1) **How to find all the links in a folder in UNIX or Linux ?**

This is a tricky UNIX question as there is no specific command to find all symbolic links. Though you have ln command for creating and updating soft links but nothing which gives you all the links in a directory. You need to use ls command which list everything in directory and then you need to list all the links, as they starts with "l" as first characters, as shown in above article .

here is the actual UNIX command to find all links in a directory :

**linux@nyj872:~ ls -lrt total 2.0K -rw-r--r-- 1 Linux Domain Users 0 Dec 6 2011 a drwxr-xr-x+ 1 Linux Domain Users 0 Sep 19 12:30 java/ lrwxrwxrwx 1 Linux Domain Users 4 Sep 19 12:31 version\_1.0 -> java/**

**linux@nyj872:~ ls -lrt | grep '^l' lrwxrwxrwx 1 Linux Domain Users 4 Sep 19 12:31 version\_1.0 -> java/**

2) **How to find a process and kill that ?**

Another classic UNIX interview questions. Answer of this question is simple if you are familiar with ps, grep and kill command. by using "ps -ef" you can get list of all process and then use grep to find your process and get the PID of that process. Once you got PID you can use kill command to kill that process as shown in this example of kill command in UNIX.

3) **How to run a program in background in UNIX or Linux ?**

an easy UNIX or Linux interview question, only when you know. You can use &amp; to run any process in background and than you can use jobs to find the job id for that process and can use fg and bg command to bring that process into foreground and background.

**CTRL+Z and bg**

**Fg + processid**

4) How to sort output of a command in reverse order in Linux or UNIX ?

One more Linux command interview question which checks knowledge of frequently used command. you can use sort command in UNIX to sort output of any command by using PIPE. By using -r option with sort command you can sort output of any command in reverse order.

5) How to create archive file in UNIX or Linux Operating System ?

Another interview question based on knowledge of UNIX or Linux command. you can use tar command to great archives in UNIX or Linux. you can even combine tar and gzip to create a compressed archive in UNIX.

Tar -cvf file.tar /opt/cri/…

Tar -cvzf file.tgz /opt/cri/..

6) What is meaning of a file has 644 permission ?

To answer this UNIX or Linux interview question, you must know basics of files and directories in UNIX. 644 represents permission 110 for owner, permission 100 for group and 100 for others which means read + write for owner who create that file and read only permission for group and others.

7) How will you remove empty files or directories from /tmp ?

Rm -rf /tmp

See how to delete empty directory and files in UNIX to answer this UNIX command interview questions.

8) I have read permission on a directory but I am not able to enter it why ?

One more tricky UNIX questions. In order to get into a directory you need execute permission. if your directory does not have execute permission than you can not go into that directory by using cd command.

9) How do you find all files which are modified 10 minutes before ?

This is another the Linux interview questions from frequently used command e.g. find and grep. you can use -mtime option of find command to list all the files which are modified 10 or m minutes before.

find . -mmin -60

10) How to do you find size of directory in UNIX or Linux ?

This is another tricky and bit tough Linux interview question as popular ls command doesn't show complete size of directories in UNIX. you need to use du command to get full size of directories including all sub directories in UNIX.

Du -sh <directory>

Ss

Find out the open ports status from remote

Use nc command,

nc -zv <hostname/ip> <port/port range>

For example,

nc -zv localhost 27017-27019

or

nc -zv localhost 27017

You can also use telnet command

telnet <ip/host> port

For scripting purposes, I've found that curl command can do it, for example:

$ curl -s localhost:80 >/dev/null && echo Connected. || echo Fail.

Connected.

$ curl -s localhost:123 >/dev/null && echo Connected. || echo Fail.

Fail.

