Name: Vansh Purohit

Class: TE-3

Roll no: 42

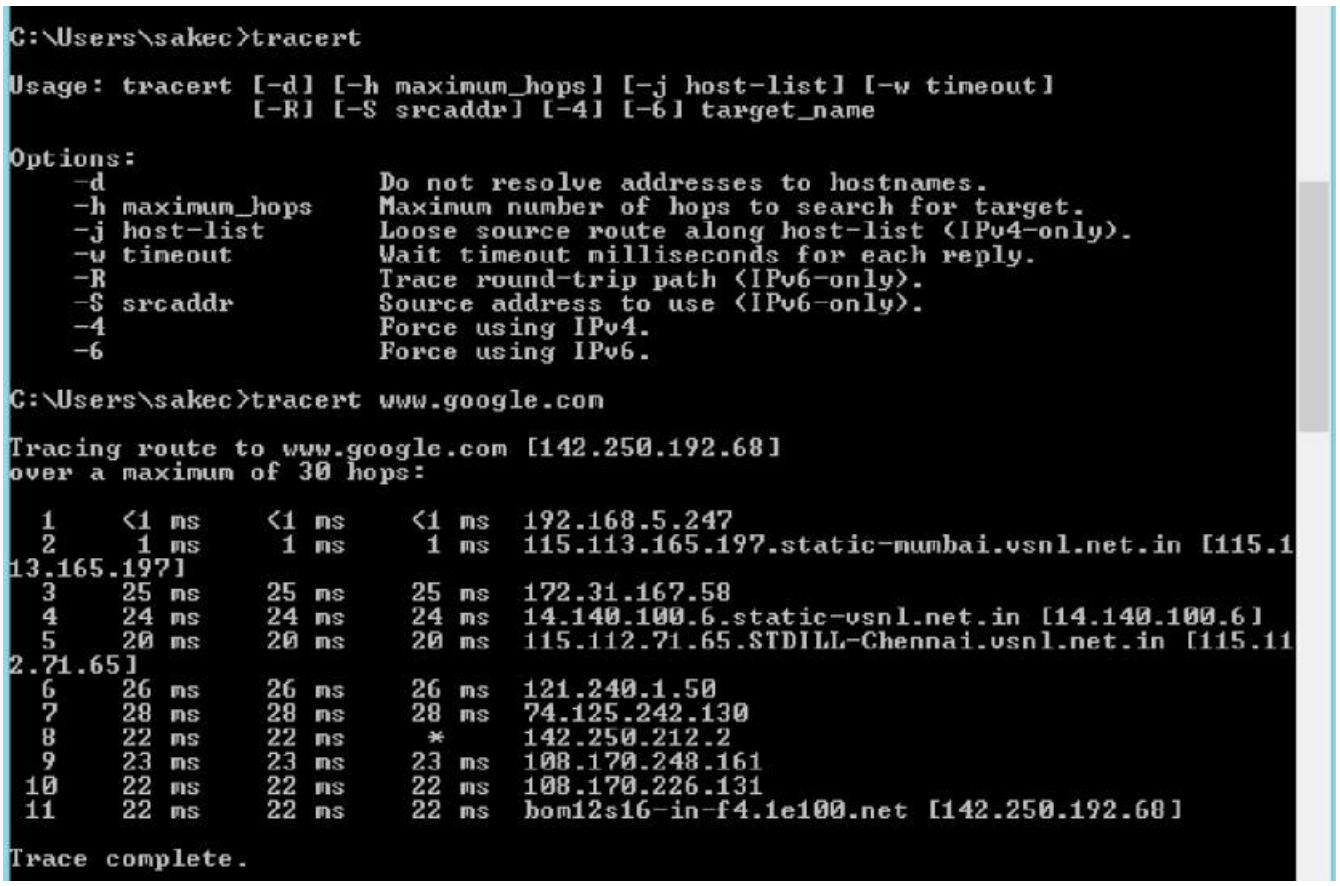
Experiment - 2

AIM: Use basic networking commands in Linux (ping, tracert, nslookup, netstat, ARP, RARP, ip, ifconfig, dig, route)

RESULTS :

ipconfig :

