

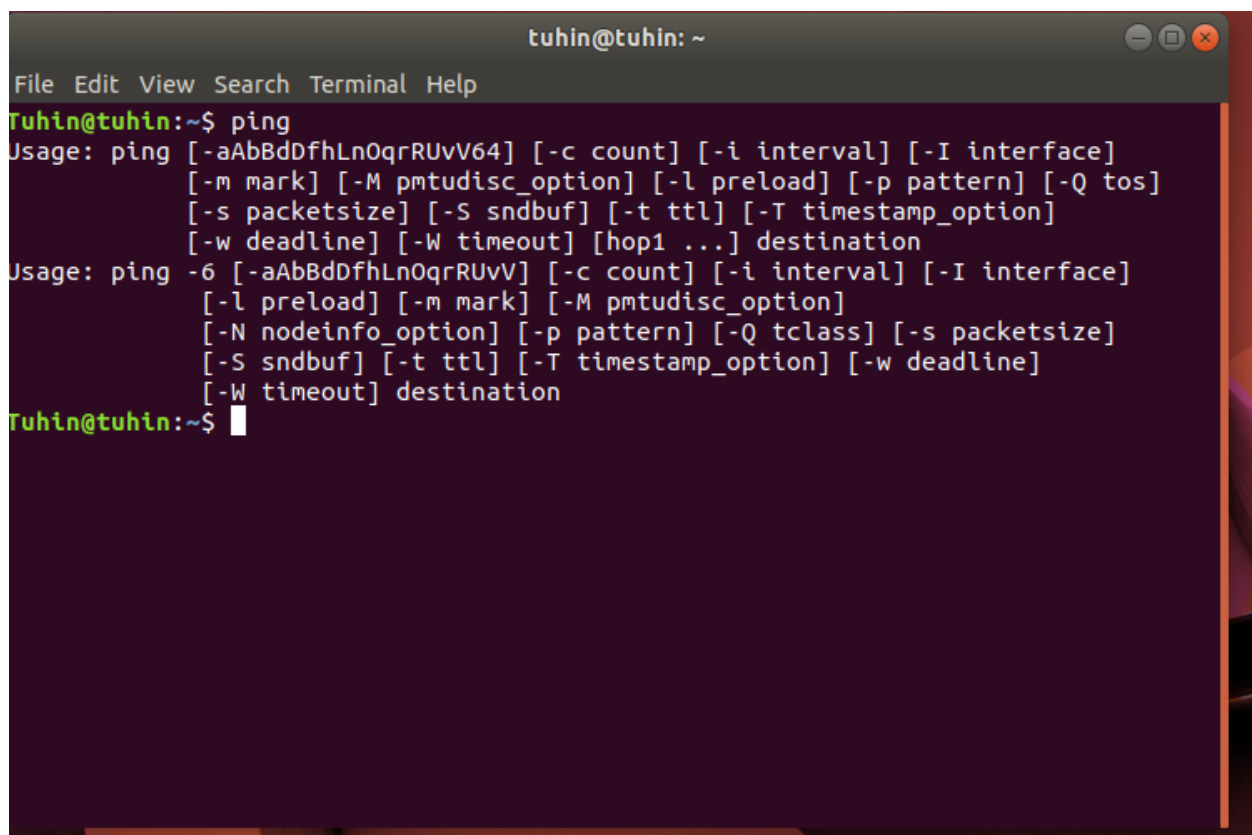
Name: Golam Kibria Tuhin

ID: IT-18015

Assignment No: 1

Assignment Name: Linux Command

Ping: The **ping** command is one of the most used tools for troubleshooting, testing, and diagnosing network connectivity issues. Ping works by sending one or more ICMP (Internet Control Message Protocol) Echo Request packages to a specified destination IP on the network and waits for a reply.