Well known ones are:

|  |  |  |
| --- | --- | --- |
| **Port** | **Service name** | **Transport protocol** |
| 20, 21 | File Transfer Protocol (FTP) | TCP |
| 22 | Secure Shell (SSH) | TCP and UDP |
| 23 | Telnet | TCP |
| 25 | Simple Mail Transfer Protocol (SMTP) | TCP |
| 50, 51 | IPSec |  |
| 53 | Domain Name System (DNS) | TCP and UDP |
| 67, 68 | Dynamic Host Configuration Protocol (DHCP) | UDP |
| 69 | Trivial File Transfer Protocol (TFTP) | UDP |
| 80 | HyperText Transfer Protocol (HTTP) | TCP |
| 110 | Post Office Protocol (POP3) | TCP |
| 119 | Network News Transport Protocol (NNTP) | TCP |
| 123 | Network Time Protocol (NTP) | UDP |
| 135-139 | NetBIOS | TCP and UDP |
| 143 | Internet Message Access Protocol (IMAP4) | TCP and UDP |
| 161, 162 | Simple Network Management Protocol (SNMP) | TCP and UDP |
| 389 | Lightweight Directory Access Protocol | TCP and UDP |
| 443 | HTTP with Secure Sockets Layer (SSL) | TCP and UDP |
| 3389 | Remote Desktop Protocol | TCP and UDP |

**Ifconfig**

ifconfig utility is used to configure network interface parameters.

Mostly we use this command to check the IP address assigned to the system.

[root@localhost ~]# ifconfig -a

eno16777736: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

       ether 00:0c:29:c5:a5:61 txqueuelen 1000 (Ethernet)

       RX packets 0 bytes 0 (0.0 B)

       RX errors 0 dropped 0 overruns 0 frame 0

       TX packets 0 bytes 0 (0.0 B)

       TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536

       inet 127.0.0.1 netmask 255.0.0.0

       inet6 ::1 prefixlen 128 scopeid 0x10<host>

       loop txqueuelen 0 (Local Loopback)

       RX packets 2 bytes 140 (140.0 B)

       RX errors 0 dropped 0 overruns 0 frame 0

       TX packets 2 bytes 140 (140.0 B)

       TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[root@localhost ~]#

**2traceroute**

traceroute print the route packets take to network host.

Destination host or IP is mandatory parameter to use this utility

[root@localhost ~]# traceroute geekflare.com

traceroute to geekflare.com (162.159.243.243), 30 hops max, 60 byte packets

1 172.16.179.2 (172.16.179.2) 0.154 ms 0.074 ms 0.074 ms

2 \* \* \*

3 \* \* \*

**3dig**

dig (Domain Information Groper) is a flexible tool for interrogating DNS name servers.

It performs [DNS lookups](https://tools.geekflare.com/tools/dns-lookup) and displays the answers that are returned from the name servers.

[root@localhost ~]# dig geekflare.com

; <<>> DiG 9.9.4-RedHat-9.9.4-14.el7 <<>> geekflare.com

;; global options: +cmd

;; Got answer:

;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 18699

;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:

; EDNS: version: 0, flags:; MBZ: 0005 , udp: 4000

;; QUESTION SECTION:

;geekflare.com.                                   IN        A

;; ANSWER SECTION:

geekflare.com.                        5          IN        A          162.159.244.243

geekflare.com.                        5          IN        A          162.159.243.243

;; Query time: 6 msec

;; SERVER: 172.16.179.2#53(172.16.179.2)

;; WHEN: Sun May 01 23:28:19 PDT 2016

;; MSG SIZE rcvd: 74

[root@localhost ~]#

**telnet**

telnet connect destination host:port via a telnet protocol if connection establishes means connectivity between two hosts is working fine.

[root@localhost ~]# telnet geekflare.com 443

Trying 162.159.244.243...

Connected to geekflare.com.

Escape character is '^]'.

**nslookup**

nslookup is a program to query Internet domain name servers.

[root@localhost ~]# nslookup geekflare.com

Server:                        172.16.179.2

Address:         172.16.179.2#53

Non-authoritative answer:

Name: geekflare.com

Address: 162.159.243.243

Name: geekflare.com

Address: 162.159.244.243

[root@localhost ~]#

**netstat**

[Netstat](https://geekflare.com/netstat/)command allows you a simple way to review each of your network connections and open sockets.

netstat with head output is very helpful while performing web server troubleshooting.

