Compile Run And 2 Commands and output


```
oscreader@OSC: ~                                                    –  □  ×
oscreader@OSC:~$ gcc -o test lab3.c
oscreader@OSC:~$ ./test
osh>ps
  PID TTY          TIME CMD
22305 pts/0    00:00:00 bash
22354 pts/0    00:00:00 test
22355 pts/0    00:00:00 ps
osh>ls -l
Desktop
Documents
Downloads
lab1.c
lab1.c.save
lab1.c.save.1
lab2.c
lab3.c
lab3.c.save
lab3.c.save.1
lab3.c.save.2
lab3.c.save.3
lab3.c.save.4
Music
osc9e-src
Pictures
Public
Templates
test
test.c
Videos
osh>top
top - 00:13:20 up 16 min,  2 users,  load average: 0.10, 0.25, 0.36
Tasks: 129 total,   1 running, 128 sleeping,   0 stopped,   0 zombie
%Cpu(s): 18.4 us,  2.4 sy,  0.0 ni, 65.3 id, 13.8 wa,  0.0 hi,  0.1 si,  0.0 st
KiB Mem:    771752 total,    712944 used,    58808 free,    13232 buffers
KiB Swap:   392188 total,    157056 used,   235132 free.   134788 cached Mem

  PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+ COMMAND
    1 root      20   0   23932   3068   2100 S  0.0  0.4   0:01.04 systemd
    2 root      20   0       0      0      0 S  0.0  0.0   0:00.00 kthreadd
    3 root      20   0       0      0      0 S  0.0  0.0   0:00.12 ksoftirqd/0
    5 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 kworker/0:0H
    6 root      20   0       0      0      0 S  0.0  0.0   0:00.00 kworker/u2:0
    7 root      20   0       0      0      0 S  0.0  0.0   0:00.30 rcu_sched
    8 root      20   0       0      0      0 S  0.0  0.0   0:00.00 rcu_bh
```

Top command Full


```
oscreader@OSC: ~                                                    –  □  ×
osh>top
top - 00:13:20 up 16 min,  2 users,  load average: 0.10, 0.25, 0.36
Tasks: 129 total,   1 running, 128 sleeping,   0 stopped,   0 zombie
%Cpu(s): 18.4 us,  2.4 sy,  0.0 ni, 65.3 id, 13.8 wa,  0.0 hi,  0.1 si,  0.0 st
KiB Mem:    771752 total,    712944 used,    58808 free,    13232 buffers
KiB Swap:   392188 total,    157056 used,   235132 free.   134788 cached Mem

  PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+ COMMAND
    1 root      20   0   23932   3068   2100 S  0.0  0.4   0:01.04 systemd
    2 root      20   0       0      0      0 S  0.0  0.0   0:00.00 kthreadd
    3 root      20   0       0      0      0 S  0.0  0.0   0:00.12 ksoftirqd/0
    5 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 kworker/0:0H
    6 root      20   0       0      0      0 S  0.0  0.0   0:00.00 kworker/u2:0
    7 root      20   0       0      0      0 S  0.0  0.0   0:00.30 rcu_sched
    8 root      20   0       0      0      0 S  0.0  0.0   0:00.00 rcu_bh
    9 root      rt   0       0      0      0 S  0.0  0.0   0:00.00 migration/0
   10 root      rt   0       0      0      0 S  0.0  0.0   0:00.00 watchdog/0
   11 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 khelper
   12 root      20   0       0      0      0 S  0.0  0.0   0:00.00 kdevtmpfs
   13 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 netns
   14 root      20   0       0      0      0 S  0.0  0.0   0:00.00 khungtaskd
   15 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 writeback
   16 root      25   5       0      0      0 S  0.0  0.0   0:00.00 ksmd
   17 root      39  19       0      0      0 S  0.0  0.0   0:00.00 khugepaged
   18 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 crypto
   19 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 kintegrityd
   20 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 bioset
   21 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 kblockd
   23 root      20   0       0      0      0 S  0.0  0.0   0:00.54 kswapd0
   24 root      20   0       0      0      0 S  0.0  0.0   0:00.00 fsnotify_mark
   30 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 kthrotld
   31 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 ipv6_addrconf
   32 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 deferwq
   66 root      20   0       0      0      0 S  0.0  0.0   0:00.00 khubd
   67 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 ata_sff
   69 root      20   0       0      0      0 S  0.0  0.0   0:00.00 scsi_eh_0
   70 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 scsi_tmf_0
   71 root      20   0       0      0      0 S  0.0  0.0   0:00.00 scsi_eh_1
   72 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 scsi_tmf_1
   74 root      20   0       0      0      0 S  0.0  0.0   0:00.00 scsi_eh_2
   75 root       0 -20       0      0      0 S  0.0  0.0   0:00.00 scsi_tmf_2
   76 root      20   0       0      0      0 S  0.0  0.0   0:00.07 kworker/u2:3
   81 root       0 -20       0      0      0 S  0.0  0.0   0:00.49 kworker/0:1H
  105 root      20   0       0      0      0 S  0.0  0.0   0:00.08 jbd2/sdal-8
```

Cal, Who, Date Commands, Most recent command execution, History ,and History Error Checking

```
    76 root      20   0      0      0      0 S  0.0  0.0   0:00.07 kworker/u2:3
    81 root       0 -20      0      0      0 S  0.0  0.0   0:00.49 kworker/0:1H
   105 root      20   0      0      0      0 S  0.0  0.0   0:00.08 jbd2/sda1-8
osh>cal
    October 2019
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 31

osh>who
oscreader :0           2019-10-16 23:57 (:0)
oscreader pts/0        2019-10-17 00:10 (10.0.2.2)
osh>date
Thu Oct 17 00:13:30 MDT 2019
osh>!!
Thu Oct 17 00:13:35 MDT 2019
osh>history
7.  date
6.  date
5.  who
4.  cal
3.  top
2.  ls
1.  ps
osh>!4
    October 2019
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 31

osh>!12

Cannot access That far in the past.
Invalid Command (ctrl^c to exit)
osh>!0
Out of Bounds. History Bounded by 1-9 or !! for 10Invalid Command (ctrl^c to exit)
osh>^C
oscreader@OSC:~$
```

Error when invalid command is entered


```
    October 2019
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 31

osh>who
oscreader :0           2019-10-16 23:57 (:0)
oscreader pts/0        2019-10-17 00:10 (10.0.2.2)
osh>date
Thu Oct 17 00:13:30 MDT 2019
osh>!!
Thu Oct 17 00:13:35 MDT 2019
osh>history
7.  date
6.  date
5.  who
4.  cal
3.  top
2.  ls
1.  ps
osh>!4
    October 2019
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 31

osh>!12

Cannot access That far in the past.
Invalid Command (ctrl^c to exit)
osh>!0
Out of Bounds. History Bounded by 1-9 or !! for 10Invalid Command (ctrl^c to exit)
osh>^C
oscreader@OSC:~$ a
-bash: a: command not found
oscreader@OSC:~$
oscreader@OSC:~$
```