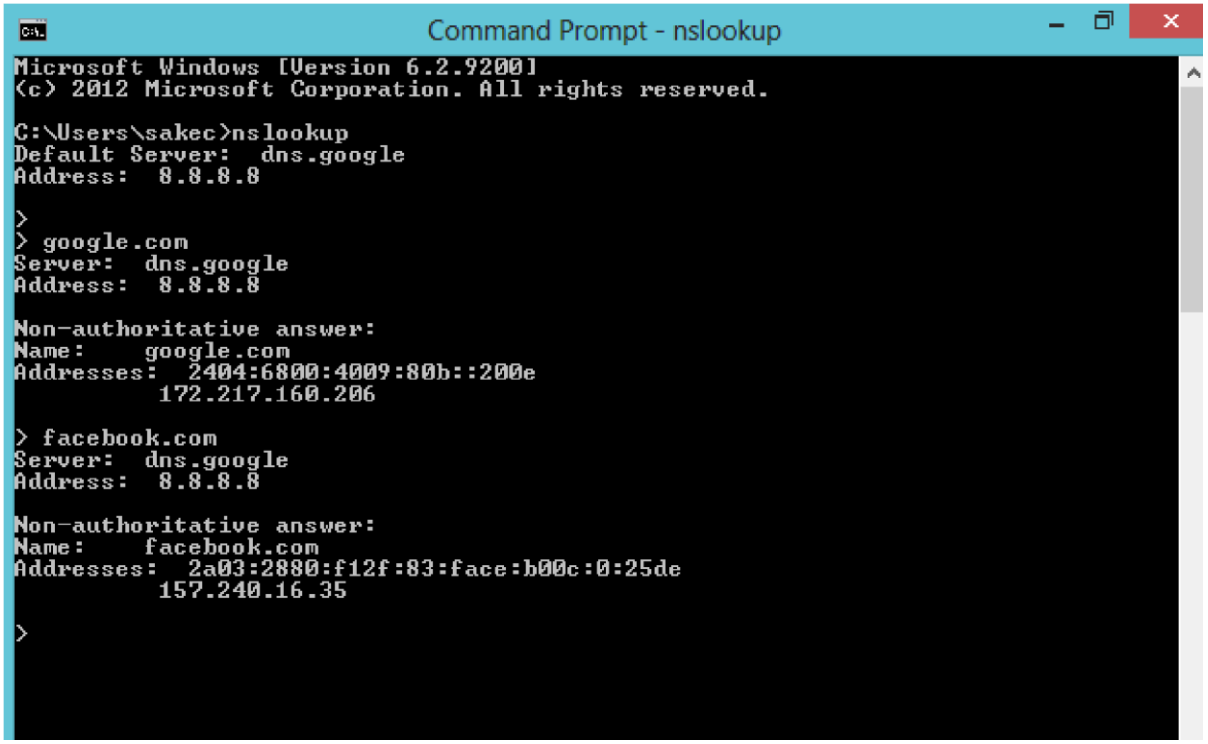
tracert :


C:\Users\sakec>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.
C:\Users\sakec>tracert www.google.com
Tracing route to www.google.com [142.250.192.68]
over a maximum of 30 hops:
1 <1 ms <1 ms <1 ms 192.168.5.247
2 1 ms 1 ms 1 ms 115.113.165.197.static-mumbai.vsnl.net.in [115.1
13.165.197]
3 25 ms 25 ms 25 ms 172.31.167.58
4 24 ms 24 ms 24 ms 14.140.100.6.static-vsnl.net.in [14.140.100.6]
5 20 ms 20 ms 20 ms 115.112.71.65.STDILL-Chennai.vsnl.net.in [115.11
2.71.65]
6 26 ms 26 ms 26 ms 121.240.1.50
7 28 ms 28 ms 28 ms 74.125.242.130
8 22 ms 22 ms * 142.250.212.2
9 23 ms 23 ms 23 ms 108.170.248.161
10 22 ms 22 ms 22 ms 108.170.226.131
11 22 ms 22 ms 22 ms bom12s16-in-f4.1e100.net [142.250.192.68]
Trace complete.

