

Bansilal Ramnath Agarwal Charitable Trust's
Vishwakarma Institute of Technology, Pune-37

(Anautonomous Institute of Savitribai Phule Pune University)



Department of Multidisciplinary Engineering

Division	CS-A
Batch	B1
Roll no.	90
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Problems to be solved in the lab:

1. Change your password to a password you would like to use for the remainder of the semester.

```
aditya@Ubuntu:~$ passwd
Changing password for aditya.
Current password:
New password:
Retype new password:
passwd: password updated successfully
aditya@Ubuntu:~$
```

2. Display the system's date.

```
aditya@Ubuntu:~$ date
Sunday 28 January 2024 10:23:48 AM IST
```

3. Count the number of lines in the /etc/passwd file.

```
aditya@Ubuntu:~$ wc /etc/passwd
 47   84 2807 /etc/passwd
```

4. Find out who else is on the system.

```
aditya@Ubuntu:~$ who
aditya      :0                2024-01-28 09:55 (:0)
```

5. Direct the output of the man pages for the date command to a file named mydate.

```
aditya@Ubuntu:~$ date
Sunday 28 January 2024 10:24:44 AM IST
aditya@Ubuntu:~$ touch my_date
aditya@Ubuntu:~$ man date > my_date
aditya@Ubuntu:~$ cat my_date
DATE(1)                                User Commands                                DATE(1)

NAME
    date - print or set the system date and time

SYNOPSIS
    date [OPTION]... [+FORMAT]
    date [-u|--utc|--universal] [MMDDhhmm[[CC]YY][.ss]]

DESCRIPTION
    Display the current time in the given FORMAT, or set the system date.

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

    -d, --date=STRING
        display time described by STRING, not 'now'

    --debug
        annotate the parsed date, and warn about questionable usage to
        stderr

    -f, --file=DATEFILE
        like --date; once for each line of DATEFILE
```

6. Create a subdirectory called mydir.

```
aditya@Ubuntu:~$ mkdir mydir
aditya@Ubuntu:~$ ls
Desktop    Downloads  first.o    my_date    Pictures   subdir     Videos
Documents  first.asm  Music      mydir      Public     Templates
aditya@Ubuntu:~$
```

7. Move the file mydate into the new subdirectory.

```
aditya@Ubuntu:~$ mv my_date mydir
aditya@Ubuntu:~$ cd mydir
aditya@Ubuntu:~/mydir$ pwd
/home/aditya/mydir
aditya@Ubuntu:~/mydir$ ls
my_date
aditya@Ubuntu:~/mydir$
```

8. Go to the subdirectory mydir and copy the file mydate to a new file called ourdate

```
aditya@Ubuntu:~/mydir$ cp my_date ourdate
aditya@Ubuntu:~/mydir$ cat ourdate
DATE(1)                                User Commands                                DATE(1)

NAME
    date - print or set the system date and time

SYNOPSIS
    date [OPTION]... [+FORMAT]
    date [-u|--utc|--universal] [MMDDhhmm[[CC]YY][.ss]]

DESCRIPTION
    Display the current time in the given FORMAT, or set the system date.

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

    -d, --date=STRING
        display time described by STRING, not 'now'

    --debug
```

9. List the contents of mydir.

```
aditya@Ubuntu:~/mydir$ ls
my_date  ourdate
aditya@Ubuntu:~/mydir$
```

10. Do a long listing on the file ourdate and note the permissions.

```
aditya@Ubuntu:~/mydir$ ls -l ourdate
-rw-rw-r-- 1 aditya aditya 6437 Jan 28 10:32 ourdate
aditya@Ubuntu:~/mydir$
```

