

# COIT20246

# Networking and Cyber Security.

## Week01

Task 1. View your Computer information

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\HI> get-computerinfo

WindowsBuildLabEx           : 19041.1.amd64fre.vb_release.191206-1406
WindowsCurrentVersion       : 6.3
WindowsEditionId            : Professional
WindowsInstallationType     : Client
WindowsInstallDateFromRegistry : 06-07-2022 11:55:30
WindowsProductId            : 00330-00000-00000-AA631
WindowsProductName          : Windows 10 Pro
WindowsRegisteredOrganization : 
WindowsRegisteredOwner     : HI
WindowsSystemRoot           : C:\Windows
WindowsVersion              : 20H4
BiosCharacteristics         : (7, 11, 12, 15...)
BiosBIOSVersion             : (HPQOEM - 1, InsydeH2O Version 03.61.01F.62, InsydeH2O Version 03.61.01F.62)
BiosBuildNumber             : 
BiosCaption                 : InsydeH2O Version 03.61.01F.62
BiosCodeSet                 : 
BiosCurrentLanguage         : 
BiosDescription             : InsydeH2O Version 03.61.01F.62
BiosEmbeddedControllerMajorVersion : 9
BiosEmbeddedControllerMinorVersion : 75
BiosFirmwareType            : Bios
BiosIdentificationCode      : 
BiosInstallableLanguages    : 
BiosInstallDate             : 
BiosLanguageEdition         : 
BiosListOfLanguages         : 
BiosManufacturer           : Hewlett-Packard
BiosName                    : InsydeH2O Version 03.61.01F.62
BiosOtherTargetOS           : 
BiosPrimaryBIOS             : True
BiosReleaseDate             : 07-02-2012 11:00:00
BiosSerialNumber            : CNF1255SH8
BiosSMBIOSBIOSVersion       : F.62
BiosSMBIOSMajorVersion      : 2
BiosSMBIOSMinorVersion      : 7
BiosSMBIOSPresent           : True
BiosSoftwareElementState    : Running
BiosStatus                  : OK
BiosSystemBIOSMajorVersion  : 15
BiosSystemBIOSMinorVersion  : 98
BiosTargetOperatingSystem   : 0
BiosVersion                 : HPQOEM - 1
```

```
Windows PowerShell

PS C:\Users\HI> get-netipconfiguration

InterfaceAlias      : Wi-Fi
InterfaceIndex      : 15
InterfaceDescription : Broadcom 802.11n Network Adapter
NetProfile.Name      : Aqsa's Galaxy A33 5G
IPv4Address          : 192.168.169.174
IPv6DefaultGateway   : 
IPv4DefaultGateway   : 192.168.169.254
DNSServer            : 192.168.169.254

InterfaceAlias      : Ethernet
InterfaceIndex      : 17
InterfaceDescription : Realtek PCIe FE Family Controller
NetAdapter.Status    : Disconnected

PS C:\Users\HI> get-netipaddress

IPAddress           : fe80::80ad:b221:761c:8e62%18
InterfaceIndex      : 18
InterfaceAlias      : Local Area Connection* 2
AddressFamily        : IPv6
Type                : Unicast
PrefixLength        : 64
PrefixOrigin         : WellKnown
SuffixOrigin         : Link
AddressState         : Deprecated
ValidLifetime        : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime    : Infinite ([TimeSpan]::MaxValue)
SkipAsSource         : False
PolicyStore          : ActiveStore

IPAddress           : fe80::197d:eea8:d02c:2c68%13
InterfaceIndex      : 13
InterfaceAlias      : Local Area Connection* 1
AddressFamily        : IPv6
Type                : Unicast
PrefixLength        : 64
PrefixOrigin         : WellKnown
SuffixOrigin         : Link
AddressState         : Deprecated
ValidLifetime        : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime    : Infinite ([TimeSpan]::MaxValue)
SkipAsSource         : False
```

```
Windows PowerShell
OsSerialNumber : 00330-80000-00000-AA631
OsServicePackMajorVersion : 0
OsServicePackMinorVersion : 0
OsStatus : OK
OsSuits : (TerminalServices, TerminalServicesSingleSession)
OsServerLevel :
KeyboardLayout : en-IN
TimeZone : (UTC+10:00) Canberra, Melbourne, Sydney
LogonServer : \\\DESKTOP-77FSHT3
PowerPlatformRole : Mobile
HyperVIsorPresent : False
HyperVRequirementDataExecutionPreventionAvailable : True
HyperVRequirementSecondLevelAddressTranslation : True
HyperVRequirementVirtualizationFirmwareEnabled : False
HyperVRequirementVMMonitorModeExtensions : True
DeviceGuardSmartStatus : Off
DeviceGuardRequiredSecurityProperties :
DeviceGuardAvailableSecurityProperties :
DeviceGuardSecurityServicesConfigured :
DeviceGuardSecurityServicesRunning :
DeviceGuardCodeIntegrityPolicyEnforcementStatus :
DeviceGuardUserModeCodeIntegrityPolicyEnforcementStatus :

PS C:\Users\HI> get-computerinfo -property "osname"
OsName
-----
Microsoft Windows 10 Pro

PS C:\Users\HI> get-computerinfo -property "processors"
PS C:\Users\HI> get-computerinfo -property "processors"
CsNumberOfLogicalProcessors CsNumberOfProcessors CsProcessors
-----
4 1 (Intel(R) Core(TM) i5-2410M CPU @ 2.30GHz)

PS C:\Users\HI> get-netadapter
Name InterfaceDescription IfIndex Status MacAddress LinkSpeed
----
Ethernet Realtek PCIe FE Family Controller 17 Disconnected 2C-27-D7-EC-D4-18 0 bps
Wi-Fi Broadcom 802.11n Network Adapter 15 Up 40-2C-F4-08-04-42 72 Mbps

PS C:\Users\HI> get-netipconfiguration
```

## Task 2. Deploy Linux Web server in virtualbox.

Open wrt Linux Appliance from moodle then download the app. Open the downloaded app from there select “generate new MAC address for all networking adapters”. Select import and hit start. The linux appliance will open.

```
root@OpenWrt:/# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel master br-mng
    state UP qlen 1000
    link/ether 08:00:27:88:4c:38 brd ff:ff:ff:ff:ff:ff
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP qlen
    1000
    link/ether 08:00:27:de:b0:18 brd ff:ff:ff:ff:ff:ff
    inet 10.0.3.15/24 brd 10.0.3.255 scope global eth1
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fede:b018/64 scope link
        valid_lft forever preferred_lft forever
4: br-mng: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP qlen
    1000
    link/ether 08:00:27:88:4c:38 brd ff:ff:ff:ff:ff:ff
    inet 192.168.56.2/24 brd 192.168.56.255 scope global br-mng
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe88:4c38/64 scope link
        valid_lft forever preferred_lft forever
root@OpenWrt:/#
```

Few features of the kernel are file system, networking, memory management, and processing.

## Task3. Browse to openWRT websites.

## Task5. Create a github Account.

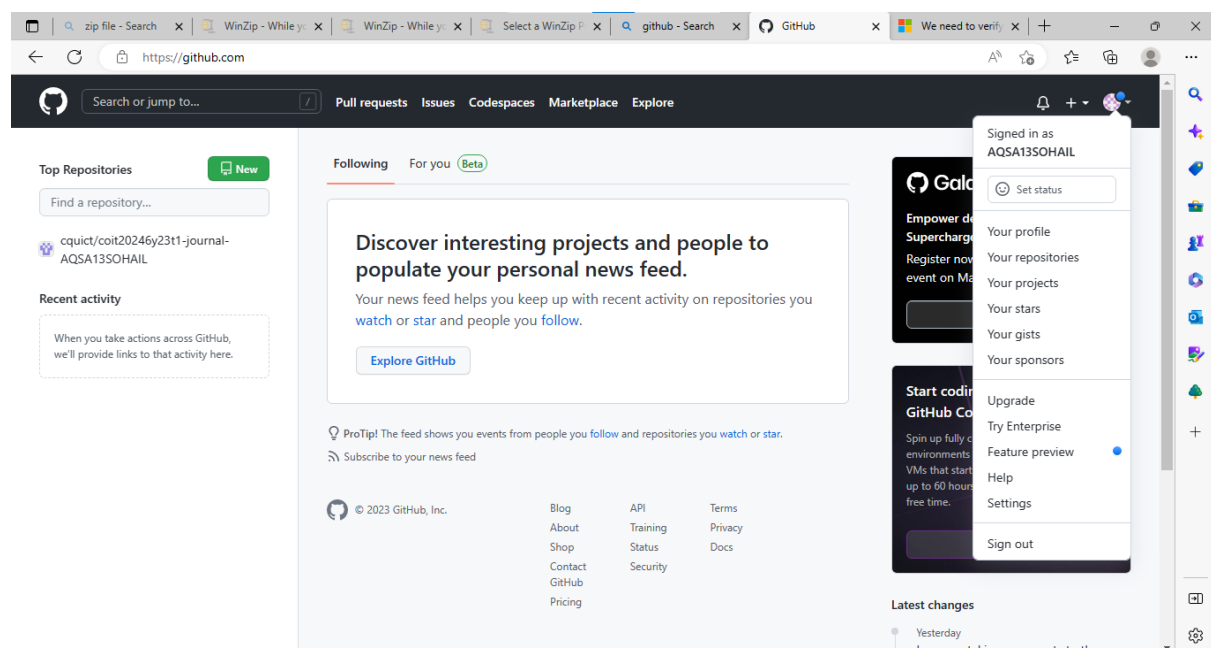
```
inet 192.168.56.2/24 brd 192.168.56.255 scope global br-mng
    valid_lft forever preferred_lft forever
inet6 fe80::a00:27ff:fe88:4c38/64 scope link
    valid_lft forever preferred_lft forever
root@OpenWrt:~# ping
BusyBox v1.35.0 (2023-01-03 00:24:21 UTC) multi-call binary.