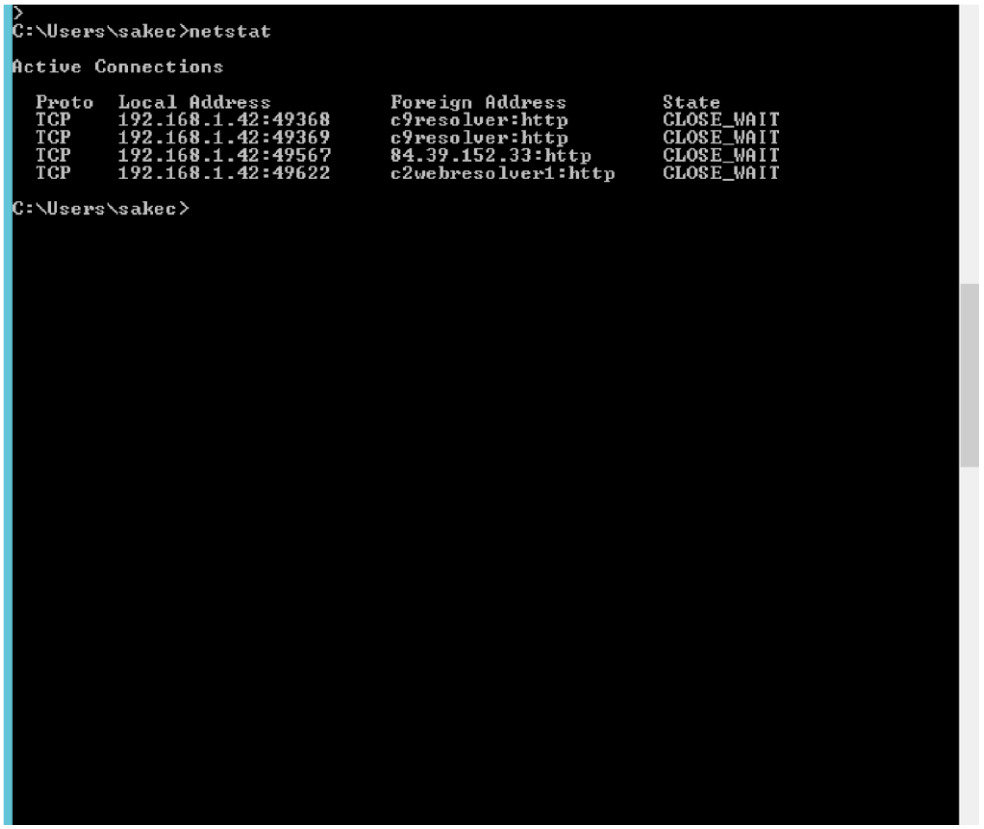
ping :


Command Prompt
C:\Users\sakec>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 Hea
er).
-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.
-4 Force using IPv4.
-6 Force using IPv6.
C:\Users\sakec>

