

EXPERIMENT NO. 2

BASIC COMMANDS IN UNIX

AIM: Study of UNIX general purpose utility commands.

REQUIREMENT: Computer machine, UBUNTU OS

THEORY: UNIX commands can often be grouped together to make more powerful capabilities known as I/O redirection and piping. There are certain commands that are essential to be known to get started with UNIX. Some of the commands are:

- 1. cd:** Changes the current working directory
- 2. mkdir:** Creates a new directory
- 3. rmdir:** Removes the directory
- 4. pwd:** Writes the full pathname of the current working directory to the standard output.
- 5. touch:** Creates a new file
- 6. gedit:** Opens the default GUI text editor in the Ubuntu OS
- 7. cat:** Creates single or multiple files, concatenates files and redirects output in terminal or files.
- 8. mv:** Moves files and directories
- 9. rm:** By default, it does not remove directories. The –recursive command is used to remove each listed directory.
- 10. ls:** Lists the directory contents of files and directories
- 11. cp:** Copies the source file to the destination file
- 12. ps:** Provides information about the currently processes
- 13. man:** It is the interface used to view system's reference manuals
- 14. who:** Displays the list of users who are currently logged into the computer
- 15. whoami:** Prints the user name associated with the current effective user id
- 16. echo:** Outputs the strings being passed as arguments
- 17. date:** Displays the current date and time
- 18. time:** Determines the duration of execution of a particular command
- 19. cal:** Prints an ASCII calendar of the given month or year
- 20. history:** Stores the history of commands entered, which can be used to repeat the commands
- 21. head:** Outputs the first part of files given to it via standard input
- 22. tail:** Outputs the last part of files given to it via standard output
- 23. more:** Enables to view the text files or other output in a scrollable manner

- 24. less:** Enables to view files instead of opening the file
- 25. passwd:** Changes the password of a user account
- 26. chmod:** Changes the file mode bits of each given file according to mode, so may change the access permissions to file system objects
- 27. chown:** Changes the owner of system files, directories
- 28. bc:** It is used as used to perform arithmetic calculations
- 29. finger:** May be used to look up users on a remote machine
- 30. clear:** Clears the screen
- 31. halt:** Instructs the hardware to stop all CPU functions
- 32. reboot:** Instructs the system to reboot
- 33. poweroff:** Sends an ACPI signal which instructs the system to power down

CODE AND OUTPUT:Screenshots to be attached

OUTCOME: The study of basic user commands in UNIX has helped us learn about various commands and their use in detail to work on such an OS.

CONCLUSION: We successfully studied the basic user commands in UNIX on our machine.

```
es Terminal Feb 10 09:39
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ cd Desktop
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ mkdir UnixLab
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ rmdir UnixLab
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ pwd
/home/dbms19/Desktop
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ touch newfile.txt
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ gedit newfile.txt
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ touch file.txt
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ gedit file.txt
```