A screenshot of a Linux terminal window titled 'tuhin@tuhin: ~'. The terminal shows the command 'ping' being entered, followed by its usage information. The usage text is displayed in two columns. The first column shows 'Usage: ping' followed by options in brackets: [-aAbBdDfhLnOqrRUvV64], [-c count], [-i interval], [-I interface], [-m mark], [-M pmtudisc_option], [-l preload], [-p pattern], [-Q tos], [-s packetsize], [-S sndbuf], [-t ttl], [-T timestamp_option], [-w deadline], [-W timeout], [hop1 ...], and destination. The second column shows 'Usage: ping -6' followed by options in brackets: [-aAbBdDfhLnOqrRUvV], [-c count], [-i interval], [-I interface], [-l preload], [-m mark], [-M pmtudisc_option], [-N nodeinfo_option], [-p pattern], [-Q tclass], [-s packetsize], [-S sndbuf], [-t ttl], [-T timestamp_option], [-w deadline], [-W timeout], and destination. The prompt 'tuhin@tuhin:~\$' is visible at the bottom of the terminal window.

```
tuhin@tuhin: ~
File Edit View Search Terminal Help
tuhin@tuhin:~$ ping
Usage: ping [-aAbBdDfhLnOqrRUvV64] [-c count] [-i interval] [-I interface]
          [-m mark] [-M pmtudisc_option] [-l preload] [-p pattern] [-Q tos]
          [-s packetsize] [-S sndbuf] [-t ttl] [-T timestamp_option]
          [-w deadline] [-W timeout] [hop1 ...] destination
Usage: ping -6 [-aAbBdDfhLnOqrRUvV] [-c count] [-i interval] [-I interface]
          [-l preload] [-m mark] [-M pmtudisc_option]
          [-N nodeinfo_option] [-p pattern] [-Q tclass] [-s packetsize]
          [-S sndbuf] [-t ttl] [-T timestamp_option] [-w deadline]
          [-W timeout] destination
tuhin@tuhin:~$
```

CURL: **curl** is a command line tool to transfer data to or from a server, using any of the supported protocols (HTTP, FTP, IMAP, POP3, SCP, SFTP, SMTP, TFTP, TELNET, LDAP or FILE) . curl is powered by Libcurl. This tool is preferred for automation, since it is designed to work without user interaction.

```
tuhin@tuhin: ~  
File Edit View Search Terminal Help  
Tuhin@tuhin:~$ curl -version  
curl: no URL specified!  
curl: try 'curl --help' or 'curl --manual' for more information  
Tuhin@tuhin:~$
```

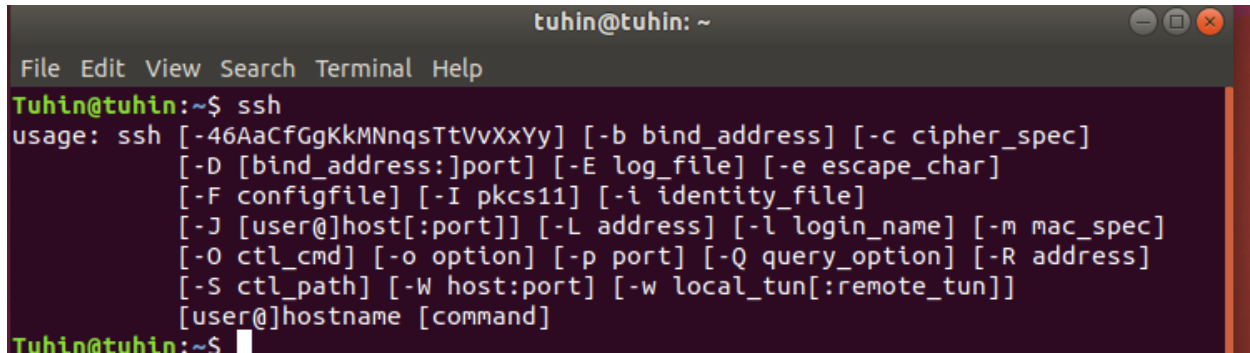
WGET: **wget** is a free utility for non-interactive download of files from the web. It supports HTTP, HTTPS, and FTP protocols

```
tuhin@tuhin: ~  
File Edit View Search Terminal Help  
Tuhin@tuhin:~$ wget https://www.w3schools.com  
--2020-12-08 17:57:13-- https://www.w3schools.com/  
Resolving www.w3schools.com (www.w3schools.com)... 192.229.179.87  
Connecting to www.w3schools.com (www.w3schools.com)|192.229.179.87|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 70691 (69K) [text/html]  
Saving to: 'index.html'  
  
index.html      100%[=====>] 69.03K  13.9KB/s   in 5.0s  
2020-12-08 17:57:20 (13.9 KB/s) - 'index.html' saved [70691/70691]  
Tuhin@tuhin:~$
```

