Is DevOps a good career?

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Abstract

DevOps (a set of software development practices that combines software development (Dev) and information technology operations (Ops) to shorten the systems development life cycle while delivering features, fixes, and updates frequently in close alignment with business objectives) is becoming the standard way of working for Enterprises. Among the few powerful trends we had experienced in the recent times, one is undoubtedly the adoption of DevOps practices – and adoption of DevOps within the organization is rising on a broader scale, and Enterprises are trending toward it. DevOps builds upon best practices to help drive enterprise performance in modernizing environments. It offers organizations a new way to move the business forward and turn technology into a strategic advantage. An increasing number of businesses recognize the power that DevOps can bring a natural extension for Agile and continuous delivery approaches.

Patrick Debois is best known as the founder of DevOpsDays and as a creator of the DevOps movement, which explains why some refer to him as the "**Godfather of DevOps**".

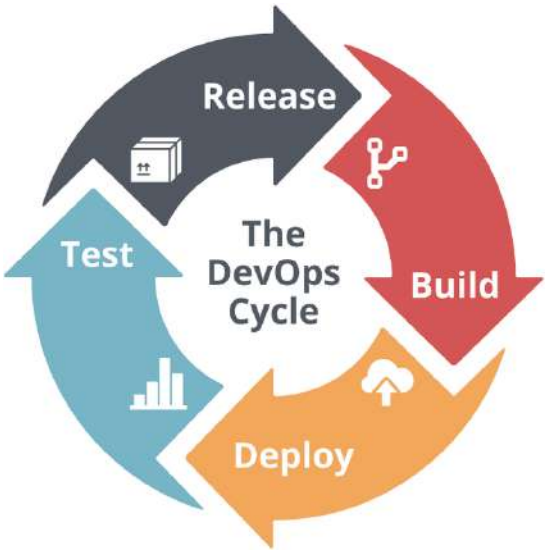
"At its essence, DevOps is a culture, a practice, a philosophy."

Introduction

DevOps expertise is in high demand. Job postings with "**DevOps**" in a title or keyword are sprouting up everywhere. DevOps is an **enterprise software development** phrase emerging from combination of IT teams, process and products to enable the continuous delivery of value to end users. It is a firm bond between **development** and **operations** that emphasizes a shift in mindset, better collaboration, and tighter integration and aims to create a culture and environment where building, testing, and releasing software can happen rapidly, often, and more reliably, so organizations can solve critical issues quickly, and better serve their customers and compete more effectively in the market.

What is DevOps?

"A software development method formed out of a fundamental need that stresses communication, collaboration and integration between software developers and **IT professionals**." DevOps could be explained simply as operations working together with engineers to get things done faster in an automated and repeatable way.



History of DevOps

At the 2008 Agile Toronto conference, **Andrew Shafer** and **Patrick Debois** introduced the term in their talk on "**Agile Infrastructure**". Since 2009, the DevOps term has been steadily promoted based on a simple philosophy — business works best when efforts being coordinated and collaborative — and brought into more mainstream usage through a series of "**DevOpsDays**", which started in Belgium and has now spread into Web-enabled sphere to resolve the conflict between the software developers and the operations teams when it comes to getting great work done quickly. In recent years, more tangential DevOps initiatives have also evolved, such as **OpsDev**, **WinOps**, and **BizDevOps** to encourage the communication between software developers and IT Operations to increase the speed at which applications being delivered.

Benefits of DevOps

The technical benefits include:

- Continuous software delivery
- Less complexity to manage
- Faster resolution of problems

The cultural benefits include:

- More productive teams
- Higher employee engagement
- Greater professional development opportunities

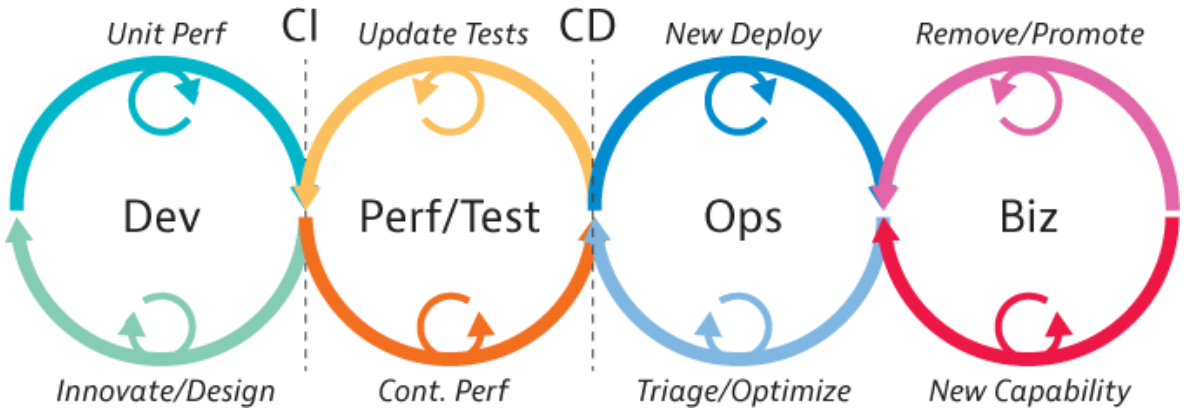
The business benefits include:

- Faster delivery of features
- More stable operating environments
- Improved communication and collaboration
- More time to innovate (and not fix / keep up)

Features of DevOps

- **Source control:** Software developers need to safely store their code and keep track of source-code history and versions. For this reason alone, source control is of critical importance.
- **Issue tracking system:** An issue tracking system allows everyone involved to track current issues, estimates, and deadlines.
- **Build system:** The build system supports continuous integration by building the software, running unit and integration tests, deploying to the integration environment, and performing any other automated checks defined for new versions of the software.
- **Monitoring system:** Monitoring systems continuously track all autonomous systems within the DevOps environment, notifying necessary maintenance staff if a system failure occurs.
- **Communications system:** The constant exchange of information is important so email, wiki, and a real-time chat system being enabled for effective communication and collaboration among all members of the project team.

- **Integration environment: The** integration environment hosts all the virtual machines that make up our DevOps environment
- **Code review system:** To make sure software quality, every line of code being reviewed by a experienced developer. The practice of reviewing code also accelerates career growth and learning.
- **Documentation system:** Regrettably, documentation often remains an afterthought in production software projects. To ensure that documentation being written throughout the project, an automated system being developed to allow developers to write documentation easily, along with source code.



DevOps Goals

- Improved deployment frequency
- To make faster time to market
- Less failure rate to new releases
- Short lead time between fixes
- Improve mean time to recovery

Is DevOps a good career?

DevOps practitioners are among the highest paid IT professionals today, and the market demand for them is growing rapidly because organizations using DevOps practices are overwhelmingly high-functioning to

deliver IT services that offer value to the business. According to a study on the application economy and the role of DevOps, 88% of enterprise IT organizations and **LOB (line of business)** executives already have planned to adopt DevOps sometime within the next five years to accelerate delivery of apps and offer customers with higher-quality software. In the last two years, listings for DevOps jobs at **Indeed.com** increased 75 percent. On **LinkedIn.com**, mentions of DevOps as a skill increased 50 percent. In a recent survey by **Puppetlabs**, half of their 4,000-plus respondents (in more than 90 countries) said their companies consider DevOps skills when hiring.

Basic MongoDB Commands:

`db.help()`	get a list of commands
`show dbs`	print a list of all databases on the server
`use myTestDB`	create new database "**myTestDB**"
`db`	know your current selected database
`db.dropDatabase()`	drop the current selected database
`db.createCollection("Employee")`	create new collection "**Employee**"
`show collections`	print a list of all collections created
`db.Employee.drop()`	drop the collection "**Employee**"
`db.Employee.insert({name: 'Raj', address: 'Bangalore'})`	insert document in collection "**Employee**"
`db.Employee.find()`	list the documents in collection "**Employee**"
`{ "_id" : ObjectId("60658a0dbe02cfa1d386ab52"), "name" : "Raj", "address" : "Bangalore" }`	
`db.Employee.update({'name' : 'Raj'}, {$set: {'name' : 'Albert'}})`	update the document in collection "**Employee**"
`db.Employee.find()`	list the documents in collection "**Employee**"

`{ "_id" : ObjectId("60658a0dbe02cfa1d386ab52"), "name" : "Albert", "address" : "Bangalore" }`	
`db.Employee.save({"_id": new ObjectId("60658a0dbe02cfa1d386ab53"), name: "Newton", address: "Delhi"});`	save document in collection "**Employee**"
`db.Employee.find()`	list the documents in collection "**Employee**"
`{ "_id" : ObjectId("60658a0dbe02cfa1d386ab52"), "name" : "Albert", "address" : "Bangalore" }` `{ "_id" : ObjectId("60658a0dbe02cfa1d386ab53"), "name" : "Newton", "address" : "Delhi" }`	
`db.Employee.remove({'name': 'Albert'})`	delete document in collection "**Employee**"
`db.Employee.find()`	list the documents in collection "**Employee**"
`{ "_id" : ObjectId("60658a0dbe02cfa1d386ab53"), "name" : "Newton", "address" : "Delhi" }`	
`db.getUsers();`	list down all the users of current database
`show roles`	list down all the roles
`db.Employee.dataSize()`	get the size of the collection "**Employee**"
`db.Employee.storageSize()`	get the total size of document stored in the collection "**Employee**"
`db.Employee.totalSize()`	get the total size in bytes for both collection data and indexes
`db.Employee.totalIndexSize()`	get the total size of all indexes in the collection "**Employee**"

Docker Commands:

`docker --version`	get the installed docker version
`docker pull hello-world`	download the image "**hello-world**" from the docker repository (**hub.docker.com**)
`docker images`	list all the images that are locally stored with the docker engine
`docker run hello-world`	create a container from the image "**hello-world**"
`docker container ls -a`	list all containers
`docker container ls -a -s`	list the size for all containers
`docker rmi 515d5e66f68a`	remove the docker image "**hello-seattle**" with image id "**515d5e66f68a**"
`docker rm d9bf06498bb2`	remove the docker container with container id "**d9bf06498bb2**"
`docker history hello-world`	display the history of the image "**hello-world**"
`docker info`	get detailed information about docker installed on the system including the kernel version, number of containers and images, etc.
`docker volume create`	create a volume which docker container will use to store data
`docker volume ls`	list all the volumes known to Docker
`docker logs c70201336fd8`	display the logs of the docker container with contained id "**c70201336fd8**"
`docker search hadoop`	search for docker image "**hadoop**" on dockerhub
`docker network ls`	list all docker networks
`docker login`	login into docker repository (**hub.docker.com**)
`docker logout`	logout from docker repository (**hub.docker.com**)
`docker start c70201336fd8`	start the docker container with container id "**c70201336fd8**"
`docker stop c70201336fd8`	stop the docker container with container id "**c70201336fd8**"

`docker restart c70201336fd8`	restart the docker container with container id "**c70201336fd8**"
`docker inspect c70201336fd8`	get detailed information about the docker container with container id "**c70201336fd8**"
`docker stats c70201336fd8`	get the statistics of the docker container with container id "**c70201336fd8**"
`docker image ls`	List all images that are locally stored with the docker engine.