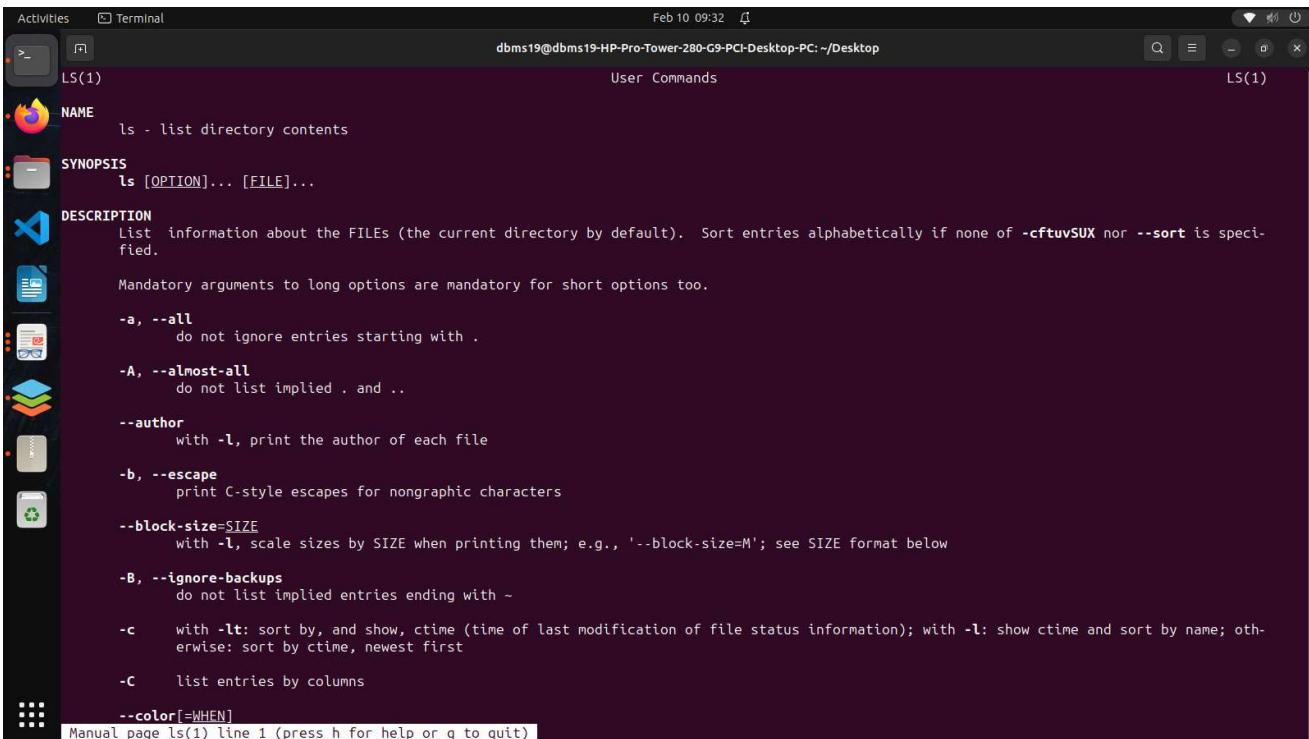
```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ cat newfile.txt
Experiment No 2
This is unix lab
New file is created.
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ mv
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ mkdir UnixLab
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ mv file.txt /home/dbms19/Desktop/UnixLab
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ ls
449.txt aish ankita.txt Arindam aritra.txt newfile.txt PlayfairCipher.java Unix unix2.txt unix34 UnixLab
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ cp newfile.txt file.txt
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ ps
  PID TTY          TIME CMD
 8099 pts/0    00:00:00 bash
 11816 pts/0    00:00:00 ps
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ who
dbms19  seat0      2025-02-10 08:38 (login screen)
dbms19  tty2       2025-02-10 08:38 (tty2)
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ whoami
dbms19
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ man
What manual page do you want?
For example, try 'man man'.
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ man man
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ man ls
```



```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ date
Mon Feb 10 09:34:23 AM IST 2025
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ time

real    0m0.000s
user    0m0.000s
sys     0m0.000s
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ cal
    February 2025
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
```

```
DESKTOP: NO SUCH FILE OR DIRECTORY
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ less Unix
Unix/   UnixLab/
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ less UnixLab/
UnixLab/ is a directory
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ bc
bc 1.07.1
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006, 2008, 2012-2017 Free Software Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type `warranty'.
18+56
74
45-8
37
12/6
2
45*8
360
12%6
0
```

```
^C
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ head newfile.txt
Experiment No 2
This is unix lab
New file is created.
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ tail newfile.txt
Experiment No 2
This is unix lab
New file is created.
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ more
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Desktop$ history
1 sudo su
2 python
3 python3
4 sudo gedit /etc/profile
5 cd Desktop
6 cd 550
7 javac Productcipher.java
8 sudo su
9 sudo apt install curl
10 sudo curl -fsSLo /usr/share/keyrings/brave-browser-archive-keyring.gpg https://brave-browser-apt-release.s3.brave.com/brave-browser-archive-keyring.gpg
11 sudo apt install curl
12 sudo curl -fsSLo /usr/share/keyrings/brave-browser-archive-keyring.gpg https://brave-browser-apt-release.s3.brave.com/brave-browser-archive-keyring.gpg
13 echo "deb [signed-by=/usr/share/keyrings/brave-browser-archive-keyring.gpg] https://brave-browser-apt-release.s3.brave.com/ stable main" | sudo tee /etc/apt/sources.list.d/brave-browser-release.list
14 sudo apt update
15 sudo apt install brave-browser
16 sudo su
17 sudo su
18 sudo su
19 java -v
```

DEPARTMENT OF INFORMATION TECHNOLOGY

EXPERIMENT NO. 3

ADVANCED COMMANDS IN LINUX

AIM: Study of UNIX Networking Commands.

REQUIREMENT: Computer machine, UBUNTU OS

THEORY: Diagnostic Networking commands are programs written for the purpose of examining the state, or locating problems with the hardware, or operating system environment that it is running on/in, the soft wares or any combination in a system, or a network of systems. Preferably, diagnostic programs provide solutions to the user to solve issues.

Following are some of the networking commands:

1. **ifconfig:** Ifconfig (interface configurator) command is used to initialize an interface, assign IP Address to interface and enable or disable interface on demand. With this command, the IP Address and Hardware / MAC address assigned to interface and the MTU (Maximum transmission unit) size can be viewed.
2. **ping:** PING (Packet Internet Groper) command is known for being one of the most basic network commands. It is a command that exists on all operating systems that support TCP/IP. It is based on the ICMP (Internet Control Message Protocol) and is used to determine:
 - If there is connectivity between your machine and another machine on the network whether it is LAN OR WAN.
 - It's used to measure the "speed" or latency time.
 - It monitors the number of packages to send.
 - It is a command that exists on all operating systems that support TCP/IP
3. **traceroute:** It is a network troubleshooting utility which shows number of hops taken to reach destination and also determine packets traveling path.
The main objective of this tool is :

- To know the travelling path of a package through our network i.e. where the package is going through (machines, switches, routers).
 - It also checks that the network is working properly and gives a rough idea about where the fault lies if any problem is encountered.
4. **netstat:** Netstat command identifies all TCP connections and UDP open on a machine. Besides this, it allows us to know the following information:
- Routing tables to meet our network interfaces and its outputs.
 - Ethernet statistics that show sent and received packages and possible errors.
 - To know the id of the process that is being used by the connection.
5. **nslookup:** Nslookup is a useful tool for troubleshooting DNS problems, such as host name resolution. When started, it shows the host name and IP address of the DNS server that is configured for the local system, and then displays command prompt for further queries.
6. **whois:** This network command is used to query data domains:
- to find out who owns the domain, when that domain expires,to view the configured logs, contact details, etc.
 - Its use is highly recommended to contact the administrators of the domains or when incidents of migration of services such as mail and web happen.
7. **host:** It is used to convert names to IP addresses and vice versa.
8. **tcpdump:** It allows the user to display TCP/IP and other packets being transmitted or received over a network to which the computer is attached.

