ASSIGNMENT

ON

Advanced Computer Network Lab

Submitted to

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Commands in windows and linux

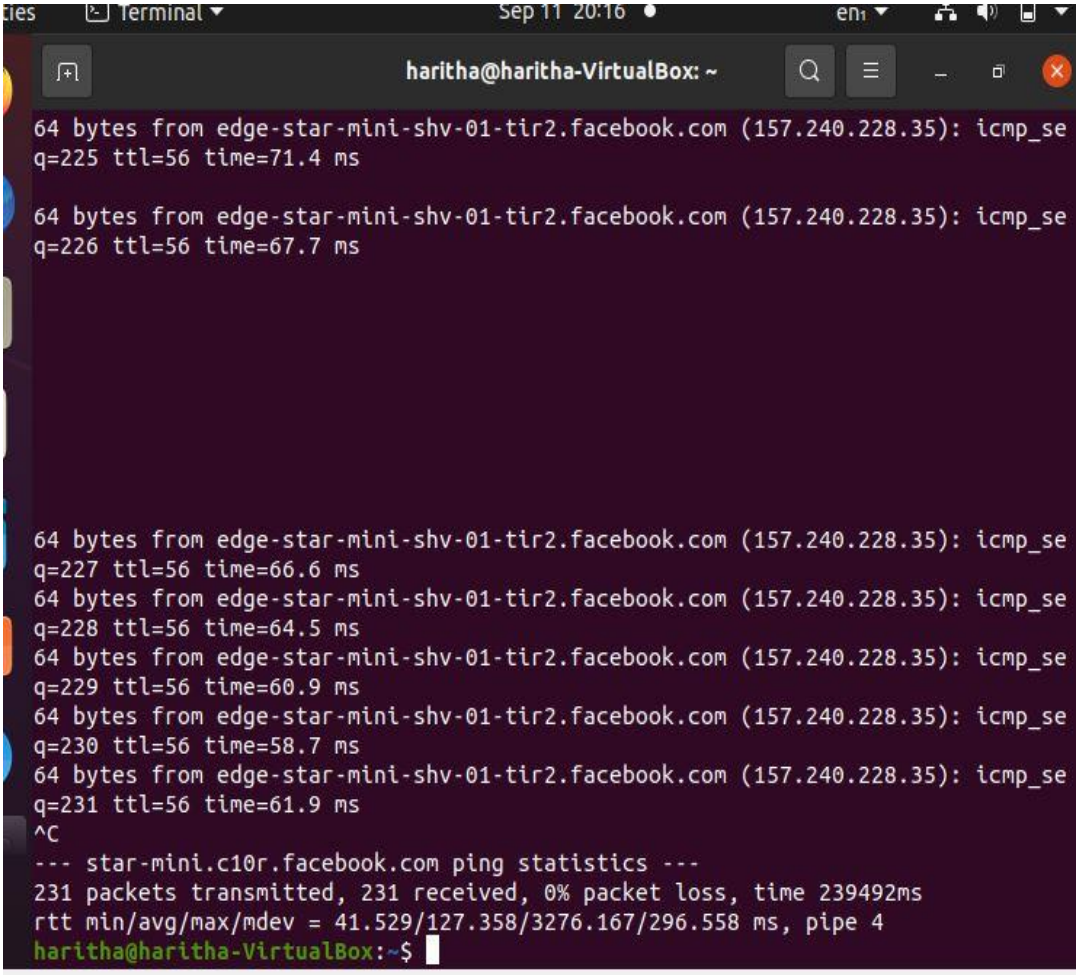
1. Ping

```
C:\Users\Hari>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] [-c compartment] [-p]
            [-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).
                   Per RFC 5095 the use of this routing header has been
                   deprecated. Some systems may drop echo requests if
                   this header is used.
    -S srcaddr     Source address to use.
    -c compartment Routing compartment identifier.
    -p             Ping a Hyper-V Network Virtualization provider address.
    -4             Force using IPv4.
    -6             Force using IPv6.
```

```
haritha@haritha-VirtualBox:~$ ping www.facebook.com
PING star-mini.c10r.facebook.com (157.240.228.35) 56(84) bytes of data.
64 bytes from edge-star-mini-shv-01-tir2.facebook.com (157.240.228.35): icmp_se
q=1 ttl=56 time=114 ms
```