"While Docker automatically captures logs for you, it does not also rotate them. In fact, currently none of the provided packages set up any log rotation. You'll need to do that yourself in most cases. Rather frustratingly, Docker also does not respond to a signal to tell it to reopen logs. If you send it the standard HUP signal, it will instead restart all the containers, which is not what you want. The current best practice for rotation of Docker logs is to have logrotate use the copytruncate method to copy the logfile and then truncate it in place. There are open bugs against docker asking for a better solution."

— Karl Matthias

`docker system prune`	delete all unused containers, unused networks, and dangling images
`systemctl status docker`	check the Docker service
`systemctl start docker`	start the Docker service
`docker image prune`	remove unused images
`docker save hello-world > hello-world.tar`	save the image "**hello-world**" to a tar archive
`docker load < hello-world.tar`	load the image "**hello-world**" from the saved tar file
`docker export a27999b71e62 > hello-world.tar`	export the docker container with container id " **a27999b71e62**" as a tar archive
`docker import hello-world.tar`	import the contents from hello-world.tar

Linux Commands

The **command-line interface** is one of the nearly all well built trademarks of **Linux**. There exists an ocean of **Linux commands**, permitting you to do nearly everything you can be under the impression of doing on your Linux operating system. Although, this to the end of time creates a problem: by all of so copious commands accessible to manage, you don't comprehend where and at which point to fly learning them, especially when you are learner. If you are facing this problem, and are peering for a painless method to begin your command line journey in Linux, you've come to the right place, as in this, we will launch you to a hold of well liked and **helpful Linux commands**.

Description:

Display system date and time.

Command:

```
date
```

Description:

Display calendar.

Command:

```
cal
```

Description:

Display date, time and calendar.

Command:

```
date & cal
```

Description:

Display August month 2016 year calendar.

Command:

```
cal 8 2016
```

Description:

Used to clear the terminal window.

Command:

```
clear
```

Description:

Exit from the terminal window.

Command:

```
exit
```

Description:

Display free and used system memory.

Command:

```
free
```

Description:

Display free and used system memory in bytes.

Command:

```
free  -b
```

Description:

Display free and used system memory in kilobytes.

Command:

```
free  -k
```

Description:

Display free and used system memory in megabytes.

Command:

```
free  -m
```

Description:

Change user password.

Command:

```
passwd
```

Description:

Power-off the machine.

Command:

```
shutdown
```

Description:

Power-off the machine immediately.

Command:

```
shutdown  -h now
```

Description:

Power-off the machine after 10 minutes.

Command:

```
shutdown  -h +10
```

Description:

Print current working directory.

Command:

```
echo $PWD
```

Description:

Print previous working directory.

Command:

```
echo $OLDPWD
```

Description:

Executes the 11th command in command history.

Command:

```
!11
```

Description:

Reveals your command history.

Command:

```
history
```

Description:

Power off or reboot the Operating system.

Command:

```
sudo reboot
```

Description:

Display the IP address of the host.

Command:

```
ip address
```

Description:

List the size of files and directories.

Command:

```
ls  -s
```

Description:

View mounted file systems.

Command:

```
mount
```

Description:

Display the information of disk usage of files and directories.

Command:

```
du
```

Description:

Tells you how long the system has been running.

Command:

```
uptime
```

Description:

Set current date as 02 Nov 1988.

Command:

```
date -- set 1998-11-02
```

Description:

Set current time as 12:11:02 IST.

Command:

```
date -- set 12:11:02
```

Description:

View and change the configuration of the network interfaces on the system.

Command:

```
ifconfig
```

Description:

Lists all files and directories in the present working directory.

Command:

```
ls
```

Description:

Report the process information.

Command:

```
ps
```

Description:

Display disk usage.

Command:

```
df
```

Description:

Display disk usage in gigabytes, megabytes, or kilobytes.

Command:

```
df  -H
```

Description:

Delete every file and every directory.

Command:

```
rm  -r *
```

Description:

Provides a quick overview of the currently running processes.

Command:

```
top
```

Description:

The system performs an immediate reboot.

Command:

```
reboot
```

Description:

Terminate processes without having to log out or reboot.

Command:

```
kill
```

Description:

Change the current working directory.

Command:

```
cd
```

Description:

Create a new session on the system.

Command:

```
login
```

Description:

List open files.

Command:

```
lsof
```

Description:

List USB devices.

Command:

```
lsusb
```

Description:

Check the status of the network services.

Command:

```
service network status
```

Description:

Start the network service.

Command:

```
service network start
```

Description:

Stop the network service.

Command:

```
service network stop
```

Description:

Restart the network service.

Command:

```
service network restart
```

Description:

Report information about the users currently on the machine and their processes.

Command:

```
w
```

Description:

Display the current directory.

Command:

```
pwd
```

Description:

Displays CPU architecture information (such as number of CPUs, threads, cores, sockets, and more).

Command:

```
lscpu
```

Description:

Displays the number of processing units available to the current process.

Command:

```
nproc
```

Description:

The system performs an immediate reboot.

Command:

```
init 6
```

Description:

Power-off the machine.

Command:

```
init 0
```

Description:

List files by date.

Command:

```
ls -lrt
```

Description:

Report information about storage devices such as hard disks, flash drives etc.

Command:

```
lsblk
```

Description:

Show exit status of previous command.

Command:

```
echo $?
```

Description:

Lists a few useful info commands.

Command:

```
info
```

Description:

Prints current year's calendar.

Command:

```
cal -y
```

Description:

Check the status of all the services.

Command:

```
service --status-all
```

Description:

Display time in hh:mm:ss.

Command:

```
date +%T
```

Description:

Tells when the user last logged on and off and from where.

Command:

```
last  -1 username
```

Description:

Sort files and directories by extension name.

Command:

```
ls  -X
```

Description:

Display the manual for the pwd command.

Command:

```
man pwd
```

Description:

Displays information about running processes in the form of a tree.

Command:

```
pstree
```

Description:

Resets your terminal.

Command:

```
reset
```

Description:

Displays What date is it this Friday.

Command:

```
date -d fri
```

Description:

Displays the size of each individual file.

Command:

```
du  -a
```

Description:

Display information about the Advanced configuration and power Interface.

Command:

```
acpi
```

Description:

Takes you two folders back.

Command:

```
cd ../..
```

Description:

Takes you to the previous directory.

Command:

```
cd -
```

Description:

Displays a list of shell built-in commands.

Command:

```
help
```

Description:

Lists your last logins.

Command:

```
last yourusername
```

Description:

Create a new directory called myfiles.

Command:

```
mkdir myfiles
```

Description:

Remove the directory myfiles.

Command:

```
rmdir myfiles
```

Description:

Disable password for a specific user "root1".

Command:

```
passwd -d root1
```

Description:

Switch to user "root1".

Command:

```
sudo su root1
```

Description:

Exit from the terminal window.

Command:

```
logout
```

Description:

Creates a user "root1".

Command:

```
useradd "root1"
```

Description:

Assign password to user "root1".

Command:

```
passwd "root1"
```

Description:

Repeats the last command.

Command:

```
!!
```

Description:

Display Who you are logged in as.

Command:

```
whoami
```

Description:

Display the login name of the current user.

Command:

```
logname
```

Description:

Report the name of the kernel.

Command:

```
uname
```

Description:

Print the kernel version.

Command:

```
uname  -v
```

Description:

Print the operating system.

Command:

```
uname  -o
```

Description:

Report the machine hardware name.

Command:

```
uname  -m
```

Description:

Print version information and exit.

Command:

```
uname  --version
```

Description:

Print the kernel release.

Command:

```
uname  -r
```

Description:

Report the network node hostname.

Command:

```
uname  -n
```

Description:

Display all port connections (both TCP and UDP).

Command:

```
netstat  -a
```

Description:

Display only TCP (Transmission Control Protocol) port connections.

Command:

```
netstat  -at
```

Description:

Display only UDP (User Datagram Protocol) port connections.

Command:

```
netstat  -au
```

Description:

Display all active listening ports.

Command:

```
netstat  -I
```

Description:

Display all active listening TCP ports.

Command:

```
netstat  -It
```

Description:

Display all active listening UDP ports.

Command:

```
netstat  -lu
```

Description:

Reveal all the information about the current user (user id, username, group id, group name etc.).

Command:

```
id
```

Description:

Reveal all the information about the user "root1" (user id, username, group id, group name etc.).

Command:

```
id  root1
```

Description:

Print the machine's architecture.

Command:

```
arch
```

Description:

Display the list of available fonts.