Usage: ping [OPTIONS] HOST

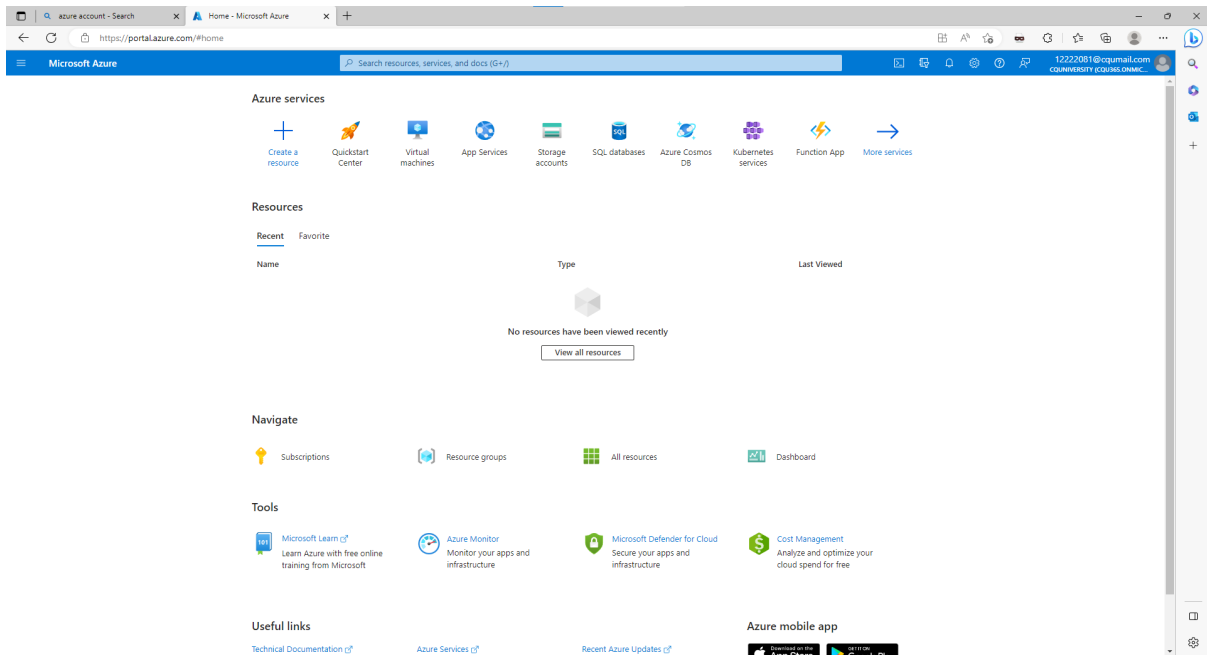
Send ICMP ECHO_REQUESTs to HOST

    -4,-6          Force IP or IPv6 name resolution
    -c CNT         Send only CNT pings
    -s SIZE        Send SIZE data bytes in packets (default 56)
    -i SECS        Interval
    -A            Ping as soon as reply is received
    -t TTL         Set TTL
    -I IFACE/IP    Source interface or IP address
    -W SEC         Seconds to wait for the first response (default 10)
                  (after all -c CNT packets are sent)
    -w SEC         Seconds until ping exits (default:infinite)
                  (can exit earlier with -c CNT)
    -q            Quiet, only display output at start/finish
    -p HEXBYTE    Payload pattern
root@OpenWrt:~#
```

To create github search Github.com and fill up the information and create the account.



## Task6. Create Microsoft Azure Account'



## Task7. Learning Reflection

This week I found difficulty in linux, this subject is new to me. It is a bit difficult for me to understand.

## Week02.

### Task1. View Your Addresses.

```

Windows PowerShell

Name      InterfaceDescription      IfIndex Status      MacAddress      LI
-----
VirtualBox Host-Only Network Adapter 10 Up      0A:00:27:00:00:00 ps
Internet  Intel(R) Ethernet Connection (7) I21... 0 Up      14:54:24-0C-FD-9E ps

PS C:\Users\12222081> get-netipaddress

IPAddress      : fe80::6154:6cc8:8a61:7e1d%10
InterfaceIndex : 10
InterfaceAlias : VirtualBox Host-Only Network
SubnetFamily   : IPv6
Type           : Unicast
PrefixLength   : 64
PrefixOrigin   : WellKnown
SourceRoute    : None
IsMulticast    : False
ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
RefreshableLifetime : Infinite ([TimeSpan]::MaxValue)
IsAutoSource   : False
PolicyStore    : ActiveStore

IPAddress      : fe80::c4ba:3178:120f:42b%8
InterfaceIndex : 8
InterfaceAlias : Ethernet
SubnetFamily   : IPv6
Type           : Unicast
PrefixLength   : 64
PrefixOrigin   : WellKnown
SourceRoute    : None
IsMulticast    : False
ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
RefreshableLifetime : Infinite ([TimeSpan]::MaxValue)
IsAutoSource   : False
PolicyStore    : ActiveStore

IPAddress      : fe80::3408:38e9:7592:20b%12
InterfaceIndex : 12
InterfaceAlias : Teredo Tunneling Pseudo-Interface
SubnetFamily   : IPv6
Type           : Unicast
PrefixLength   : 64
PrefixOrigin   : WellKnown
SourceRoute    : None
IsMulticast    : False
ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
RefreshableLifetime : Infinite ([TimeSpan]::MaxValue)
IsAutoSource   : False
PolicyStore    : ActiveStore

IPAddress      : 2001:0:2b31:f1b0:3408:38e9:7592:20b%
InterfaceIndex : 12
InterfaceAlias : Teredo Tunneling Pseudo-Interface
SubnetFamily   : IPv6
Type           : Unicast
PrefixLength   : 64
PrefixOrigin   : RouterAdvertisement
SourceRoute    : None
IsMulticast    : False
ValidLifetime  : Infinite ([TimeSpan]::MaxValue)
RefreshableLifetime : Infinite ([TimeSpan]::MaxValue)
IsAutoSource   : False
PolicyStore    : ActiveStore

IPAddress      : ::1
InterfaceIndex : 1

```

Select Windows PowerShell

Windows PowerShell  
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Try the new cross-platform PowerShell <https://aka.ms/pscore6>

PS C:\Users\12222081> get-netadapter

Name	InterfaceDescription	ifIndex	Status	MacAddress	Link Speed
VirtualBox Host-Only N...	VirtualBox Host-Only Ethernet Adapter	10	Up	0A-00-27-00-00-0A	...
Ethernet	Intel(R) Ethernet Connection (7) I21...	8	Up	E4-54-E8-6C-F8-9E	...

PS C:\Users\12222081> get-netipaddress

IPAddress : fe80::6154:6cc0:8ae1:7e1d%10  
InterfaceIndex : 10  
InterfaceAlias : VirtualBox Host-Only Network  
AddressFamily : IPv6  
Type : Unicast  
PrefixLength : 64  
PrefixOrigin : WellKnown  
SuffixOrigin : Link  
AddressState : Preferred  
ValidLifetime : Infinite ([TimeSpan]::MaxValue)  
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)  
SkipAsSource : False  
PolicyStore : ActiveStore

IPAddress : fe80::c4ba:3170:126f:420c%8  
InterfaceIndex : 8  
InterfaceAlias : Ethernet  
AddressFamily : IPv6  
Type : Unicast  
PrefixLength : 64  
PrefixOrigin : WellKnown  
SuffixOrigin : Link  
AddressState : Preferred  
ValidLifetime : Infinite ([TimeSpan]::MaxValue)  
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)  
SkipAsSource : False  
PolicyStore : ActiveStore

IPAddress : fe80::14a9:b3f1:75b2:290b%12  
InterfaceIndex : 12  
InterfaceAlias : Teredo Tunneling Pseudo-Interface  
AddressFamily : IPv6

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Select Windows PowerShell
refixLength      : 24
refixOrigin      : Manual
uffixOrigin      : Manual
dressState       : Preferred
alidLifetime     : Infinite ([TimeSpan]::MaxValue)
ferredLifetime   : Infinite ([TimeSpan]::MaxValue)
kipAssSource     : False
olicyStore       : ActiveStore

PAddress         : 10.162.33.244
nterfaceIndex    : 8
nterfaceAlias    : Ethernet
dressFamily      : IPv4
ype              : Unicast
refixLength      : 22
refixOrigin      : Dhcp
uffixOrigin      : Dhcp
dressState       : Preferred
alidLifetime     : 7.14:46:20
ferredLifetime   : 7.14:46:20
kipAssSource     : False
olicyStore       : ActiveStore

PAddress         : 127.0.0.1
nterfaceIndex    : 1
nterfaceAlias    : Loopback Pseudo-Interface 1
dressFamily      : IPv4
ype              : Unicast
refixLength      : 8
refixOrigin      : WellKnown
uffixOrigin      : WellKnown
dressState       : Preferred
alidLifetime     : Infinite ([TimeSpan]::MaxValue)
ferredLifetime   : Infinite ([TimeSpan]::MaxValue)
kipAssSource     : False
olicyStore       : ActiveStore

S C:\Users\12222081> test-connection

cmdlet Test-Connection at command pipeline position 1
Supply values for the following parameters:
ComputerName[0]: 10.162.33.244
ComputerName[1]: 127.0.0.1
ComputerName[2]:

Source           Destination      IPv4Address      IPv6Address      Bytes      Time(ms)
-----
QU006284        10.162.33.244   192.168.56.1     fe80::6154:6cc0:8ae1:7e1d%10 32         0
QU006284        10.162.33.244   192.168.56.1     fe80::6154:6cc0:8ae1:7e1d%10 32         0
QU006284        10.162.33.244   192.168.56.1     fe80::6154:6cc0:8ae1:7e1d%10 32         0
QU006284        10.162.33.244   192.168.56.1     fe80::6154:6cc0:8ae1:7e1d%10 32         0
QU006284        127.0.0.1       192.168.56.1     fe80::6154:6cc0:8ae1:7e1d%10 32         0
QU006284        127.0.0.1       192.168.56.1     fe80::6154:6cc0:8ae1:7e1d%10 32         0
QU006284        127.0.0.1       192.168.56.1     fe80::6154:6cc0:8ae1:7e1d%10 32         0
QU006284        127.0.0.1       192.168.56.1     fe80::6154:6cc0:8ae1:7e1d%10 32         0

S C:\Users\12222081> test-netconnection

ComputerName      : internetbeacon.msedge.net
RemoteAddress     : 13.107.4.52
InterfaceAlias    : Ethernet
SourceAddress     : 10.162.33.244
PingSucceeded     : True
PingReplyDetails (RTT) : 1 ms
```