TC: **Tc** is used to configure Traffic Control in the Linux kernel. Traffic Control consists of the following: SHAPING When traffic is shaped, its rate of transmission is under control. Shaping may be more than lowering the available bandwidth - it is also used to smooth out bursts in traffic for better network behaviour.

```
tuhin@tuhin: ~  
File Edit View Search Terminal Help  
Tuhin@tuhin:~$ tc  
Usage: tc [ OPTIONS ] OBJECT { COMMAND | help }  
       tc [-force] -batch filename  
where  OBJECT := { qdisc | class | filter | action | monitor | exec }  
       OPTIONS := { -s[tatistics] | -d[etails] | -r[aw] | -p[retty] | -b[atch] [ filename] | -n[etns] name |  
                  -nm | -nam[es] | { -cf | -conf } path } | -j[son]  
Tuhin@tuhin:~$
```

SSH: `ssh` command provides a secure encrypted connection between two hosts over an insecure network. This connection can also be used for terminal access, file transfers, and for tunneling other applications. Graphical X11 applications can also be run securely over SSH from a remote location.

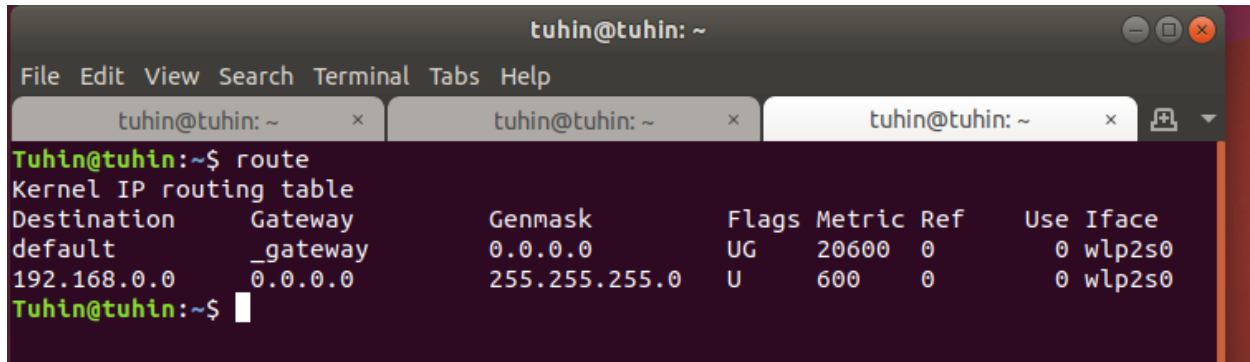
A terminal window titled 'tuhin@tuhin: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The prompt is 'Tuhin@tuhin:~\$' and the command 'ssh' has been entered. The output shows the usage of the ssh command with various options in brackets.

```
tuhin@tuhin: ~
File Edit View Search Terminal Help
Tuhin@tuhin:~$ ssh
usage: ssh [-46AaCfGgKkMnqsTtVvXxYy] [-b bind_address] [-c cipher_spec]
          [-D [bind_address:]port] [-E log_file] [-e escape_char]
          [-F configfile] [-I pkcs11] [-i identity_file]
          [-J [user@]host[:port]] [-L address] [-l login_name] [-m mac_spec]
          [-O ctl_cmd] [-o option] [-p port] [-Q query_option] [-R address]
          [-S ctl_path] [-W host:port] [-w local_tun[:remote_tun]]
          [user@]hostname [command]
```

RSYNC: **rsync** is a fast and versatile command-line utility for synchronizing files and directories between two locations over a remote shell, or from/to a remote **Rsync** daemon. It provides fast incremental file transfer by transferring only the differences between the source and the destination.