CODE AND OUTPUT:Screenshots to be attached

OUTCOME: The study of advance user commands in UNIX has helped us learn about various advanced commands and their use in detail to work on a system connected in a network.

CONCLUSION: We successfully studied the basic user commands in UNIX on our machine.

MCT

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```
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ ifconfig
enp1s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
      ether e0:73:e7:10:65:c5 txqueuelen 1000  (Ethernet)
      RX packets 0 bytes 0 (0.0 B)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 0 bytes 0 (0.0 B)
      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 383 bytes 40946 (40.9 KB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 383 bytes 40946 (40.9 KB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.2.129 netmask 255.255.255.0 broadcast 192.168.2.255
      inet6 fe80::bc64:408d:8ee4:a0f6 prefixlen 64 scopeid 0x20<link>
      ether cc:47:40:d7:e9:99 txqueuelen 1000  (Ethernet)
      RX packets 1902 bytes 663009 (663.0 KB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 481 bytes 88009 (88.0 KB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ ping -b 192.168.2.255
WARNING: pinging broadcast address
PING 192.168.2.255 (192.168.2.255) 56(84) bytes of data.
64 bytes from 192.168.2.1: icmp_seq=1 ttl=64 time=8.64 ms
64 bytes from 192.168.2.101: icmp_seq=1 ttl=64 time=37.1 ms
64 bytes from 192.168.2.1: icmp_seq=2 ttl=64 time=15.4 ms
64 bytes from 192.168.2.101: icmp_seq=2 ttl=64 time=270 ms
64 bytes from 192.168.2.1: icmp_seq=3 ttl=64 time=5.61 ms
64 bytes from 192.168.2.101: icmp_seq=3 ttl=64 time=195 ms
64 bytes from 192.168.2.1: icmp_seq=4 ttl=64 time=10.3 ms
64 bytes from 192.168.2.101: icmp_seq=4 ttl=64 time=222 ms
64 bytes from 192.168.2.1: icmp_seq=5 ttl=64 time=5.84 ms
64 bytes from 192.168.2.101: icmp_seq=5 ttl=64 time=27.7 ms
64 bytes from 192.168.2.1: icmp_seq=6 ttl=64 time=5.74 ms
64 bytes from 192.168.2.101: icmp_seq=6 ttl=64 time=162 ms
64 bytes from 192.168.2.1: icmp_seq=7 ttl=64 time=5.63 ms
64 bytes from 192.168.2.101: icmp_seq=7 ttl=64 time=390 ms
64 bytes from 192.168.2.1: icmp_seq=8 ttl=64 time=9.00 ms
64 bytes from 192.168.2.101: icmp_seq=8 ttl=64 time=204 ms
64 bytes from 192.168.2.1: icmp_seq=9 ttl=64 time=5.05 ms
64 bytes from 192.168.2.101: icmp_seq=9 ttl=64 time=17.1 ms
64 bytes from 192.168.2.1: icmp_seq=10 ttl=64 time=8.56 ms
64 bytes from 192.168.2.101: icmp_seq=10 ttl=64 time=39.7 ms
64 bytes from 192.168.2.1: icmp_seq=11 ttl=64 time=5.66 ms
64 bytes from 192.168.2.101: icmp_seq=11 ttl=64 time=174 ms
64 bytes from 192.168.2.1: icmp_seq=12 ttl=64 time=5.66 ms
64 bytes from 192.168.2.101: icmp_seq=12 ttl=64 time=402 ms
64 bytes from 192.168.2.1: icmp_seq=13 ttl=64 time=5.05 ms
64 bytes from 192.168.2.101: icmp_seq=13 ttl=64 time=319 ms
64 bytes from 192.168.2.1: icmp_seq=14 ttl=64 time=8.90 ms
64 bytes from 192.168.2.101: icmp_seq=14 ttl=64 time=38.6 ms
64 bytes from 192.168.2.1: icmp_seq=15 ttl=64 time=5.31 ms
64 bytes from 192.168.2.101: icmp_seq=15 ttl=64 time=163 ms
64 bytes from 192.168.2.1: icmp_seq=16 ttl=64 time=8.67 ms
64 bytes from 192.168.2.101: icmp_seq=16 ttl=64 time=186 ms
64 bytes from 192.168.2.1: icmp_seq=17 ttl=64 time=5.05 ms
```

