

Re: dev-ops traning materials

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Fri 20/09/2019 17:59

To: Vishal Gupta <Vishal.Gupta@synechron.com>

Chetan Email : chetan.talwar@thinknyx.com / @gmail.com**Day 5 (Jenkins)****Install jenkins**

```

root@master:/home/ubuntu# apt-get update
root@master:/home/ubuntu# apt-get install openjdk-8-jdk (java is required to run jenkins)
root@master:/home/ubuntu# java -version
root@master:/home/ubuntu# wget -q -O - https://pkg.jenkins.io/debian/jenkins-ci.org.key | sudo apt-key add (adding key for authentication purpose)
OK
root@master:/home/ubuntu#
root@master:/home/ubuntu#
root@master:/home/ubuntu# echo deb https://pkg.jenkins.io/debian-stable binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list (adding entry to /etc/apt
list for jenkins)
deb https://pkg.jenkins.io/debian-stable binary/
root@master:/home/ubuntu#

```

```

root@master:/home/ubuntu# apt-get update
Hit:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease
Get:5 https://pkg.jenkins.io/debian-stable binary/ Release [2042 B]
Get:6 https://pkg.jenkins.io/debian-stable binary/ Release.gpg [181 B]
Hit:7 http://ppa.launchpad.net/ansible/ansible/ubuntu bionic InRelease
Get:8 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:9 https://pkg.jenkins.io/debian-stable binary/ Packages [15.2 kB]
Fetched 269 kB in 1s (453 kB/s)
Reading package lists... Done
root@master:/home/ubuntu#
root@master:/home/ubuntu# apt-get install jenkins

```

```

root@master:/home/ubuntu# service jenkins status
● jenkins.service - LSB: Start Jenkins at boot time
   Loaded: loaded (/etc/init.d/jenkins; generated)
   Active: active (exited) since Fri 2019-09-20 06:06:47 UTC; 3min 23s ago
     Docs: man:systemd-sysv-generator(8)
    Tasks: 0 (limit: 1152)
   CGroup: /system.slice/jenkins.service

```

```

Sep 20 06:06:46 master systemd[1]: Starting LSB: Start Jenkins at boot time...
Sep 20 06:06:46 master jenkins[9292]: Correct java version found
Sep 20 06:06:46 master jenkins[9292]: * Starting Jenkins Automation Server jenkins
Sep 20 06:06:46 master su[9338]: Successful su for jenkins by root
Sep 20 06:06:46 master su[9338]: + ??? root:jenkins
Sep 20 06:06:46 master su[9338]: pam_unix(su:session): session opened for user jenkins by (uid=0)
Sep 20 06:06:46 master su[9338]: pam_unix(su:session): session closed for user jenkins
Sep 20 06:06:47 master jenkins[9292]: ...done.
Sep 20 06:06:47 master systemd[1]: Started LSB: Start Jenkins at boot time.
root@master:/home/ubuntu#

```

Steps to be done post jenkins installation

- Jetty webserver gets installed with jenkins, by default 8080 port is exposed
- Add 8080 to security window
- click <http://18.220.65.166:8080/login?from=%2F> (public ip : exposed port number in security group)

Not secure | 18.220.65.166:8080/login?from=%2F

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

```
/var/lib/jenkins/secrets/initialAdminPassword
```

Please copy the password from either location and paste it below.

Administrator password

-
- root@master:/home/ubuntu# cat /var/lib/jenkins/secrets/initialAdminPassword
5299eee756664b579a7038346121c6e1
- Select plugin to install
- On webpage select NONE option and install
- enter user/password (admin/1234)
- Jenking url <http://18.220.65.166:8080/>
- Start using Jenkins
- when Jenkins installed, it created a user with name jenkins on UNIX box
- jenkins:x:111:116:Jenkins,,,:/var/lib/jenkins:/bin/bash
root@master:/home/ubuntu# cat /etc/passwd | grep jenkins
jenkins:x:111:116:Jenkins,,,:/var/lib/jenkins:/bin/bash
- Click on new item on web page to create a new project and configure project

GIT plugin to Jenkins

1. add GIT plugins to Jenkins

The screenshot shows the Jenkins web interface. The top navigation bar includes the Jenkins logo, a search bar, and the user name 'vishal gu'. Below the navigation bar, the 'Plugin Manager' page is displayed. On the left sidebar, there are links for 'Back to Dashboard', 'Manage Jenkins', and 'Update Center'. The main content area has tabs for 'Updates', 'Available', 'Installed', and 'Advanced'. The 'Installed' tab is selected, showing a list of installed plugins. A filter 'github' is applied to the list. The list includes the following plugins:

Enabled	Name ↓	Version	Previously installed version
<input checked="" type="checkbox"/>	Apache HttpComponents Client 4.x API Plugin Bundles Apache HttpComponents Client 4.x and allows it to be used by Jenkins plugins.	4.5.10-1.0	
<input checked="" type="checkbox"/>	Credentials Plugin This plugin allows you to store credentials in Jenkins.	2.3.0	
<input checked="" type="checkbox"/>	Display URL API Provides the DisplayURLProvider extension point to provide alternate URLs for use in notifications	2.3.2	
<input checked="" type="checkbox"/>	Git client plugin Utility plugin for Git support in Jenkins	2.8.6	
<input checked="" type="checkbox"/>	Git plugin This plugin integrates Git with Jenkins.	3.12.1	
<input checked="" type="checkbox"/>	GitHub API Plugin This plugin provides GitHub API for other plugins.	1.95	
<input checked="" type="checkbox"/>	GitHub plugin	1.79.4	

2. Jenkins webbook url : <http://18.220.65.166:8080/github-webhook/> (string 'github-webhook/' need to appended to Jenkins URL)

3. Configuring GIT project to Jenkins build project as shown below

The screenshot shows the Jenkins configuration page for a project named 'dev-ops-git-hub'. The 'Source Code Management' tab is selected. Under the 'Git' section, the 'Repositories' field is set to 'https://github.com/vikasam1/dev-ops2.git' with credentials set to '- none -'. The 'Branches to build' section has a 'Branch Specifier (blank for \'any\')' set to '*/master'. The 'Repository browser' is set to '(Auto)'. Under 'Build Triggers', the 'GitHub hook trigger for GITScm polling' checkbox is checked.

4. Configuring Jenkins webhook URL into GIT hub so that it will auto send update to Jenkins in case any changes done to GIT master -- This is **push** mechanish where GIT wil push changes of branch to Jenkins

The screenshot shows the GitHub repository page for 'vikasam1 / dev-ops2'. The 'Settings' tab is selected. On the left sidebar, 'Webhooks' is highlighted. The 'Webhooks' section shows a single webhook configured with the URL 'http://18.220.65.166:8080/github-webhook/' for 'all events'. The 'Add webhook' button is visible at the top right.

5. Also we need to enable below setting in jenkins project

The screenshot shows the Jenkins configuration page for 'dev-ops-git-hub' with the 'Build Triggers' tab selected. The 'Build Triggers' section shows the 'GitHub hook trigger for GITScm polling' checkbox checked, while other options like 'Trigger builds remotely', 'Build after other projects are built', 'Build periodically', and 'Poll SCM' are unchecked.

6. To run periodic build (In case of backup) -- crontab

The screenshot shows the Jenkins configuration page for 'dev-ops-git-hub' with the 'Build Triggers' tab selected. The 'Build Triggers' section shows the 'Build periodically' checkbox checked. The 'Schedule' field is empty, and a warning message at the bottom states 'No schedules so will never run'.

Build maven based project on jenkins

1. apt-get install maven (this is manual way to install)
2. Intall via jenkins

The screenshot shows the Jenkins 'Global Tool Configuration' page. Under the 'Maven Configuration' section, the 'Default settings provider' and 'Default global settings provider' are both set to 'Use default maven settings'. The 'JDK' section is partially visible at the bottom.

Add Git

Maven

Maven installations

Add Maven

Maven

Name

maven362

Install automatically

Install from Apache

Version

3.6.2

Delete

Add Installer

3. Configure maven in jenkins project

Jenkins

dev-ops-git-hub

General

Source Code Management

Build Triggers

Build

Post-build Actions

Build Triggers

Trigger builds remotely (e.g., from scripts)

Build after other projects are built

Build periodically

☒ GitHub hook trigger for GITScm polling

Poll SCM

Build

Invoke top-level Maven targets

Maven Version


maven362

Goals

Advanced...

Add build step

4. Confiure the maven project like as shown in below (maven java git link <https://github.com/thechetantalwar/java-demos>)



thechetantalwar/java-demos

Contribute to thechetantalwar/java-demos development by creating an account on GitHub.

github.com

Jenkins

dev-ops-maven

General

Source Code Management

Build Triggers

Build

Post-build Actions

Source Code Management

None

☒ Git

Repositories

Repository URL

https://github.com/thechetantalwar/java-demos

Credentials

- none -

Add

Advanced...