Terminal
Sep 11 20:16
haritha@haritha-VirtualBox: ~
64 bytes from edge-star-mini-shv-01-tir2.facebook.com (157.240.228.35): icmp_seq=225 ttl=56 time=71.4 ms
64 bytes from edge-star-mini-shv-01-tir2.facebook.com (157.240.228.35): icmp_seq=226 ttl=56 time=67.7 ms
64 bytes from edge-star-mini-shv-01-tir2.facebook.com (157.240.228.35): icmp_seq=227 ttl=56 time=66.6 ms
64 bytes from edge-star-mini-shv-01-tir2.facebook.com (157.240.228.35): icmp_seq=228 ttl=56 time=64.5 ms
64 bytes from edge-star-mini-shv-01-tir2.facebook.com (157.240.228.35): icmp_seq=229 ttl=56 time=60.9 ms
64 bytes from edge-star-mini-shv-01-tir2.facebook.com (157.240.228.35): icmp_seq=230 ttl=56 time=58.7 ms
64 bytes from edge-star-mini-shv-01-tir2.facebook.com (157.240.228.35): icmp_seq=231 ttl=56 time=61.9 ms
^C
--- star-mini.c10r.facebook.com ping statistics ---
231 packets transmitted, 231 received, 0% packet loss, time 239492ms
rtt min/avg/max/mdev = 41.529/127.358/3276.167/296.558 ms, pipe 4
haritha@haritha-VirtualBox:~$

2. **route**

```
C:\Users\Hari>route

Manipulates network routing tables.

ROUTE [-f] [-p] [-4|-6] command [destination]
                  [MASK netmask]  [gateway] [METRIC metric]  [IF interface]

  -f            Clears the routing tables of all gateway entries.  If this is
                used in conjunction with one of the commands, the tables are
                cleared prior to running the command.

  -p            When used with the ADD command, makes a route persistent across
                boots of the system. By default, routes are not preserved
                when the system is restarted. Ignored for all other commands,
                which always affect the appropriate persistent routes.

  -4            Force using IPv4.

  -6            Force using IPv6.

  command       One of these:
                  PRINT     Prints  a route
                  ADD       Adds    a route
                  DELETE    Deletes a route
                  CHANGE    Modifies an existing route
  destination   Specifies the host.
  MASK          Specifies that the next parameter is the 'netmask' value.
  netmask       Specifies a subnet mask value for this route entry.
                If not specified, it defaults to 255.255.255.255.
  gateway       Specifies gateway.
  interface     the interface number for the specified route.
  METRIC        specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database
file NETWORKS. The symbolic names for gateway are looked up in the host name
database file HOSTS.

If the command is PRINT or DELETE. Destination or gateway can be a wildcard,
(wildcard is specified as a star '*'), or the gateway argument may be omitted.

If Dest contains a * or ?, it is treated as a shell pattern, and only
matching destination routes are printed. The '*' matches any string,
and '?' matches any one char. Examples: 157.*.1, 157.*, 127.*, *224*.
```

```
Pattern match is only allowed in PRINT command.
Diagnostic Notes:
    Invalid MASK generates an error, that is when (DEST & MASK) != DEST.
    Example> route ADD 157.0.0.0 MASK 155.0.0.0 157.55.80.1 IF 1
             The route addition failed: The specified mask parameter is invalid. (Destination & Mask) != Destination.

Examples:

    > route PRINT
    > route PRINT -4
    > route PRINT -6
    > route PRINT 157*            .... Only prints those matching 157*

    > route ADD 157.0.0.0 MASK 255.0.0.0  157.55.80.1 METRIC 3 IF 2
              destination^      ^mask      ^gateway     metric^    ^
                                                        Interface^
      If IF is not given, it tries to find the best interface for a given
      gateway.
    > route ADD 3ffe::/32 3ffe::1

    > route CHANGE 157.0.0.0 MASK 255.0.0.0 157.55.80.5 METRIC 2 IF 2

      CHANGE is used to modify gateway and/or metric only.

    > route DELETE 157.0.0.0
    > route DELETE 3ffe::/32
```

```
haritha@haritha-VirtualBox:~$ sudo route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         _gateway        0.0.0.0         UG    100    0        0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U     100    0        0 enp0s3
link-local      0.0.0.0         255.255.0.0     U     1000   0        0 enp0s3
```

