

Subject: Operating System	Subject Code:22516
Semester:5 th Semester	Course: Computer Engineering
Laboratory No: L001C	Name of Subject Teacher: Vijay Patil
Name of Student: Siddharth P. Shah	Roll Id: 22203A0041

Experiment No:	02
Title of Experiment	Execute general purpose commands.

X. PROGRAM CODE:

1. Write down different options of cal command. (Use \$man cal)

Output:

```
-3, --three
    Display three months spanning the date.

-n , --months number
    Display number of months, starting from the month containing the
    date.

-S, --span
    Display months spanning the date.

-s, --sunday
    Display Sunday as the first day of the week.

-m, --monday
    Display Monday as the first day of the week.

-v, --vertical
    Display using a vertical layout (aka ncal mode).

--iso Display the proleptic Gregorian calendar exclusively. This op-
tion does not affect week numbers and the first day of the week.
See --reform below.

-j, --julian
    Use day-of-year numbering for all calendars. These are also
    called ordinal days. Ordinal days range from 1 to 366. This
    option does not switch from the Gregorian to the Julian calendar
    system, that is controlled by the --reform option.
```

Manual page cal(1) line 35 (press h for help or q to quit)

2. Write options of date command. (Use \$man cal)

Output:

```
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

    -I[FMT], --iso-8601[=FMT]
        output date/time in ISO 8601 format.  FMT='date' for date only
        (the default), 'hours', 'minutes', 'seconds', or 'ns' for date
        and time to the indicated precision.  Example:
        2006-08-14T02:34:56-06:00
Manual page date(1) line 1 (press h for help or q to quit)
```

XII. PRACTICAL RELATED QUESTIONS:

1. How you record all the following activities performed by user.

Ans: Use `script`, `auditd`, `tcpdump`, keyloggers (with legal/ethical considerations), application logs, and UI recording. Consider data privacy, storage, analysis, and security.

2. Give a command to display calendar for month of January.

Ans:

```
[root@localhost ~]# cal 01 2024
      January 2024
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
```

3. Give single statement command to display calendar of previous, current and next month.

Ans:

```
[root@localhost ~]# cal -3
      July 2024          August 2024          September 2024
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
    1  2  3  4  5  6    1  2  3    4  5  6  7    1  2  3  4  5  6  7
 7  8  9 10 11 12 13   4  5  6  7  8  9 10    8  9 10 11 12 13 14
14 15 16 17 18 19 20  11 12 13 14 15 16 17  15 16 17 18 19 20 21
21 22 23 24 25 26 27  18 19 20 21 22 23 24  22 23 24 25 26 27 28
28 29 30 31          25 26 27 28 29 30 31  29 30
```

4. Give the command to display full week day (eg. Sunday) using date command.

Ans:

```
[root@localhost ~]# date +%A
Tuesday
```

XIII. EXERCISE:

1. What is output of following command?

a. `$cal 04 2019`

OUTPUT:

```
[root@localhost ~]# cal 04 2019
    April 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
```

b. `$date "+Today's information: %D and %B"`

OUTPUT:

```
[root@localhost ~]# date "+Today's information: %D and %B"
Today's information: 08/06/24 and August
```

c. `$date "+My clock is showing %H hours, %M minutes and %S seconds"`

OUTPUT:

```
[root@localhost ~]# date "+My clock is showing %H hours, %M minutes and %S seconds"
My clock is showing 11 hours, 07 minutes and 59 seconds
```


d. \$cal-3

OUTPUT:

```
[root@localhost ~]# cal -3
      July 2024      August 2024      September 2024
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
   1  2  3  4  5  6          1  2  3      1  2  3  4  5  6  7
  7  8  9 10 11 12 13    4  5  6  7  8  9 10    8  9 10 11 12 13 14
14 15 16 17 18 19 20    11 12 13 14 15 16 17    15 16 17 18 19 20 21
21 22 23 24 25 26 27    18 19 20 21 22 23 24    22 23 24 25 26 27 28
28 29 30 31            25 26 27 28 29 30 31    29 30
```