Add Repository

Branches to build

Branch Specifier (blank for 'any')

*/master

Add Branch

Jenkins

dev-ops-maven

General

Source Code Management

Build Triggers

Build

Post-build Actions

Build Triggers

Trigger builds remotely (e.g., from scripts)

Build after other projects are built

Build periodically

☒ GitHub hook trigger for GITScm polling

Poll SCM

Build

Invoke top-level Maven targets

Maven Version

maven362

Goals

package

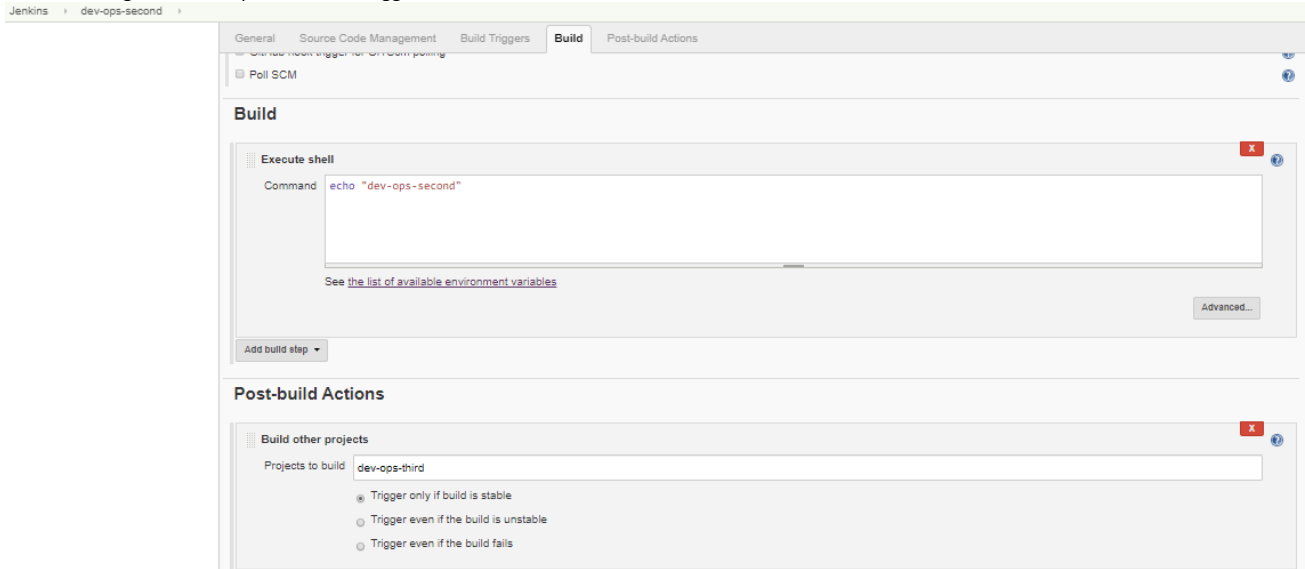
Advanced...

Create pipeline in Jenkins

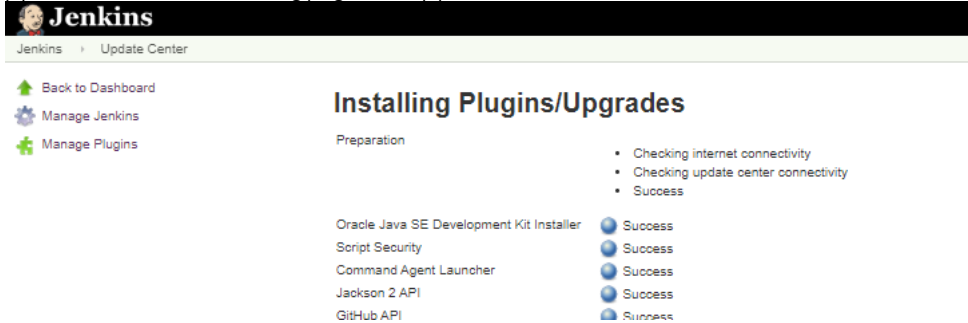
<https://outlook.office365.com/mail/deeplink?version=2020012701.14&popoutv2=1>

4/18

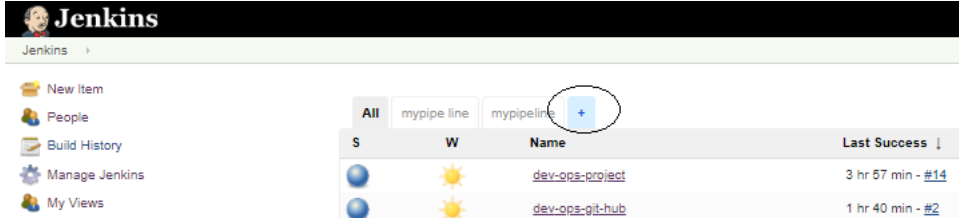
1. once a existing build is complted, we can triggre next one as shown below.

