
Neighbor Advertisements	13	4
Redirects	0	0
Router Renumberings	0	0

Internet Control Message Protocol (ICMP) is an internet protocol extension which is an error reporting protocol used by routers, hosts and network devices and when there is an error delivering IP packets it generates error messages. The picture beside shows the statistics on the ICMPv4 and ICMPv6. For ICMPv4, 7 messages were sent and 6 were received without error but the destination for one of them was unreachable so it was not received. For ICMPv6, 80 messages were sent and 13 were received without error. Ping works like a sonar and it sends information in small packets containing and ICMP echo request to a specified computer/network device and when the connections is

Discuss the connections opened by visiting the DCU website here.
Also, grab the window, showing connections opened as a result of visiting the DCU website.



Before opening web browser

After visiting DCU website

- The pictures above on the right show a significant increase in connections that were made after I visited DCU website compare to the one on the left.
- The connections were in established state which means they were connected to my computer device.

Netstat -r explained:

```
C:\Windows\system32\cmd.exe
C:\Users\umerm2>netstat -r
=====
Interface List
=====
13...50 9a 4c 3d 92 e4 .....Intel(R) Ethernet Connection (5) I219-V
15...0a 00 27 00 00 0f .....VirtualBox Host-Only Ethernet Adapter
17...00 50 56 c0 00 01 .....VMware Virtual Ethernet Adapter for VMnet1
19...00 50 56 c0 00 08 .....VMware Virtual Ethernet Adapter for VMnet8
1...-...-...-...-...-...Software Loopback Interface 1
14...00 00 00 00 00 00 e0 Microsoft ISATAP Adapter
11...00 00 00 00 00 00 e0 Microsoft 6to4 Adapter
12...00 00 00 00 00 00 e0 Microsoft Teredo Tunneling Adapter
16...00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #2
18...00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #3
20...00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #4
=====

IPv4 Route Table
=====
Active Routes:
=====
Network Destination          Netmask          Gateway          Interface        Metric
-----
0.0.0.0                      0.0.0.0          136.206.18.254   136.206.18.184   10
127.0.0.0                    255.0.0.0        0n-link          127.0.0.1        306
127.0.0.1                    255.255.255.255  0n-link          127.0.0.1        306
127.255.255.255             255.255.255.255  0n-link          127.0.0.1        306
136.206.18.0                 255.255.255.0    0n-link          136.206.18.184   266
136.206.18.184               255.255.255.255  0n-link          136.206.18.184   266
136.206.18.255               255.255.255.255  0n-link          136.206.18.184   266
192.168.2.0                  255.255.255.0    0n-link          192.168.2.1      276
192.168.2.1                  255.255.255.255  0n-link          192.168.2.1      276
192.168.2.255                255.255.255.255  0n-link          192.168.2.1      276
192.168.56.0                 255.255.255.0    0n-link          192.168.56.1     266
192.168.56.1                 255.255.255.255  0n-link          192.168.56.1     266
192.168.56.255               255.255.255.255  0n-link          192.168.56.1     266
192.168.121.0                255.255.255.0    0n-link          192.168.121.1    276
192.168.121.1                255.255.255.255  0n-link          192.168.121.1    276
192.168.121.255              255.255.255.255  0n-link          192.168.121.1    276
224.0.0.0                    240.0.0.0        0n-link          127.0.0.1        306
224.0.0.0                    240.0.0.0        0n-link          136.206.18.184   266
224.0.0.0                    240.0.0.0        0n-link          192.168.56.1     266
224.0.0.0                    240.0.0.0        0n-link          192.168.121.1    276
224.0.0.0                    240.0.0.0        0n-link          192.168.2.1      276
255.255.255.255              255.255.255.255  0n-link          127.0.0.1        306
255.255.255.255              255.255.255.255  0n-link          136.206.18.184   266
255.255.255.255              255.255.255.255  0n-link          192.168.56.1     266
255.255.255.255              255.255.255.255  0n-link          192.168.121.1    276
255.255.255.255              255.255.255.255  0n-link          192.168.2.1      276
=====
Persistent Routes:
None

IPv6 Route Table
=====
Active Routes:
=====
If Metric Network Destination      Gateway
-----
1        306 ::1/128                  0n-link
11       1010 2002::/16                 0n-link
11       266 2002:88ce:12b8::88ce:12b8/128 0n-link
13       266 fe80::/64                  0n-link
15       266 fe80::/64                  0n-link
17       276 fe80::/64                  0n-link
19       276 fe80::/64                  0n-link
15       266 fe80::25d2:c495:5930:9ad0/128 0n-link
17       276 fe80::9887:f8d0:d5dc:5aaf/128 0n-link
19       276 fe80::ec4e:abf:19b5:2d1/128 0n-link
13       266 fe80::f579:3d9a:3f3a:8cdf/128 0n-link
1        306 ff00::/8                    0n-link
13       266 ff00::/8                    0n-link
15       266 ff00::/8                    0n-link
17       276 ff00::/8                    0n-link
19       276 ff00::/8                    0n-link
=====
Persistent Routes:
None
```

Netstat command with parameter -r shows the routing table for the computer's network adapter which contains addresses for other networks. Routing table can be found in any networking device and is used to determine the locations of where to send packets.