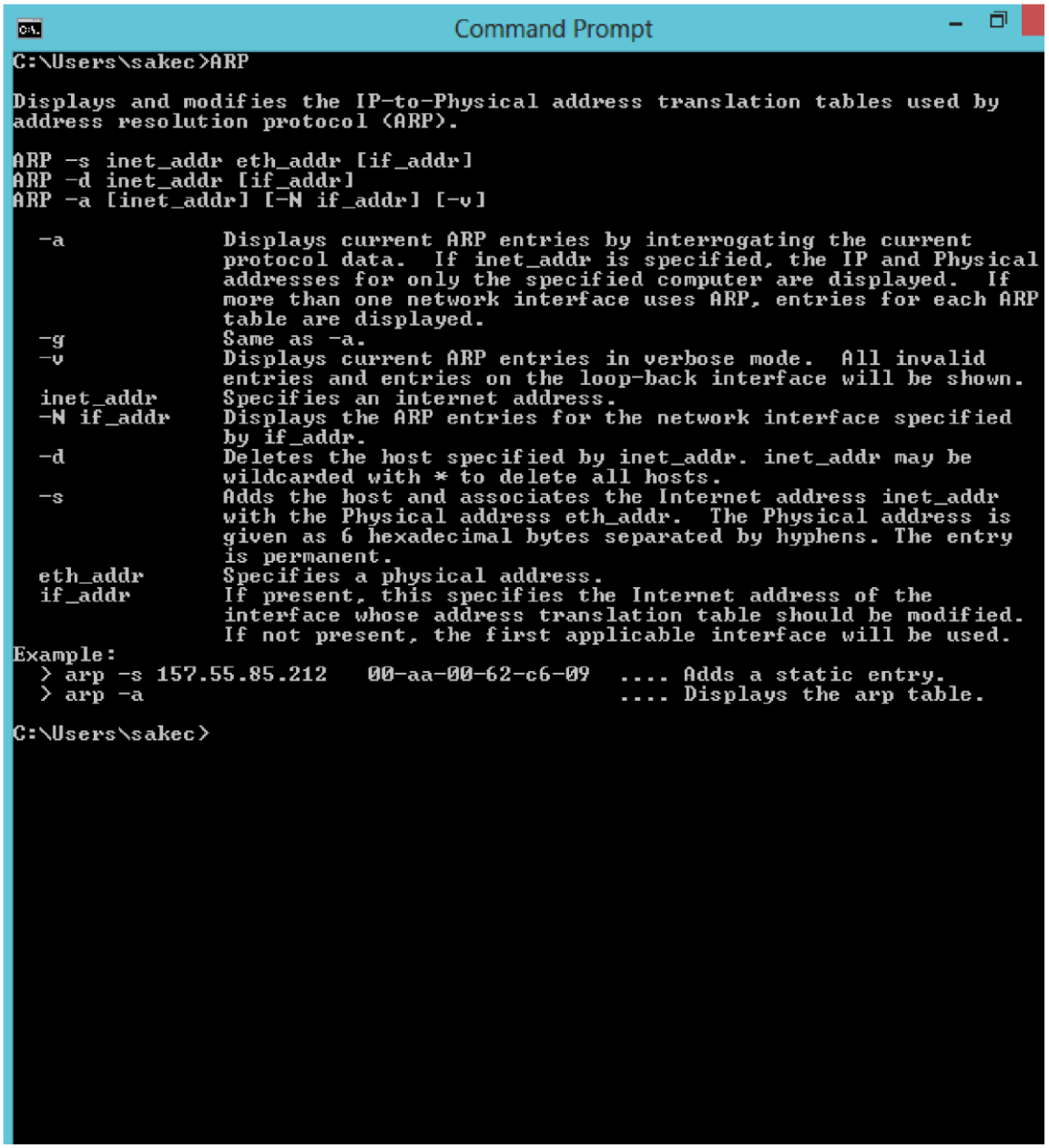
nslookup :


Command Prompt - nslookup
Microsoft Windows [Version 6.2.9200]
(c) 2012 Microsoft Corporation. All rights reserved.
C:\Users\sakec>nslookup
Default Server: dns.google
Address: 8.8.8.8
>
> google.com
Server: dns.google
Address: 8.8.8.8
Non-authoritative answer:
Name: google.com
Addresses: 2404:6800:4009:80b::200e
172.217.160.206
> facebook.com
Server: dns.google
Address: 8.8.8.8
Non-authoritative answer:
Name: facebook.com
Addresses: 2a03:2880:f12f:83:face:b00c:0:25de
157.240.16.35
>

netstat :