[root@localhost ~]# netstat

Active Internet connections (w/o servers)

Proto Recv-Q Send-Q Local Address           Foreign Address        State

tcp       0     0 172.16.179.135:58856   mirror.comp.nus.ed:http TIME\_WAIT

tcp       0     0 172.16.179.135:34444   riksun.riken.go.jp:http ESTABLISHED

tcp       0     0 172.16.179.135:37948   mirrors.isu.net.sa:http TIME\_WAIT

tcp       0     0 172.16.179.135:53128   ossm.utm.my:http       TIME\_WAIT

tcp       0     0 172.16.179.135:59723   103.237.168.15:http     TIME\_WAIT

tcp       0     0 172.16.179.135:60244   no-ptr.as20860.net:http TIME\_WAIT

**7scp**

scp allows you to secure copy files to and from another host in the network.

Ex:

scp $filename user@targethost:/$path

**8w**

w prints a summary of the current activity on the system, including what each user is doing, and their processes.

Also list the logged in users and system load average for the past 1, 5, and 15 minutes.

[root@localhost ~]# w

23:32:48 up 2:52, 2 users, load average: 0.51, 0.36, 0.19

USER     TTY       LOGIN@   IDLE   JCPU   PCPU WHAT

chandan :0       20:41   ?xdm?   7:07 0.13s gdm-session-worker [pam/gdm-password]

chandan pts/0     20:42   0.00s 0.23s 3.42s /usr/libexec/gnome-terminal-server

[root@localhost ~]#

**9nmap**

nmap is a one of the powerful commands, which checks the [opened port](https://geekflare.com/port-scanner-server/) on the server.

Usage example:

nmap $server\_name

**10Enable/Disable Network Interface**

You can enable or disable the network interface by using ifup/ifdown commands with ethernet interface parameter.

**To enable eth0**

#ifup eth0

**To disable eth0**

#ifdown eth0

I hope above Linux Commands help you to gather network information or troubleshoot the networking issue. If you are looking to learn Networking in details, then check out this great [online course by SONIC](https://click.linksynergy.com/link?id=jf7w44yEft4&offerid=323058.456626&type=2&murl=https%3A%2F%2Fwww.udemy.com%2Fnetworking-essentials%2F).

**top**

You may want to start by looking into top or htop result to see the processes overview.

As you can see below, it gives an excellent idea about what all processes are utilizing. If you look at the first one which is nodejs taking 3.9% of memory and 0.3% of CPU.

The top is installed on almost all Linux distribution.

Once you identify the suspect, then you may want to focus on that process instead of everything like you saw above. You can still use top command but with some argument.

Let’s say you know the process id (PID); you can use the below command.

top -p $PID

You may also use grep with top. Below an example of checking rabbitmq utilization.

**htop**

Similar to the top but with more information. As you can, it got the command column, which is handy to identify the process path. And, also it is colorful.

htop may not be installed by default, but you can always do it by apt-get install htop if using Ubuntu.

**glances**

As the name says, you get system utilization view on a single screen. Running processes are sorted by their CPU utilization.

**atop**

A similar to the above listed but with a brilliant feature to record the output in a file so you can view them later. Imagine, there is a pattern of having an issue at a specific time window. You can schedule to write the output in a file through [crontab](https://geekflare.com/crontab-linux-with-real-time-examples-and-tools/) or other and later you can playback.

To record the output in a file:

atop -w filename

and, to playback:

atop -r filename

It supports multiple arguments like interval, samples, etc. and I would strongly recommend taking a look at the man page.

If you are just interested in real-time troubleshooting, then just execute atop and you should see like below.

**ps**

Let’s check ps command now.

