LINUX PROCESS RELATED COMMANDS

fg

Description:
The fg command moves a background job in the current environment into the foreground.
It belongs to Process Management Category.

Syntax:
fg jobID   (or)   fg jobID1   jobID2   jobID3 …. jobIDN

JobID Parameter:
- %Number   Refers to a job by a job number
- %String   Refers to a job whose name begins with the specified string
- %?String   Refers to a job whose name contains the specified string
- %+ or %%   Refers to the current job
- %-   Refers to the previous job

If this parameter is not supplied, the fg command uses the job most recently suspended, placed in the background, or run as a background job.

Using the fg command to place a job into the foreground removes the job's process ID from the list of those known by the current shell environment.

To see all options:
Command: $ help fg

```
vinita@vinitha-hp-notebook:~$ help fg
fg: fg [job_spec]
    Move job to the foreground.

    Place the job identified by JOB_SPEC in the foreground, making it the
    current job.  If JOB_SPEC is not present, the shell's notion of the
    current job is used.

    Exit Status:
    Status of command placed in foreground, or failure if an error occurs.
```

Exit Status:
- 0   Successful ™Completion
- > 0   An error occurred

Creating Sample jobs:

Before using fg command, we need to start some jobs on our system.
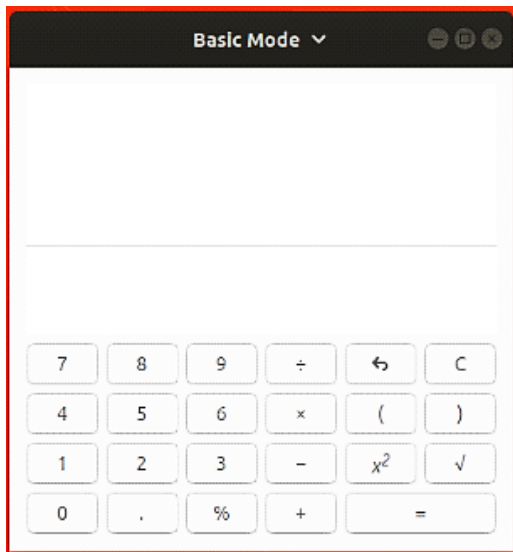The following are some commands to create some jobs.

- $ xeyes &

```
vinita@vinitha-hp-notebook:~$ xeyes &
[1] 4671
```


- $ **gnome-calculator &**

```
vinita@vinitha-hp-notebook:~$ gnome-calculator &
[2] 5195
```


- $ **gedit fetch-stock-prices.py &**

```
vinita@vinitha-hp-notebook:~$ gedit fetch-stock-prices.py &
[3] 6457
```

Open ▾   fetch-stock-prices.py   Save ≡ ○ ◎ ✕

Python ▾   Tab Width: 8 ▾   Ln 1, Col 1   ▼   INS

- $ **ping cyberciti.biz**

    To suspend ping command use ctrl-Z key sequence.

```
vinita@vinitha-hp-notebook:~$ ping cyberciti.biz
PING cyberciti.biz (104.20.186.5) 56(84) bytes of data.
64 bytes from 104.20.186.5: icmp_seq=1 ttl=52 time=26.1 ms
64 bytes from 104.20.186.5: icmp_seq=2 ttl=52 time=26.2 ms
64 bytes from 104.20.186.5: icmp_seq=3 ttl=52 time=25.8 ms
64 bytes from 104.20.186.5: icmp_seq=4 ttl=52 time=26.6 ms
64 bytes from 104.20.186.5: icmp_seq=5 ttl=52 time=42.6 ms
^Z
[3]+  Stopped                 ping cyberciti.biz
```

