

SYSTEMS LEVEL PROGRAMMING

CST 365-3

PRACTICAL ASSIGNMENT 1



UWU/CST/17/054

FACULTY OF APPLIED SCIENCES

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATICS

Question 01:

How to use only * to list all files in the current working directory

Ans:

ls *

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ cd Desktop
user@user-HP-Pavilion-Laptop-14-bk0xx:~/Desktop$ pwd
/home/user/Desktop
user@user-HP-Pavilion-Laptop-14-bk0xx:~/Desktop$ ls *
'SLP excercise1- 21st April 2021.pdf'

screen:
q1.png          'Screenshot from 2021-04-23 18-30-13.png' 'Screenshot from 2021-04-23 19-00-14.png'
q2.png          'Screenshot from 2021-04-23 18-30-44.png' 'Screenshot from 2021-04-23 19-00-47.png'
'Screenshot from 2021-04-23 18-03-20.png' 'Screenshot from 2021-04-23 18-31-46.png' 'Screenshot from 2021-04-23 19-01-47.png'
'Screenshot from 2021-04-23 18-07-23.png' 'Screenshot from 2021-04-23 18-36-44.png' 'Screenshot from 2021-04-23 19-02-53.png'
'Screenshot from 2021-04-23 18-10-21.png' 'Screenshot from 2021-04-23 18-38-04.png' 'Screenshot from 2021-04-23 19-03-32.png'
'Screenshot from 2021-04-23 18-11-24.png' 'Screenshot from 2021-04-23 18-39-11.png' 'Screenshot from 2021-04-23 19-16-44.png'
'Screenshot from 2021-04-23 18-12-37.png' 'Screenshot from 2021-04-23 18-40-58.png' 'Screenshot from 2021-04-23 19-17-25.png'
'Screenshot from 2021-04-23 18-16-21.png' 'Screenshot from 2021-04-23 18-51-04.png' 'Screenshot from 2021-04-23 19-21-32.png'
'Screenshot from 2021-04-23 18-29-47.png' 'Screenshot from 2021-04-23 18-59-28.png' 'Screenshot from 2021-04-23 19-26-35.png'
user@user-HP-Pavilion-Laptop-14-bk0xx:~/Desktop$
```

Question 02:

How to use ? to list all files with three characters in the previous directory.

Ans:

cd - (To go to previous directory)

ls ??? (To list all file with 3 characters)

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ cd Desktop
user@user-HP-Pavilion-Laptop-14-bk0xx:~/Desktop$ pwd
/home/user/Desktop
user@user-HP-Pavilion-Laptop-14-bk0xx:~/Desktop$ ls *
'SLP excercise1- 21st April 2021.pdf'

screen:
q1.png          'Screenshot from 2021-04-23 18-30-13.png' 'Screenshot from 2021-04-23 19-00-14.png'
q2.png          'Screenshot from 2021-04-23 18-30-44.png' 'Screenshot from 2021-04-23 19-00-47.png'
'Screenshot from 2021-04-23 18-03-20.png' 'Screenshot from 2021-04-23 18-31-46.png' 'Screenshot from 2021-04-23 19-01-47.png'
'Screenshot from 2021-04-23 18-07-23.png' 'Screenshot from 2021-04-23 18-36-44.png' 'Screenshot from 2021-04-23 19-02-53.png'
'Screenshot from 2021-04-23 18-10-21.png' 'Screenshot from 2021-04-23 18-38-04.png' 'Screenshot from 2021-04-23 19-03-32.png'
'Screenshot from 2021-04-23 18-11-24.png' 'Screenshot from 2021-04-23 18-39-11.png' 'Screenshot from 2021-04-23 19-16-44.png'
'Screenshot from 2021-04-23 18-12-37.png' 'Screenshot from 2021-04-23 18-40-58.png' 'Screenshot from 2021-04-23 19-17-25.png'
'Screenshot from 2021-04-23 18-16-21.png' 'Screenshot from 2021-04-23 18-51-04.png' 'Screenshot from 2021-04-23 19-21-32.png'
'Screenshot from 2021-04-23 18-29-47.png' 'Screenshot from 2021-04-23 18-59-28.png' 'Screenshot from 2021-04-23 19-26-35.png'
user@user-HP-Pavilion-Laptop-14-bk0xx:~/Desktop$ cd -
/home/user
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls ???
pdf tes
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

Question 03:

How to find more details about following UNIX utilities and understand how those functionalities are working (i.e,inputs and outputs to the utility)

Ans:

i.ls

Function-List files and directories

Command for find more details about ls - `man ls`

```
LS(1)                                User Commands                                LS(1)

NAME
    ls - list directory contents

SYNOPSIS
    ls [OPTION]... [FILE]...