```
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ traceroute google.com
traceroute to google.com (142.250.77.46), 30 hops max, 60 byte packets
 1 _gateway (192.168.2.1)  5.936 ms  5.898 ms  5.880 ms
 2 puppetmaster (192.168.0.1)  100.902 ms  100.886 ms  100.871 ms
 3 103.149.174.161 (103.149.174.161)  100.478 ms  100.445 ms  100.426 ms
 4 103.149.174.5 (103.149.174.5)  100.409 ms  100.391 ms  100.376 ms
 5 197.11.112.45.mipl.com (45.112.11.197)  100.735 ms  100.345 ms  100.703 ms
 6 172.16.2.202 (172.16.2.202)  100.686 ms * *
 7 22.188.100.175.mipl.com (175.100.188.22)  98.317 ms  104.263 ms  104.222 ms
 8 * * *
 9 216.239.46.136 (216.239.46.136)  104.149 ms 108.170.226.130 (108.170.226.130)  104.489 ms 142.251.69.102 (142.251.69.102)  104.107 ms
10 192.178.110.108 (192.178.110.108)  104.088 ms 192.178.110.110 (192.178.110.110)  104.070 ms 142.250.238.201 (142.250.238.201)  104.419 ms
11 bom07s26-in-f14.1e100.net (142.250.77.46)  104.037 ms  104.021 ms 192.178.110.249 (192.178.110.249)  104.346 ms
```

```
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
tcp      0      34 dbms15-HP-Pro-Tow:52100 5.8.93.138:19092 ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:42458  a104-97-76-226.de:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:40308  bom07s27-in-f10.1:https ESTABLISHED
tcp      0      1 dbms15-HP-Pro-Tow:49310  ads.us.e-planning:https LAST_ACK
tcp      0      0 dbms15-HP-Pro-Tow:45680  163.184.100.175.m:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:45978  bom07s31-in-f3.1e:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:35572  bom07s31-in-f3.1e:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:36270  143.244.197.139:https ESTABLISHED
tcp     32      0 dbms15-HP-Pro-Tow:42474  pare-many.psychef:https CLOSE_WAIT
tcp      0      0 dbms15-HP-Pro-Tow:35564  ec2-54-195-125-7.:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:38566  151.101.193.91:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:40646  91.243.81.149:https ESTABLISHED
tcp      0      1 dbms15-HP-Pro-Tow:46574  pare-many.psychef:https LAST_ACK
tcp      0      0 dbms15-HP-Pro-Tow:45678  163.184.100.175.m:https ESTABLISHED
tcp      0      1 dbms15-HP-Pro-Tow:40686  vista.secretprowe:https LAST_ACK
tcp      0      0 dbms15-HP-Pro-Tow:54182  bom07s31-in-f3.1e:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:43334  ec2-3-0-107-214.a:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:59880  bom07s32-in-f3.1e:https TIME_WAIT
tcp      0      0 dbms15-HP-Pro-Tow:48374  69.173.158.64:https FIN_WAIT2
tcp      0      1 dbms15-HP-Pro-Tow:53942  ads.us.e-planning:https LAST_ACK
tcp      0      0 dbms15-HP-Pro-Tow:57410  90.7.213.35.bc.go:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:38028  151.101.2.49:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:57050  8.154.244.35.bc.g:https ESTABLISHED
tcp      0      1 dbms15-HP-Pro-Tow:51938  ip81.ip-51-79-152:https LAST_ACK
tcp      0      0 dbms15-HP-Pro-Tow:57416  90.7.213.35.bc.go:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:53966  69.173.158.92:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:55676  172.64.155.119:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:40502  69.173.158.65:https TIME_WAIT
tcp      0      0 dbms15-HP-Pro-Tow:40924  bom07s45-in-f1.1e:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:58924  104.18.27.216:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:56448  172.64.144.50:https ESTABLISHED
tcp      0      0 dbms15-HP-Pro-Tow:52186  88.199.214.35.bc.:https ESTABLISHED
tcp     64      0 dbms15-HP-Pro-Tow:50550  143-244-50-82.bun:https CLOSE_WAIT
tcp      0      0 dbms15-HP-Pro-Tow:57578  151.101.194.49:https ESTABLISHED
```

```
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ nslookup  
> google.com  
Server: 127.0.0.53  
Address: 127.0.0.53#53  
  
Non-authoritative answer:  
Name: google.com  
Address: 142.250.77.46  
Name: google.com  
Address: 2404:6800:4009:81c::200e
```

```
-q [version|sources|types] query specified server info
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ whois google.com
Domain Name: GOOGLE.COM
Registry Domain ID: 2138514_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.markmonitor.com
Registrar URL: http://www.markmonitor.com
Updated Date: 2019-09-09T15:39:04Z
Creation Date: 1997-09-15T04:00:00Z
Registry Expiry Date: 2028-09-14T04:00:00Z
Registrar: MarkMonitor Inc.
Registrar IANA ID: 292
Registrar Abuse Contact Email: abusecomplaints@markmonitor.com
Registrar Abuse Contact Phone: +1.2086851750
Domain Status: clientDeleteProhibited https://icann.org/epp#clientDeleteProhibited
Domain Status: clientTransferProhibited https://icann.org/epp#clientTransferProhibited
Domain Status: clientUpdateProhibited https://icann.org/epp#clientUpdateProhibited
Domain Status: serverDeleteProhibited https://icann.org/epp#serverDeleteProhibited
Domain Status: serverTransferProhibited https://icann.org/epp#serverTransferProhibited
Domain Status: serverUpdateProhibited https://icann.org/epp#serverUpdateProhibited
Name Server: NS1.GOOGLE.COM
Name Server: NS2.GOOGLE.COM
Name Server: NS3.GOOGLE.COM
Name Server: NS4.GOOGLE.COM
DNSSEC: unsigned
URL of the ICANN Whois Inaccuracy Complaint Form: https://www.icann.org/wicf/
>>> Last update of whois database: 2025-01-27T04:06:17Z <<
```

For more information on Whois status codes, please visit <https://icann.org/epp>

NOTICE: The expiration date displayed in this record is the date the registrar's sponsorship of the domain name registration in the registry is currently set to expire. This date does not necessarily reflect the expiration date of the domain name registrant's agreement with the sponsoring registrar. Users may consult the sponsoring registrar's Whois database to view the registrar's reported date of expiration for this registration.

TERMS OF USE: You are not authorized to access or query our Whois database through the use of electronic processes that are high-volume and automated except as reasonably necessary to register domain names or