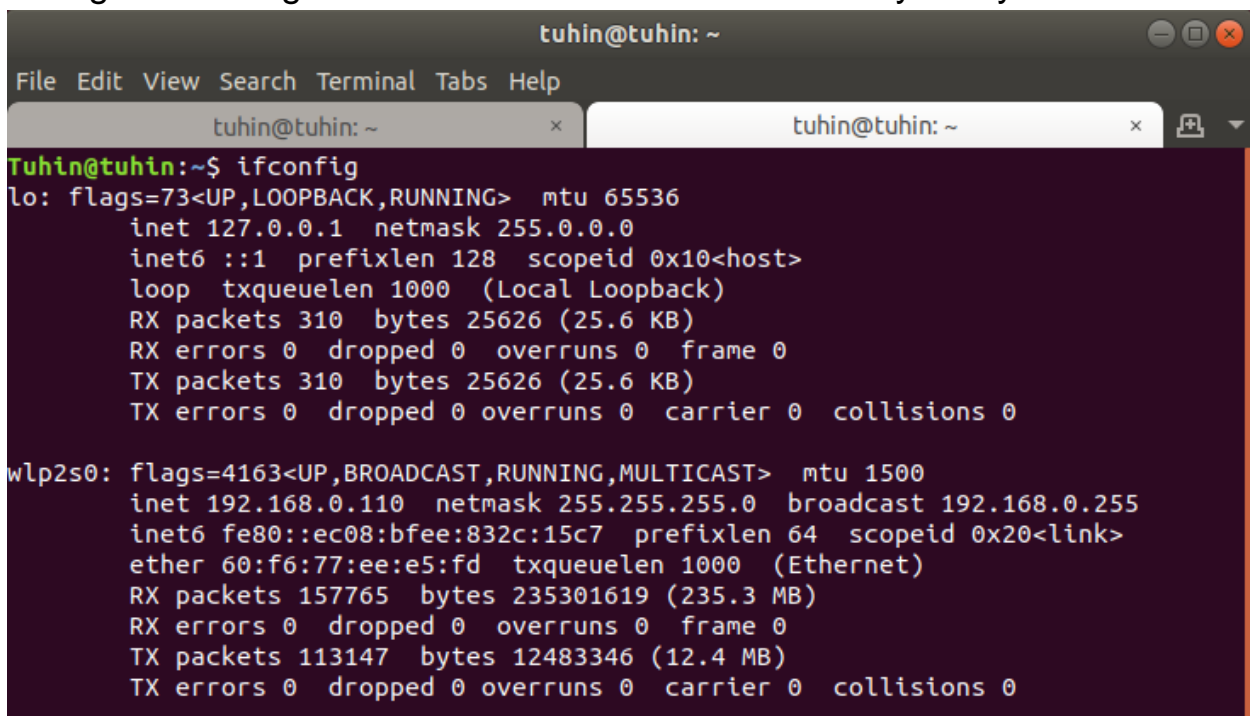
```
tuhin@tuhin: ~  
File Edit View Search Terminal Help  
Tuhin@tuhin:~$ rsync  
rsync version 3.1.2 protocol version 31  
Copyright (C) 1996-2015 by Andrew Tridgell, Wayne Davison, and others.  
Web site: http://rsync.samba.org/  
Capabilities:  
  64-bit files, 64-bit inums, 64-bit timestamps, 64-bit long ints,  
  socketpairs, hardlinks, symlinks, IPv6, batchfiles, inplace,  
  append, ACLs, xattrs, iconv, symtimes, prealloc  
  
rsync comes with ABSOLUTELY NO WARRANTY. This is free software, and you  
are welcome to redistribute it under certain conditions. See the GNU  
General Public Licence for details.  
  
rsync is a file transfer program capable of efficient remote update  
via a fast differencing algorithm.  
  
Usage: rsync [OPTION]... SRC [SRC]... DEST  
or rsync [OPTION]... SRC [SRC]... [USER@]HOST:DEST  
or rsync [OPTION]... SRC [SRC]... [USER@]HOST::DEST  
or rsync [OPTION]... SRC [SRC]... rsync://[USER@]HOST[:PORT]/DEST  
or rsync [OPTION]... [USER@]HOST:SRC [DEST]  
or rsync [OPTION]... [USER@]HOST::SRC [DEST]  
or rsync [OPTION]... rsync://[USER@]HOST[:PORT]/SRC [DEST]  
The ':' usages connect via remote shell, while '::' & 'rsync://' usages connect  
to an rsync daemon, and require SRC or DEST to start with a module name.  
  
Options  
-v, --verbose          increase verbosity  
--info=FLAGS          fine-grained informational verbosity  
--debug=FLAGS         fine-grained debug verbosity  
--msgs2stderr         special output handling for debugging  
-q, --quiet           suppress non-error messages  
--no-motd             suppress daemon-mode MOTD (see manpage caveat)  
-c, --checksum        skip based on checksum, not mod-time & size  
-a, --archive         archive mode; equals -rlptgoD (no -H,-A,-X)  
--no-OPTION           turn off an implied OPTION (e.g. --no-D)  
-r, --recursive      recurse into directories  
-R, --relative        use relative path names  
--no-implied-dirs     don't send implied dirs with --relative  
-b, --backup          make backups (see --suffix & --backup-dir)  
--backup-dir=DIR      make backups into hierarchy based in DIR  
--suffix=SUFFIX       set backup suffix (default ~ w/o --backup-dir)  
-u, --update          skip files that are newer on the receiver  
--inplace             update destination files in-place (SEE MAN PAGE)  
--append             append data onto shorter files  
--append-verify       like --append, but with old data in file checksum  
-d, --dirs            transfer directories without recursing  
-l, --links           copy symlinks as symlinks
```