DESCRIPTION
    List information about the FILES (the current directory by default).
    Sort entries alphabetically if none of -cftuvSUX nor --sort is speci-
    fied.

    Mandatory arguments to long options are mandatory for short options
    too.

    -a, --all
        do not ignore entries starting with .

    -A, --almost-all
        do not list implied . and ..

    --author
        with -l, print the author of each file

    -b, --escape
        print C-style escapes for nongraphic characters

    --block-size=SIZE
        with -l, scale sizes by SIZE when printing them; e.g.,
        '--block-size=M'; see SIZE format below

    -B, --ignore-backups
        do not list implied entries ending with ~

    -c      with -lt: sort by, and show, ctime (time of last modification of
            file status information); with -l: show ctime and sort by name;

Manual page ls(1) line 1 (press h for help or q to quit)
```

ii.cp

Function- Use the cp command to copy files through the command line. It takes two arguments: The first is the location of the file to be copied, the second is where to copy.

Eg- `cp file1 file2`

Command for more details about cp – `man cp`

```

CP(1)                                User Commands                                CP(1)

NAME
    cp - copy files and directories

SYNOPSIS
    cp [OPTION]... [-T] SOURCE DEST
    cp [OPTION]... SOURCE... DIRECTORY
    cp [OPTION]... -t DIRECTORY SOURCE...

DESCRIPTION
    Copy SOURCE to DEST, or multiple SOURCE(s) to DIRECTORY.

    Mandatory arguments to long options are mandatory for short options
    too.

    -a, --archive
        same as -dR --preserve=all

    --attributes-only
        don't copy the file data, just the attributes

    --backup[=CONTROL]
        make a backup of each existing destination file

    -b
        like --backup but does not accept an argument

    --copy-contents
        copy contents of special files when recursive

    -d
        same as --no-dereference --preserve=links

    -f, --force
        if an existing destination file cannot be opened, remove it and
        try again (this option is ignored when the -n option is also
        used)

```

iii.rmdir

Function-remove a directory

Eg: rmdir directory

Command for more details about rmdir – man rmdir

```

RMDIR(1)                             User Commands                             RMDIR(1)

NAME
    rmdir - remove empty directories

SYNOPSIS
    rmdir [OPTION]... DIRECTORY...

DESCRIPTION
    Remove the DIRECTORY(ies), if they are empty.

    --ignore-fail-on-non-empty
        ignore each failure that is solely because a directory
        is non-empty

    -p, --parents
        remove DIRECTORY and its ancestors; e.g., 'rmdir -p a/b/c' is
        similar to 'rmdir a/b/c a/b a'

    -v, --verbose
        output a diagnostic for every directory processed

    --help display this help and exit

    --version
        output version information and exit

AUTHOR
    Written by David MacKenzie.

REPORTING BUGS
    GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
    Report rmdir translation bugs to <https://translationproject.org/team/>

```

iv.man

Function-command read the online manual

Eg: man ls

Command for more details about man – man man

```
MAN(1)                                Manual pager utils                                MAN(1)

NAME
    man - an interface to the on-line reference manuals

SYNOPSIS
    man [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L
    locale] [-m system[,...]] [-M path] [-S list] [-e extension] [-i|-I]
    [--regex|--wildcard] [--names-only] [-a] [-u] [--no-subpages] [-P
    pager] [-r prompt] [-7] [-E encoding] [--no-hyphenation] [--no-just-
    ification] [-p string] [-t] [-T[device]] [-H[browser]] [-X[dpi]]
    [-Z] [[section] page[.section] ...] ...
    man -k [apropos options] regex ...
    man -K [-w|-W] [-S list] [-i|-I] [--regex] [section] term ...
    man -f [whatIs options] page ...
    man -l [-C file] [-d] [-D] [--warnings[=warnings]] [-R encoding] [-L
    locale] [-P pager] [-r prompt] [-7] [-E encoding] [-p string] [-t]
    [-T[device]] [-H[browser]] [-X[dpi]] [-Z] file ...
    man -w|-W [-C file] [-d] [-D] page ...
    man -c [-C file] [-d] [-D] page ...
    man [-?V]

DESCRIPTION
    man is the system's manual pager. Each page argument given to man
    is normally the name of a program, utility or function. The manual
    page associated with each of these arguments is then found and dis-
    played. A section, if provided, will direct man to look only in
    that section of the manual. The default action is to search in all
    of the available sections following a pre-defined order ("1 n l 8 3
    2 3posix 3pm 3perl 3am 5 4 9 6 7" by default, unless overridden by
    the SECTION directive in /etc/manpath.config), and to show only the
    first page found, even if page exists in several sections.