```
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ hostname
dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ host
Usage: host [-aCdilrTvVw] [-c class] [-N ndots] [-t type] [-W time]
           [-R number] [-m flag] [-p port] hostname [server]
-a is equivalent to -v -t ANY
-A is like -a but omits RRSIG, NSEC, NSEC3
-c specifies query class for non-IN data
-C compares SOA records on authoritative nameservers
-d is equivalent to -v
-l lists all hosts in a domain, using AXFR
-m set memory debugging flag (trace|record|usage)
-N changes the number of dots allowed before root lookup is done
-p specifies the port on the server to query
-r disables recursive processing
-R specifies number of retries for UDP packets
-s a SERVFAIL response should stop query
-t specifies the query type
-T enables TCP/IP mode
-U enables UDP mode
-v enables verbose output
-V print version number and exit
-w specifies to wait forever for a reply
-W specifies how long to wait for a reply
-4 use IPv4 query transport only
-6 use IPv6 query transport only
```

```
dbms15@dbms15-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ |
```


EXPERIMENT NO. 6

BASH/ C Shell Programming in UNIX

OBJECTIVE:

- a. Write a bash / C program to print Fibonacci Series

CODE:

```
#include<stdio.h>
int main(void)
{
    int n,i,fib,f=0,s=1;
    printf("\nEnter no. of terms");
    scanf("%d",&n);
    printf("\n%d",f);
    fib=f+s;
    printf("\n%d",fib);
    for(i=0;i<n;i++)
    {
        f=s;
        s=fib;
        fib=f+s;
        printf("\n%d",fib);
    }
}
```

OUTPUT:

```
ict23@ict23-ThinkCentre-M71e:~/Desktop$ gcc fib.c -o fib
ict23@ict23-ThinkCentre-M71e:~/Desktop$ ./fib
Enter the no.12
Fibonacci series of first 12 numbers: 1 1 2 3 5 8 13 21 34 55 89 144
```

OBJECTIVE:

- b. Write a bash / C program to check whether the number is prime.

CODE:

```
#include<stdio.h>
#include<stdlib.h>
int main(void)
{
    int n,i;
    printf("\nEnter a no.");
    scanf("%d",&n);
    for(i=2;i< n-1;i++)
    {
        if(n%i == 0)
        {
            printf("not prime");
            exit(0);
        }
    }
    if(i == n-1)
    {
        printf("prime");
    }
}
```

OUTPUT:

```
ict23@ict23-ThinkCentre-M71e:~/Desktop$ gcc prime.c -o prime
ict23@ict23-ThinkCentre-M71e:~/Desktop$ ./prime
enter a no:
7
the no. is prime
ict23@ict23-ThinkCentre-M71e:~/Desktop$ ./prime
enter a no:
125
the no. is not prime
```

Experiment No. 6

- **Aim :** Write a bash/ C program to print Fibonacci Series
- **Program :**

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
    int n,i,t1=0,t2=1, next=0;
    printf("Enter the number of terms \n");
    scanf("%d", &n);
    printf("The fibonacci series is: \n");
    for(i=1;i<=n;++i)
    {
        printf("%d \t", t1);
        next=t1+t2;
        t1=t2;
        t2=next;
    }
    return 0;
}
```

- **Output :**

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ sudo su
[sudo] password for dbms19:
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19# cd Desktop
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# gedit fibonacci.c

(gedit:4852): dconf-WARNING **: 09:08:25.626: failed to commit changes to dconf: Failed to execute child process "dbus-launch" (No such file or directory)

(gedit:4852): dconf-WARNING **: 09:08:25.626: failed to commit changes to dconf: Failed to execute child process "dbus-launch" (No such file or directory)

(gedit:4852): dconf-WARNING **: 09:08:25.626: failed to commit changes to dconf: Failed to execute child process "dbus-launch" (No such file or directory)

(gedit:4852): dconf-WARNING **: 09:08:50.645: failed to commit changes to dconf: Failed to execute child process "dbus-launch" (No such file or directory)
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# gcc fibonacci.c
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# ./a.out
Enter the number of terms
10
The fibonacci series is:
0      1      1      2      3      5      8      13     21     34      root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# SS
```

- **Aim :** Write a bash/ C program to check whether the number is prime.
- **Program :**

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
    int n, count=0,i;
    printf("Enter any number:\n");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
    {
        if(n%i==0)
            count++;
    }

    if(count==2)
    {
        printf("It is a prime number.\n");
    }
    else
    {
        printf("It is not a prime number.\n");
    }
    return 0;
}
```