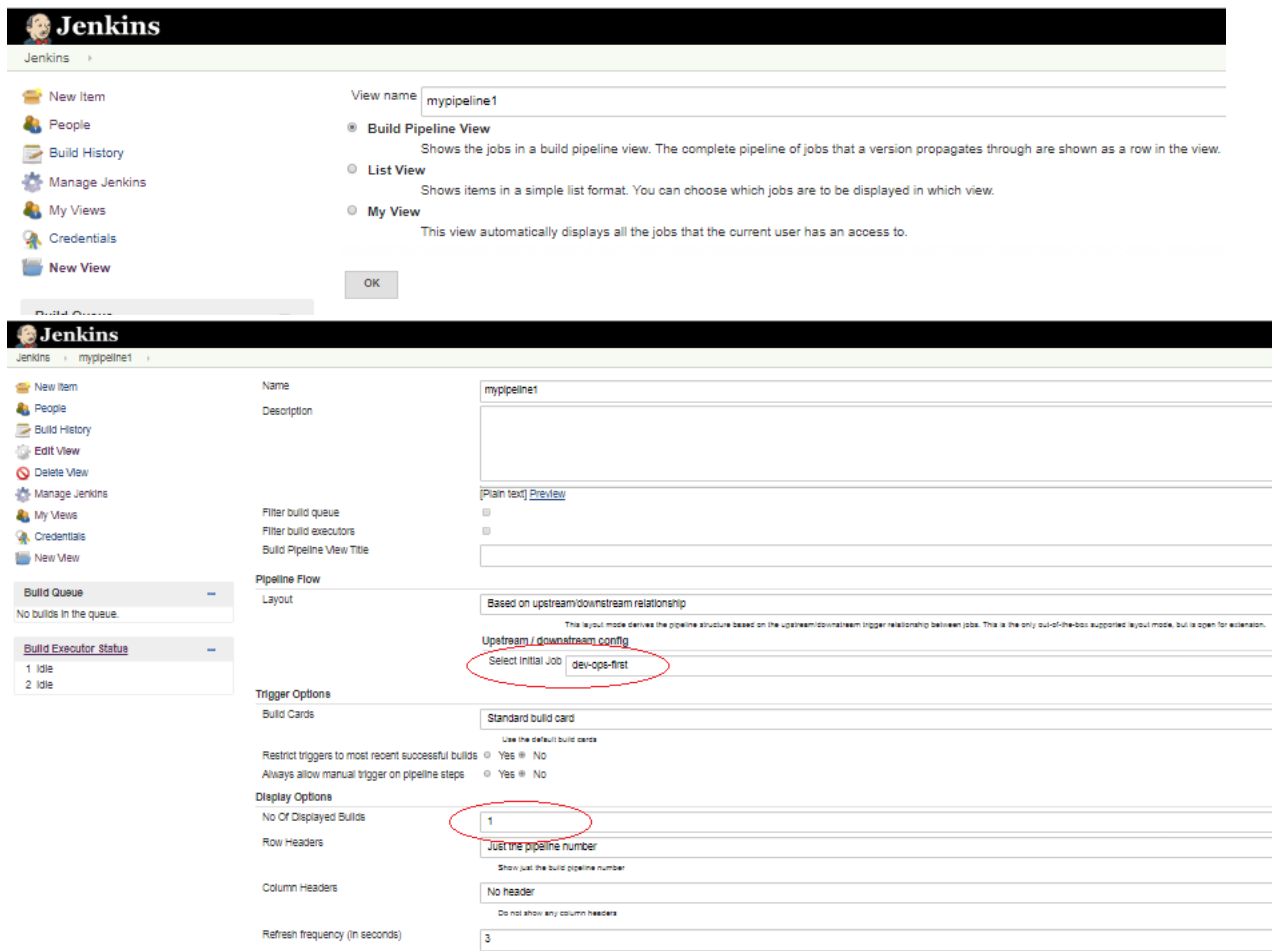


2. pipe line can also be created using plugin "build pipeline"



3. Now we need to configure like below





Jenkins

View name: mypipeline1

- ☒ **Build Pipeline View**
Shows the jobs in a build pipeline view. The complete pipeline of jobs that a version propagates through are shown as a row in the view.
- ☐ **List View**
Shows items in a simple list format. You can choose which jobs are to be displayed in which view.
- ☐ **My View**
This view automatically displays all the jobs that the current user has an access to.

OK

Jenkins

Name: mypipeline1

Description:

[Plain text] [Preview](#)

Filter build queue: ☐

Filter build executors: ☐

Build Pipeline View Title:

Pipeline Flow

Layout: Based on upstream/downstream relationship

Upstream / downstream config

Select Initial Job: dev-ops-first

Trigger Options

Build Cards: Standard build card

Use the default build cards: ☐

Restrict triggers to most recent successful builds: ☐ Yes ☒ No

Always allow manual trigger on pipeline steps: ☐ Yes ☒ No

Display Options

No Of Displayed Builds: 1

Row Headers: Just the pipeline number

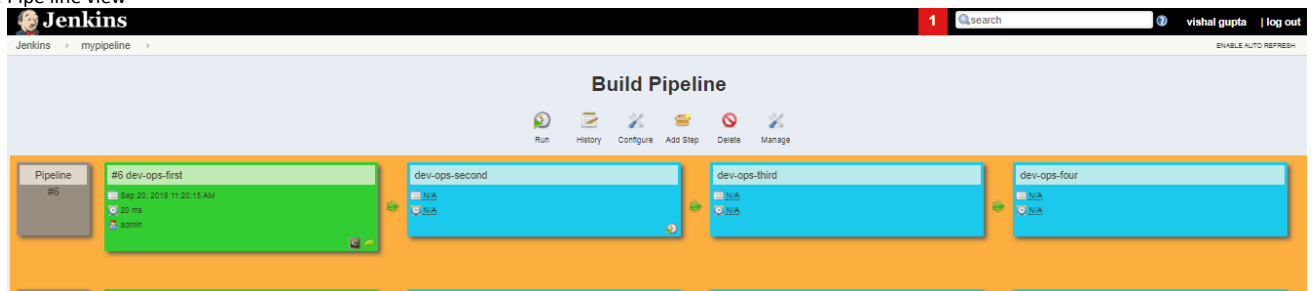
Show just the build pipeline number: ☐

Column Headers: No header

Do not show any column headers: ☐

Refresh frequency (in seconds): 3

4. Pipe line view

**Adding jenkins to docker user group**

```
root@master:/home/ubuntu/playbook/test# usermod -aG docker jenkins
root@master:/home/ubuntu/playbook/test# service jenkins restart
```

java git repo to jenkins integration - <https://github.com/thechetantalwar/java-demos>

From: Vishal Gupta <Vishal.Gupta@synechron.com>
Sent: 19 September 2019 17:48
To: Vishal Gupta <Vishal.Gupta@synechron.com>
Subject: Re: dev-ops tranning materials

Day 4 (docker & container)**install docker**

```
root@master:/etc/ansible# apt-get update
root@master:/etc/ansible# apt-get install docker.io
root@master:/etc/ansible# docker --version
Docker version 18.09.7, build 2d0083d
root@master:/etc/ansible#
```

docker registry

```
root@master:/var/lib/docker# docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
root@master:/var/lib/docker#
```

pull docker image from global registry

```

root@master:/var/lib/docker# docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
5667fdb72017: Pull complete
d83811f270d5: Pull complete
ee671aafb583: Pull complete
7fc152dfb3a6: Pull complete
Digest: sha256:b88f8848e9a1a4e4558ba7cfc4acc5879e1d0e7ac06401409062ad2627e6fb58
Status: Downloaded newer image for ubuntu:latest
root@master:/var/lib/docker# docker images
REPOSITORY    TAG       IMAGE ID      CREATED        SIZE
ubuntu        latest    2ca708c1c9cc  7 hours ago    64.2MB
root@master:/var/lib/docker#

```

create a container

```
root@master:/var/lib/docker# docker run ubuntu (image name) -- this is used to create containers
```

```
root@master:/var/lib/docker# docker ps (list of running container)
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
--------------	-------	---------	---------	--------	-------	-------

```
root@master:/var/lib/docker# docker ps -a (list of running container in-respective of state running/stopped)
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
0e601955b0f4	ubuntu	"/bin/bash"	2 minutes ago	Exited (0)	About a minute ago	objective_noyce

```
root@master:/var/lib/docker# docker run centos (as centos is not there, it will first download it)
```

```
Unable to find image 'centos:latest' locally
```

```
latest: Pulling from library/centos
```

```
d8d02d457314: Pull complete
```

```
Digest: sha256:307835c385f656ec2e2fec602cf093224173c51119bbebd602c53c3653a3d6eb
```

```
Status: Downloaded newer image for centos:latest
```

```
root@master:/var/lib/docker# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
8e9834aa9a27	centos	"/bin/bash"	12 seconds ago	Exited (0)	10 seconds ago	heuristic_mclean
0e601955b0f4	ubuntu	"/bin/bash"	5 minutes ago	Exited (0)	5 minutes ago	objective_noyce

If I run "docker run centos" again, it will create another instance of centos container

```
root@master:/var/lib/docker# docker run centos
```

```
root@master:/var/lib/docker#
```

```
root@master:/var/lib/docker# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
9a01dc4a76f4	centos	"/bin/bash"	3 seconds ago	Exited (0)	2 seconds ago	epic_ride
8e9834aa9a27	centos	"/bin/bash"	2 minutes ago	Exited (0)	2 minutes ago	heuristic_mclean
0e601955b0f4	ubuntu	"/bin/bash"	7 minutes ago	Exited (0)	7 minutes ago	objective_noyce

delete a container/images

```
root@master:/var/lib/docker# docker rm epic_ride
```

```
epic_ride
```

```
root@master:/var/lib/docker# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
8e9834aa9a27	centos	"/bin/bash"	7 minutes ago	Exited (0)	7 minutes ago	heuristic_mclean
0e601955b0f4	ubuntu	"/bin/bash"	12 minutes ago	Exited (0)	12 minutes ago	objective_noyce