ROUTE: **route** command in Linux is used when you want to work with the IP/kernel routing table. It is mainly used to set up static routes to specific hosts or networks via an interface. It is used for showing or update the IP/kernel routing table.



```
tuhin@tuhin: ~  
File Edit View Search Terminal Tabs Help  
tuhin@tuhin: ~ x tuhin@tuhin: ~ x tuhin@tuhin: ~ x  
Tuhin@tuhin:~$ route  
Kernel IP routing table  
Destination      Gateway          Genmask          Flags Metric Ref    Use Iface  
default          _gateway        0.0.0.0          UG    20600  0      0 wlp2s0  
192.168.0.0      0.0.0.0         255.255.255.0    U     600    0      0 wlp2s0  
Tuhin@tuhin:~$
```

IFCONFIG: stands for "**interface configuration.**" It is used to view and change the configuration of the network interfaces on your system.



```
tuhin@tuhin: ~  
File Edit View Search Terminal Tabs Help  
tuhin@tuhin: ~ x tuhin@tuhin: ~ x  
Tuhin@tuhin:~$ ifconfig  
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 310 bytes 25626 (25.6 KB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 310 bytes 25626 (25.6 KB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.0.110 netmask 255.255.255.0 broadcast 192.168.0.255  
    inet6 fe80::ec08:bfee:832c:15c7 prefixlen 64 scopeid 0x20<link>  
    ether 60:f6:77:ee:e5:fd txqueuelen 1000 (Ethernet)  
    RX packets 157765 bytes 235301619 (235.3 MB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 113147 bytes 12483346 (12.4 MB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

sudo apt upgrade: The **sudo apt-get update** command is used to download package information from all configured sources. The sources often defined in /etc/apt/sources. list file and other files located in /etc/apt/sources. ... So when you run update command, it downloads the package information from the Internet.