11. Display the name of the current directory starting from the root.

```
aditya@Ubuntu:~$ pwd
/home/aditya
```

12. Move the files in the directory mydir back to your home directory.

```
aditya@Ubuntu:~$ mv * ~/
mv: 'Desktop' and '/home/aditya/Desktop' are the same file
mv: 'Documents' and '/home/aditya/Documents' are the same file
mv: 'Downloads' and '/home/aditya/Downloads' are the same file
mv: 'first.asm' and '/home/aditya/first.asm' are the same file
mv: 'first.o' and '/home/aditya/first.o' are the same file
mv: 'Music' and '/home/aditya/Music' are the same file
mv: 'mydir' and '/home/aditya/mydir' are the same file
mv: 'Pictures' and '/home/aditya/Pictures' are the same file
mv: 'Public' and '/home/aditya/Public' are the same file
mv: 'subdir' and '/home/aditya/subdir' are the same file
mv: 'Templates' and '/home/aditya/Templates' are the same file
mv: 'Videos' and '/home/aditya/Videos' are the same file
```

13. Display the first 5 lines of mydate.

```
aditya@Ubuntu:~/mydir$ head -5 my_date
DATE(1)                                User Commands                                DATE(1)

NAME
    date - print or set the system date and time
```

14. Display the last 8 lines of mydate.

```
aditya@Ubuntu:~/mydir$ tail -8 my_date
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

SEE ALSO
    Full documentation at: <https://www.gnu.org/software/coreutils/date>
    or available locally via: info '(coreutils) date invocation'

GNU coreutils 8.30                                September 2019                                DATE(1)
```

15. Remove the directory mydir.

```
aditya@Ubuntu:~$ rmdir mydir
aditya@Ubuntu:~$ ls
Desktop  Downloads  first.o  Pictures  subdir  Videos
Documents  first.asm  Music   Public   Templates
```


16. Redirect the output of the long listing of files to a file named list.

```
aditya@Ubuntu:~$ ls -d ~/
/home/aditya/
aditya@Ubuntu:~$ ls -l | cat>list.txt
aditya@Ubuntu:~$ cat list.txt
total 44
drwxr-xr-x 2 aditya aditya 4096 Jan 22 18:59 Desktop
drwxr-xr-x 2 aditya aditya 4096 Jan 22 18:59 Documents
drwxr-xr-x 2 aditya aditya 4096 Jan 22 18:59 Downloads
-rw-rw-r-- 1 aditya aditya 370 Jan 22 23:37 first.asm
-rw-rw-r-- 1 aditya aditya 1008 Jan 22 23:37 first.o
-rw-rw-r-- 1 aditya aditya 0 Jan 28 10:49 list.txt
drwxr-xr-x 2 aditya aditya 4096 Jan 22 18:59 Music
drwxr-xr-x 2 aditya aditya 4096 Jan 22 18:59 Pictures
drwxr-xr-x 2 aditya aditya 4096 Jan 22 18:59 Public
drwxrwxr-x 2 aditya aditya 4096 Jan 28 10:29 subdir
drwxr-xr-x 2 aditya aditya 4096 Jan 22 18:59 Templates
drwxr-xr-x 2 aditya aditya 4096 Jan 22 18:59 Videos
```

17. Select any 5 capitals of states in India and enter them in a file named capitals1. Choose 5 more capitals and enter them in a file named capitals2. Choose 5 more capitals and enter them in a file named capitals3. Concatenate all 3 files and redirect the output to a file named capitals.

```
aditya@Ubuntu:~$ cat>capital1
chennai Junnar Bangalore Mumbai Raichur
^C
aditya@Ubuntu:~$ cat>capital2
jaipur Gandinager Patna Bhunbaneshwar Raipur
^C
aditya@Ubuntu:~$ cat>capital3
Lucknow Kohima Gangkok Itanger Dehradun
^C
aditya@Ubuntu:~$ ls
capital1 Desktop first.asm Music subdir
capital2 Documents first.o Pictures Templates
capital3 Downloads list.txt Public Videos
aditya@Ubuntu:~$ cat capital1 capital3>capitals.txt
aditya@Ubuntu:~$ cat capitals.txt
chennai Junnar Bangalore Mumbai Raichur
Lucknow Kohima Gangkok Itanger Dehradun
```