    The table below shows the section numbers of the manual followed by
    the types of pages they contain.

    1 Executable programs or shell commands
    Manual page man(1) line 1 (press h for help or q to quit)
```

v.who

Function-list users currently logged in

Command for more details about who – man who

```

WHO(1)                                User Commands                                WHO(1)

NAME
    who - show who is logged on

SYNOPSIS
    who [OPTION]... [ FILE | ARG1 ARG2 ]

DESCRIPTION
    Print information about users who are currently logged in.

    -a, --all
        same as -b -d --login -p -r -t -T -u

    -b, --boot
        time of last system boot

    -d, --dead
        print dead processes

    -H, --heading
        print line of column headings

    --ips
        print ips instead of hostnames. with --lookup, canonicalizes
        based on stored IP, if available, rather than stored host-
        name

    -l, --login
        print system login processes

    --lookup
        attempt to canonicalize hostnames via DNS

    -m
        only hostname and user associated with stdin

    -p, --process
        print active processes spawned by init

```

Question 04:

How to use ls utility

i.To list all the files (including hidden files)

Ans:

ls -a

```

user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls -a
.          .cache      .gnupg      .profile    test1
..         .config     .local      Public      .thunderbird
.bash_history Desktop     .mozilla    .ssh        Videos
.bash_logout Documents  Music       .sudo_as_admin_successful
.bashrc    Downloads Pictures    Templates

```

ii.list all the files as a list format

Ans:

ls

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  test1  Videos
```

Question 05:

What is/are the difference(s) between cat and more utilities?

cat command will dump the entire content of a file on the screen whereas more command will display content that would fit our screen and we can press enter to see rest of the content line by line.

Question 06:

Enter following commands to the UNIX terminal and interpret the output.

i.echo hello world ii. passwd iii. date echo hello world ii. passwd iii. Date iv. hostname v. arch vi. uname -a vii. dmesg | more

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ echo helloworld
helloworld
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ passwd
Changing password for user.
Current password:
New password:
Retype new password:
passwd: password updated successfully
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ hostname
user-HP-Pavilion-Laptop-14-bk0xx
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ arch
x86_64
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ uname -a
Linux user-HP-Pavilion-Laptop-14-bk0xx 5.3.0-18-generic #19-Ubuntu SMP Tue Oct 8 20:14:06 UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ dmesg|more
[ 0.000000] microcode: microcode updated early to revision 0xb4, date = 2019-
04-01
[ 0.000000] Linux version 5.3.0-18-generic (buildlcy01-amd64-027) (gcc vers
ion 9.2.1 20190909 (Ubuntu 9.2.1-8ubuntu1)) #19-Ubuntu SMP Tue Oct 8 20:14:06 UT
C 2019 (Ubuntu 5.3.0-18.19-generic 5.3.1)
[ 0.000000] Command line: BOOT_IMAGE=/boot/vmlinuz-5.3.0-18-generic root=UUID
=9c1a116d-78d7-42d3-a95c-b7c28a03a82e ro quiet splash vt.handoff=7
[ 0.000000] KERNEL supported cpus:
[ 0.000000] Intel GenuineIntel
[ 0.000000] AMD AuthenticAMD
[ 0.000000] Hygon HygonGenuine
[ 0.000000] Centaur CentaurHauls
[ 0.000000] zhaoxin Shanghai
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point regi
sters'
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x008: 'MPX bounds registers'
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x010: 'MPX CSR'
[ 0.000000] x86/fpu: xstate_offset[3]: 576, xstate_sizes[3]: 64
[ 0.000000] x86/fpu: xstate_offset[4]: 640, xstate_sizes[4]: 64
[ 0.000000] x86/fpu: Enabled xstate features 0x1b, context size is 704 bytes,
using 'compacted' format.
[ 0.000000] BIOS-provided physical RAM map:
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