Listing all Jobs:
To find jobs that are running or suspended in the background
Command: $ jobs (or)   jobs -l

```
vinita@vinitha-hp-notebook:~$ jobs -l
[1]   4671 Running              xeyes &
[2]   5195 Running              gnome-calculator &
[3]-  6457 Running              gedit fetch-stock-prices.py &
[4]+  6662 Stopped              ping cyberciti.biz
```

```
vinita@vinitha-hp-notebook:~$ jobs
[1]   Running              xeyes &
[2]-  Running              gnome-calculator &
[3]+  Stopped              ping cyberciti.biz
```

To list down the PID of the process group leader.
Command: $ jobs   -p

```
vinita@vinitha-hp-notebook:~$ jobs -p
4127
4131
4140
```

To list down all the running jobs
Command: $ jobs   -r

```
vinita@vinitha-hp-notebook:~$ jobs -r
[1]   Running                 xeyes &
[2]-  Running                 gnome-calculator &
```

To list down all the stopped jobs
Command: $ jobs   -s

```
vinita@vinitha-hp-notebook:~$ jobs -s
[3]+  Stopped                 ping cyberciti.biz
```

To find whether a specific job is running or stopped
Command: $ jobs   %String

```
vinita@vinitha-hp-notebook:~$ jobs %ping
[3]+  Stopped                 ping cyberciti.biz
```

```
vinita@vinitha-hp-notebook:~$ jobs %xeyes
[1]   Running                 xeyes &
```

To find current job:
Command: jobs %%   (or)   jobs %+

```
vinita@vinitha-hp-notebook:~$ jobs %+
[3]+  Stopped                 ping cyberciti.biz
```

```
vinita@vinitha-hp-notebook:~$ jobs %%
[3]+  Stopped                 ping cyberciti.biz
```

To find previous job
Command: jobs %-

```
vinita@vinitha-hp-notebook:~$ jobs %-
[2]-  Running                 gnome-calculator &
```

Suspending the jobs:
The following commands are used to suspend the jobs

$ kill –s stop %jobID
$ kill –s stop %PID
$ pkill –stop %PID

```
vinita@vinitha-hp-notebook:~$ jobs
[1]   Running                 xeyes &
[2]-  Running                 gnome-calculator &
[3]+  Stopped                 ping cyberciti.biz
vinita@vinitha-hp-notebook:~$ kill -s stop %1

[1]+  Stopped                 xeyes
vinita@vinitha-hp-notebook:~$ kill -s stop %1

[1]+  Stopped                 xeyes
vinita@vinitha-hp-notebook:~$ jobs
[1]+  Stopped                 xeyes
[2]   Running                 gnome-calculator &
[3]-  Stopped                 ping cyberciti.biz
```

fg Command:

To bring background or suspended process (ping created above) to the foreground
Command: $ fg   %4

```
vinita@vinitha-hp-notebook:~$ fg %4
ping cyberciti.biz
64 bytes from 104.20.187.5: icmp_seq=231 ttl=52 time=25.6 ms
64 bytes from 104.20.187.5: icmp_seq=232 ttl=52 time=25.4 ms
64 bytes from 104.20.187.5: icmp_seq=233 ttl=52 time=25.3 ms
64 bytes from 104.20.187.5: icmp_seq=234 ttl=52 time=25.1 ms
64 bytes from 104.20.187.5: icmp_seq=235 ttl=52 time=25.6 ms
^C
--- cyberciti.biz ping statistics ---
235 packets transmitted, 234 received, 0% packet loss, time 588285ms
rtt min/avg/max/mdev = 24.847/25.610/56.220/2.244 ms
```

$ fg   %ping

```
vinita@vinitha-hp-notebook:~$ fg %ping
ping cyberciti.biz
64 bytes from 104.20.187.5: icmp_seq=4 ttl=52 time=59.3 ms
64 bytes from 104.20.187.5: icmp_seq=5 ttl=52 time=60.0 ms
64 bytes from 104.20.187.5: icmp_seq=6 ttl=52 time=64.7 ms
^C
--- cyberciti.biz ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 12791ms
rtt min/avg/max/mdev = 58.821/61.759/68.749/3.734 ms
```