Command:

```
fc-list
```

Description:

Create two directories (myfiles, files).

Command:

```
mkdir myfiles files
```

Description:

install apache (CentOS).

Command:

```
yum install httpd
```

Description:

install apache (Ubuntu).

Command:

```
apt install httpd
```

Description:

upgrade apache (CentOS).

Command:

```
yum update httpd
```

Description:

upgrade apache (Ubuntu).

Command:

```
apt update httpd
```

Description:

uninstall apache (CentOS).

Command:

```
yum remove httpd
```

Description:

uninstall apache (Ubuntu).

Command:

```
apt remove httpd
```

Description:

Display usage summary for the command (date).

Command:

```
date --help
```

Description:

List active connections to/from system.

Command:

```
ss -tup
```

Description:

List internet services on a system.

Command:

```
ss -tupl
```

Description:

Display all active UNIX listening ports.

Command:

```
netstat  -lx
```

Description:

Display all the active interfaces details.

Command:

```
ifconfig
```

Description:

Display information of all network interfaces.

Command:

```
ifconfig  -a
```

Description:

Compare the contents of two files (1.txt, 2.txt).

Command:

```
diff 1.txt 2.txt
```

Description:

Tells you how many lines, words, and characters there are in a file (1.txt).

Command:

```
wc 1.txt
```

Description:

Compresses file (1.txt), so that it take up much less space.

Command:

```
gzip 1.txt
```

Description:

Uncompresses file (1.txt) compressed by gzip.

Command:

```
gunzip 1.txt
```

Description:

Examine the contents of the file (1.txt).

Command:

```
cat 1.txt
```

Description:

Display calendar.

Command:

```
ncal
```

Description:

Removes the file (1.txt).

Command:

```
rm 1.txt
```

Description:

Rename a file named 1.txt to 0.txt.

Command:

```
mv 1.txt 0.txt
```

Description:

Replace the contents of 0.txt with that of 1.txt.

Command:

```
cp 1.txt 0.txt
```

Description:

Create a empty file (test.txt).

Command:

```
touch test.txt
```

Description:

Print the last 10 lines of a file (1.txt).

Command:

```
tail 1.txt
```

Description:

Print N number of lines from the file (1.txt).

Command:

```
tail  -n N 1.txt
```

Description:

Prints the number of words in a file (1.txt).

Command:

```
wc -w 1.txt
```

Description:

Prints the number of characters from a file (1.txt).

Command:

```
wc -m 1.txt
```

Description:

Prints the length of the longest line in a file (1.txt).

Command:

```
wc -L 1.txt
```

Description:

Print information about usb ports, graphics cards, network adapters etc.

Command:

```
lspci
```

Description:

View contents of a file (1.txt).

Command:

```
less 1.txt
```

Description:

Display calendar (last month, current month, and next month).

Command:

```
cal -3
```

Description:

Compare the contents of three files (1.txt, 2.txt, 3.txt) line by line.

Command:

```
diff3 1.txt 2.txt 3.txt
```

Description:

Compare two files (1.txt, 2.txt) line-by-line.

Command:

```
comm 1.txt 2.txt
```

Description:

Perform byte-by-byte comparison of two files (1.txt, 2.txt).

Command:

```
cmp 1.txt 2.txt
```

Description:

Prints the CRC checksum and byte count for the file "myfiles.txt".

Command:

```
cksum myfiles.txt
```

Description:

Append contents of files (1.txt, 2.txt) into one file (0.txt).

Command:

```
cat 1.txt 2.txt > 0.txt
```

Description:

Append contents of files (1.txt, 2.txt, 3.txt) into one file (0.txt).

Command:

```
sed  r 1.txt 2.txt 3.txt > 0.txt
```

Description:

Append contents of files (1.txt, 2.txt, 3.txt) into one file (0.txt).

Command:

```
sed  h 1.txt 2.txt 3.txt > 0.txt
```

Description:

Append contents of files (1.txt, 2.txt, 3.txt) into one file (0.txt).

Command:

```
sed  -n  p 1.txt 2.txt 3.txt > 0.txt
```

Shortcuts:

```
| ctrl+c           | Halts the current command           |
| ctrl+z           | Stops the current command           |
|                  |                                     |
| ctrl+d           | Logout the current session          |
| ctrl+w           | Erases one word in the current line |
|                  |                                     |
| ctrl+u           | Erases the whole line               |
| ctrl+r           | Type to bring up a recent command   |
```

Description:

Writes contents of a file (0.txt) to output, and prepends each line with line number.

Command:

```
nl 0.txt
```

Description:

Create a empty file (test1.txt) inside a directory (test).

Command:

```
mkdir test
cd test
pwd
touch test1.txt
```

Description:

Gather information about hardware components such as CPU, disks, memory, USB controllers etc.

Command:

```
sudo lshw
```

Description:

Gather information about file system partitions.

Command:

```
sudo fdisk -l
```

Description:

Displays the line (good morning) in which the string (good) is found in the file (1.txt).

Command:

```
grep good 1.txt
```

Description:

Append contents of files (1.txt, 2.txt, 3.txt) into one file (0.txt) using for loop.

Command:

```
for i in {1..3}; do cat "$i.txt" >> 0.txt; done
```

Description:

Search for files (test.txt, test1.txt, test2.txt, test.php, test.html) in a directory as well as its sub-directories.

Command:

```
find test*
```

Description:

Displays status related to a file (1.txt).

Command:

```
stat 1.txt
```

```
###
|     Command      |  Description       |
|:-----------------|-------------:      |
| vi               | Open vi editor     |
| i                | Go to Insert mode  |
|                  |                    |
| a =20; b =64;    |                    |
| print (a + b);   |                    |
| Hit Escape to return to Normal mode.  |
| :w hello.py      | Save text          |
| :q               | Quit               |
| python hello.py  |Print the output:84 |
```

Description:

Download the file (file.txt) from url "http: //website.com/files/file.txt".

Command:

```
wget http://website.com/files/file.txt
```

Description:

Display host's numeric ID in hexadecimal format.

Command:

```
hostid
```

Description:

Display file type of the file (myfiles.txt).

Command:

```
file myfiles.txt
```

Description:

Create a file (myfiles.txt) containing a text (Hello World).

Command:

```
echo 'Hello World' > myfiles.txt
```

Description:

Create a file (myfiles.txt) containing a text (Hello World).

Command:

```
printf 'Hello World' > myfiles.txt
```

Description:

Display IP address of the hostname.

Command:

```
hostname  -i
```

Description:

Add a new line of text to an existing file (1.txt).

Command:

```
echo "Hello world!" >> 1.txt
echo "this is 2nd line text" >> 1.txt
echo "last line!" >> 1.txt
```

Description:

Displays a single line description about a command (cal).

Command:

```
whatis cal
```

```
###
|     Command      |  Description       |
|:-----------------|-------------:      |
```

```
| vi                | Open vi editor     |
| i                 | Go to Insert mode  |
| Type some text.   |                    |
| Hit Escape to return to Normal mode.  |
| :w test.txt       | Save text          |
| :q                | Quit               |
| :q!               |Quit without saving |
```

```
###
|     Command       |  Description          |
|:-----------------|-------------:         |
| vi                | Open vi editor        |
| i                 | Go to Insert mode     |
| $name = "Paul";   |                       |
| print "$name";    |                       |
| Hit Escape to return to Normal mode.      |
| :w hello.pl       | Save text             |
| :q                | Quit                  |
| perl hello.pl     |Print the output: Paul |
```

```
###
|     Command                 |  Description           |
|:---------------------------|-------------:          |
| vi                          | Open vi editor         |
| i                           | Go to Insert mode      |
| echo "What is your name?"   |                        |
| read PERSON                 |                        |
| echo "Hello, $PERSON"       |                        |
| Hit Escape to return to Normal mode.                 |
| :w hello.sh                 | Save text              |
| :q                          | Quit                   |
| sh hello.sh                 | Output:                |
|                             | What is your name?     |
|                             | If you enter: Zara Ali |
|                             | Hello, Zara Ali        |
```

Description:

Check the network connectivity between host (your connection) and server (Google server).

Command:

```
ping google.com
```

Description:

Find the location of source/binary file of a command (cal).

Command:

```
whereis cal
```

Description:

List the files in the bin directory.

Command:

```
ls /bin
```

Description:

List the files in the bin directory and the etc directory.

Command:

```
ls /bin /etc
```

Description:

Moves the file test.txt to the folder newrepo.

Command:

```
mv test.txt ./newrepo
```

Description:

Deletes all the lines in the test.txt containing tue word.