Windows PowerShell

```

PS C:\Users\12222081> resolve-dnsname

cmdlet Resolve-DnsName at command pipeline position 1
Supply values for the following parameters:
Name: 192.168.56.1

Name      Type      TTL      Section  NameHost
-----
1.56.168.192.in-addr.arpa PTR      18771    Answer   city-gw.cqu.edu.au

PS C:\Users\12222081> get-netneighbor

ifIndex  IPAddress                               LinkLayerAddress      State      PolicyStore
-----
10       ff02::1:2                             33-33-00-01-00-02     Permanent ActiveStore
10       ff02::1:6                             33-33-00-00-00-16     Permanent ActiveStore
10       fe80::f69c:bfe9:21ff:ce5b             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::d8c5:a51e:b85b:b943             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::d4d5:4b90:9a9a:94c5             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::d39c:657f:fcac:9a8d             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::cdfb:958d:12c7:a2df             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::b97d:5de3:18a3:b4c7             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::b96c:3ea9:48c7:4a6c             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::b0b5:7b5d:a04d:96d              00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::ae23:e125:2830:2b6c             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::9e67:7f68:39cc:53c3             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::988c:acd1:8aac:82e4             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::86ec:dc2b:4595:faca             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::84cb:85c4:da85:883c             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::83b3:a6e:6773:dbae             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::7342:ef7a:7c57:b4bc             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::5a60:60a8:ff6e:4a9c             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::4b9c:411c:3b53:85bf             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::38fb:5016:eed5:46cb             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::31fa:eed0:3528:c557             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::301d:a78d:17c2:7341             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::2c7a:8c75:f54:6cfc             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::1983:486e:2cfa:e5c4             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::1479:7087:f707:8a0              00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::a05:4be1:14fa:b81              00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::896c:5a7c:eded:a018             00-00-00-00-00-00     Unreachable ActiveStore
10       fe80::887:da7e:1c4:7ff                00-00-00-00-00-00     Unreachable ActiveStore
8        ff02::1:ffffd:78b8                   33-33-FF-FD-78-B8     Permanent ActiveStore
8        ff02::1:ffff7:fb99                    33-33-FF-F7-FB-99     Permanent ActiveStore
8        ff02::1:ffff7:7238                    33-33-FF-F7-72-38     Permanent ActiveStore
8        ff02::1:ffe4:440c                      33-33-FF-F4-44-0C     Permanent ActiveStore
8        ff02::1:ffc4:5320                      33-33-FF-F4-53-20     Permanent ActiveStore
8        ff02::1:ffb3:aa8d                      33-33-FF-B3-AA-8D     Permanent ActiveStore
8        ff02::1:ff8c:fc61                      33-33-FF-8C-FC-61     Permanent ActiveStore
8        ff02::1:ff80:2703                      33-33-FF-80-27-03     Permanent ActiveStore
8        ff02::1:ff6f:420c                      33-33-FF-6F-42-0C     Permanent ActiveStore
8        ff02::1:ff3f:afb                       33-33-FF-3F-0A-FB     Permanent ActiveStore
8        ff02::1:ff3d:900f                      33-33-FF-3D-90-0F     Permanent ActiveStore
8        ff02::1:ff0f:d24b                      33-33-FF-0F-D2-4B     Permanent ActiveStore
8        ff02::1:ff0c:390c                      33-33-FF-0C-39-0C     Permanent ActiveStore
8        ff02::1:ff0c:260c                      33-33-FF-0C-26-0C     Permanent ActiveStore
8        ff02::1:3                             33-33-00-01-00-03     Permanent ActiveStore
8        ff02::1:2                             33-33-00-01-00-02     Permanent ActiveStore
8        ff02::1:fb                             33-33-00-00-00-fb     Permanent ActiveStore
8        ff02::1:6                             33-33-00-00-00-16     Permanent ActiveStore
8        ff02::c                             33-33-00-00-00-0c     Permanent ActiveStore
8        ff02::2                             33-33-00-00-00-02     Permanent ActiveStore
8        ff02::1                             33-33-00-00-00-01     Permanent ActiveStore
8        fe80::ffe0:555b:6d8d:3d37             80-78-25-0C-25-DE     Stable ActiveStore
8        fe80::fe27:3904:39fe:51b1             80-78-25-0C-25-DE     Stable ActiveStore
8        fe80::fd8d:3dfa:77f4:1bd3             80-78-25-0C-25-98     Stable ActiveStore
8        fe80::fbb0:c01f:4590:766e             E4-54-E8-6C-7A-2C     Stable ActiveStore
8        fe80::fbb0:c3aa:dd0e:536d             E4-54-E8-6B-E2-70     Stable ActiveStore

```

er Systems and Applicati

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OpenWRT

PowerShell

- Get-NetAdapter
- Get-NetIPAddress
- Test-Connection
- Test-NetConnection
- Resolve-DnsName
- Get-NetNeighbor
- Get-NetRoute

Many PowerShell commands, cd, pwd, cp,

Search online for options/exam

Both PowerShell and Linux (or t ways to do a similar task. In sun

- Show the MAC address (and
- Show the IP address (and oth
- Perform a ping, e.g. ping 1.2.
- Perform a traceroute, e.g. tra
- Convert a domain name to IF
- Show ARP table
- Show routing table

You don't need to learn Linux cc small set of commands to comp

## Task2. Ping your local router.

Windows PowerShell

```

10.162.32.47 00-00-00-00-00-00 Unreachable ActiveStore
10.162.32.48 80-78-25-22-20-8D Stable ActiveStore
10.162.32.49 80-78-25-17-A4-F6 Stable ActiveStore
10.162.32.44 E4-54-E8-6C-F6-A0 Stable ActiveStore
10.162.32.43 80-78-25-22-2B-91 Stable ActiveStore
10.162.32.42 80-78-25-0C-26-01 Stable ActiveStore
10.162.32.41 80-78-25-1A-00-0C Stable ActiveStore
10.162.32.40 80-78-25-29-F9-BB Stable ActiveStore
10.162.32.38 00-00-00-00-00-00 Unreachable ActiveStore
10.162.32.37 08-9E-F3-17-3A-DE Stable ActiveStore
10.162.32.36 00-00-00-00-00-00 Unreachable ActiveStore
10.162.32.33 08-9E-F3-10-EE-82 Stable ActiveStore
10.162.32.31 08-9E-F3-10-EE-AF Stable ActiveStore
10.162.32.29 E4-54-E8-6B-D4-E8 Stable ActiveStore
10.162.32.28 00-00-00-00-00-00 Unreachable ActiveStore
10.162.32.25 80-78-25-0C-28-89 Stable ActiveStore
10.162.32.22 80-78-25-0C-2E-3E Stable ActiveStore
10.162.32.21 00-00-00-00-00-00 Unreachable ActiveStore
10.162.32.20 34-48-ED-B5-F4-3E Stable ActiveStore
10.162.32.1 70-6E-6D-B9-C3-D5 Stable ActiveStore
239.255.255.250 00-00-00-00-00-00 Permanent ActiveStore
224.0.0.22 Permanent ActiveStore

PS C:\Users\12222081> get-netroute

ifIndex DestinationPrefix NextHop RouteMetric
-----
255.255.255.255/32 0.0.0.0 256
255.255.255.255/32 0.0.0.0 256
255.255.255.255/32 0.0.0.0 256
224.0.0.0/4 0.0.0.0 256
224.0.0.0/4 0.0.0.0 256
224.0.0.0/4 0.0.0.0 256
192.168.56.255/32 0.0.0.0 256
192.168.56.0/24 0.0.0.0 256
127.255.255.255/32 0.0.0.0 256
127.0.0.0/8 0.0.0.0 256
10.162.35.255/32 0.0.0.0 256
10.162.35.244/32 0.0.0.0 256
10.162.32.0/22 0.0.0.0 256
0.0.0.0/0 10.162.32.1 256
ff00::/8 11 256
ff00::/8 11 256
ff00::/8 11 256
fe80::c4ba:3170:126f:420c/128 11 256
fe80::c1a4:6c00:8ae1:7e3d/128 11 256
fe80::11aa9:b3f1:75b2:290b/128 11 256
fe80::/64 11 256
fe80::/64 11 256
2001:0:2851:fc0b:14a9:b3f1:75b2:290b/128 11 256
2001:0:2851:fc0b:14a9:b3f1:75b2:290b/128 11 256
::1/128 11 256
::/0 11 256