3. **tracert**

```
C:\Users\Hari>tracert

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
               [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                 Do not resolve addresses to hostnames.
    -h maximum_hops    Maximum number of hops to search for target.
    -j host-list       Loose source route along host-list (IPv4-only).
    -w timeout         Wait timeout milliseconds for each reply.
    -R                 Trace round-trip path (IPv6-only).
    -S srcaddr         Source address to use (IPv6-only).
    -4                 Force using IPv4.
    -6                 Force using IPv6.
```

```
Processing triggers for man-db (2.9.1-1) ...
haritha@haritha-VirtualBox:~$ traceroute www.facebook.com
traceroute to www.facebook.com (157.240.228.35), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  1.568 ms  0.761 ms  1.895 ms
 2  _gateway (10.0.2.2)  34.044 ms  33.411 ms  33.097 ms
```

4. **nslookup**

```
C:\Users\Hari>nslookup
Default Server:  UnKnown
Address:  fec0:0:0:ffff::1

>
```

```
haritha@haritha-VirtualBox:~$ traceroute www.facebook.com
traceroute to www.facebook.com (157.240.228.35), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  1.568 ms  0.761 ms  1.895 ms
 2  _gateway (10.0.2.2)  34.044 ms  33.411 ms  33.097 ms
haritha@haritha-VirtualBox:~$ nslookup google.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.196.14
Name:   google.com
Address: 2404:6800:4007:826::200e
```

5. ipconfig

```
C:\Users\Hari>ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

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

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::d1f9:268d:a2c6:d00b%7
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Wi-Fi:

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

Wireless LAN adapter Local Area Connection* 1:

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

Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

```
haritha@haritha-VirtualBox:~$ sudo ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
        inet6 fe80::1dbc:3da3:bc25:fb9b  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:06:7c:2f  txqueuelen 1000  (Ethernet)
        RX packets 606  bytes 318356 (318.3 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 621  bytes 70222 (70.2 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 873  bytes 66220 (66.2 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 873  bytes 66220 (66.2 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

6. NetStat

```
C:\Users\Hari>NetStat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:57859        kubernetes:57858       TIME_WAIT
  TCP    127.0.0.1:57867        kubernetes:57866       TIME_WAIT
  TCP    127.0.0.1:57870        kubernetes:57875       TIME_WAIT
  TCP    127.0.0.1:57871        kubernetes:57873       TIME_WAIT
  TCP    127.0.0.1:57873        kubernetes:57871       TIME_WAIT
  TCP    127.0.0.1:57874        kubernetes:57872       TIME_WAIT
  TCP    127.0.0.1:57875        kubernetes:57870       TIME_WAIT
  TCP    127.0.0.1:57934        kubernetes:57935       ESTABLISHED
  TCP    127.0.0.1:57935        kubernetes:57934       ESTABLISHED
```

```
haritha@haritha-VirtualBox:~$ netstat -l
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 localhost:mysql         0.0.0.0:*               LISTEN
tcp        0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp6       0      0 [::]:http               [::]:*                  LISTEN
tcp6       0      0 ip6-localhost:ipp       [::]:*                  LISTEN
udp        0      0 0.0.0.0:49205           0.0.0.0:*
udp        0      0 localhost:domain        0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
```

Identify and perform 5 more network commands and it's working.