Command:

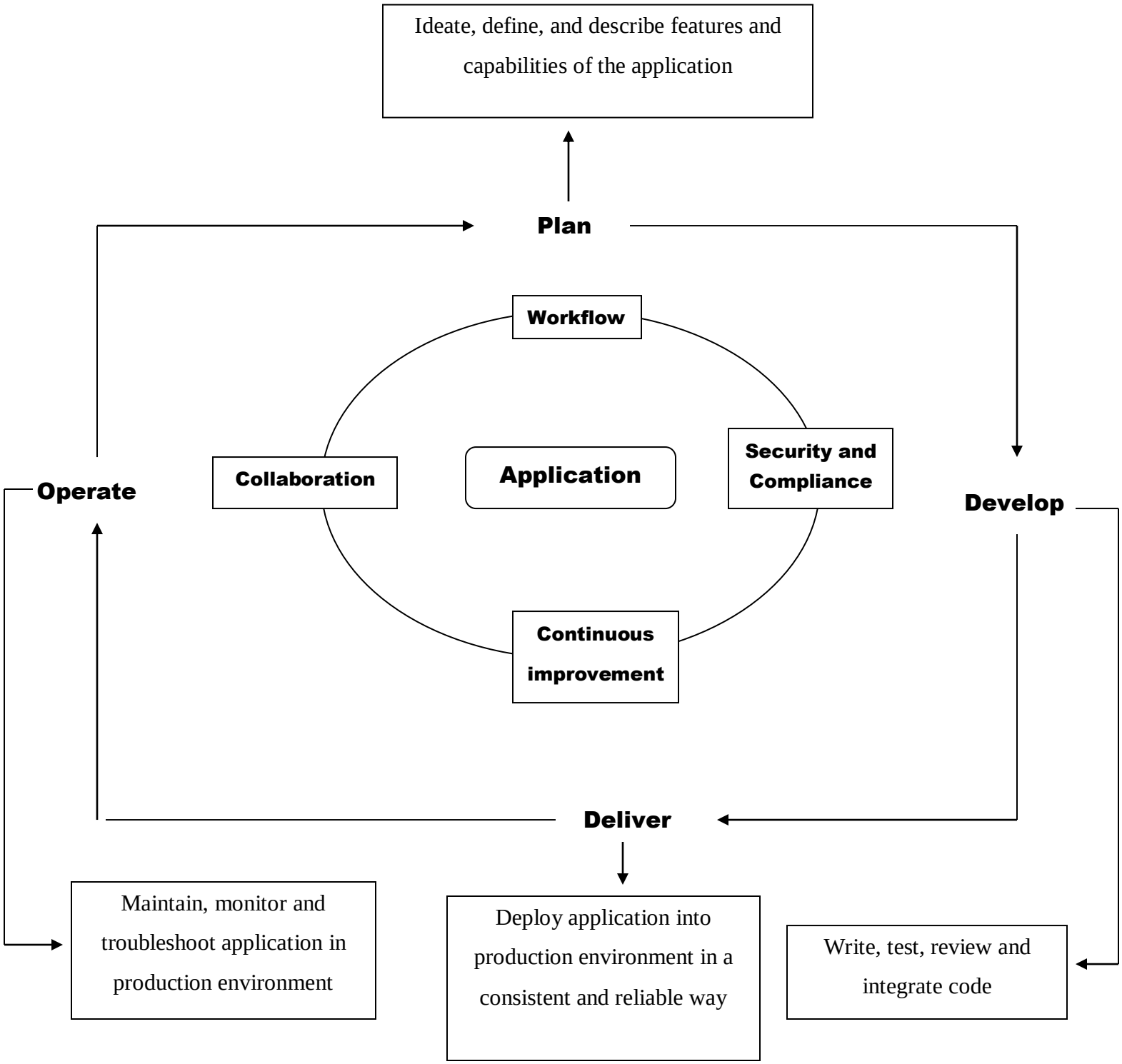
```
sed -i "/tue/d" test.txt
```

import subprocess subprocess.call ('**linux command**')	import os os.system('**linux command**')

import os os.system('ls')	**List all the files and directories in the current directory**
import subprocess subprocess.call ('ls')	

DevOps isn't any single person's job. It's everyone's job.

Christophe Capel



Development (Software engineering) + Quality assurance + operations = DevOps

Development (Software engineering) + Quality assurance + operations + Security

↓

DevSecOps

- Communication
- Collaboration
- Integration

Dev

(Software releases and updates)

↔

Ops

(Reliability, performance and scaling)

Sec

(Confidentiality, availability and integrity)

Agile

↓

Focuses on processes highlighting change while accelerating delivery

CI/CD

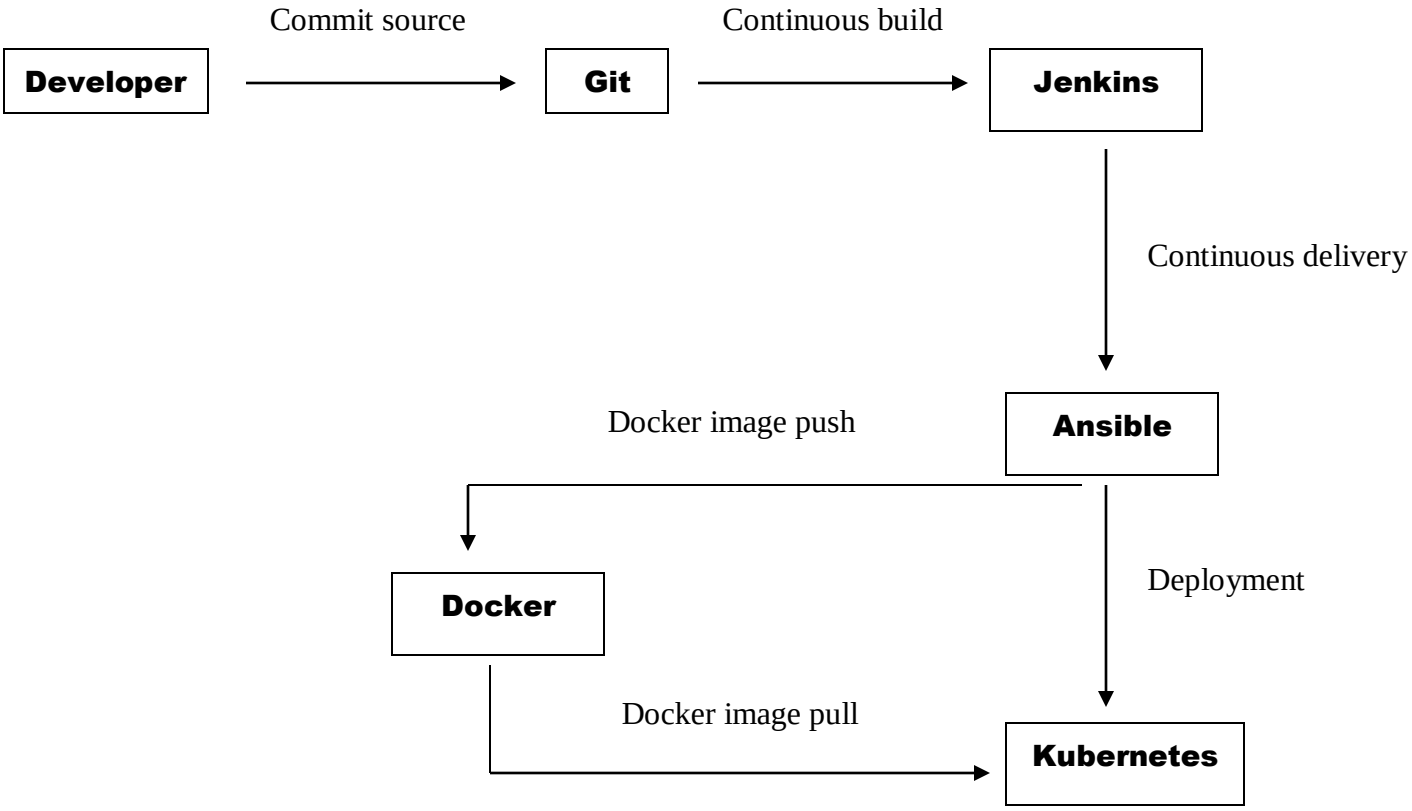
↓

Focuses on software-defined life cycles highlighting tools that emphasize automation