You can use ps command with PID to print their CPU and memory utilization.

ps -p $PID -o %cpu,%mem

The output should look like this.

root@sr-master-us:~# ps -p 1048 -o %cpu,%mem

%CPU %MEM

0.2 3.0

root@sr-master-us:~#

**nmon**

Interactive command-line monitoring tool for CPU, memory, disks, network, NFS, and virtual memory utilization. To view the top process (by utilization), you can execute nmon and press t button.

[

The ‘tail’ along with dmesg command will print only 20 last lines, this is useful in case we insert removable device.

[root@tecmint.com ~]# dmesg | tail -20

Search Detected Device or Particular String

It’s difficult to search particular string due to length of dmesg output. So, filter the lines with are having string like ‘usb‘ ‘dma‘ ‘tty‘ and ‘memory‘ etc. The ‘-i’ option instruct to [grep command](https://www.tecmint.com/12-practical-examples-of-linux-grep-command/) to ignore the case (upper or lower case letters).

Assigning IP Address and Gateway

Assigning an IP Address and Gateway to interface on the fly. The setting will be removed in case of system reboot.**eth0 192.168.50.5 netmask 255.255.255.0**

Enable or Disable Specific Interface

To enable or disable specific Interface, we use example command as follows.

Enable eth0

**# ifup eth0**

Disable eth0

**# ifdown eth0**

Setting MTU Size

By default MTU size is 1500. We can set required MTU size with below command. Replace XXXX with size.

**# ifconfig eth0 mtu XXXX**

ROUTE Command

route command also shows and manipulate ip routing table. To see default routing table in Linux, type the following command.

**#**

0 eth0

Adding, deleting routes and default Gateway with following commands.

Route Adding

**# route add -net 10.10.10.0/24 gw 192.168.0.1**

Route Deleting

**# route del -net 10.10.10.0/24 gw 192.168.0.1**

Adding default Gateway

**# route add default gw 192.168.0.1**

HOST Command

host command to find name to IP or IP to name in IPv4 or IPv6 and also query DNS records.

**# host www.google.com**

.179

ARP Command

ARP (Address Resolution Protocol) is useful to view / add the contents of the kernel’s ARP tables. To see default table use the command as.

**1. How will you suspend a running process and put it in the background?**

Answer : In order to suspend a running process/job and put it in the background we need to use the key combination Ctrl+z.

**2. What are the minimum number of partitions required to install Linux and How will you check boot messages?**

Answer : The /root partition alone is sufficient to perform the whole task however minimum three partitions are recommended to install Linux. These are root, boot and swap. An IDE Hard Disk Drive supports upto 63 partitions and SCSI Hard Disk Drive supports up-to 15 partitions.

In order to check boot messages we need to use cat or dmesg commands as shown below.

**3. Name the Daemon responsible for tracking System Event on your Linux box?**

Answer : The Daemon ‘syslogd’ is responsible for tracking system information and stores the tracked logs in specific log files.

**4. What are the minimum requirements to run command ‘fsck’ on root partition?**

Answer : The /root partition must be mounted as read only mode and not read-write to execute fsck command on root partition.

**5. How to copy /home directory hierarchically to another directory. How will you do it?**

Answer : A Linux command ‘cpio’ comes to rescue here. The ‘cpio’ utility copies files and directories hierarchically over another location.

**6. How will you automate the rotation of logs in Linux?**

Answer : A Linux command ‘logrotate’ comes to rescue when it comes to automate the logs in Linux.

**7. How to know who has scheduled the job?**

Answer : The Linux command ‘at’ along with switch ‘-l’ is all we need to use in order to check who has scheduled the job.

**8. How to view the contents of the tar ball without extracting it. How will you do this?**

Answer : We need to use command ‘tar’ with options ‘-tvf’. The options ‘t’ (Display the contents), ‘v’ (Verbose), ‘f’ (files).

**9. What is page Fault and how it happens?**

Answer : A program request for some data and if it is not available in the Memory it is called as page fault. Page Fault occurs as a result of program shutdown.