- **Output :**

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ sudo su
[sudo] password for dbms19:
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19# cd Desktop
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# gedit primeno.c

(gedit:5322): dconf-WARNING **: 09:20:07.989: failed to commit changes to dconf: Failed to execute child process "dbus-launch" (No such file or directory)

(gedit:5322): dconf-WARNING **: 09:20:07.989: failed to commit changes to dconf: Failed to execute child process "dbus-launch" (No such file or directory)

(gedit:5322): dconf-WARNING **: 09:20:07.989: failed to commit changes to dconf: Failed to execute child process "dbus-launch" (No such file or directory)

(gedit:5322): dconf-WARNING **: 09:20:12.620: failed to commit changes to dconf: Failed to execute child process "dbus-launch" (No such file or directory)
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# gcc primeno.c
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# ./a.out
Enter any number:
5
It is a prime number.
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# gcc primeno.c
root@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/dbms19/Desktop# ./a.out
Enter any number:
16
It is not a prime number.
```

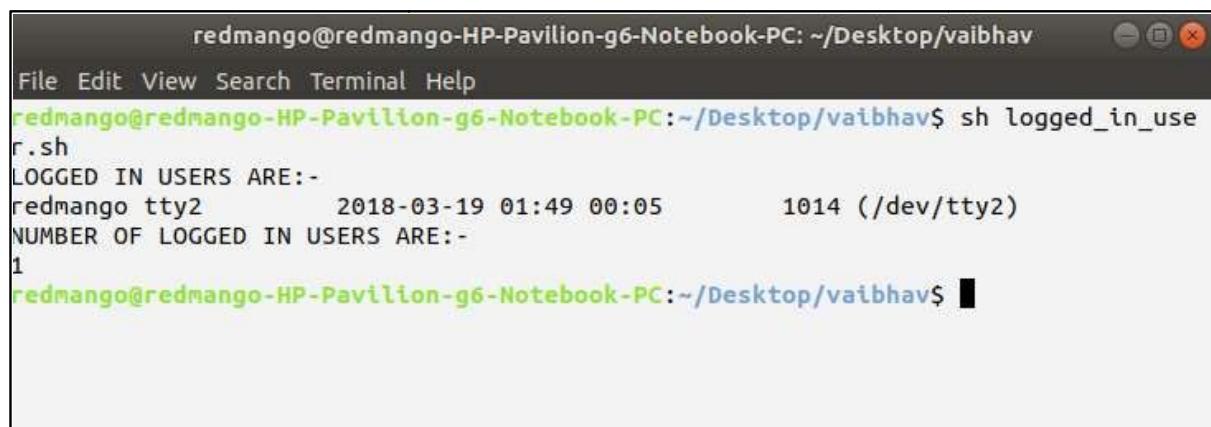
Experiment No:- 8

Aim:- Write a shell script program to display list of user currently logged in

Program:-

```
echo "LOGGED IN USERS ARE:-";
who -u
echo "NUMBER OF LOGGED IN USERS ARE:-";
who -u| wc -l
```

Output:-



The screenshot shows a terminal window with the following content:

```
redmango@redmango-HP-Pavilion-g6-Notebook-PC: ~/Desktop/vaibhav
File Edit View Search Terminal Help
redmango@redmango-HP-Pavilion-g6-Notebook-PC:~/Desktop/vaibhav$ sh logged_in_use
r.sh
LOGGED IN USERS ARE:-
redmango  tty2          2018-03-19 01:49 00:05          1014 (/dev/tty2)
NUMBER OF LOGGED IN USERS ARE:-
1
redmango@redmango-HP-Pavilion-g6-Notebook-PC:~/Desktop/vaibhav$
```

Aim:- Write a shell script program to display “HELLO WORLD”

Program:-

```
echo "Hello world"
```

Output:-

```
redmango@redmango-HP-Pavilion-g6-Notebook-PC: ~/Desktop/vaibhav
File Edit View Search Terminal Help
redmango@redmango-HP-Pavilion-g6-Notebook-PC:~/Desktop/vaibhav$ sh hello.sh
Hello world
redmango@redmango-HP-Pavilion-g6-Notebook-PC:~/Desktop/vaibhav$
```

Aim:- Write a shell script program for basic arithmetic calculations

Program:-