```

er Systems and Applicati

9 / 11

91%

OpenWRT

PowerShell

- Get-NetAdapter
- Get-NetIPAddress
- Test-Connection
- Test-NetConnection
- Resolve-DnsName
- Get-NetNeighbor
- Get-NetRoute

Many PowerShell commands, cd, pwd, cp,

Search online for options/ex

Both PowerShell and Linux (t ways to do a similar task. In t

- Show the MAC address (a
- Show the IP address (a
- Perform a ping, e.g. ping :
- Perform a traceroute, e.g.
- Convert a domain name t
- Show ARP table
- Show routing table

You don't need to learn Linu small set of commands to co



```
f
M
e
t
r
i
c
-----
0 255.255.255.255/32 0.0.0.0 256.2
10 255.255.255.255/32 0.0.0.0 256.2
1 255.255.255.255/32 0.0.0.0 256.7
0 224.0.0.0/4 0.0.0.0 256.2
10 224.0.0.0/4 0.0.0.0 256.2
1 224.0.0.0/4 0.0.0.0 256.7
10 192.168.56.0/24 0.0.0.0 256.2
10 192.168.56.1/32 0.0.0.0 256.2
10 192.168.56.0/24 0.0.0.0 256.2
1 127.255.255.255/32 0.0.0.0 256.7
1 127.0.0.1/32 0.0.0.0 256.7
1 127.0.0.0/8 0.0.0.0 256.7
0 10.162.35.255/32 0.0.0.0 256.2
0 10.162.35.244/32 0.0.0.0 256.1
0 10.162.32.0/22 0.0.0.0 256.2
0 0.0.0.0/0 10.162.32.1 0.2
12 ffff://0 256.7
0 ffff://0 256.2
10 ffff://0 256.2
1 ffff://0 256.7
0 f000::0ba3170:126f:430c/128 256.2
10 f000::6154:6cc0:bae1:7e1d/128 256.2
12 f000::14a9:b9f1:75b2:290b/128 256.2
1 f000::64 256.7
0 f000::64 256.2
10 f000::64 256.2
12 2001:0:2851:fc0b:14a9:b9f1:75b2:290b/128 256.7
12 2001::/32 256.7
1 ::1/128 256.7
12 ::/0 256.7

PS C:\Users\12222081> ping 192.168.56.1

Pinging 192.168.56.1 with 32 bytes of data:
Reply from 192.168.56.1: bytes=32 time=1ms TTL=128
Reply from 192.168.56.1: bytes=32 time=1ms TTL=128
Reply from 192.168.56.1: bytes=32 time=1ms TTL=128
Reply from 192.168.56.1: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.56.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
PS C:\Users\12222081>
```

```
64 bytes from 192.168.56.1: seq=45 ttl=128 time=0.744 ms
64 bytes from 192.168.56.1: seq=46 ttl=128 time=0.256 ms
64 bytes from 192.168.56.1: seq=47 ttl=128 time=0.288 ms
64 bytes from 192.168.56.1: seq=48 ttl=128 time=0.744 ms
64 bytes from 192.168.56.1: seq=49 ttl=128 time=0.224 ms
64 bytes from 192.168.56.1: seq=50 ttl=128 time=0.795 ms
64 bytes from 192.168.56.1: seq=51 ttl=128 time=0.354 ms
64 bytes from 192.168.56.1: seq=52 ttl=128 time=0.524 ms
64 bytes from 192.168.56.1: seq=53 ttl=128 time=0.792 ms
64 bytes from 192.168.56.1: seq=54 ttl=128 time=0.744 ms
64 bytes from 192.168.56.1: seq=55 ttl=128 time=0.993 ms
64 bytes from 192.168.56.1: seq=56 ttl=128 time=0.777 ms
64 bytes from 192.168.56.1: seq=57 ttl=128 time=0.719 ms
64 bytes from 192.168.56.1: seq=58 ttl=128 time=0.747 ms
64 bytes from 192.168.56.1: seq=59 ttl=128 time=0.740 ms
64 bytes from 192.168.56.1: seq=60 ttl=128 time=0.696 ms
64 bytes from 192.168.56.1: seq=61 ttl=128 time=0.656 ms
64 bytes from 192.168.56.1: seq=62 ttl=128 time=0.731 ms
64 bytes from 192.168.56.1: seq=63 ttl=128 time=0.745 ms
64 bytes from 192.168.56.1: seq=64 ttl=128 time=0.724 ms
64 bytes from 192.168.56.1: seq=65 ttl=128 time=0.732 ms
64 bytes from 192.168.56.1: seq=66 ttl=128 time=0.735 ms
64 bytes from 192.168.56.1: seq=67 ttl=128 time=0.330 ms
64 bytes from 192.168.56.1: seq=68 ttl=128 time=0.573 ms
```

# Task3. Ping your Openwrt Linux Server

```

root@OpenWrt:/# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel master br-mng
    state UP qlen 1000
    link/ether 08:00:27:88:4c:38 brd ff:ff:ff:ff:ff:ff
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP qlen
    1000
    link/ether 08:00:27:de:b0:18 brd ff:ff:ff:ff:ff:ff
    inet 10.0.3.15/24 brd 10.0.3.255 scope global eth1
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fede:b018/64 scope link
        valid_lft forever preferred_lft forever
4: br-mng: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP qlen
    1000
    link/ether 08:00:27:88:4c:38 brd ff:ff:ff:ff:ff:ff
    inet 192.168.56.2/24 brd 192.168.56.255 scope global br-mng
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe88:4c38/64 scope link
        valid_lft forever preferred_lft forever
root@OpenWrt:/# _

```

```
usyBox v1.35.0 (2023-01-03 00:24:21 UTC) built-in shell (ash)
```

WIRELESS FREEDOM

OpenWrt 22.03.3, r20028-43d71ad93e

```
oot@OpenWrt:/# ip link
: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel master br-mng
state UP qlen 1000
    link/ether 08:00:27:88:4c:38 brd ff:ff:ff:ff:ff:ff
: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP qlen
1000
    link/ether 08:00:27:de:b0:18 brd ff:ff:ff:ff:ff:ff
: br-mng: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP qlen
1000
    link/ether 08:00:27:88:4c:38 brd ff:ff:ff:ff:ff:ff
oot@OpenWrt:/#
```

```

-n      Print numeric addresses
-r      Bypass routing tables, send directly to HOST
-v      Verbose
-f N    First number of hops (default 1)
-m N    Max number of hops
-q N    Number of probes per hop (default 3)
-p N    Base UDP port number used in probes
        (default 33434)
-s IP   Source address
-i IFACE Source interface
-t N    Type-of-service in probe packets (default 0)
-w SEC  Wait for a response (default 3)
-z MSEC Wait before each send

```

root@OpenWrt:~# nslookup

BusyBox v1.35.0 (2023-01-03 00:24:21 UTC) multi-call binary.