```
delete a image - docker rmi <image name/image id >
```

deleting all the containers in single command

```
docker rm -f $(docker ps -a -q) -- this is for container
```

```
docker rmi -f $(docker images -a -q) -- this is for images
```

Connect to container

```
root@master:/var/lib/docker# docker run -it ubuntu /bin/bash (i= interactive, t=tty)
```

```
root@80891fed806b:/# hostname
```

```
80891fed806b
```

```
root@80891fed806b:/#
```

```
root@80891fed806b:/# ps -ef
```

```

UID    PID  PPID  C  STIME TTY      TIME CMD
root    1   0  0 06:57 pts/0  00:00:00 /bin/bash
root   11   1  0 06:58 pts/0  00:00:00 ps -ef

```

```
root@80891fed806b:/#
```

```
root@80891fed806b:/# exit
```

```
exit
```

```
root@master:/var/lib/docker#
```

download vi in container

```
root@5cbfbb478d76:/# whoami
```

```
root
```

```
root@5cbfbb478d76:/# vi abc.txt
```

```
bash: vi: command not found
```

```
root@5cbfbb478d76:/# apt-get update
```

```

root@5cbfbb478d76:/# apt-get install vim
root@5cbfbb478d76:/# vi abc.txt
root@5cbfbb478d76:/#
root@5cbfbb478d76:/# cat abc.txt
jhjdhhd

```

connect to container with active session (create a demon process for container - deattcahed mode)

```

root@master:/var/lib/docker# docker run -it ubuntu /bin/bash
root@28752077beaf:/# mkdir dev-ops

```

cont+P+Q -- this is command to keep container in running mode

```

root@28752077beaf:/# root@master:/var/lib/docker# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
28752077beaf   ubuntu    "/bin/bash"             About a minute ago Up About a minute      flamboyant_swanson
root@master:/var/lib/docker# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
28752077beaf   ubuntu    "/bin/bash"             About a minute ago Up About a minute      flamboyant_swanson
5cbfbb478d76   ubuntu    "/bin/bash"             13 minutes ago   Exited (0) 8 minutes ago    musing_cartwright
8e9834aa9a27   centos    "/bin/bash"             36 minutes ago   Exited (0) 36 minutes ago    heuristic_mclean
root@master:/var/lib/docker#
root@master:/var/lib/docker# docker attach 28752077beaf (docker attcah container id/name)
root@28752077beaf:/#
root@master:/var/lib/docker# docker attach 28752077beaf (if you try to attcah non-running container)
You cannot attach to a stopped container, start it first
root@master:/var/lib/docker#

```

run container as demon process

```

root@master:/var/lib/docker# docker run -d nginx (d is for demon)
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
b8f262c62ec6: Pull complete
a6639d774c21: Pull complete
22a7aa8442bf: Pull complete
Digest: sha256:9688d0dae8812dd2437947b756393eb0779487e361aa2ffbc3a529dca61f102c
Status: Downloaded newer image for nginx:latest
8ce917319540a7739f57e6a85903f022404f23c5f3d9fbee6a1bbe50f202331d
root@master:/var/lib/docker# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
8ce917319540   nginx     "nginx -g 'daemon of..." 7 seconds ago   Up 6 seconds   80/tcp         boring_germain
root@master:/var/lib/docker#

```

ip address of container

```

root@master:/var/lib/docker# ifconfig
docker0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255 (container running the VM will get IP from this range)
    inet6 fe80::42:9aff:fe9f:9765 prefixlen 64 scopeid 0x20<link>
    ether 02:42:9a:9f:97:65 txqueuelen 0 (Ethernet)
    RX packets 10208 bytes 538127 (538.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 13685 bytes 30925512 (30.9 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

```

root@master:/var/lib/docker# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
8ce917319540   nginx     "nginx -g 'daemon of..." 4 minutes ago   Up 4 minutes   80/tcp         boring_germain
root@master:/var/lib/docker#
root@master:/var/lib/docker#
root@master:/var/lib/docker# docker inspect 8ce917319540
[
  {
    "Id": "8ce917319540a7739f57e6a85903f022404f23c5f3d9fbee6a1bbe50f202331d",
    ..
    ..
    "IPAddress": "172.17.0.2",
    "IPPrefixLen": 16,
    "IPv6Gateway": "",
    "GlobalIPv6Address": "",
    "GlobalIPv6PrefixLen": 0,
    "MacAddress": "02:42:ac:11:00:02",
    "DriverOpts": null
  }
]