**10. What are return codes in program?**

Answer : A return code is the feature of Shell. The result of return code shows the status of a program. A successful program after execution returns ‘0’, && can be used to prioritize which application will be executing first.

**1. SSH is configured on what Port Number, by default? How to change the port of SSH?**

Answer : SSH is configured on port 22, by default. We can change or set custom port number for SSH in configuration file.

We can check port number of SSH by running the below one liner script, directly on terminal.

To change the port of SSH, we need to modify the configuration file of SSH which is located at ‘/etc/ssh/sshd\_config‘ or ‘/etc/ssh/ssh\_config‘.

And replace ‘22‘ with any UN-engaged port Number say ‘1080‘. Save the file and restart the SSH service to take the changes into effect.

# service sshd restart [On **Red Hat** based systems]

# service ssh restart [On **Debian** based systems]

**2. As a security implementation, you need to disable root Login on SSH Server, in Linux. What would you suggest?**

Answer : The above action can be implemented in the configuration file. We need to change the parameter ‘PermitRootLogin’ to ‘no’ in the configuration file to disable direct root login.

To disable SSH root login, open the configuration file located at ‘/etc/ssh/sshd\_config‘ or ‘/etc/ssh/ssh\_config‘n **Debian** based systems]

Change the parameter ‘PermitRootLogin‘ to ‘no‘ and restart the SSH service as show above.

**3. SSH or Telnet? Why?**

Answer : Both SSH and Telnet are network Protocol. Both the services are used in order to connect and communicate to another machine over Network. SSH uses Port 22 and Telnet uses port 23 by default. Telnet send data in plain text and non-encrypted format everyone can understand whereas SSH sends data in encrypted format. Not to mention SSH is more secure than Telnet and hence SSH is preferred over Telnet.

**4. Is it possible to login to SSH server without password? How**

Answer : Yes! It is possible to login to a remote SSH server without entering password. We need to use ssh-keygen technology to create public and private keys.

Create ssh-keygen using the command below.

$ ssh-keygen

Copy public keys to remote host using the command below.

$ ssh-copy-id -i /home/USER/.ssh/id\_rsa.pub REMOTE-SERVER

Note: Replace USER with user name and REMOTE-SERVER by remote server address.

The next time we try to login to SSH server, it will allow login without asking password, using the keygen. For more detailed instructions, read [how to login remote SSH server without password](https://www.tecmint.com/ssh-passwordless-login-using-ssh-keygen-in-5-easy-steps/).

**5. How will you allows users and groups to have access to SSH Sever?**

Answer : Yes! It is possible to allow users and groups to have access to SSH server.

Here again we need to edit the configuration file of SSH service. Open the configuration file and add users and groups at the bottom as show below and then, restart the service.

AllowUsers Tecmint Tecmint1 Tecmint2

AllowGroups group\_1 group\_2 group\_3

**6. How to add welcome/warning message as soon as a user login to SSH Server?**

Answer : In order to add a welcome/warning message as soon as a user logged into SSH server, we need to edit file called ‘/etc/issue’ and add message there.

# nano /etc/issue

And add your custom message in this file. See, below a screen grab that shows a custom message as soon as user logged into server.

*SSH Login Message*

**7. SSH has two protocols? Justify this statement.**

Answer : SSH uses two protocols – Protocol 1 and Protocol 2. Protocol 1 is older than protocol 2. Protocol 1 is less secure than protocol 2 and should be disabled in the config file.

Again, we need to open the SSH configuration file and add/edit the lines as shown below.

Save the configuration file and restart the service.

**8. Is it possible to trace unauthorized login attempts to SSH Server with date of Intrusion along with their corresponding IP.**

Answer : Yes! we can find the failed login attempts in the log file created at location ‘/var/log/secure’. We can make a filter using the grep command as shown below.

# cat /var/log/secure | grep “Failed password for”

Note: The grep command can be tweaked in any other way to produce the same result.

**9. Is it possible to copy files over SSH? How?**

Answer : Yes! We can copy files over SSH using command SCP, stands for ‘Secure CopY’. SCP copies file using SSH and is very secure in functioning.