Usage: nslookup [-type=QUERY\_TYPE] [-debug] HOST [DNS\_SERVER]

Query DNS about HOST

QUERY\_TYPE: soa,ns,a,aaaa,cname,mx,txt,ptr,srv,any

root@OpenWrt:~# arp

IP address	HW type	Flags	HW address	Mask	Device
10.0.3.2	0x1	0x2	52:54:00:12:35:02	*	eth1

root@OpenWrt:~# \_

```

-p N    Base UDP port number used in probes
        (default 33434)
-s IP   Source address
-i IFACE Source interface
-t N    Type-of-service in probe packets (default 0)
-w SEC  Wait for a response (default 3)
-z MSEC Wait before each send
root@OpenWrt:~# nslookup
BusyBox v1.35.0 (2023-01-03 00:24:21 UTC) multi-call binary.
Usage: nslookup [-type=QUERY_TYPE] [-debug] HOST [DNS_SERVER]
Query DNS about HOST
QUERY_TYPE: soa,ns,a,aaaa,cname,mx,txt,ptr,srv,any
root@OpenWrt:~# arp
IP address      HW type      Flags      HW address      Mask      Device
10.0.3.2        0x1          0x2        52:54:00:12:35:02  *         eth1
root@OpenWrt:~# route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         10.0.3.2       0.0.0.0         UG    0     0        0 eth1
10.0.3.0        *              255.255.255.0   U     0     0        0 eth1
192.168.56.0    *              255.255.255.0   U     0     0        0 br-mng
root@OpenWrt:~# _

```

```

-4,-6   Force IP or IPv6 name resolution
-f      Set don't fragment bit
-l      Display TTL value of the returned packet
-n      Print numeric addresses
-r      Bypass routing tables, send directly to HOST
-v      Verbose
-f N    First number of hops (default 1)
-m N    Max number of hops
-q N    Number of probes per hop (default 3)
-p N    Base UDP port number used in probes
        (default 33434)
-s IP   Source address
-i IFACE Source interface
-t N    Type-of-service in probe packets (default 0)
-w SEC  Wait for a response (default 3)
-z MSEC Wait before each send
root@OpenWrt:~# nslookup
BusyBox v1.35.0 (2023-01-03 00:24:21 UTC) multi-call binary.
Usage: nslookup [-type=QUERY_TYPE] [-debug] HOST [DNS_SERVER]
Query DNS about HOST
QUERY_TYPE: soa,ns,a,aaaa,cname,mx,txt,ptr,srv,any
root@OpenWrt:~# _

```

```
BusyBox v1.35.0 (2023-01-03 00:24:21 UTC) multi-call binary.
```

```
Usage: traceroute [-46flnrv] [-f 1ST_TTL] [-m MAXTTL] [-q PROBES] [-p PORT]
          [-t TOS] [-w WAIT_SEC] [-s SRC_IP] [-i IFACE]
          [-z PAUSE_MSEC] HOST [BYTES]
```

Trace the route to HOST

```
-4,-6    Force IP or IPv6 name resolution
-F       Set don't fragment bit
-l       Display TTL value of the returned packet
-n       Print numeric addresses
-r       Bypass routing tables, send directly to HOST
-v       Verbose
-f N     First number of hops (default 1)
-m N     Max number of hops
-q N     Number of probes per hop (default 3)
-p N     Base UDP port number used in probes
          (default 33434)
-s IP    Source address
-i IFACE Source interface
-t N     Type-of-service in probe packets (default 0)
-w SEC   Wait for a response (default 3)
-z MSEC  Wait before each send
```

```
root@OpenWrt:/# _
```

```
inet 192.168.56.2/24 brd 192.168.56.255 scope global br-mng
    valid_lft forever preferred_lft forever
inet6 fe80::a00:27ff:fe88:4c38/64 scope link
    valid_lft forever preferred_lft forever
```

```
root@OpenWrt:/# ping
```

```
BusyBox v1.35.0 (2023-01-03 00:24:21 UTC) multi-call binary.
```

```
Usage: ping [OPTIONS] HOST
```

Send ICMP ECHO\_REQUESTs to HOST

```
-4,-6    Force IP or IPv6 name resolution
-c CNT    Send only CNT pings
-s SIZE   Send SIZE data bytes in packets (default 56)
-i SECS   Interval
-A        Ping as soon as reply is received
-t TTL    Set TTL
-I IFACE/IP Source interface or IP address
-W SEC    Seconds to wait for the first response (default 10)
          (after all -c CNT packets are sent)
-w SEC    Seconds until ping exits (default:infinite)
          (can exit earlier with -c CNT)
-q        Quiet, only display output at start/finish
-p HEXBYTE Payload pattern
```

```
root@OpenWrt:/#
```

```
Select Windows PowerShell

ValidLifetime : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
IsPipAsSource : False
PolicyStore : ActiveStore

PAddress : fe80::c4ba:3170:126f:420c%8
InterfaceIndex : 8
InterfaceAlias : Ethernet
AddressFamily : IPv6
Type : Unicast
PrefixLength : 64
PrefixOrigin : WellKnown
SuffixOrigin : Link
AddressState : Preferred
ValidLifetime : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
IsPipAsSource : False
PolicyStore : ActiveStore

PAddress : fe80::14a9:b3f1:75b2:290b%12
InterfaceIndex : 12
InterfaceAlias : Teredo Tunneling Pseudo-Interface
AddressFamily : IPv6
Type : Unicast
PrefixLength : 64
PrefixOrigin : WellKnown
SuffixOrigin : Link
AddressState : Preferred
ValidLifetime : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
IsPipAsSource : False
PolicyStore : ActiveStore

PAddress : 2001:0:2851:fc00::14a9:b3f1:75b2:290b
InterfaceIndex : 12
InterfaceAlias : Teredo Tunneling Pseudo-Interface
AddressFamily : IPv6
Type : Unicast
PrefixLength : 64
PrefixOrigin : RouterAdvertisement
SuffixOrigin : Link
AddressState : Preferred
ValidLifetime : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
IsPipAsSource : False
PolicyStore : ActiveStore

PAddress : ::1
InterfaceIndex : 1
InterfaceAlias : Loopback Pseudo-Interface 1
AddressFamily : IPv6
Type : Unicast
PrefixLength : 128
PrefixOrigin : WellKnown
SuffixOrigin : WellKnown
AddressState : Preferred
ValidLifetime : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
IsPipAsSource : False
PolicyStore : ActiveStore

PAddress : 192.168.56.1
InterfaceIndex : 10
InterfaceAlias : VirtualBox Host-Only Network
AddressFamily : IPv4
Type : Unicast
PrefixLength : 24
PrefixOrigin : Manual
SuffixOrigin : Manual
AddressState : Preferred
ValidLifetime : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime : Infinite ([TimeSpan]::MaxValue)
```

File Transfer Protocol (FTP) client interface showing a directory listing of a remote site.

Host: sftp://192.168.56.2 Username: root Password: \*\*\*\*\* Port: Quickconnect

Status: Directory listing of / successful  
Status: Connecting to 192.168.56.2...  
Status: Using username "root".  
Status: Connected to 192.168.56.2  
Status: Starting download of /pimlgl.pcap  
Status: File transfer successful, transferred 10,788 bytes in 1 second

Local site: C:\Users\12222081\ Desktop Documents C: (Windows) SRecycle.Bin SSystemReset SWinREAgent Apache Ant Apache Derby Apache Maven Apache Hadoop

Remote site: /

Filename	Filesize	Filetype	Last modified	Permissions	Owner/Group
bin		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
boot		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
dev		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
etc		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
lib		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
lib64		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
lost+found		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
mnt		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
overlay		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
proc		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
sys		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
tmp		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
usr		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
var		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
www		File folder	24/03/2023 11:20:00	drwxr-xr-x	root root
pimlgl.pcap	10,788	WireShark...	24/03/2023 11:20:00	-rw-r--r--	root root

9 files and 26 directories. Total size: 2,153,016 bytes

Selected 1 file. Total size: 10,788 bytes

Server/Local file Direction Remote file Size Priority Status

Queued files Failed transfers Successful transfers (1)

Queue: empty

Task4. Trace Path Through the Internet

Task5. Draw a Network Diagram.

Task6. Find Addresses of a website

```
COIT20246 OpenWRT T1 2023 5 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
BusyBox v1.35.0 (2023-01-03 00:24:21 UTC) built-in shell (ash)
You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard

The Virtual Machine reports that the guest OS supports mouse pointer integration. This means that you do not need to capture the

-----
|_!_! W I R E L E S S   F R E E D O M
-----

OpenWrt 22.03.3, r20028-43d71ad93e
-----
root@OpenWrt:~#
root@OpenWrt:~#
root@OpenWrt:~# nslookup wikipedia.com
Server:      127.0.0.1
Address:     127.0.0.1:53

Non-authoritative answer:
Name:   wikipedia.com
Address: 52.128.23.153

Non-authoritative answer:

root@OpenWrt:~# ping 52.128.23.153
PING 52.128.23.153 (52.128.23.153): 56 data bytes
```

```
COIT20246 OpenWRT T1 2023 5 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the keyboard

The Virtual Machine reports that the guest OS supports mouse pointer integration. This means that you do not need to capture the

-----
|_!_! W I R E L E S S   F R E E D O M
-----

OpenWrt 22.03.3, r20028-43d71ad93e
-----
root@OpenWrt:~#
root@OpenWrt:~#
root@OpenWrt:~# nslookup wikipedia.com
Server:      127.0.0.1
Address:     127.0.0.1:53

Non-authoritative answer:
Name:   wikipedia.com
Address: 52.128.23.153

Non-authoritative answer:

root@OpenWrt:~# _
```

# Traceroute

This traceroute commences from [www.telstra.net](http://www.telstra.net), within AS 1221.