$ fg   %+

```
vinita@vinitha-hp-notebook:~$ fg %+
ping cyberciti.biz
64 bytes from 104.20.187.5: icmp_seq=7 ttl=52 time=80.2 ms
64 bytes from 104.20.187.5: icmp_seq=8 ttl=52 time=30.9 ms
^Z
[3]+  Stopped                 ping cyberciti.biz
```

$ fg   %%

```
vinita@vinitha-hp-notebook:~$ fg %%
ping cyberciti.biz
64 bytes from 104.20.187.5: icmp_seq=4 ttl=52 time=97.0 ms
64 bytes from 104.20.187.5: icmp_seq=5 ttl=52 time=29.0 ms
64 bytes from 104.20.187.5: icmp_seq=6 ttl=52 time=28.6 ms
^Z
[3]+  Stopped                    ping cyberciti.biz
```

$ fg   %-

```
vinita@vinitha-hp-notebook:~$ fg %-
gnome-calculator
^Z
[2]+  Stopped                    gnome-calculator
```

$ fg   %?calculator

```
vinita@vinitha-hp-notebook:~$ fg %?calculator
gnome-calculator
^Z
[2]+  Stopped                    gnome-calculator
```

To find out whether "fg command" is a shell builtin or /usr/bin/fg
Command: $ type   -a   fg

```
vinita@vinitha-hp-notebook:~$ type -a fg
fg is a shell builtin
```

The /usr/bin/fg command does not work when operating in its own command execution environment, because that environment does not have applicable jobs to manipulate. Hence, the fg command is implemented as a Korn shell or POSIX shell regular built-in command.

bg

Description:
The bg command resumes suspended jobs in the current environment by running them as background jobs.
If job specification is not given ,it uses current job.

Syntax:
bg jobID
bg jobID1 jobID2 ... jobIDn

Job command:
Specifies the job that you want to run in the background.
job %1 refers to the first job.
job %2 refers to the second job etc.

JobID:

- %Number   Refers to a job by a job number
- %String   Refers to a job whose name begins with the specified string
- %?String   Refers to a job whose name contains the specified string
- %+ or %%   Refers to the current job
- %-   Refers to the previous job

Status of jobs:

$ jobs   **-p** : Lists only the PID of process group leader.

$ jobs   **-l** : Lists only jobs that have change status since last notified by their status.

$ jobs   **-r** : Restricts output to running jobs.

$ jobs   **- s** : Restricts output to stopped jobs.

```
vinita@vinitha-hp-notebook:~$ jobs -l
[1]   4127 Running                 xeyes &
[2]-  4131 Running                 gnome-calculator &
[3]+  4140 Stopped                 ping cyberciti.biz
vinita@vinitha-hp-notebook:~$ jobs -p
4127
4131
4140
vinita@vinitha-hp-notebook:~$ jobs -r
[1]   Running                 xeyes &
[2]-  Running                 gnome-calculator &
vinita@vinitha-hp-notebook:~$ jobs -s
[3]+  Stopped                 ping cyberciti.biz
vinita@vinitha-hp-notebook:~$
```

To see what bg does:

Command: $ help bg

```
vinita@vinitha-hp-notebook:~$ help bg
bg: bg [job_spec ...]
    Move jobs to the background.

    Place the jobs identified by each JOB_SPEC in the background, as if they
    had been started with `&'.  If JOB_SPEC is not present, the shell's notion
    of the current job is used.

    Exit Status:
    Returns success unless job control is not enabled or an error occurs.
```

Creating Sample jobs:

Before **using bg command**, we need to start some jobs on our system. The following are some commands to create some jobs.

```
vinita@vinitha-hp-notebook:~$ xeyes &
[1] 4127
vinita@vinitha-hp-notebook:~$ gnone-calculator &
[2] 4131
vinita@vinitha-hp-notebook:~$ ping cyberciti.biz
PING cyberciti.biz (104.20.187.5) 56(84) bytes of data.
64 bytes from 104.20.187.5: icmp_seq=1 ttl=52 time=64.0 ms
64 bytes from 104.20.187.5: icmp_seq=2 ttl=52 time=67.5 ms
64 bytes from 104.20.187.5: icmp_seq=3 ttl=52 time=61.4 ms
64 bytes from 104.20.187.5: icmp_seq=4 ttl=52 time=64.8 ms
64 bytes from 104.20.187.5: icmp_seq=5 ttl=52 time=66.0 ms
^Z
[3]+  Stopped                 ping cyberciti.biz
```

Listing all the jobs:

After creating jobs , to execute bg command we need to know all jobs under execution. The following commands list the jobs.

```
vinita@vinitha-hp-notebook:~$ jobs
[1]   Running                 xeyes &
[2]-  Running                 gnone-calculator &
[3]+  Stopped                 ping cyberciti.biz
```

Suspending the jobs:

The following commands are used to suspend the jobs.

$ kill   -s   stop   %jobID

$ kill   –s   stop   %PID

$ pkill   -stop   PID

```
vinita@vinitha-hp-notebook:~$ jobs
[1]   Running                xeyes &
[2]-  Running                gnome-calculator &
[3]+  Stopped                ping cyberciti.biz
vinita@vinitha-hp-notebook:~$ kill -s stop %1

[1]+  Stopped                xeyes
vinita@vinitha-hp-notebook:~$ kill -s stop %1

[1]+  Stopped                xeyes
vinita@vinitha-hp-notebook:~$ jobs
[1]+  Stopped                xeyes
[2]   Running                gnome-calculator &
[3]-  Stopped                ping cyberciti.biz
```

bg command:

bg is a job control command that resumes suspended jobs while keeping them running in the background.

$ bg   %1

$ bg   %ping

```
vinita@vinitha-hp-notebook:~$ kill -s stop %1

[1]+  Stopped                xeyes
vinita@vinitha-hp-notebook:~$ jobs
[1]+  Stopped                xeyes
[2]   Running                gnome-calculator &
[3]-  Stopped                ping cyberciti.biz
vinita@vinitha-hp-notebook:~$ bg %1
[1]+ xeyes &
vinita@vinitha-hp-notebook:~$ kill -s stop %1

[1]+  Stopped                xeyes
vinita@vinitha-hp-notebook:~$ bg %xeyes
```

$ bg   %+

```
vinita@vinitha-hp-notebook:~$ bg %+
[2]+ gnome-calculator &
vinita@vinitha-hp-notebook:~$ jobs
[1]-  Running                xeyes &
[2]+  Running                gnome-calculator &
```

$ bg   %-

```
vinita@vinitha-hp-notebook:~$ bg %-
[1]- xeyes &
vinita@vinitha-hp-notebook:~$ jobs
[1]-   Running                xeyes &
[2]+   Stopped                gnome-calculator
```

$ bg   %%

```
vinita@vinitha-hp-notebook:~$ bg %%
[2]+ gnome-calculator &
vinita@vinitha-hp-notebook:~$ jobs
[1]-   Running                xeyes &
[2]+   Running                gnome-calculator &
```

$ bg   %?calculator

```
vinita@vinitha-hp-notebook:~$ bg %?calculator
[2]+ gnome-calculator &
vinita@vinitha-hp-notebook:~$ jobs
[1]-   Running                xeyes &
[2]+   Running                gnome-calculator &
```

The suspended job will resume operation and remain in the background. It will not receive any input from the terminal but it will keep running.

To find out whether "bg" command" is a shell builtin or /usr/bin/bg:

Command: $ type   -a   bg

```
vinita@vinitha-hp-notebook:~$ type -a bg
bg is a shell builtin
vinita@vinitha-hp-notebook:~$ █
```