```

```

root@master:/var/lib/docker# curl 172.17.0.2
<!DOCTYPE html>
<html>

```



```
<head>
<title>Welcome to nginx!</title>
<style>
  body {
    width: 35em;
    margin: 0 auto;
    font-family: Tahoma, Verdana, Arial, sans-serif;
  }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
```

```
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
```

```
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

```
root@master:/var/lib/docker#
```

starting/stopping demon container

```
root@master:/var/lib/docker# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
8ce917319540   nginx    "nginx -g 'daemon of..." 12 minutes ago  Exited (0) 2 minutes ago
8e9834aa9a27   centos   "/bin/bash"              2 hours ago    Exited (0) 2 hours ago    heuristic_mclean
```

```
root@master:/var/lib/docker#
```

```
root@master:/var/lib/docker# docker start 8ce917319540
```

```
root@master:/var/lib/docker# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
8ce917319540   nginx    "nginx -g 'daemon of..." 13 minutes ago  Up 18 seconds  80/tcp         boring_germain
8e9834aa9a27   centos   "/bin/bash"              2 hours ago    Exited (0) 2 hours ago    heuristic_mclean
```

connect to demon container

```
root@master:/var/lib/docker# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
8ce917319540   nginx    "nginx -g 'daemon of..." 17 minutes ago  Up 4 minutes  80/tcp         boring_germain
root@master:/var/lib/docker# docker exec -it 8ce917319540 /bin/bash
root@8ce917319540:/#
root@8ce917319540:/# hostname
8ce917319540
```

runnign process related in docker on VM (here 1 process for for docker & 1 process for container is runnign)

```
root@master:/var/lib/docker# ps -ef | grep -i docker
root   3964   1  0 06:04 ?        00:00:08 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock -- this is docker process
root   19801 2630  0 09:00 ?        00:00:00 containerd-shim -namespace moby -workdir
/var/lib/containerd/io.containerd.runtime.v1.linux/moby/8ce917319540a7739f57e6a85903f022404f23c5f3d9fbee6a1bbe50f202331d -address
/run/containerd/containerd.sock -containerd-binary /usr/bin/containerd -runtime-root /var/run/docker/runtime-runc -- this is container demon process
root   19974 1918  0 09:08 pts/0    00:00:00 grep --color=auto -i docker
root@master:/var/lib/docker# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
8ce917319540   nginx    "nginx -g 'daemon of..." 20 minutes ago  Up 7 minutes  80/tcp         boring_germain
root@master:/var/lib/docker#
```

namign in a container, mapping port of VM to that with container

```
root@master:/var/lib/docker# docker run -d -p 8080:80 --name dev-ops nginx
root@master:/var/lib/docker#
root@master:/var/lib/docker# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
e5b854b08a20   nginx    "nginx -g 'daemon of..." About a minute ago  Up About a minute  0.0.0.0:8080->80/tcp  dev-ops
8ce917319540   nginx    "nginx -g 'daemon of..." About an hour ago    Up About an hour    80/tcp          boring_germain
```

1. -d option is for demon
2. -p is to assign port (here 8080 is port for VM & 80 is the default port for nginx container)
3. we need to expose 8080 port for VM in security group

board

Create Security Group Actions

Edit inbound rules

Type	Protocol	Port Range	Source	Description
Custom TCP	TCP	8080	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
Custom TCP	TCP	8080	Custom ::/0	e.g. SSH for Admin Desktop
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

Add Rule

NOTE: Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on that rule to be dropped for a very brief period of time until the new rule can be created.

custome image, docket tag (version of the image we want to create image)

```
root@master:/var/lib/docker# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
e5b854b08a20   nginx    "nginx -g 'daemon of..." About an hour ago Up About an hour 0.0.0.0:8080->80/tcp               dev-ops
8ce917319540   nginx    "nginx -g 'daemon of..." 2 hours ago    Up 2 hours    80/tcp                             boring_germain

root@master:/var/lib/docker# docker commit dev-ops dev-ops-image (command to create a custome image)
sha256:8bb6cf085cbc5fa575f48e6d2694efa13047b61bdc80647ac60e0d068f63708a

root@master:/var/lib/docker# docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
dev-ops-image latest    8bb6cf085cbc   12 minutes ago 177MB --- this is custom image
ubuntu        latest    2ca708c1c9cc   12 hours ago   64.2MB
nginx         latest    ab56bba91343   6 days ago     126MB
httpd         latest    19459a872194   6 days ago     154MB
centos        latest    67fa590cfc1c   4 weeks ago    202MB

root@master:/var/lib/docker#
root@master:/var/lib/docker# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
45980ddace4e   httpd     "httpd-foreground"       23 minutes ago Up 23 minutes 80/tcp, 0.0.0.0:8084->8080/tcp     apache-dev-ops
e5b854b08a20   nginx    "nginx -g 'daemon of..." About an hour ago Up About an hour 0.0.0.0:8080->80/tcp               dev-ops
8ce917319540   nginx    "nginx -g 'daemon of..." 2 hours ago    Up 2 hours    80/tcp                             boring_germain

root@master:/var/lib/docker#
root@master:/var/lib/docker# docker run -d -p 8085:80 dev-ops-image
```

Docket file - Along with existng nginx Image; we are creating tets directory in root location