A dummy SCP command in action is depicted below:

For more practical examples on how to copy files/folders using scp command, read the [10 SCP Commands to Copy Files/Folders in Linux](https://www.tecmint.com/scp-commands-examples/).

**10. Is it possible to pass input to SSH from a local file? If Yes! How?**

Answer : Yes! We can pass input to SSH from a local file. We can do this simply as we do in scripting Language. Here is a simple one liner command, which will pass input from local files to SSH.

# ssh username@servername < local\_file.txt

SSH is a very hot topic from interview point, of all times. The above questions would have surely added to your knowledge.

That’s all for now. I’ll soon be here with another interesting article. Till then Stay Tuned and connected to Tecmint. Don’t forget to provide us with your valuable feedback in our comment section.

[How can I calculate the size of a directory?](https://unix.stackexchange.com/questions/3019/how-can-i-calculate-the-size-of-a-directory)

du -s directory\_name

Or to get human readable output:

du -sh directory\_name

The -s option means that it won't list the size for each subdirectory, only the total size.

HQMP-SMAHESHWAR:Desktop smaheshwari$ du -csh

222M .

222M total

HQMP-SMAHESHWAR:Desktop smaheshwari$ ls -ldh /etc

lrwxr-xr-x@ 1 root wheel 11B Oct 24 2018 /etc -> private/etc

HQMP-SMAHESHWAR:Desktop smaheshwari$

###### 1. How will you add a new user (say, tux) to your system.?

1. useradd command
2. adduser command
3. linuxconf command
4. All of the above
5. None of the above

**Answer :** All of the above commands i.e., **useradd**, **adduser** and **linuxconf** will add an user to the Linux system.

###### 2. How many primary partition is possible on one drive?

1. 1
2. 2
3. 4
4. 16

**Answer :** There are a maximum of ‘**4**‘ primary partition possible on a drive.

###### 3. The default port for Apache/Http is?

1. 8080
2. 80
3. 8443
4. 91
5. None of the above.

**Answer :** By default Apache/Http is configured on port **80**.

###### 4. What does GNU stand for?

1. GNU’s not Unix
2. General Unix
3. General Noble Unix
4. Greek Needed Unix
5. None of the above

**Answer :** GNU stands for ‘**GNU**‘s not **Unix**‘.

###### 5. You typed at shell prompt “mysql” and what you got in return was “can’t connect to local MySQL server through socket ‘/var/mysql/mysql.sock’”, what would you check first.

**Answer :** Seeing the error message, I will first check if mysql is running or not using commands **service mysql status** or **service mysqld status**. If mysql service is not running, starting of the service is required.

**Note**:The above error message can be the result of ill configured **my.cnf** or mysql **user permission**. If mysql service starting doesn’t help, you need to see into the above said issues.

###### 6. How to Mount a windows ntfs partition on Linux?

**Answer :** First install **ntfs­3g** pack on the system using **apt** or **yum** tool and then use “**mount sudo mount ­t ntfs­3g /dev/<Windows­partition>/<Mount­point>**” command to mount Windows partition on Linux.

###### 7. From the following which is not an RPM based OS.?

1. RedHat Linux
2. Centos
3. Scientific Linux
4. Debian
5. Fedora

**Answer :** The ‘**Debian**‘ operating system is not an **RPM** based and all listed above are ‘**RPM**‘ based except Debian.

###### 8. Which command can be used to rename a file in Linux.?

1. mv
2. ren
3. rename
4. change
5. None of the Above

**Answer :** The **mv** command is used to rename a file in Linux. For example, **mv /path\_to\_File/original\_file\_name.extension /Path\_to\_File/New\_name.extension**.

###### 9. Which command is used to create and display file in Linux?

1. ed
2. vi
3. cat
4. nano
5. None of the above

**Answer :** The ‘**cat**‘ command can be used to create and display file in Linux.

###### 10. What layer protocol is responsible for user and the application program support such as passwords, resource sharing, file transfer and network management?