viii. uptime ix. who am i x. who xi. id xii. Last

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ uptime
18:11:49 up 40 min, 1 user, load average: 0.97, 0.75, 0.78
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ who am i
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ who
user      :0                2021-04-23 17:32 (:0)
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ id
uid=1000(user) gid=1000(user) groups=1000(user),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),119(lpadmin),130(lxd),131(sambashare)
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ last
user      :0                :0                Fri Apr 23 17:32    still logged in
reboot    system boot      5.3.0-18-generic Fri Apr 23 17:31    still running
user      :0                :0                Fri Apr 23 12:16 - down      (00:44)
reboot    system boot      5.3.0-18-generic Fri Apr 23 12:16 - 13:01   (00:44)
user      :0                :0                Fri Apr 23 11:08 - down      (00:24)
reboot    system boot      5.3.0-18-generic Fri Apr 23 11:08 - 11:33   (00:25)
user      :0                :0                Fri Apr 23 15:45 - down      (-5:15)
reboot    system boot      5.3.0-18-generic Fri Apr 23 15:44 - 10:29   (-5:15)
user      :0                :0                Thu Apr 22 23:36 - down      (00:00)
reboot    system boot      5.3.0-18-generic Thu Apr 22 23:36 - 23:36   (00:00)
user      :0                :0                Thu Apr 22 00:44 - down      (00:01)
reboot    system boot      5.3.0-18-generic Thu Apr 22 00:44 - 00:45   (00:01)
user      :0                :0                Wed Apr 21 13:17 - down      (00:00)
reboot    system boot      5.3.0-18-generic Wed Apr 21 13:16 - 13:17   (00:00)
user      :0                :0                Tue Apr 13 23:27 - down      (00:00)
reboot    system boot      5.3.0-18-generic Tue Apr 13 23:25 - 23:27   (00:01)
user      :0                :0                Tue Apr 13 17:44 - down      (00:01)
reboot    system boot      5.3.0-18-generic Tue Apr 13 17:44 - 17:45   (00:01)
reboot    system boot      5.3.0-18-generic Tue Apr 13 15:58 - 16:34   (00:36)
user      :0                :0                Tue Apr 13 15:47 - down      (00:01)
reboot    system boot      5.3.0-18-generic Tue Apr 13 15:38 - 15:49   (00:10)
user      :0                :0                Tue Apr 13 15:06 - down      (00:00)
reboot    system boot      5.3.0-18-generic Tue Apr 13 15:04 - 15:06   (00:02)
user      :0                :0                Tue Apr 13 16:12 - down      (00:02)
reboot    system boot      5.3.0-18-generic Tue Apr 13 16:11 - 16:14   (00:03)
user      :0                :0                Tue Apr 13 16:04 - down      (00:02)
reboot    system boot      5.3.0-18-generic Tue Apr 13 16:04 - 16:07   (00:03)

wtmp begins Tue Apr 13 16:04:00 2021
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ █
```


xiii. finger xiv. w xv. top (you may need to press q to quit) xvi. echo \$SHELL xvii. echo {con,pre}{sent,fer}{s,ed}

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ finger
finger: command not found
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ w
 18:13:01 up 41 min,  1 user,  load average: 0.71, 0.71, 0.76
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
user      :0        :0               17:32    ?xdm? 21:15   0.01s /usr/lib/gdm3
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ top

top - 18:13:07 up 41 min,  1 user,  load average: 0.65, 0.69, 0.76
Tasks: 236 total,   1 running, 235 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.8 us,  0.5 sy,  0.0 ni, 98.6 id,  0.0 wa,  0.0 hi,  0.1 si,  0.0 s
MiB Mem :  7847.3 total,  4451.1 free,  1913.4 used,  1482.8 buff/cache
MiB Swap:  4019.0 total,  4019.0 free,    0.0 used.  5332.3 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM    TIME+  COMMAND
 1010 root        20   0  231568   6344   5572  S   2.0   0.1   0:33.40 iio-sen+
 2319 user        20   0 2977700 334252 130388  S   1.0   4.2   3:43.68 Web Con+
 2884 user        20   0 2658036 263904 136900  S   1.0   3.3   0:58.20 Web Con+
 3103 user        20   0 2739016 199184 114488  S   1.0   2.5   2:47.61 Web Con+
 1597 user        20   0  409356   89896   67188  S   0.7   1.1   2:46.41 Xorg
 1809 user        20   0 2935068 229368   87328  S   0.7   2.9   3:04.43 gnome-s+
 3185 user        20   0 2681404 269032 136032  S   0.7   3.3   0:37.20 Web Con+
    1 root        20   0  167152   10996   8076  S   0.3   0.1   0:06.32 systemd
 1886 user        20   0  400060   11000   8952  S   0.3   0.1   0:08.65 ibus-da+
 1895 user        20   0  289652   32476  19804  S   0.3   0.4   0:03.23 ibus-ex+
 1936 user        20   0  592248   31356  21824  S   0.3   0.4   0:00.49 gsd-col+
 1946 user        20   0  406396   13292  11364  S   0.3   0.2   0:00.92 gsd-sha+
 2759 user        20   0 2639052 206948 128944  S   0.3   2.6   0:43.29 Web Con+
 3723 root        20   0         0         0         0  I   0.3   0.0   0:00.45 kworker+
 4021 user        20   0  969040  48232  35388  S   0.3   0.6   0:06.12 gnome-t+
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ echo$SELL
$SELL
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ echo{con,pre}{sent,fer}{s,ed}
echoconsents: command not found
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ echo {con,pre}{sent,fer}{s,ed}
consents consented confers conferred presents presented prefers preferred
user@user-HP-Pavilion-Laptop-14-bk0xx:~$
```