```
tuhin@tuhin: ~
File Edit View Search Terminal Help

[-N nodeinfo_option] [-p pattern] [-Q tclass] [-s packetsize]
[-S sndbuf] [-t ttl] [-T timestamp_option] [-w deadline]
[-W timeout] destination
Tuhin@tuhin:~$ sudo apt upgrade
[sudo] password for tuhin:
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
  libllvm7
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  linux-headers-5.4.0-54-generic linux-hwe-5.4-headers-5.4.0-54
  linux-image-5.4.0-54-generic linux-modules-5.4.0-54-generic
  linux-modules-extra-5.4.0-54-generic
The following packages will be upgraded:
  accountsservice apport apport-gtk distro-info-data firefox firefox-locale-en
  gdb gdbserver gdm3 gir1.2-accountsservice-1.0 gir1.2-gdm-1.0
  google-chrome-stable grub-common grub-efi-amd64-bin grub-efi-amd64-signed
  grub-pc grub-pc-bin grub2-common intel-microcode krb5-locales
  libaccountsservice0 libc-bin libc6 libc6-dbg libexif12 libgdm1
  libgssapi-krb5-2 libk5crypto3 libkrb5-3 libkrb5support0 libldap-2.4-2
  libldap-common libnautilus-extension1a libnss-myhostname libnss-systemd
  libpam-systemd libpulse-mainloop-glib0 libpulse0 libpulsedsp libraptor2-0
  libsmbclient libsystemd0 libudev1 libvncclient1 libwbclient0
  linux-generic-hwe-18.04 linux-headers-generic-hwe-18.04
  linux-image-generic-hwe-18.04 locales multiarch-support nautilus
  nautilus-data openjdk-11-jdk openjdk-11-jdk-headless openjdk-11-jre
  openjdk-11-jre-headless pulseaudio pulseaudio-module-bluetooth
  pulseaudio-utils python3-apport python3-cryptography python3-distupgrade
  python3-problem-report samba-libs snapd spice-vdagent sudo systemd
  systemd-sysv tzdata ubuntu-release-upgrader-core ubuntu-release-upgrader-gtk
  udev vino
74 upgraded, 5 newly installed, 0 to remove and 0 not upgraded.
Need to get 98.7 MB/505 MB of archives.
After this operation, 363 MB of additional disk space will be used.
Do you want to continue? [Y/n] n
Abort.
Tuhin@tuhin:~$
```

The sudo apt-get update command is used to download package information from all configured sources. The sources often defined in /etc/apt/sources. list file and other files located in /etc/apt/sources. ... So when you run update command, it downloads the package information from the Internet.


```
Tuhin@tuhin:~$ sudo apt update
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Hit:3 http://bd.archive.ubuntu.com/ubuntu bionic InRelease
Get:4 http://bd.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Hit:5 https://download.sublimetext.com apt/stable/ InRelease
Get:6 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [1,453 kB]
Get:7 http://bd.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:8 http://bd.archive.ubuntu.com/ubuntu bionic-updates/main i386 Packages [1,172 kB]
Get:9 http://bd.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [1,789 kB]
Get:10 http://bd.archive.ubuntu.com/ubuntu bionic-updates/main Translation-en [376 kB]
Get:11 http://bd.archive.ubuntu.com/ubuntu bionic-updates/main amd64 DEP-11 Meta data [295 kB]
Get:12 http://security.ubuntu.com/ubuntu bionic-security/main i386 Packages [870 kB]
Get:13 http://security.ubuntu.com/ubuntu bionic-security/main Translation-en [284 kB]
Get:14 http://bd.archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [206 kB]
Get:15 http://security.ubuntu.com/ubuntu bionic-security/main amd64 DEP-11 Metadata [49.0 kB]
Get:16 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [184 kB]
Get:17 http://bd.archive.ubuntu.com/ubuntu bionic-updates/restricted Translation-en [184 kB]
```