Enter the desired destination host, domain or IPv4 or IPv6 address:

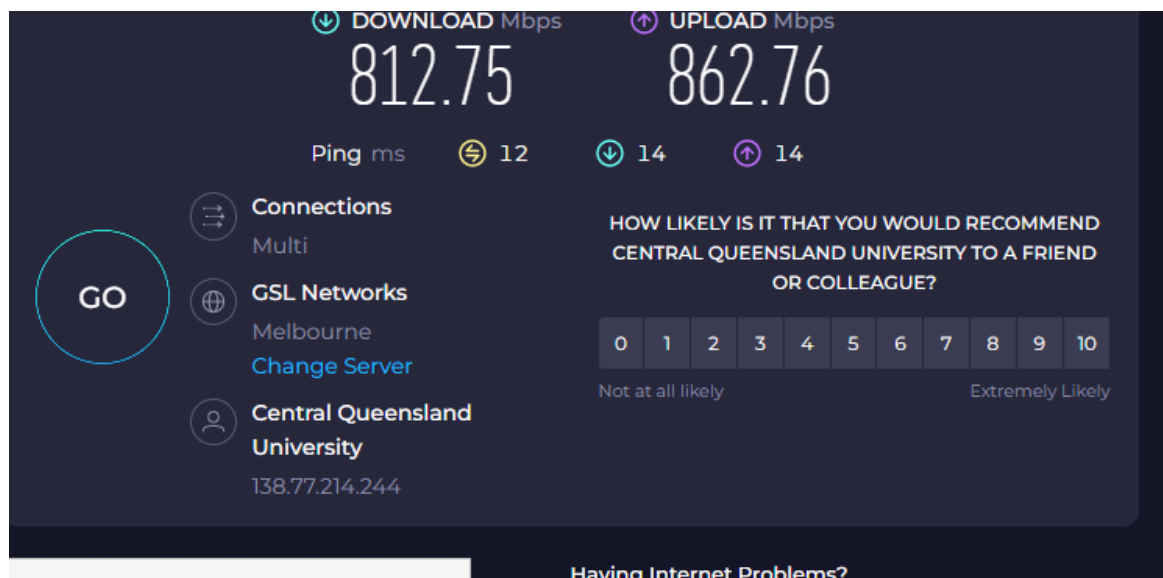
```
1 gigabitethernet3-3.exi1.melbourne.telstra.net (203.50.77.49) 0.908 ms 0.721 ms 0.620 ms
2 TenGigE0-0-0-21.lon-dlr20.melbourne.telstra.net (203.50.233.22) 0.868 ms 0.737 ms 0.620 ms
3 bundle-ether30.exi-core30.melbourne.telstra.net (203.50.11.246) 2.744 ms 1.613 ms 1.994 ms
4 bundle-ether2.cla-core30.melbourne.telstra.net (203.50.13.124) 2.120 ms 1.367 ms 2.240 ms
5 bundle-ether3.hay-core30.sydney.telstra.net (203.50.13.132) 11.864 ms 13.855 ms 13.361 ms
6 bundle-ether19.ken-core10.sydney.telstra.net (203.50.13.146) 12.364 ms 12.856 ms 12.613 ms
7 bundle-ether1.pad-gw11.sydney.telstra.net (203.50.6.61) 14.361 ms 12.733 ms 13.612 ms
8 203.50.13.90 (203.50.13.90) 13.113 ms 13.357 ms 13.488 ms
9 203.50.13.90 (203.50.13.90) 147.787 ms 147.780 ms 147.409 ms
10 i-20802.eqnx-core02.telstraglobal.net (202.84.141.25) 149.157 ms 147.655 ms 149.408 ms
11 i-1041.paix02.telstraglobal.net (202.84.251.62) 156.902 ms
12 i-0-0-0-1.paix-core02.telstraglobal.net (202.84.143.210) 158.152 ms
13 f-ee11-i.F.DE.NET.DTAG.DE (217.239.42.5) 299.446 ms
14 80.157.128.205 (80.157.128.205) 157.294 ms 157.138 ms 157.404 ms
```

There are other traceroute sites listed [here](#).

The traceroute CGI source can be found via:



## Task7. Home Internet Connection



## Week03.

### Task1. View ARP Table



```
Windows PowerShell
Copyright (c) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/powershell

PS C:\Users\12222001> arp -a

Interface: 10.162.32.113 --- ---
Internet Address      Physical Address      Type
-----
10.162.32.11          70-0e-6d-09-c3-05     dynamic
10.162.32.20          00-70-25-30-f7-8a     dynamic
10.162.32.22          00-0e-43-07-08-ec     dynamic
10.162.32.23          00-70-25-30-f5-36     dynamic
10.162.32.25          00-70-25-0c-28-89     dynamic
10.162.32.27          e4-54-e8-0c-04-08     dynamic
10.162.32.28          00-70-25-1f-a9-c2     dynamic
10.162.32.29          00-0e-43-07-01-26     dynamic
10.162.32.32          00-70-25-1a-06-16     dynamic
10.162.32.35          08-9e-f3-16-f2-3d     dynamic
10.162.32.37          08-9e-f3-17-2a-9e     dynamic
10.162.32.38          00-0e-43-07-01-0a     dynamic
10.162.32.40          00-70-25-1a-06-00     dynamic
10.162.32.41          00-70-25-1a-06-0c     dynamic
10.162.32.42          00-70-25-0c-26-02     dynamic
10.162.32.44          e4-54-e8-0c-f6-40     dynamic
10.162.32.45          00-70-25-1f-a4-f6     dynamic
10.162.32.46          00-0e-43-07-01-93     dynamic
10.162.32.47          00-70-25-22-26-86     dynamic
10.162.32.48          00-70-25-22-20-f1     dynamic
10.162.32.50          00-70-25-0c-28-28     dynamic
10.162.32.51          e4-54-e8-0c-fa-73     dynamic
10.162.32.52          e4-54-e8-0c-f6-44     dynamic
10.162.32.56          00-0e-43-07-01-89     dynamic
10.162.32.57          e4-54-e8-0c-fa-01     dynamic
10.162.32.58          e4-54-e8-0c-f6-14     dynamic
10.162.32.59          e4-54-e8-0c-c8-c4     dynamic
10.162.32.60          00-70-25-0c-28-8a     dynamic
10.162.32.61          00-70-25-1a-06-ff     dynamic
10.162.32.62          00-70-25-29-07-07     dynamic
10.162.32.63          e4-54-e8-0c-f3-40     dynamic
10.162.32.65          e4-54-e8-0c-f9-5f     dynamic
10.162.32.66          74-06-e3-39-52-cc     dynamic
10.162.32.68          74-06-e3-38-04-e0     dynamic
10.162.32.70          00-0e-43-07-01-5a     dynamic
10.162.32.71          00-70-25-0c-28-94     dynamic
10.162.32.74          00-70-25-0c-44-1c     dynamic
10.162.32.76          00-70-25-0c-44-1c     dynamic
10.162.32.78          00-70-25-0c-25-cc     dynamic
10.162.32.81          00-0e-43-07-7f-17     dynamic
10.162.32.83          00-0e-43-07-01-3f     dynamic
10.162.32.84          00-70-25-0c-19-72     dynamic
10.162.32.85          00-0e-43-07-01-06     dynamic
10.162.32.86          00-70-25-1f-a7-03     dynamic
10.162.32.87          00-70-25-0c-25-4c     dynamic
10.162.32.88          00-0e-43-07-01-4b     dynamic
10.162.32.89          00-70-25-0c-25-bd     dynamic
10.162.32.90          00-70-25-22-2c-25     dynamic
10.162.32.92          00-70-25-0c-19-3a     dynamic
10.162.32.93          00-70-25-22-22-93     dynamic
10.162.32.94          08-0e-86-a8-09-46     dynamic
10.162.32.96          00-70-25-22-1b-e0     dynamic
10.162.32.97          00-70-25-1f-a3-c8     dynamic
10.162.32.98          00-0e-43-07-01-c0     dynamic
10.162.32.101         00-70-25-22-25-69     dynamic
10.162.32.102         00-70-25-1a-74-3a     dynamic
10.162.32.103         00-0e-43-07-01-4e     dynamic
10.162.32.104         00-70-25-22-20-15     dynamic
10.162.32.105         74-06-e3-39-44-e3     dynamic
10.162.32.106         00-70-25-1f-a7-07     dynamic
10.162.32.110         e4-54-e8-0c-f5-d3     dynamic
10.162.32.114         00-0e-43-07-01-77     dynamic
```

```
Windows PowerShell

PS C:\Users\HI> get-netneighbor -w arp table

ifIndex IPAddress      LinkLayerAddress      State      PolicyStore
-----
18 ff02::1:2          33-33-00-01-00-02     Permanent ActiveStore
18 ff02::1:9          33-33-00-00-00-fb     Permanent ActiveStore
18 ff02::1:6          33-33-00-00-00-16     Permanent ActiveStore
13 ff02::1:2          33-33-00-01-00-02     Permanent ActiveStore
13 ff02::fb          33-33-00-00-00-fb     Permanent ActiveStore
17 ff02::1:16         33-33-00-00-00-16     Permanent ActiveStore
17 ff02::1:3          33-33-00-01-00-03     Permanent ActiveStore
17 ff02::1:2          33-33-00-01-00-02     Permanent ActiveStore
17 ff02::fb          33-33-00-00-00-fb     Permanent ActiveStore
17 ff02::1:6          33-33-00-00-00-16     Permanent ActiveStore
17 f608::5d10:d84b:4b3d:f6b 00-00-00-00-00-00     Unreachable ActiveStore
15 ff02::1:ff3d:f6b    33-33-ff-3d-f0-68     Permanent ActiveStore
15 ff02::1:3          33-33-00-01-00-03     Permanent ActiveStore
15 ff02::1:2          33-33-00-01-00-02     Permanent ActiveStore
15 ff02::1:9          33-33-00-00-00-fb     Permanent ActiveStore
15 ff02::1:6          33-33-00-00-00-16     Permanent ActiveStore
15 ff02::c            33-33-00-00-00-0c     Permanent ActiveStore
15 ff02::2            33-33-00-00-00-02     Permanent ActiveStore
15 ff02::1            33-33-00-00-00-01     Permanent ActiveStore
1 ff02::1:3          Permanent ActiveStore
1 ff02::1:2          Permanent ActiveStore
1 ff02::fb          Permanent ActiveStore
1 ff02::1:6          Permanent ActiveStore
1 ff02::c            Permanent ActiveStore
18 224.0.0.22          01-00-5e-00-00-16     Permanent ActiveStore
13 224.0.0.22          01-00-5e-00-00-16     Permanent ActiveStore
17 224.0.0.252         01-00-5e-00-00-fc     Permanent ActiveStore
17 224.0.0.251         01-00-5e-00-00-fb     Permanent ActiveStore
17 224.0.0.22          01-00-5e-00-00-16     Permanent ActiveStore
15 255.255.255.255     ff-ff-ff-ff-ff-ff     Permanent ActiveStore
15 230.255.255.250     01-00-5e-7f-ff-fa     Permanent ActiveStore
15 224.0.0.252         01-00-5e-00-00-fc     Permanent ActiveStore
15 224.0.0.251         01-00-5e-00-00-fb     Permanent ActiveStore
15 224.0.0.22          01-00-5e-00-00-16     Permanent ActiveStore
15 192.168.169.255     ff-ff-ff-ff-ff-ff     Permanent ActiveStore
15 192.168.169.254     e6-82-24-9e-d7-17     Stale ActiveStore
1 239.255.255.250     Permanent ActiveStore
1 224.0.0.252         Permanent ActiveStore
1 224.0.0.251         Permanent ActiveStore
1 224.0.0.22          Permanent ActiveStore
```