DevOps

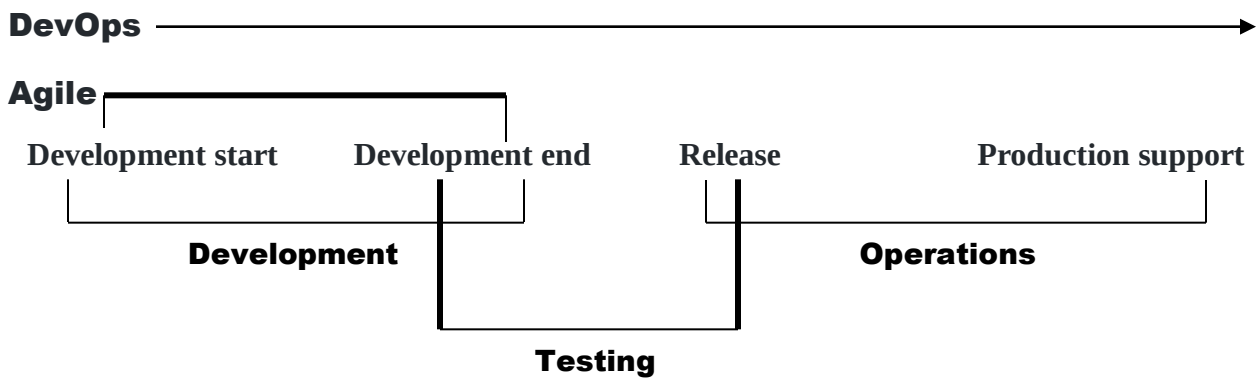
↓

Focuses on culture highlighting roles that emphasize responsiveness

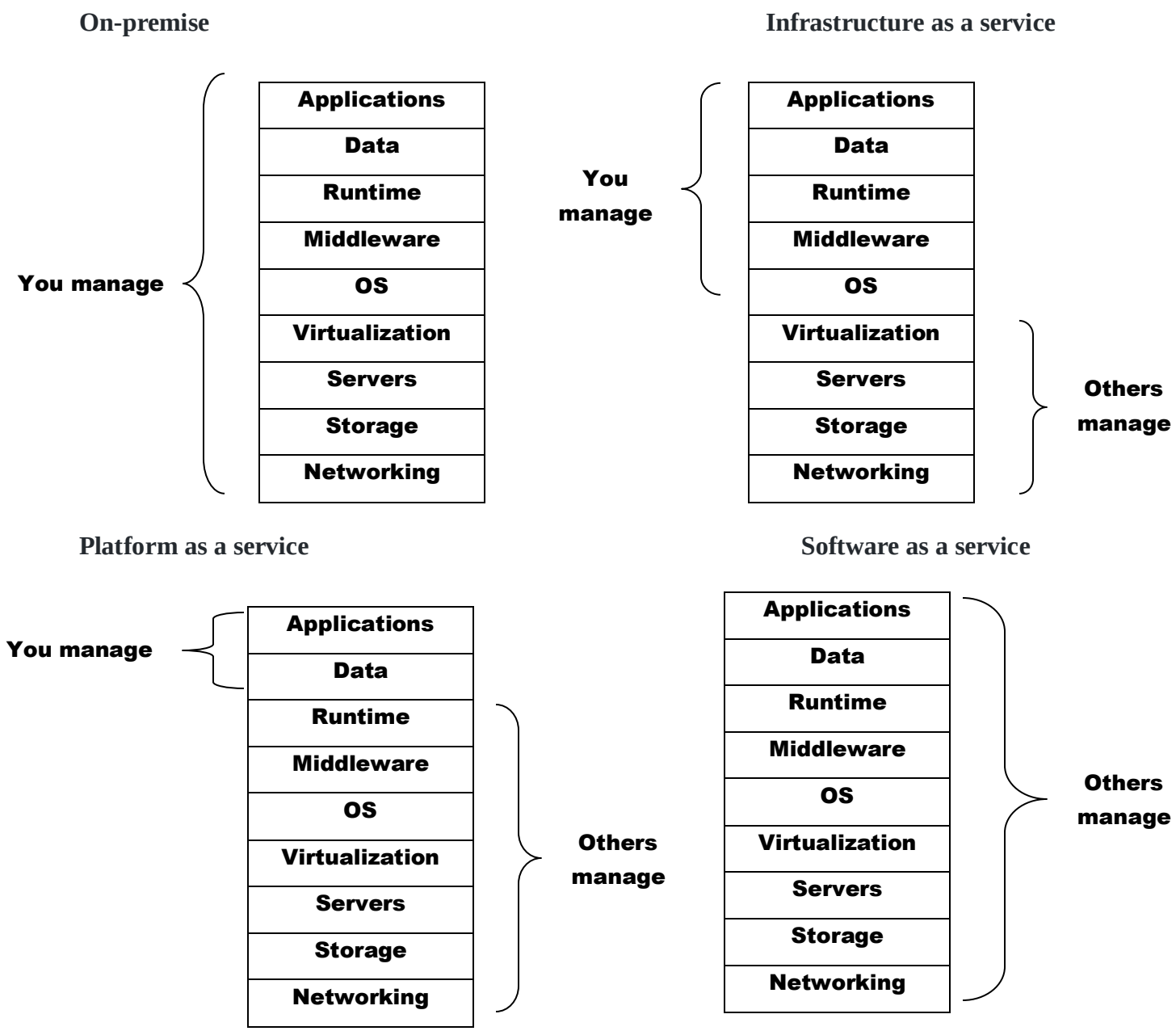


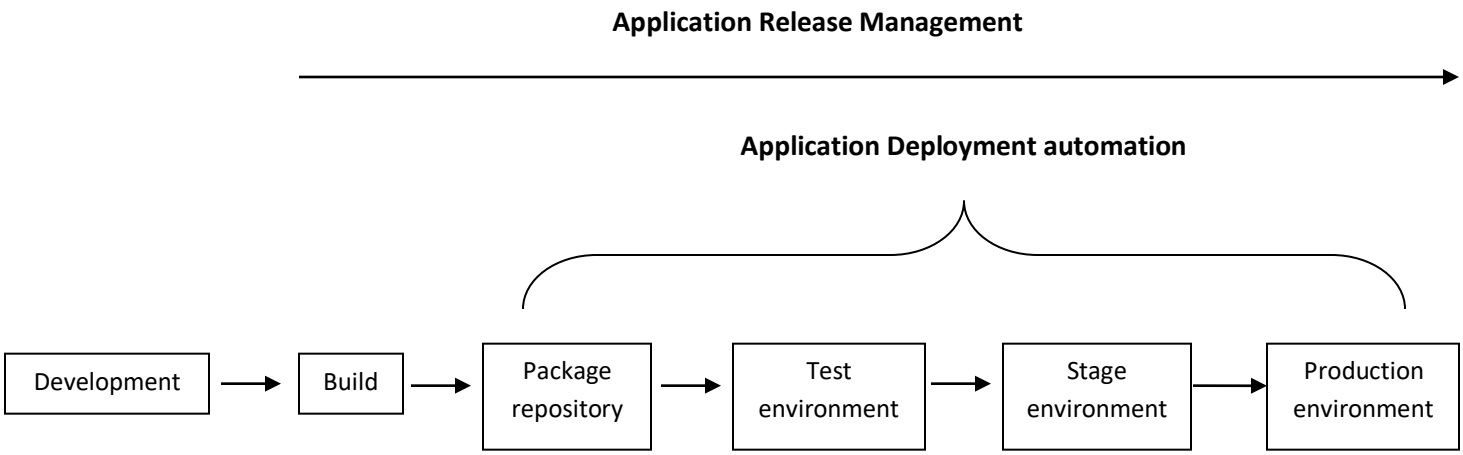
DevOps Flow

Git	Version Control System tool
Jenkins	Continuous Integration tool
Selenium	Continuous Testing tool
Puppet, Chef, Ansible	Configuration Management and Deployment tools
Nagios	Continuous Monitoring tool
Docker	Containerization tool

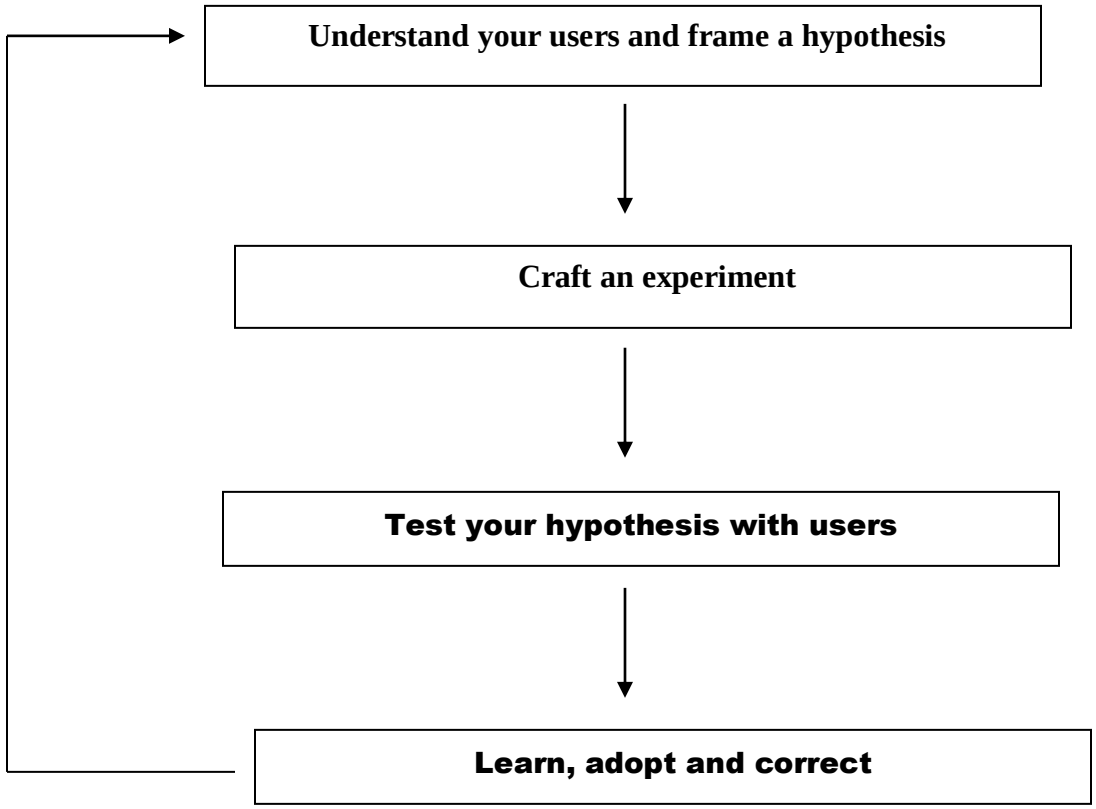


Cloud Service:





Stages of a typical DevOps delivery pipeline



```
# Basic Hello World program written in Groovy

class MyClass {
    static void main(String[] args) {

        println('Hello World');

    }
}
```

6 Build Phases in Maven:

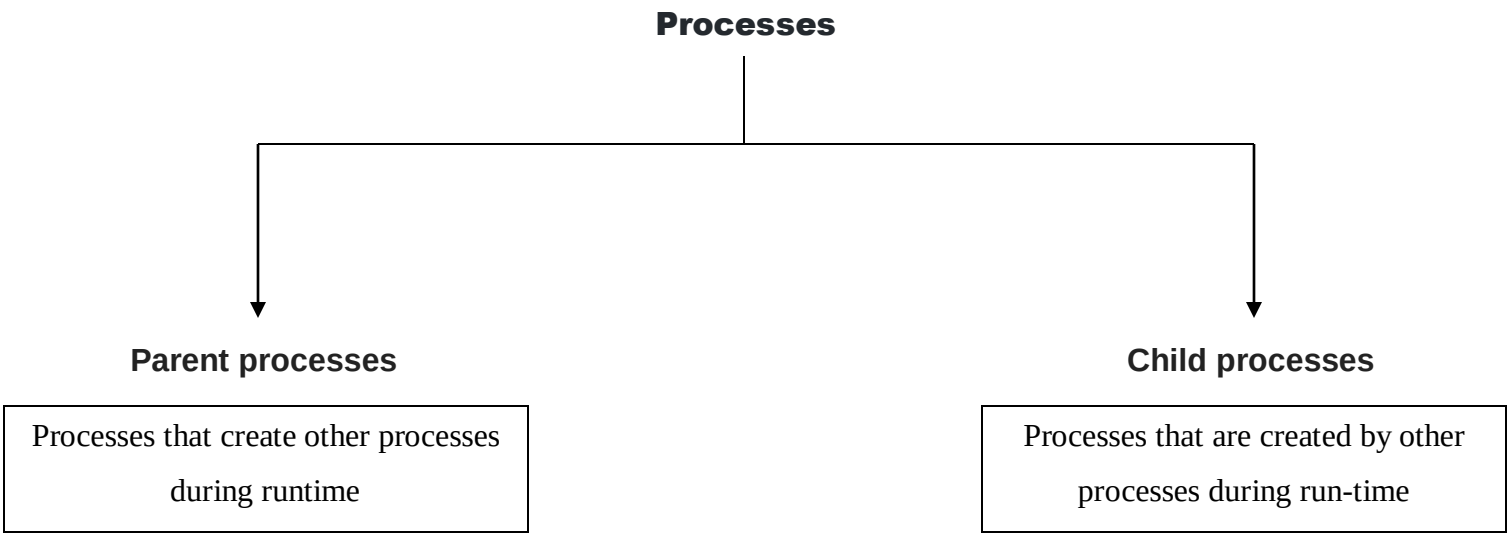
Validate → Compile → Test → Package → Install → Deploy