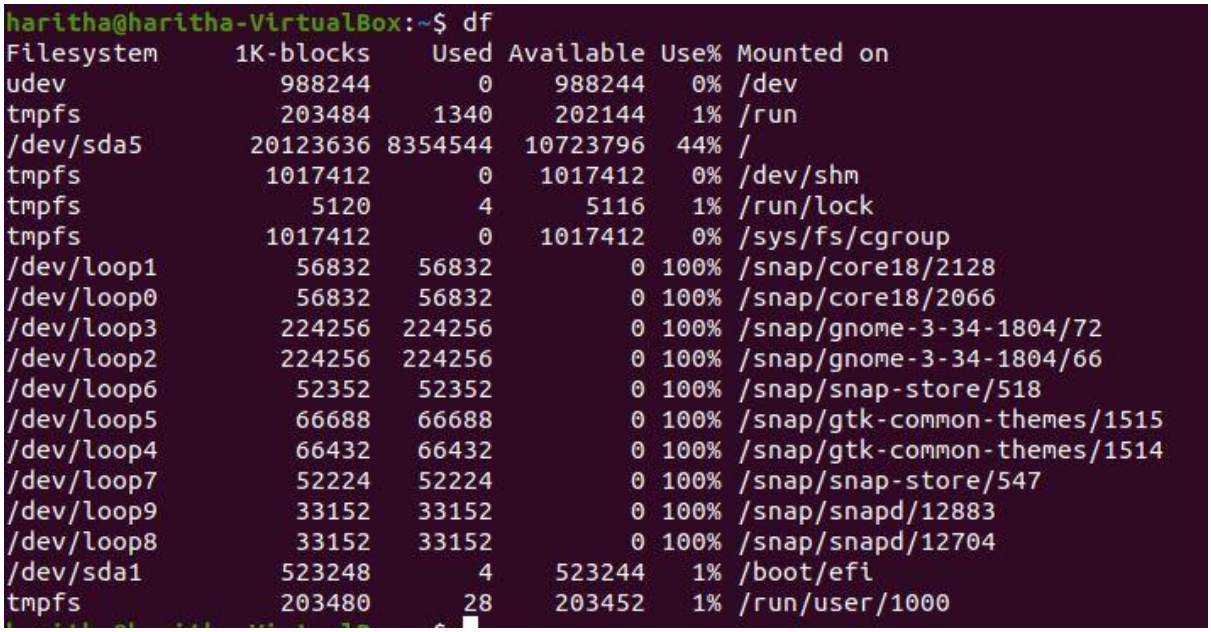
1. Hostname

To communicate with each and other, the computer needs a unique address. A hostname can be alphabetic or alphanumeric and contain specific symbols used specifically to define a specific node or device in the network. For example, a hostname should have a domain name (TLD) of the top-level and a distance between one and 63 characters when used in a domain name system (DNS) or on the Internet.

```
haritha@haritha-VirtualBox:~$ hostname
haritha-VirtualBox
haritha@haritha-VirtualBox:~$
```