1. Layer 4 protocols
2. Layer 5 protocols
3. Layer 6 protocols
4. Layer 7 protocols
5. None of the above

**Answer :** The ‘**Layer 7 Protocol**‘ is responsible for user and the application program support such as passwords, resource sharing, file transfer and network management.

# *Linux and Unix xargs command tutorial with examples*

## **Tutorial on using xargs, a UNIX and Linux command for building and executing command lines from standard input. Examples of cutting by character, byte position, cutting based on delimiter and how to modify the output delimiter.**

*Estimated reading time: 3 minutes*

## **Table of contents**

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  + [How to use xargs](https://shapeshed.com/unix-xargs/#how-to-use-xargs)
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## **What is the xargs command in UNIX?**

The xargs command in UNIX is a command line utility for building an execution pipeline from standard input. Whilst tools like [grep](https://shapeshed.com/unix-grep/) can accept standard input as a parameter, many other tools cannot. Using xargs allows tools like echo and [rm](https://shapeshed.com/unix-rm/) and [mkdir](https://shapeshed.com/unix-mkdir/) to accept standard input as arguments.

## **How to use xargs**

By default xargs reads items from standard input as separated by blanks and executes a command once for each argument. In the following example standard input is piped to xargs and the mkdir command is run for each argument, creating three folders.

echo 'one two three' | xargs mkdir

ls

one two three

## **How to use xargs with find**

The most common usage of xargs is to use it with the [find](https://shapeshed.com/unix-find/) command. This uses find to search for files or directories and then uses xargs to operate on the results. Typical examples of this are removing files, changing the ownership of files or moving files.

find and xargs can be used together to operate on files that match certain attributes. In the following example files older than two weeks in the temp folder are found and then piped to the xargs command which runs the rmcommand on each file and removes them.

find /tmp -mtime +14 | xargs rm

## **xargs v exec {}**

The find command supports the -exec option that allows arbitrary commands to be found on files that are found. The following are equivalent.

find ./foo -type f -name "\*.txt" -exec rm {} \;

find ./foo -type f -name "\*.txt" | xargs rm

So which one is faster? Let’s compare a folder with 1000 files in it.

time find . -type f -name "\*.txt" -exec rm {} \;

0.35s user 0.11s system 99% cpu 0.467 total

time find ./foo -type f -name "\*.txt" | xargs rm

0.00s user 0.01s system 75% cpu 0.016 total

Clearly using xargs is far more efficient. In fact [several](https://danielmiessler.com/blog/linux-xargs-vs-exec/) [benchmarks](https://www.everythingcli.org/find-exec-vs-find-xargs/) suggest using xargs over exec {} is six times more efficient.

## **How to print commands that are executed**

The -t option prints each command that will be executed to the terminal. This can be helpful when debugging scripts.

echo 'one two three' | xargs -t rm

rm one two three

## **How to view the command and prompt for execution**

The -p command will print the command to be executed and prompt the user to run it. This can be useful for destructive operations where you really want to be sure on the command to be run. l

echo 'one two three' | xargs -p touch

touch one two three ?...

## **How to run multiple commands with xargs**

It is possible to run multiple commands with xargs by using the -I flag. This replaces occurrences of the argument with the argument passed to xargs. The following prints echos a string and creates a folder.

cat foo.txt

one

two

three

cat foo.txt | xargs -I % sh -c 'echo %; mkdir %'

one

two

three

ls

one two three

## **Further reading**

* [xargs man page](http://man7.org/linux/man-pages/man1/xargs.1.html)
* [xargs vs. exec {}](https://danielmiessler.com/blog/linux-xargs-vs-exec/)
* [find exec vs find xargs](https://www.everythingcli.org/find-exec-vs-find-xargs/)

Have an update or suggestion for this article? [You can edit it here and send me a pull request.](https://github.com/shapeshed/shapeshed.com/edit/master/content/post/unix-xargs.md)

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