18. Concatenate the file capitals2 at the end of file capitals.

```
aditya@Ubuntu:~$ cat capital2 >> capitals.txt
aditya@Ubuntu:~$ cat capitals.txt
chennai Junnar Bangalore Mumbai Raichur
Lucknow Kohima Gangkok Itanger Dehradun
jaipur Gandinager Patna Bhunbaneshwar Raipur
```

19. Give read and write permissions to all users for the file capitals.

```
aditya@Ubuntu:~$ chmod a+rw capitals.txt
aditya@Ubuntu:~$ ls -l capitals.txt
-rw-rw-rw- 1 aditya aditya 124 Jan 28 10:56 capitals.txt
```

20. Give read permissions only to the owner of the file capitals. Open the file, make some changes and try to save it. What happens ?

```
aditya@Ubuntu:~$ chmod 477 capitals.txt
aditya@Ubuntu:~$ ls -l capitals.txt
-r--rwxrwx 1 aditya aditya 124 Jan 28 10:56 capitals.txt
```

21. Create an alias to concatenate the 3 files capitals1, capitals2, capitals3 and redirect the output to a file named capitals. Activate the alias and make it run.

```
aditya@Ubuntu:~$ alias f1="cat capital1 capital2 capital3 >> capitals2.txt"
aditya@Ubuntu:~$ f1
aditya@Ubuntu:~$ cat capitals2.txt
chennai Junnar Bangalore Mumbai Raichur
jaipur Gandhinagar Patna Bhunbaneshwar Raipur
Lucknow Kohima Gangkok Itanger Dehradun
```

22. Find out the number of times the string “the” appears in the file mydate.

```
aditya@Ubuntu:~$ grep -n "the" my_date
4:      date - print or set the system date and time
11:      Display the current time in the given FORMAT, or set the system date.
20:      annotate the parsed date, and warn about questionable usage t
o
28:      (the default), 'hours', 'minutes', 'seconds', or 'ns' for dat
e
29:      and time to the indicated precision. Example
:
38:      'ns' for date and time to the indicated precision. Example
:
42:      display the last modification time of FILE
55:      FORMAT controls the output. Interpreted sequences are:
103:      %p      locale's equivalent of either AM or PM; blank if not known
153:      -      (hyphen) do not pad the field
164:      then an optional modifier, which is either E to use the locale's a
l-
165:      ternate representations if available, or 0 to use the locale's alte
r-
169:      Convert seconds since the epoch (1970-01-01 UTC) to a date
173:      Show the time on the west coast of the US (use tzselect(1) to find T
Z)
177:      Show the local time for 9AM next Friday on the west coast of the US
186:      tive date, and numbers. An empty string indicates the beginning
of
187:      the day. The date string format is more complex than is easily doc
u-
188:      mented here but is fully described in the info documentation.
201:      There is NO WARRANTY, to the extent permitted by law.
```

23. Find out the line numbers on which the string “date” exists in mydate.

```
aditya@Ubuntu:~$ grep -n "date" my_date
4:  date - print or set the system date and time
7:  date [OPTION]... [+FORMAT]
8:  date [-u|--utc|--universal] [MMDDhhmm[[CC]YY][.ss]]
11:  Display the current time in the given FORMAT, or set the system date.
16:  -d, --date=STRING
20:      annotate the parsed date, and warn about questionable usage to
o
24:      like --date; once for each line of DATEFILE
27:      output date/time in ISO 8601 format. FMT='date' for date only
y
28:      (the default), 'hours', 'minutes', 'seconds', or 'ns' for date
e
33:      output date and time in RFC 5322 format. Example: Mon, 14 Aug
g
37:      output date/time in RFC 3339 format. FMT='date', 'seconds', or
r
38:      'ns' for date and time to the indicated precision. Example
:
67:  %c  locale's date and time (e.g., Thu Mar 3 23:05:25 2005)
73:  %D  date; same as %m/%d/%y
77:  %F  full date; same as %Y-%m-%d
131:  %x  locale's date representation (e.g., 12/31/99)
150:  By default, date pads numeric fields with zeroes. The following options
p-
169:  Convert seconds since the epoch (1970-01-01 UTC) to a date
171:  $ date --date='@2147483647'
175:  $ TZ='America/Los_Angeles' date
179:  $ date --date='TZ="America/Los_Angeles" 09:00 next Fri'
```