```

sum=0
i="y"
echo "Enter a number"
read n1
echo "Enter 2nd number"
read n2

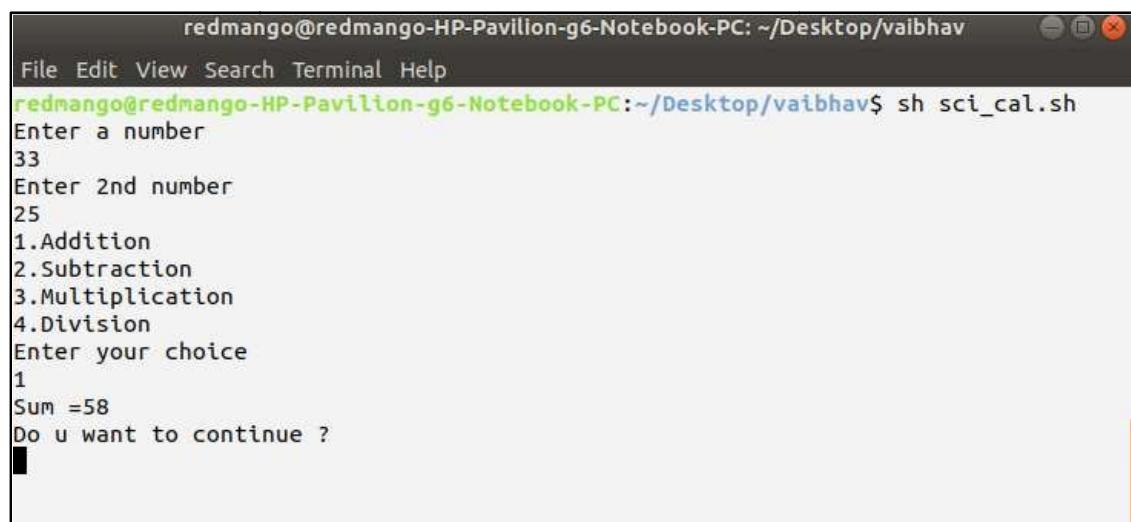
while [ $i = "y" ]
do
echo "1.Addition"
echo "2.Subtraction"
echo "3.Multiplication"
echo "4.Division"
echo "Enter your choice"
read ch

case $ch in
1)sum=`expr $n1 + $n2`
echo "Sum ="$sum;;
2)sum=`expr $n1 - $n2`
echo "Sub ="$sum;;
3)sum=`expr $n1 \* $n2`
echo "Mul ="$sum;;
4)sum=`expr $n1 / $n2`
echo "Div ="$sum;;
*)echo "Invalid choice";;
esac

echo "Do u want to continue ?"
read i
if [ $i != "y" ]
then
exit
fi
done

```

Output:-



```

redmango@redmango-HP-Pavilion-g6-Notebook-PC: ~/Desktop/vaibhav
File Edit View Search Terminal Help
redmango@redmango-HP-Pavilion-g6-Notebook-PC:~/Desktop/vaibhav$ sh sci_cal.sh
Enter a number
33
Enter 2nd number
25
1.Addition
2.Subtraction
3.Multiplication
4.Division
Enter your choice
1
Sum =58
Do u want to continue ?

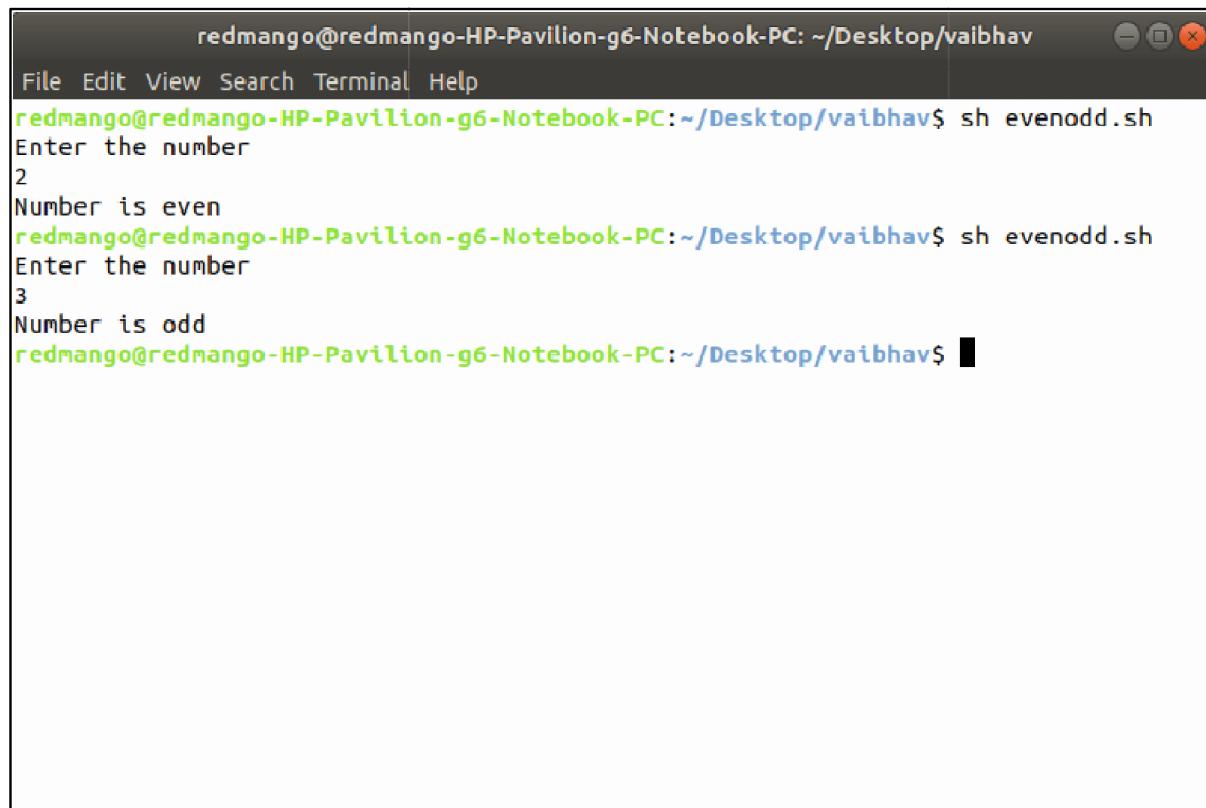
```

Aim:- Write a shell script program to check whether the given number is even or odd

Program:-

```
cho "Enter the number "
read n
rem=$(( $n % 2 ))
if [ $rem -eq 0 ]
then
echo "Number is even"
else
echo "Number is odd"
fi
```

Output:-



The screenshot shows a terminal window with a dark theme. The title bar reads "redmango@redmango-HP-Pavilion-g6-Notebook-PC: ~/Desktop/vaibhav". The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The command "sh evenodd.sh" is entered at the prompt. The user then types "2" and the output "Number is even" is displayed. A second run of the script with input "3" results in the output "Number is odd". The terminal window has a red vertical scroll bar on the right side.