2. df

df is a standard Unix command used to display the amount of available disk space for file systems on which the invoking user has appropriate read access. df is typically implemented using the statfs or statvfs system calls.



```
haritha@haritha-VirtualBox:~$ df
Filesystem     1K-blocks    Used Available Use% Mounted on
udev              988244       0    988244   0% /dev
tmpfs             203484    1340    202144   1% /run
/dev/sda5       20123636 8354544  10723796  44% /
tmpfs            1017412       0   1017412   0% /dev/shm
tmpfs               5120       4      5116   1% /run/lock
tmpfs            1017412       0   1017412   0% /sys/fs/cgroup
/dev/loop1         56832   56832         0 100% /snap/core18/2128
/dev/loop0         56832   56832         0 100% /snap/core18/2066
/dev/loop3        224256  224256         0 100% /snap/gnome-3-34-1804/72
/dev/loop2        224256  224256         0 100% /snap/gnome-3-34-1804/66
/dev/loop6         52352   52352         0 100% /snap/snap-store/518
/dev/loop5         66688   66688         0 100% /snap/gtk-common-themes/1515
/dev/loop4         66432   66432         0 100% /snap/gtk-common-themes/1514
/dev/loop7         52224   52224         0 100% /snap/snap-store/547
/dev/loop9         33152   33152         0 100% /snap/snapd/12883
/dev/loop8         33152   33152         0 100% /snap/snapd/12704
/dev/sda1         523248       4    523244   1% /boot/efi
tmpfs             203480      28    203452   1% /run/user/1000
```

3.env

env is a shell command for Unix and Unix-like operating systems. It is used to either print a list of environment variables or run another utility in an altered environment without having to modify the currently existing environment.

```
haritha@haritha-VirtualBox:~$ env
SHELL=/bin/bash
SESSION_MANAGER=local/haritha-VirtualBox:@/tmp/.ICE-unix/1257,unix/haritha-Virt
ualBox:/tmp/.ICE-unix/1257
_WSREP_START_POSITION=
QT_ACCESSIBILITY=1
COLORTERM=truecolor
XDG_CONFIG_DIRS=/etc/xdg/xdg-ubuntu:/etc/xdg
XDG_MENU_PREFIX=gnome-
GNOME_DESKTOP_SESSION_ID=this-is-deprecated
LANGUAGE=en_IN:en
GNOME_SHELL_SESSION_MODE=ubuntu
SSH_AUTH_SOCK=/run/user/1000/keyring/ssh
XMODIFIERS=@im=ibus
DESKTOP_SESSION=ubuntu
SSH_AGENT_PID=1190
GTK_MODULES=gail:atk-bridge
PWD=/home/haritha
LOGNAME=haritha
XDG_SESSION_DESKTOP=ubuntu
XDG_SESSION_TYPE=x11
GPG_AGENT_INFO=/run/user/1000/gnupg/S.gpg-agent:0:1
XAUTHORITY=/run/user/1000/gdm/Xauthority
GJS_DEBUG_TOPICS=JS ERROR;JS LOG
```

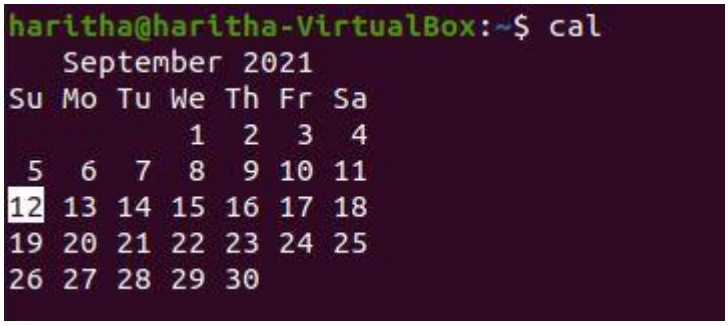
4.Od

od is a command on various operating systems for displaying data in various human-readable output formats. The name is an acronym for "octal dump" since it defaults to printing in the octal data format.

```
haritha@haritha-VirtualBox:~$ od -b file2.txt
0000000 164 150 151 163 040 151 163 040 156 145 164 167 157 162 153 154
0000020 141 142 012 150 157 167 040 141 162 145 040 171 157 165 012 150
0000040 141 166 145 040 141 040 156 151 143 145 040 144 141 171 012 156
0000060 145 164 167 157 162 153 040 151 163 040 163 151 155 160 154 145
0000100 012
0000101
```

5.cal

cal will print a calendar of the current month.


haritha@haritha-VirtualBox:~$ cal
September 2021
Su Mo Tu We Th Fr Sa
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30