e. \$cal-5

OUTPUT:

```
[root@localhost ~]# cal 5
      0005
      January      February      March
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
   1  2  3          1  2  3  4  5  6  7      1  2  3  4  5  6  7
  4  5  6  7  8  9 10    8  9 10 11 12 13 14    8  9 10 11 12 13 14
11 12 13 14 15 16 17    15 16 17 18 19 20 21    15 16 17 18 19 20 21
18 19 20 21 22 23 24    22 23 24 25 26 27 28    22 23 24 25 26 27 28
25 26 27 28 29 30 31    29 30 31              29 30 31

      April      May      June
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
   1  2  3  4          1  2          1  2  3  4  5  6
  5  6  7  8  9 10 11    3  4  5  6  7  8  9    7  8  9 10 11 12 13
12 13 14 15 16 17 18    10 11 12 13 14 15 16    14 15 16 17 18 19 20
19 20 21 22 23 24 25    17 18 19 20 21 22 23    21 22 23 24 25 26 27
26 27 28 29 30          24 25 26 27 28 29 30    28 29 30
                    31

      July      August      September
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
   1  2  3  4          1          1  2  3  4  5
  5  6  7  8  9 10 11    2  3  4  5  6  7  8    6  7  8  9 10 11 12
12 13 14 15 16 17 18    9 10 11 12 13 14 15    13 14 15 16 17 18 19
19 20 21 22 23 24 25    16 17 18 19 20 21 22    20 21 22 23 24 25 26
26 27 28 29 30 31      23 24 25 26 27 28 29    27 28 29 30
                    30 31

      October      November      December
Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa
   1  2  3          1  2  3  4  5  6  7      1  2  3  4  5
  4  5  6  7  8  9 10    8  9 10 11 12 13 14    6  7  8  9 10 11 12
11 12 13 14 15 16 17    15 16 17 18 19 20 21    13 14 15 16 17 18 19
18 19 20 21 22 23 24    22 23 24 25 26 27 28    20 21 22 23 24 25 26
25 26 27 28 29 30 31    29 30                27 28 29 30 31
```

f. \$cal-2000 OUTPUT:

```
[root@localhost ~]# cal 2000

                2000

    January                February                March
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
                   1                   1 2 3 4 5                   1 2 3 4
 2 3 4 5 6 7 8         6 7 8 9 10 11 12         5 6 7 8 9 10 11
 9 10 11 12 13 14 15    13 14 15 16 17 18 19    12 13 14 15 16 17 18
16 17 18 19 20 21 22    20 21 22 23 24 25 26    19 20 21 22 23 24 25
23 24 25 26 27 28 29    27 28 29                26 27 28 29 30 31
30 31

    April                  May                  June
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
                   1                   1 2 3 4 5 6                   1 2 3
 2 3 4 5 6 7 8         7 8 9 10 11 12 13         4 5 6 7 8 9 10
 9 10 11 12 13 14 15    14 15 16 17 18 19 20    11 12 13 14 15 16 17
16 17 18 19 20 21 22    21 22 23 24 25 26 27    18 19 20 21 22 23 24
23 24 25 26 27 28 29    28 29 30 31                25 26 27 28 29 30
30

    July                  August                September
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
                   1                   1 2 3 4 5                   1 2
 2 3 4 5 6 7 8         6 7 8 9 10 11 12         3 4 5 6 7 8 9
 9 10 11 12 13 14 15    13 14 15 16 17 18 19    10 11 12 13 14 15 16
16 17 18 19 20 21 22    20 21 22 23 24 25 26    17 18 19 20 21 22 23
23 24 25 26 27 28 29    27 28 29 30 31         24 25 26 27 28 29 30
30 31

    October                November                December
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
 1 2 3 4 5 6 7         1 2 3 4                   1 2
 8 9 10 11 12 13 14     5 6 7 8 9 10 11         3 4 5 6 7 8 9
15 16 17 18 19 20 21    12 13 14 15 16 17 18    10 11 12 13 14 15 16
22 23 24 25 26 27 28    19 20 21 22 23 24 25    17 18 19 20 21 22 23
29 30 31                26 27 28 29 30         24 25 26 27 28 29 30
                                    31
```