## Task2. Analyse Ping Packet Capture

ping!pcap

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter: <Ctrl>F

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.56.1	192.168.56.1	ICMP	74	Echo (ping) request id=0x0001, seq=15/3840, ttl=64 (reply in 2)
2	0.000027	192.168.56.2	192.168.56.1	ICMP	74	Echo (ping) reply id=0x0001, seq=15/3840, ttl=64 (request in 1)
3	0.004618	192.168.56.2	192.168.56.1	ICMP	120	Destination unreachable (Port unreachable)
4	0.004932	192.168.56.2	192.168.56.1	ICMP	120	Destination unreachable (Port unreachable)
5	0.005974	192.168.56.2	192.168.56.1	ICMP	120	Destination unreachable (Port unreachable)
6	4.521159	192.168.56.2	192.168.56.1	ICMP	120	Destination unreachable (Port unreachable)
7	4.925554	0a:00:27:00:00:0a	PcsCompu_88:4c:138	ARP	60	Who has 192.168.56.2? Tell 192.168.56.1
8	4.986566	PcsCompu_88:4c:138	0a:00:27:00:00:0a	ARP	42	192.168.56.2 is at 0a:00:27:00:00:0a
9	5.836262	PcsCompu_88:4c:138	0a:00:27:00:00:0a	ARP	42	Who has 192.168.56.1? Tell 192.168.56.2
10	5.836400	0a:00:27:00:00:0a	PcsCompu_88:4c:138	ARP	60	192.168.56.1 is at 0a:00:27:00:00:0a
11	6.920395	192.168.56.2	192.168.56.1	ICMP	120	Destination unreachable (Port unreachable)
12	7.521054	192.168.56.2	192.168.56.1	ICMP	120	Destination unreachable (Port unreachable)
13	10.040755	192.168.56.2	192.168.56.2	ICMP	74	Echo (ping) request id=0x0001, seq=16/4096, ttl=64 (reply in 14)
14	10.046782	192.168.56.2	192.168.56.1	ICMP	74	Echo (ping) reply id=0x0001, seq=16/4096, ttl=64 (request in 13)
15	10.051885	192.168.56.2	192.168.56.1	ICMP	120	Destination unreachable (Port unreachable)
16	11.051483	192.168.56.2	192.168.56.2	ICMP	120	Destination unreachable (Port unreachable)
17	13.053320	192.168.56.1	192.168.56.1	ICMP	120	Destination unreachable (Port unreachable)

> Frame 1: 74 bytes on wire (592 bits), 74 bytes captured (592 bits)  
> Ethernet II, Src: 0a:00:27:00:00:0a (0a:00:27:00:00:0a), Dst: PcsCompu\_88:4c:138 (08:00:27:00:4c:138)  
> Internet Protocol Version 4, Src: 192.168.56.1, Dst: 192.168.56.2  
> Internet Control Message Protocol

0000 08 00 27 00 4c 13 80 00 27 00 00 0a 00 00 45 00 ... LB ... E  
0010 00 3c c1 cc 00 00 50 01 b7 00 c0 a0 38 01 c0 a0 ... < P ... B ...  
0020 38 02 08 00 4d 4c 00 01 00 0f f1 63 63 64 65 66 ... B ML ... 3c0de  
0030 07 60 69 6a 6b 6c 6d 6e 6f 70 f1 72 73 74 75 76 ... 011Len option  
0040 77 61 62 63 64 65 66 67 68 69 ... 3c0de f 1

ping!pcap

Packets: 187 - Displayed: 187 (100.0%)

Profile: Default

ping!pcap

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter: <Ctrl>F

No.	Time	Source	Destination	Protocol	Length	Info
7	4.854218	0a:00:27:00:00:0a	PcsCompu_f1:33:18	ARP	60	Who has 192.168.56.2? Tell 192.168.56.1
8	4.854238	PcsCompu_f1:33:18	0a:00:27:00:00:0a	ARP	42	192.168.56.2 is at 0a:00:27:f1:33:18
9	5.017572	PcsCompu_f1:33:18	0a:00:27:00:00:0a	ARP	42	Who has 192.168.56.1? Tell 192.168.56.2
10	5.017684	0a:00:27:00:00:0a	PcsCompu_f1:33:18	ARP	60	192.168.56.1 is at 0a:00:27:00:00:0a
29	29.354435	0a:00:27:00:00:0a	PcsCompu_f1:33:18	ARP	60	Who has 192.168.56.2? Tell 192.168.56.1
30	29.354462	PcsCompu_f1:33:18	0a:00:27:00:00:0a	ARP	42	192.168.56.2 is at 0a:00:27:f1:33:18
47	49.737377	PcsCompu_f1:33:18	0a:00:27:00:00:0a	ARP	42	Who has 192.168.56.1? Tell 192.168.56.2
48	49.737610	0a:00:27:00:00:0a	PcsCompu_f1:33:18	ARP	60	192.168.56.1 is at 0a:00:27:00:00:0a
55	54.854408	0a:00:27:00:00:0a	PcsCompu_f1:33:18	ARP	60	Who has 192.168.56.2? Tell 192.168.56.1
56	54.854436	PcsCompu_f1:33:18	0a:00:27:00:00:0a	ARP	42	192.168.56.2 is at 0a:00:27:f1:33:18
75	79.354666	0a:00:27:00:00:0a	PcsCompu_f1:33:18	ARP	60	Who has 192.168.56.2? Tell 192.168.56.1
76	79.354693	PcsCompu_f1:33:18	0a:00:27:00:00:0a	ARP	42	192.168.56.2 is at 0a:00:27:f1:33:18
81	95.417021	PcsCompu_f1:33:18	0a:00:27:00:00:0a	ARP	42	Who has 192.168.56.1? Tell 192.168.56.2
92	95.417446	0a:00:27:00:00:0a	PcsCompu_f1:33:18	ARP	60	192.168.56.1 is at 0a:00:27:00:00:0a