Command:

```
ifstat
```

Description:

Prints network interface statistics



Command:

```
pidof bash
```

Description:

Display the process IDs of a specific running program (Bash**)**

```
# Display the process ID of the current shell

echo $$

# Display the parent process ID of the current shell

echo $PPID
```

Command:

```
ps aux  | awk '{print $6/1024 " MBtt" $11}'  | sort -n
```

Description:

Display a list of most memory consuming processes

Github Fetch	Github Pull
Fetches the required information only to local repository	Fetches the required information not only to local repository but also to the workspace that you are currently working in

Github Pull = Github fetch + Merge

Combination of fetch and merge the content

Fetch the content

Docker registry	Docker repository
Service for hosting and distributing docker images	Collection of related Docker images

Selenium supports 2 types of testing:

- **Regression Testing** → retesting a product around an area where a bug was fixed.
- **Functional Testing** → testing of software features (functional points) individually.

Command:

```
ps aux  | awk '{print $6/1024 " MBtt" $11}'  | sort -n
```

Description:

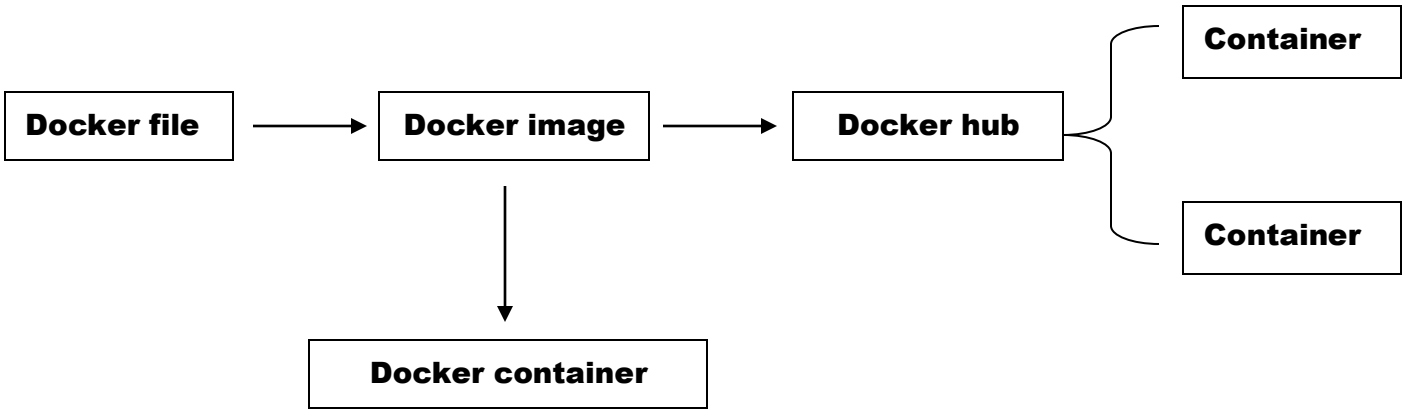
Display a list of most memory consuming processes

Command:

```
ps aux
```

Description:

Display all processes and their status and resource usage



Command:

```
last reboot
```

Description:

Show system reboot history

Command:

```
dmesg
```

Description:

Displays the messages from the kernel ring buffer (a data structure that records messages related to the operation of the kernel**)**

Command:

```
cat /proc/cpuinfo
```

Description:

Display CPU information

Command:

```
cat /proc/meminfo
```

Description:

Display memory information

Command:

```
lspci -tv
```

Description:

Display PCI (Peripheral Component Interconnect**) devices**

Command:

```
lsusb –tv
```

Description:

Display USB devices

Command:

```
free -h
```

Description:

Display free and used memory (-h for human readable, -m for MB, -g for GB**)**

Command:

```
mpstat 1
```

Description:

Display processor related statistics

Command:

```
vmstat 1
```

Description:

Display virtual memory statistics

Command:

```
iostat 1
```

Description:

Display Input / Output statistics

Command:

```
watch df -h
```

Description:

Execute "df -h" command, showing periodic updates

Command:

```
ps –ef
```

Description:

Display all the currently running processes on the system

Command:

```
ip a
```

Description:

Display all network interfaces and IP address

Command:

```
dig wikipedia.org
```

Description:

Display DNS information for domain (wikipedia.org**)**

Command:

```
host wikipedia.org
```

Description:

Display the IP address details of the specified domain (wikipedia.org**)**

Command:

```
netstat -nutlp
```

Description:

Display listening Transmission Control Protocol (TCP**) and the User Datagram Protocol (**UDP**) ports and corresponding programs**

Command:

```
rpm -qa
```

Description:

List all installed packages

Command:

```
yum list installed
```

Description:

List all installed packages (CentOS)

Command:

```
yum info httpd
```

Description:

Display description and summary information about package "httpd" **(CentOS)**

Command:

```
du -ah
```

Description:

Display disk usage for all files and directories in human readable format

Command:

```
du -sh
```

Description:

Display total disk usage off the current directory

Command:

```
cd /etc
```

Description:

Change to the /etc directory

Command:

```
ps -A
```

Description:

List the status of all the processes along with process id and PID

Command:

```
#include <stdio.h>
int main()
{
  printf("Hello world\n");
  return 0;
}
```

Hello.c

```
gcc Hello.c
```

Description:

Compile the C program saved in Hello.c file

Command:

```
#include <iostream>
int main()
{
std::cout << "Hello world!";
  return 0;
}
```

Hello.cpp

```
g++ Hello.cpp
```

Description:

Compile the C++ program saved in Hello.cpp file

Command:

```
tty
```

Description:

Displays the file name of the terminal connected to standard input

Command:

```
public class MyClass {
public static void main(String [] args) {
System.out.println("Hello, World!");
}
}

javac MyClass.java
```

MyClass.java

Description:

Compile the Java program saved in MyClass.java file using javac compiler

Command:

```
od -b myfiles.txt
```

Description:

Displays the contents of myfiles.txt **file in octal format**

Command:

```
od -c myfiles.txt
```

Description:

Displays the contents of myfiles.txt **file in character format**

Command:

```
od -An -c myfiles.txt
```

Description:

Displays the contents of myfiles.txt **file in character format but with no offset information**

Command:

```
csplit myfiles.txt 13 62 101
```

Description:

If the file **myfiles.txt** has 123 lines, the **csplit command** would create four files: the xx00 file would contain lines 1−12, the xx01 file would contain lines 13−61, the xx02 file would contain lines 62−100, the xx03 file would contain lines 101−123

Command:

```
md5sum myfiles.txt
```

Description:

Prints a 32-character (128-bit) checksum of myfiles.txt **file using the MD5 algorithm**

Command:

```
more myfiles.txt
```

Description:

Displays the content of myfiles.txt **file**

Command:

```
sha1sum myfiles.txt
```

Description:

Prints SHA1 (160-bit) checksum of myfiles.txt **file**

SHA 1 → Secure Hash Algorithm 1

Command:

```
shred myfiles.txt
```

Description:

Overwrites the myfiles.txt **file repeatedly − in order to make it harder for even very expensive hardware probing to recover the data**

Command:

```
cat myfile.txt

01. Einstein
02. Newton
03. Maxwell
04. Tesla
05. Edison

tac myfile.txt

05. Edison
04. Tesla
03. Maxwell
02. Newton
01. Einstein
```

Description:

Print the lines of myfile.txt **in reverse (from last line to first)**

Command:

```
chkconfig --list
```

Description:

Displays a list of system services and whether they are started (on) or stopped (off) in run levels 0−6

Command:

```
chkconfig --list
```

Description:

Displays a list of system services and whether they are started (on) or stopped (off) in run levels 0−6

Command:

```
halt -p
```

Description:

Power-off the system

Command:

```
lastlog
```

Description:

Prints the details of the last login (login-name, port and last login time**)**

Command:

```
lastlog -t 1
```

Description:

Displays the login information (1 day ago**)**

Command:

```
lastlog -u manju
```

Description:

Display lastlog information for a particular user (manju**)**

Command:

```
cat /etc/passwd
```

```
more /etc/passwd
```

```
less /etc/passwd
```

```
getent passwd
```

Description:

List all users on Linux

Command:

```
tail -5 /etc/passwd

head -5 /etc/passwd
```

Description:

List last 5 users on Linux

List first 5 users on Linux

Command:

```
wall "The system will be shutdown in 10 minutes."
```

Description:

The message (The system will be shutdown in 10 minutes.**) will be broadcasted to all users that are currently logged in**

Command:

```
chage -l manju
```

Description:

List the password and its related details for a user (manju**)**

Command:

```
chage -M 10 manju
```

Description:

Set Password Expiry Date for an user (manju**)**

Command:

```
chage -E "2020-07-30" manju
```

Description:

Set the Account Expiry Date for an User (manju**)**

Command:

```
chage -I 10 manju
```

Description:

Force the user (manju**) account to be locked after 10 inactivity days**

Command:

```
ftp 192.168.42.77
```

Description:

Connect to an FTP server at remote server IP address "192.168.42.77**"**

Command:

```
arp –a
```

Description:

Lists all the peers connected at various interfaces along with their MAC Addresses **and IP addresses**

Command:

```
dnsdomainname
```

Description:

Display the system's DNS domain name

Command:

```
domainname
```

Description:

Display the name of the domain your machine belongs to

Command:

```
echo 'Hello World!' | base64

Output: SGVsbG8gV29ybGQhCg==
```

Description:

Encode text (Hello World!**) to base64**

Command:

```
echo 'SGVsbG8gV29ybGQhCg==' | base64 -d

Output: Hello World!
```

Description:

Decode (SGVsbG8gV29ybGQhCg==**) to text (**Hello World!**)**

Command:

```
fc-cache -f –v
```

Description:

Build font information cache files

Command:

```
cat 1.txt

Einstein
Newton
Albert

fmt 1.txt

Einstein Newton Albert
```

Description:

Formats text in a single line

```
cat phy.txt

Albert Einstein was a German-born theoretical physicist, widely acknowledged to
be one of the greatest physicists of all time. Einstein is known for developing
the theory of relativity, but he also made important contributions to the
development of the theory of quantum mechanics.


fmt -w 1  phy.txt

 Albert
 Einstein
 was
 a
 German-born
 theoretical
 physicist,
 widely
 acknowledged
 to
 be
 one
 of
 the
 greatest
 physicists
 of
 all
 time.
 Einstein
 is
 known
 for
 developing
```

```
 the
 theory
 of
 relativity,
 but
 he
 also
 made
 important
 contributions
 to
 the
 development
 of
 the
 theory
 of
 quantum
 mechanics.
```

```
cat phy.txt

Albert Einstein was a German-born theoretical physicist, widely acknowledged to
be one of the greatest physicists of all time. Einstein is known for developing
the theory of relativity, but he also made important contributions to the
development of the theory of quantum mechanics.


fold -w 20  phy.txt

Albert Einstein was
```

```
 a German-born theor
etical physicist, wi
dely acknowledged to
 be one of the great
est physicists of al
l time. Einstein is
known for developing
 the theory of relat
ivity, but he also m
ade important contri
butions to the devel
opment of the theory
 of quantum mechanic
s.
```

Command:

```
traceroute google.com
```

Description:

Prints the route that a packet takes to reach the Google (172.217.26.206**) host from the local machine**

Command:

```
cat 1.txt
```

```
Einstein
Newton
Albert

gzip 1.txt

zcat 1.txt.gz

Einstein
Newton
Albert
```

Description:

View the contents of zipped file

Command:

```
zdiff 1.txt.gz 2.txt.gz
```

Description:

Compare the contents of two zipped files (1.txt.gz, 2.txt.gz**)**

Command:

```
ss | less
```

Description:

List all connections

Command:

```
ss -aA tcp
```

Description:

Filter out TCP (Transmission Control Protocol**) connections**

Command:

```
ss -aA udp
```

Description:

Filter out UDP (User Datagram Protocol**) connections**

Command:

```
ss -lnt
```

Description:

Display only listening sockets

Command:

```
ss -ltp
```

Description:

Print process name and PID

Command:

```
ss -s
```

Description:

Print summary statistics

Command:

```
ss -tl6
```

Description:

Display only IPv6 connections

Command:

```
ss -tl -f inet
```

Description:

Display only IPv4 socket connections

Command:

```
ss -t4 state established
```

Description:

Display all IPv4 TCP sockets that are in connected state

Command:

```
pmap 3244
```

Description:

View the memory map of a process with Process ID (3244**)**

Command:

```
apropos -r 'remove file'
```

Description:

Find command that removes file

Command:

```
apropos editor
```

Description:

Display information about the editing programs that are available on a system

Command:

```
apropos pstree
```

Description:

Provide information about the pstree command (which displays the names of the processes currently on the system in the form of a tree diagram**)**

The **apropos command** is useful when you know what you want to do, but you have no idea what command you should be using to do it. If you were wondering how to locate files, for example, the commands

apropos find

and

apropos locate

would have a lot of suggestions to offer.

```
basename /etc/passwd

Output: passwd

basename /usr/local/apache2/conf/httpd.conf
```

```
Output: httpd.conf
```

```
echo a b c d e f| xargs

Output: a b c d e f


echo a b c d e f| xargs -n 3

Output:                          display only 3 items per line

a b c
d e f
```

Command:

```
env
```

Description:

Print out a list of all environment variables

Command:

```
printenv HOME
```

Description:

Print HOME variable value

```
cat score.txt

Albert-30
John-50
William-80
Stephen-20
Justin-40

cut -d- -f2 score.txt

30
50
80
20
40

cut -d- -f1 score.txt

Albert
John
William
Stephen
Justin
```

```
cat 1.txt

Hello World


cat 2.txt

Computer Program


paste 1.txt  2.txt

Hello World   Computer Program
```

```
cat 1.txt

Hello World


cat 2.txt

Computer Program


join 1.txt  2.txt

Hello World   Computer Program
```

Command:

```
rev 1.txt
```

Description:

Reverse lines of a file (1.txt**)**

```
cat 3.txt

22
33
11
77
55

sort 3.txt

11
22
33
55
77
```

sorts numeric values in 3.txt file and displays sorted output

```
cat 1.txt

Hello World

cat 1.txt | tr "[a-z]" "[A-Z]"

HELLO WORLD
```

convert from lower case to upper case

```
cat 5.txt

zz
zz
yy
yy
yy
xx

uniq 5.txt

zz
yy
xx
```

removes duplicate lines and displays unique lines

```
cat 6.txt

Einstein
Newton
Tesla


nl 6.txt

1 Einstein
2 Newton
3 Tesla
```

numbers the lines in a file (6.txt)

Command:

```
ls -l *.txt
```

Description:

Lists the files with .txt **extension**

> The thing with Linux is that the developers themselves are actually customers too: that has always been an important part of Linux.
>
> **Linus Torvalds**

Linux	Unix
Free to use (**open source**)	Licensed Operating System (**closed source**)
Linux is just the kernel	Unix is a complete package of Operating System
Bash (**Bourne Again SHell**) is default shell for Linux	Bourne Shell is default shell for Unix
Portable and is booted from a USB Stick	Unportable
Source code is accessible to the general public	Source code is not accessible to anyone
Uses Graphical User Interface with an optional Command Line Interface	Uses Command Line Interface

Command:

```
echo $SHELL
```

Description:

Print the Default shell of user

Command:

```
echo $0
```

Description:

Display the name of the currently running process **($0 is the name of the running process**). If you use it inside of a shell then it will return the name of the shell. If you use it inside of a script, it will return the name of the script

Command:

```
echo *
```

Description:

Print all files and folders − similar to ls command

Command:

```
ps -p $$

Output:

   PID  TTY       TIME   CMD
  3352 pts/0    00:00:00 bash
```

Description:

Print the process ID of the current shell ($$ is the process ID of the current shell)

Command:

```
cat /etc/shells
```

Description:

List shells

Command:

```
last
```

Description:

List last logins of users and what happened such as "shutdown**" or "**crash**" etc.**

Command:

```
last
```

Description:

List last logins of users and what happened such as "shutdown**" or "**crash**" etc.**

Command:

```
bzip2 -k phy.txt
```

Description:

Compresses but does not deletes the original file

phy.txt → phy.txt.bz2

Command:

```
bzip2 -d phy.txt.bz2
```

Description:

Decompresses the compressed file (phy.txt.bz2**)**

phy.txt.bz2 → phy.txt

Command:

```
bzcat phy.txt.bz2
```

Description:

Display the contents of compressed file (phy.txt.bz2**)**

Command:

```
bunzip2 phy.txt.bz2
```

Description:

Decompresses the compressed file (phy.txt.bz2**)**

Command:

```
crontab -l
```

Description:

Display current logged-in user's crontab entries

```
cat /dev/null > phy.txt
```

```
cp /dev/null phy.txt
```

```
echo "" > phy.txt
```

```
echo > phy.txt
```

Description:

Empty the content of a file (phy.txt**)**

Command:

```
nohup ping google.com &
```

Description:

Ping google.com **and send the process to the background**

Command:

```
nohup ping google.com > log.txt &
```

Description:

Save the ping logs to log.txt

```
pgrep -a ping

Output:

3858 ping google.com
4200 ping google.com
4236 ping google.com

kill 3858

pgrep -a ping

Output:

4200 ping google.com
4236 ping google.com
```

Command:

```
ls -la /home
```

Description:

Display the contents of /home

Command:

```
sudo shutdown 2
```

Description:

Power-off the machine after 2 minutes

Command:

```
shutdown -c
```

Description:

Cancel the shutdown process

Command:

```
pr 36.txt
```

Description:

Display the contents of the file (36.txt**) one page after the other**

Command:

```
stty –a
```

Description:

Display all current terminal settings

Command:

```
ls -1
```

Description:

List files one per line

Command:

```
yes John
```

Description:

Outputs a string (John**) repeatedly until killed**

Command:

```
vdir
```

Description:

List files and directories in the current directory (one per line**) with details**

Command:

```
who -b
```

Description:

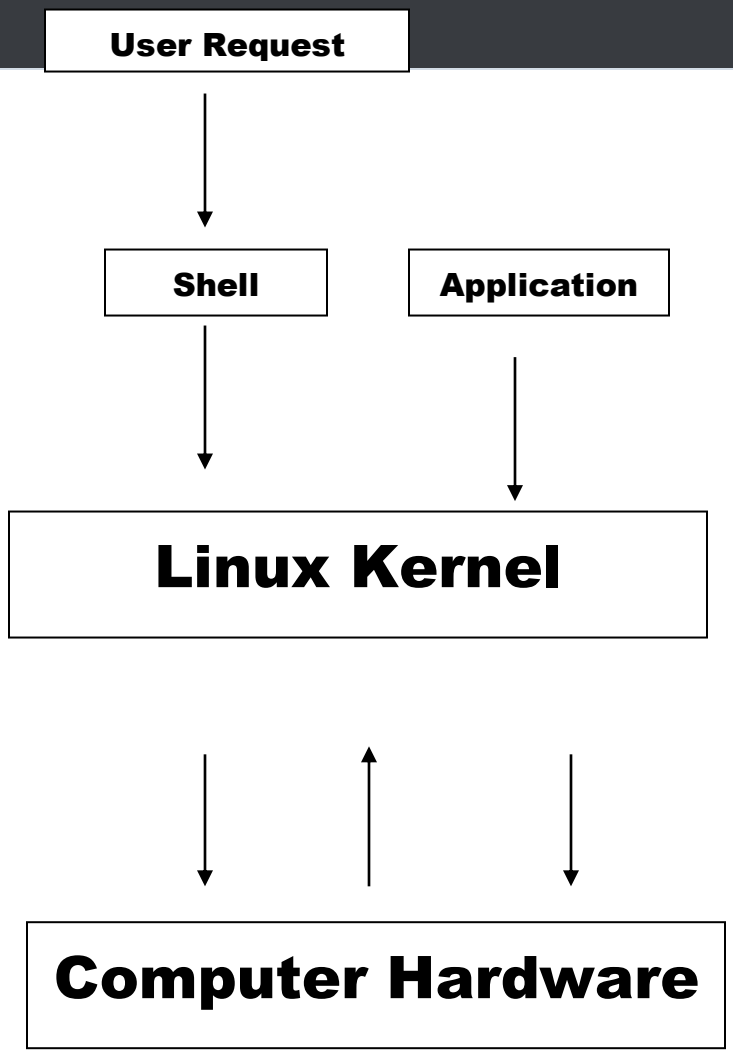
Print when the system was booted

```
# Open phy.txt with nano
```

```
nano phy.txt


# Open phy.txt with vim

vim phy.txt
```




```
w --ip-addr
```

```
# Displays information regarding the users currently on the machine, login time, IDLE time,
TTY and CPU time

Output:

11:12:10 up  1:29,  2 users,  load average: 0.02, 0.04, 0.10
USER     TTY      FROM  LOGIN@   IDLE   JCPU   PCPU WHAT
manju    :0       :0    02:43   ?xdm?   3:30   0.65s gdm-session-worker [pa
manju    pts/0    :0    11:01    2.00s  0.10s  0.01s w --ip-addr

w –short
# Omits CPU time and login information
Output:

11:11:46 up  1:28,  2 users,  load average: 0.02, 0.04, 0.11
USER     TTY      FROM              IDLE WHAT
manju    :0       :0               ?xdm?  gdm-session-worker [pam/gdm-password]
manju    pts/0    :0                2.00s w --short
```

Command:

```
findmnt
```

Description:

Display a list of currently mounted file systems

Command:

```
ip addr show
```

Description:

List IP addresses and network interfaces

Command:

```
netstat -pnltu
```

Description:

List active (listening) ports

Command:

```
Journalctl
```

Description:

Display systemd, kernel and journal logs

Command:

```
sudo systemctl status network
```

Description:

Display the status of network service

Command:

```
sudo systemctl start network
```

Description:

Start the network service

Command:

```
sudo systemctl stop network
```

Description:

Stop the network service

Command:

```
sestatus -b
```

Description:

Display the current state of Booleans

Command:

```
getenforce
```

Description:

Reports whether SELinux **is enforcing, permissive or disabled**

Security-Enhanced Linux (SELinux) is a security architecture for Linux systems that allows administrators to have more control over who can access the system

```
setenforce 0
```

```
getenforce
```

```
Output:

Permissive
```

```
setenforce 1
```

```
getenforce
```

```
Output:

Enforcing
```

- **Enforcing** - SELinux security policy is enforced.
- **Permissive** - SELinux prints warnings instead of enforcing.
- **Disabled** - No SELinux policy is loaded.

Command:

```
sestatus
```

Description:

Display the current status of the SELinux that is running on your system

Command:

```
ps -aef
```

Description:

Display full listing of processes on your system

Command:

```
sar
```

Description:

Display System Activity Report

Command:

```
ulimit
```

Description:

Report the resource limit of the current user

```
Output:

Unlimited        The current user can consume all the resources the current system supports
```

2 types of resource limitation:

- **Hard resource limit:** The physical limit that the user can reach.
- **Soft resource limit:** The limit that is manageable by the user (**its value can go up to the hard limit**)

Command:

```
ulimit -a
```

Description:

Report all the resource limits for the current user

Command:

```
ulimit –s
```

Description:

Check the maximum stack size of the current user

Command:

```
ulimit –e
```

Description:

Check out the max scheduling priority of the current user

Command:

```
ulimit -u
```

Description:

Display the maximum number of user processes

Command:

```
ulimit -v
```

Description:

Check out the size of virtual memory

Command:

```
ulimit -n
```

Description:

Check out how many file descriptors a process can have

Command:

```
man limits.conf
```

Description:

Display the in-depth information on the limits.conf **configuration file**

Command:

```
sar -V
```

Description:

Display the sar version

Command:

```
sar -u 2 5
```

Description:

Report CPU details total 5 times with the interval of 2 seconds

Command:

```
sar -n DEV 1 3 | egrep -v lo
```

Description:

Report about network interface, network speed, IPV4, TCPV4, ICMPV4 network traffic and errors

Command:

```
sar -v 1 3
```

Description:

Report details about the process, kernel thread, i-node, and the file tables

Command:

```
sar -S 1 3
```

Description:

Report statistics about swapping

Command:

```
sar -b 1 3
```

Description:

Report details about I/O operations like transaction per second, read per second, write per second

Command:

```
sudo systemctl status firewalld
```

Description:

Display the status of the firewalld

Command:

```
sudo systemctl start firewalld
```

Description:

Start the firewalld **service**

firewalld is a firewall management tool for Linux operating systems

Command:

```
firewall-config
```

Description:

Start the graphical firewall configuration tool

firewall-cmd

Command:

```
firewall-cmd --list-all-zones
```

Description:

List all zones

Command:

```
firewall-cmd --get-default-zone
```

Description:

Check the currently set default zone

Command:

```
firewall-cmd --list-services
```

Description:

Display currently allowed service on your system

Command:

```
firewall-cmd --list-ports
```

Description:

List the ports that are open on your system

Command:

```
firewall-cmd --zone=work --list-services
```

Description:

List services that are allowed for the public zone

Command:

```
mtr --report google.com
```

Description:

Provides information about the route that Internet traffic takes between the local system and a remote host (google.com**)**

Command:

```
sudo yum install samba
```

Description:

install Samba (CentOS**)**

Samba is client/server technology that implements network resource sharing across operating systems. With Samba, files and printers can be shared across Windows, Mac and Linux/UNIX clients.

Command:

```
sudo firewall-cmd --add-service samba –permanent
```

Description:

Add Samba service to firewalld

Command:

```
zip q.zip q.txt
```

Description:

Create a zip file (q.zip**)**

Command:

```
unzip q.zip
```

Description:

Unzip a zip file (q.zip**)**

```
zipcloak q.zip

-----------------------------------------------------------------------------

# zipcloak prompts you for a password, and then ask you to confirm it:

   Enter password:
   Verify password:

...if the passwords match, it encrypts q.zip file

-----------------------------------------------------------------------------


unzip q.zip


#  When you try to unzip the q.zip file, it prompts you for the password before
allowing you to extract the file (q.txt) it contains
```

Command:

```
zgrep -l "Einstein" *
```

Description:

Display the names of the files with the word (Einstein**) present in it**

Command:

```
zipsplit -n 1048576 q.zip
```

Description:

Split q.zip **file to create a sequence of zipfiles** (q1.zip, q2.zip…..) − each no larger than **1048576 bytes** (one megabyte)

```
You could concatenate (q1.zip, q2.zip…..) into a new file, w.zip, with the
command:

                                cat q*.zip > w.zip
```

Git Commands

Description:

Display information about previous commits.

Command:

```
git log
```

Description:

Display information about previous commits (detailed).

Command:

```
git log --summary
```

Description:

Display information about previous commits (briefly).

Command:

```
git log --oneline
```

Description:

Obtain the repository "Git-Commands" from the URL "https:// github.com/ manjunath5496/Git-Commands.git".

Command:

```
git clone https://github.com/manjunath5496/Git-Commands.git
```

Description:

Display most commonly used git commands.

Command:

```
git help
```

Description:

Display git version.

Command:

```
git version
```

Description:

Set the basic configurations on github (your name and email).

Command:

```
git config --global user.name "myw3schools"
git config --global user.email myw3schools@gmail.com
```

Description:

Check status.

Command:

```
git status
```

Description:

List all branches (local and remote).

Command:

```
git branch -a
```

Description:

Display Git configurations.

Command:

```
git config --list
```

Description:

Add an empty file "test.txt" to an existing repo "colors".

Command:

```
touch test.txt
git init
git add test.txt
git commit -m "first commit"
git remote add origin git@github.com:myw3schools/colors.git
git push -u origin main
```

My first official teaching job was at GIT, which was fantastic because I wanted to pay the rent and I got to stay in the building, which is an inspiring place to be - the vibe was there. My first gig was doing private lessons. It went great. Then they decided to promote me to a classroom teacher. I taught a class called Single String Technique.

Paul Gilbert

Linus Benedict Torvalds is a Finnish-American software engineer who is the creator and, historically, the main developer of the Linux kernel, used by Linux distributions and other operating systems such as Android and Chrome OS.

References:

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