xviii. man "automatic door" xix. man ls (you may need to press q to quit) xx. man who (you may need to press q to quit) xxi. who can tell me why i got divorced xxii. lost xxiii. Clear

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ man "automatic door"
No manual entry for automatic door
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ man ls
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ who can tell me why i got divorced
who: extra operand 'me'
Try 'who --help' for more information.
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ lost

Command 'lost' not found, did you mean:

  command 'gost' from snap gost (2.11.1)
  command 'last' from deb util-linux (2.34-0.1ubuntu2)
  command 'host' from deb bind9-host (1:9.11.5.P4+dfsg-5.1ubuntu2)

See 'snap info <snapname>' for additional versions.

user@user-HP-Pavilion-Laptop-14-bk0xx:~$ clear
```

xxiv. cal 2000

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ cal 2000
      2000
  ජනවාරි   ජූනිවාරි   මාර්තු
  ෧  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
  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
  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  23  24  25  26  27  28  29  30  31
  30  31

  අප්‍රේල්   මැයි   ජූනි
  ෧  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
  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
  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30
  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  23  24  25  26  27  28  29  30  31
  30

  ජූලි   අගෝස්තු   සැප්තැම්බර්
  ෧  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
  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
  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  23  24  25  26  27  28  29  30  31
  30  31

  ඔක්තෝබර්   නොවැම්බර්   දෙසැම්බර්
  ෧  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
  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
  22  23  24  25  26  27  28  29  30  31
  29  30  31
  31
```

xxv. cal 9 1752 (do you notice anything unusual?) xxvi. bc -l (type quit or press Ctrl-d to quit) xxvii. echo 5+4 | bc -l

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ cal 9 1752
සැප්තැම්බර් 1752
  ෧  ෨  ෩  ෪  ෫  ෬  ෭
17 18 19 20 21 22 23
24 25 26 27 28 29 30

user@user-HP-Pavilion-Laptop-14-bk0xx:~$ bc -l
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'.
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ echo 5+4|bc -l
9
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ █
```

I noticed in cal 9 1752, 11 days missing in the month of September, 1752.

The Gregorian Reformation is assumed to have occurred in 1752 after the 2nd of September. By this time, most countries had recognized the reformation (although a few did not recognize it until the early 1900's.) Eleven days following that date were eliminated by the reformation, so the calendar for that month is a bit unusual.

xxviii. yes please (you may need to press Ctrl-c to quit)

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ yes please█
```

```
please
please
please
please
please
please
please
please
please
please
please
please
please
pleas^C
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ ^C
```

xxix. time sleep 5

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ time sleep 5
real    0m5.004s
user    0m0.003s
sys     0m0.001s
```

xxx. history

```
user@user-HP-Pavilion-Laptop-14-bk0xx:~$ history
 1 echo helloworld
 2 passwd
 3 a
 4 as123
 5 passwd
 6 echo helloworld
 7 passwd
 8 date
 9 hostname
10 arch
11 uname -a
12 d mesg
13 update
14 uptime
15 who am i
16 who
17 id
18 last
19 finger
20 w
21 top
22 echo $SHELL
23 echo{con,pre}{sent,fer}{s,ed}
24 man "automatic door"
25 man ls
26 man who
27 who can tell me why i got divorced
28 lost
29 clear
30 cal 2000
31 cal 9 1752
32 bc -l
33 bc -l
34 echo 5+4>bc -l
35 yes please
36 time sleep 5
37 history
```