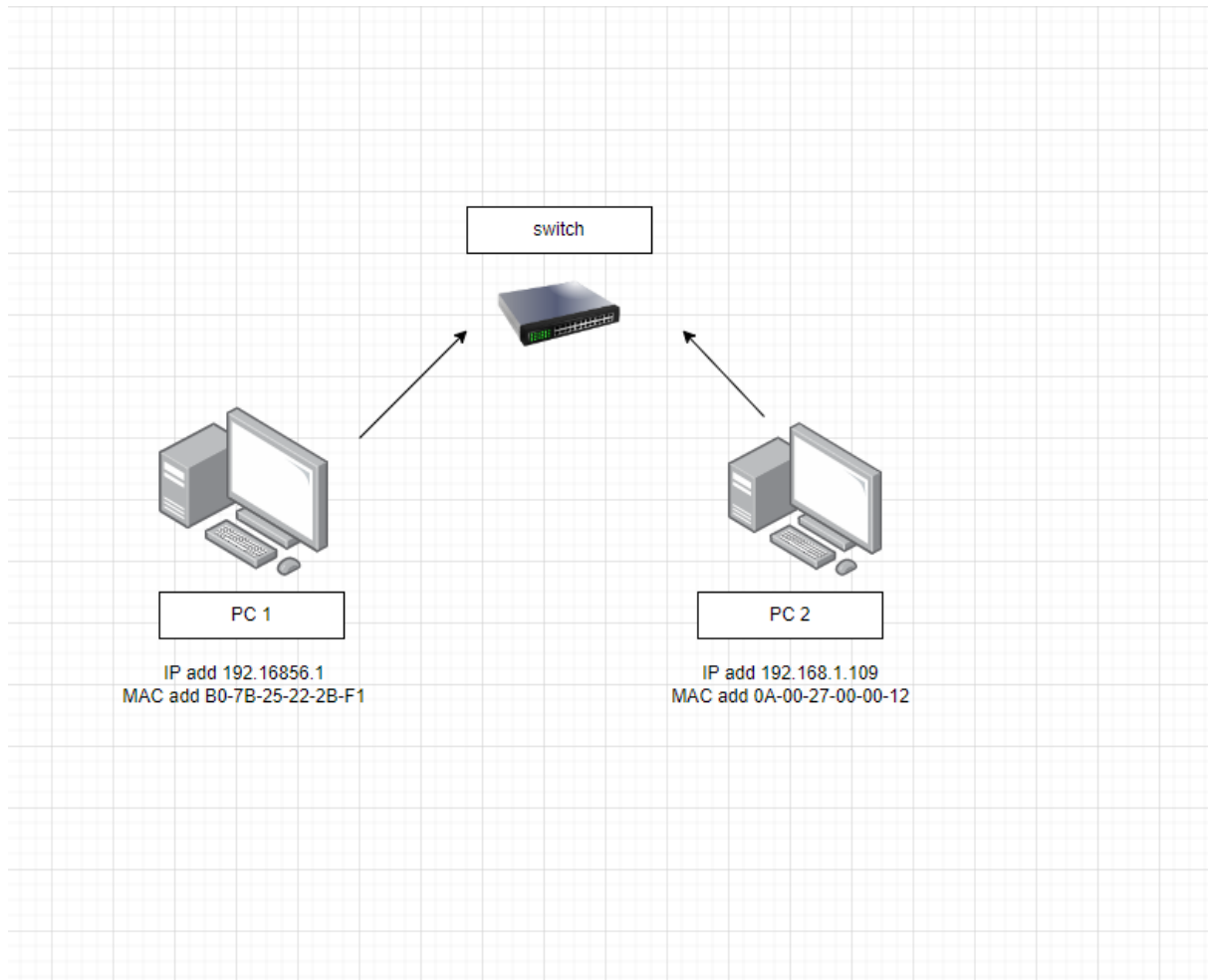
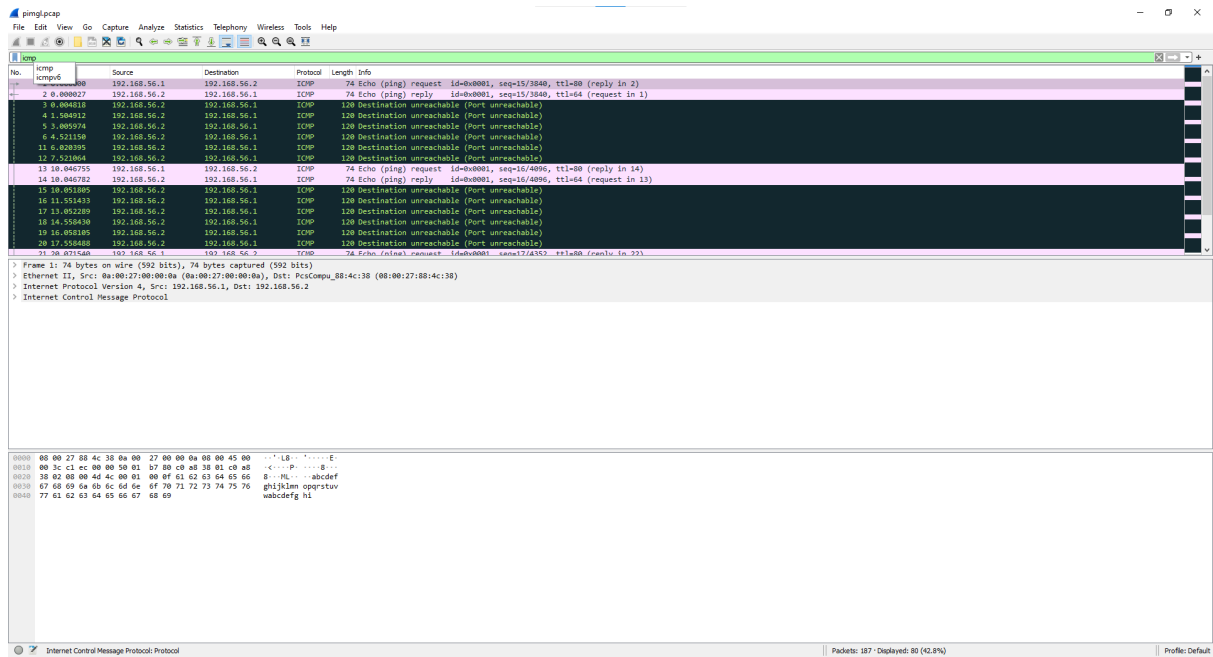
> Frame 7: 60 bytes on wire (480 bits), 60 bytes captured (480 bits)  
> Ethernet II, Src: 0a:00:27:00:00:0a (0a:00:27:00:00:0a), Dst: PcsCompu\_f1:33:18 (06:00:27:f1:33:18)  
> Address Resolution Protocol (request)

0000 08 00 27 f1 33 18 0a 00 27 00 00 06 00 00 01 ... 3 ... ..  
0010 00 00 0a 00 01 0a 00 27 00 00 06 c0 a0 38 01 ... .. B ...  
0020 08 00 27 f1 33 18 c0 a0 38 02 00 00 00 00 00 ... 3 ... B ...  
0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ... ..

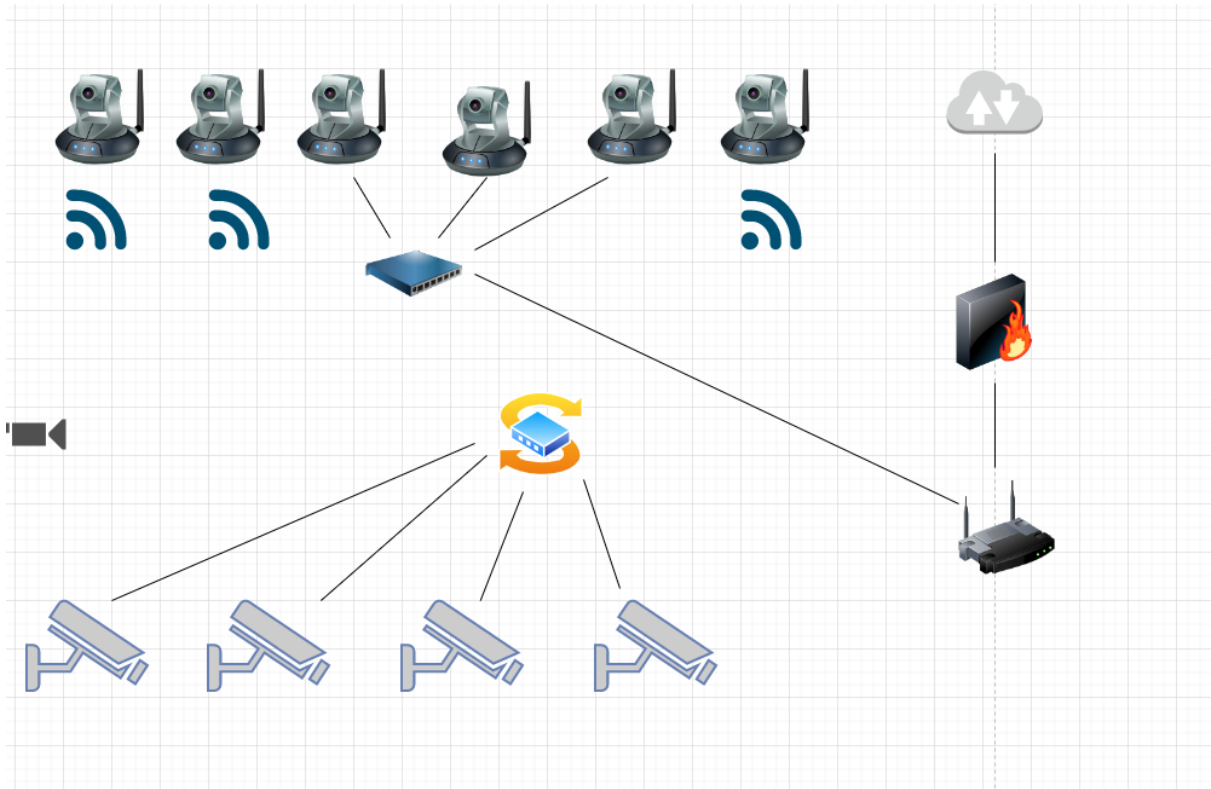
Address Resolution Protocol: Protocol

Packets: 94 - Displayed: 14 (14.9%)

Profile: Default



## Task3. Design a Small Network



#### Task4. Learning Reflection

I found io.diagram useful which can be used in other subject assignments as well.