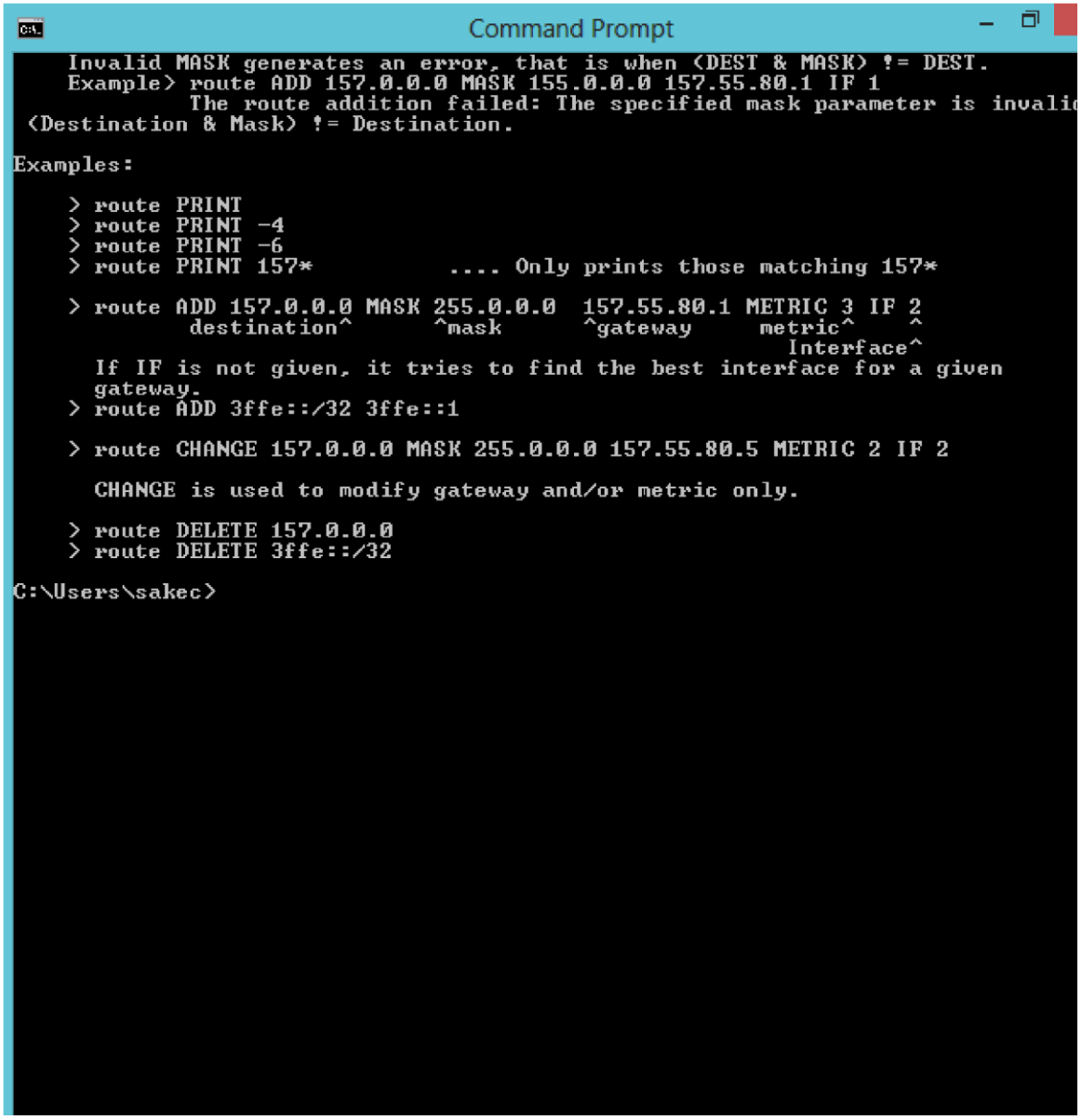

>
C:\Users\sakec>netstat
Active Connections
Proto Local Address Foreign Address State
TCP 192.168.1.42:49368 c9resolver:http CLOSE_WAIT
TCP 192.168.1.42:49369 c9resolver:http CLOSE_WAIT
TCP 192.168.1.42:49567 84.39.152.33:http CLOSE_WAIT
TCP 192.168.1.42:49622 c2webresolver1:http CLOSE_WAIT
C:\Users\sakec>

ARP :


Command Prompt
C:\Users\sakec>ARP
Displays and modifies the IP-to-Physical address translation tables used by
address resolution protocol (ARP).
ARP -s inet_addr eth_addr [if_addr]
ARP -d inet_addr [if_addr]
ARP -a [inet_addr] [-N if_addr] [-v]
-a Displays current ARP entries by interrogating the current
protocol data. If inet_addr is specified, the IP and Physical
addresses for only the specified computer are displayed. If
more than one network interface uses ARP, entries for each ARP
table are displayed.
-g Same as -a.
-v Displays current ARP entries in verbose mode. All invalid
entries and entries on the loop-back interface will be shown.
inet_addr Specifies an internet address.
-N if_addr Displays the ARP entries for the network interface specified
by if_addr.
-d Deletes the host specified by inet_addr. inet_addr may be
wildcarded with * to delete all hosts.
-s Adds the host and associates the Internet address inet_addr
with the Physical address eth_addr. The Physical address is
given as 6 hexadecimal bytes separated by hyphens. The entry
is permanent.
eth_addr Specifies a physical address.
if_addr If present, this specifies the Internet address of the
interface whose address translation table should be modified.
If not present, the first applicable interface will be used.
Example:
> arp -s 157.55.85.212 00-aa-00-62-c6-09 .... Adds a static entry.
> arp -a .... Displays the arp table.
C:\Users\sakec>

route :


Command Prompt
operable program or batch file.
C:\Users\sakec>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


Command Prompt
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 invali
(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
C:\Users\sakec>

CONCLUSION: Hence, in this experiment, we have successfully studied some important networking commands and also implemented them in Linux.