```
redmango@redmango-HP-Pavilion-g6-Notebook-PC: ~/Desktop/vaibhav
File Edit View Search Terminal Help
redmango@redmango-HP-Pavilion-g6-Notebook-PC:~/Desktop/vaibhav$ sh evenodd.sh
Enter the number
2
Number is even
redmango@redmango-HP-Pavilion-g6-Notebook-PC:~/Desktop/vaibhav$ sh evenodd.sh
Enter the number
3
Number is odd
redmango@redmango-HP-Pavilion-g6-Notebook-PC:~/Desktop/vaibhav$
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ touch userlog.sh  
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ gedit userlog.sh
```

The screenshot shows a terminal window with the following content:

```
*userlog.sh  
-/  
1 echo "users logged in are:/n"  
2 who -u  
3 echo "number of users logged in are:/n"  
4 who -u | wc -l  
5 |  
sh ▾ Tab Width: 8 ▾ Ln 5, Col 1 ▾ INS
```

Below the terminal window, the command `sh userlog.sh` is run, resulting in the output:

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ sh userlog.sh  
users logged in are:/n  
dbms19    tty2          2025-03-17 08:35 00:38          1667 (tty2)  
number of users logged in are:/n  
1
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ touch hello.sh  
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ gedit hello.sh
```

The screenshot shows a terminal window with the following content:

```
hello.sh  
-/  
1 echo "Hello World!"
```

Below the terminal window, the command `sh hello.sh` is run, resulting in the output:

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ sh hello.sh  
Hello World!
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ touch basiccalc.sh  
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ gedit basiccalc.sh
```

The screenshot shows a terminal window with the following content:

```
*basiccalc.sh  
-/  
1 echo "Enter number one:/n"  
2 read n1  
3 echo "Enter number two:/n"  
4 read n2  
5 echo "Addition =${((n1+n2))}"  
6 echo "Subtraction =${((n1-n2))}"  
7 echo "Multiplication = ${((n1 * n2))} "  
8 echo "Division = ${((n1/n2))} "  
9 echo "Modulus = ${((n1%n2))} "
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ sh basiccalc.sh
Enter number one:/n
10
Enter number two:/n
2
Addition =12
Subtraction =8
Multiplication = 20
Division = 5
Modulus = 0
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ touch evenodd.sh
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ gedit evenodd.sh
```



The screenshot shows a terminal window with the following content:

```
Open ✓  evenodd.sh  Save  -  ×
1 echo -n "Enter the number: "
2 read n
3 rem=$((n % 2))
4 if [ $rem -eq 0 ]
5 then
6 echo "Number is even."
7 else
8 echo "Number is odd."
9 fi |
```

At the bottom of the terminal window, there are status indicators: "sh" (dropdown menu), "Tab Width: 8" (dropdown menu), "Ln 9, Col 4" (status bar), and "INS" (status bar).

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ sh evenodd.sh
Enter the number: 5
Number is odd.
```

```
dbms19@dbms19-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~$ sh evenodd.sh
Enter the number: 8
Number is even.
```

Write a shell script program to display list of users currently logged in

```
echo "Logged in users are:"  
who -u  
echo "Number of logged in users are:"  
who -u | wc -l
```

Write a shell script program to display “Hello World”

```
echo "Hello World"
```

Write a shell script program to check whether the given number is even or odd

```
echo "Enter the number"  
read n  
rem=$((n % 2))  
if [ $rem -eq 0 ]  
then  
    echo "Number is even"  
else  
    echo "Number is odd"  
fi
```

Write a shell script program for basic arithmetic calculations

```
sum=0  
i="y"  
echo "Enter a number"  
read n1  
echo "Enter 2nd number"  
read n2  
while [ "$i" = "y" ]  
do  
    echo "1. Addition"  
    echo "2. Subtraction"  
    echo "3. Multiplication"  
    echo "4. Division"  
    echo "Enter your choice"  
    read ch  
  
    case $ch in  
        1)  
            sum=$(expr $n1 + $n2)  
            echo "Sum = $sum"  
            ;;  
        2)  
            sum=$(expr $n1 - $n2)  
            echo "Sub = $sum"  
            ;;  
        3)  
            sum=$(expr $n1 \* $n2)  
            echo "Mul = $sum"  
            ;;  
        4)
```

```
sum=$(expr $n1 / $n2)
echo "Div = $sum"
;;
*)
echo "Invalid choice"
;;
esac
echo "Do you want to continue? (y/n)"
read i
if [ "$i" != "y" ]
then
    exit
fi
done
```