24. Print all lines of mydate except those that have the letter “i” in them.

```
aditya@Ubuntu:~$ grep -v 'i' my_date
DATE(1)                                User Commands                                DATE(1)

NAME

SYNOPSIS
    date [OPTION]... [+FORMAT]

DESCRIPTION

    too.

    -d, --date=STRING

    --debug
        stderr

        2006-08-14T02:34:56-06:00

        2006 02:34:56 -0600

    --rfc-3339=FORMAT
        2006-08-14 02:34:56-06:00

    -r, --reference=FILE

    -s, --set=STRING
```


25. List the words of 4 letters from the file mydate.

```
aditya@Ubuntu:~$ grep -o '\b\w{4}\b' my_date
DATE
User
DATE
NAME
date
date
time
date
date
time
date
date
date
date
time
with
with
date
time
long
  date
warn
file
like
```

26. List 5 states in north east India in a file mystates. List their corresponding capitals in a file mycapitals. Use the paste command to join the 2 files.

```
aditya@Ubuntu:~$ echo "asam" "arunachal" "pradesh" "manipur" "meghalaya" "nagal
and" >> states
aditya@Ubuntu:~$ touch mycapitals
aditya@Ubuntu:~$ echo "Itangar" "imphal" "Shillong" "kohima" >> mycapitals
aditya@Ubuntu:~$ touch northinfo
aditya@Ubuntu:~$ paste states mycapitals > northinfo
aditya@Ubuntu:~$ cat northinfo
asam arunachal pradesh manipur meghalaya nagaland      Itangar imphal Shillong
kohima
```

27. Use the cut command to print the 1 st and 3 rd columns of the /etc/passwd file for all students in this class.

```
aditya@Ubuntu:~$ echo "student1" > students.txt
aditya@Ubuntu:~$ echo "student2" > students.txt
aditya@Ubuntu:~$ grep -wFf students.txt /etc/passwd
aditya@Ubuntu:~$ grep -wFf students.txt /etc/passwd | cut -d: -f1,3
aditya@Ubuntu:~$ cat students.txt
student2
```


28. Count the number of people logged in and also trap the users in a file using the tee command.

```
#!/bin/bash
logged_in_users=$(who | wc -l)
echo "Number of people logged in: $logged_in_users"
who | cut -d' ' -f1 | tee logged_users.txt
```

```
$ vi countlog.sh
(kali@kali)-[~]
$ bash countlog.sh
Number of people logged in: 1
kali
```

29. Convert the contents of mystates into uppercase.

```
aditya@Ubuntu:~$ tr '[:lower:]' '[:upper:]' < states > states_uppercase
aditya@Ubuntu:~$ cat states
asam arunachal pradesh manipur meghalaya nagaland
aditya@Ubuntu:~$ cat states_uppercase
ASAM ARUNACHAL PRADESH MANIPUR MEGHALAYA NAGALAND
```

30. Create any two files & display the common values between them.

```
aditya@Ubuntu:~$ touch file1
aditya@Ubuntu:~$ touch file2
aditya@Ubuntu:~$ cat >file1
This
Is
Linux
^C
aditya@Ubuntu:~$ cat >file2
This
Is
Linux
^C
aditya@Ubuntu:~$ sort file1 > sfile1
aditya@Ubuntu:~$ sort file2 > sfile2
aditya@Ubuntu:~$ comm sfile1 sfile2
          Is
          Linux
This
          This
```