```
root@master:/home/ubuntu/playbook/test# vi Dockerfile
root@master:/home/ubuntu/playbook/test#
root@master:/home/ubuntu/playbook/test#
root@master:/home/ubuntu/playbook/test# cat Dockerfile
FROM nginx
RUN mkdir test

root@master:/home/ubuntu/playbook/test#
root@master:/home/ubuntu/playbook/test# docker build -t myimage .
[we have used . becasue we created default Dockerfile file, in case file created with different file name we have to -f <filename> | myimage is name of image I want to give]
Sending build context to Docker daemon 2.048kB
Step 1/2 : FROM nginx
----> ab56bba91343
Step 2/2 : RUN mkdir test
----> Running in 11c38c4b62ce
Removing intermediate container 11c38c4b62ce
----> 3b972852de47
Successfully built 3b972852de47
Successfully tagged myimage:latest
root@master:/home/ubuntu/playbook/test# docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
myimage        latest    3b972852de47   21 seconds ago 126MB
root@master:/home/ubuntu/playbook/test#
root@master:/home/ubuntu/playbook/test# docker run -d -p 8088:80 myimage
521b6597dd8e1c680320b1505c0bc3cf05230866a9057640fa210332a85185f7
root@master:/home/ubuntu/playbook/test#
root@master:/home/ubuntu/playbook/test# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
521b6597dd8e   myimage   "nginx -g 'daemon of..." About a minute ago Up About a minute 0.0.0.0:8088->80/tcp               pedantic_hellman
root@master:/home/ubuntu/playbook/test#
root@master:/home/ubuntu/playbook/test# docker exec -it 521b6597dd8e bash
```

```
root@521b6597dd8e:/# ls -ltr | grep test -- test directory created
drwxr-xr-x 2 root root 4096 Sep 20 11:37 test
root@521b6597dd8e:/#
```

Tag (v1, v2) in docker/container for custom image

```
root@master:/var/lib/docker# docker commit dev-ops dev-ops-image:v1 (command to create a custome image)
root@master:/var/lib/docker# docker run -d -p 8085:80 dev-ops-image:v1
root@master:/var/lib/docker# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
dev-ops-image	v1	98821e0ca7c4	7 seconds ago	177MB
dev-ops-image	latest	8bb6cf085cbc	26 minutes ago	177MB
ubuntu	latest	2ca708c1c9cc	12 hours ago	64.2MB
nginx	latest	ab56bba91343	6 days ago	126MB
httpd	latest	19459a872194	6 days ago	154MB
centos	latest	67fa590cfc1c	4 weeks ago	202MB

```
root@master:/var/lib/docker# docker commit dev-ops dev-ops-image:v2 (command to create a custome image)
root@master:/var/lib/docker# docker run -d -p 8086:80 dev-ops-image:v2
```

Push code to docker hub

(vikasam/Lalganj@1234 - <https://hub.docker.com/signup>)

```
root@master:/var/lib/docker# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
dev-ops-image	v1	98821e0ca7c4	19 minutes ago	177MB
dev-ops-image	latest	8bb6cf085cbc	About an hour ago	177MB

```
root@master:/var/lib/docker#
root@master:/var/lib/docker# docker tag dev-ops-image:v1 vikasam/dev-ops-image1
```

```
root@master:/var/lib/docker# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
vikasam/dev-ops-image1	latest	98821e0ca7c4	19 minutes ago	177MB
dev-ops-image	v1	98821e0ca7c4	19 minutes ago	177MB
dev-ops-image	latest	8bb6cf085cbc	About an hour ago	177MB

```
root@master:/var/lib/docker# docker login (provide docker portal credentials)
root@master:/var/lib/docker# docker push vikasam/dev-ops-image1
The push refers to repository [docker.io/vikasam/dev-ops-image1]
f134b1246e95: Pushed
ce3539cc1849: Pushed
16d1b1dd2a23: Pushed
2db44bce66cd: Pushed
latest: digest: sha256:cbc62b59188d037314a1c3b8f7dfc8e000c8f3be0e84d840911732c26a8ed3e1 size: 1160
```

Now if we want to access this from any other VM, we need to execute below command

1. root@master:/var/lib/docker# docker run -d -p 8087:80 vikasam/dev-ops-image1
2. we need to expose 8087 port under security group for the VM on which we want to run this image.

Orchestrating.

1. create a common network layer in between cluster VM's
2. To create a cluster and manage it
3. Can scale VM level depends on load
4. Can scale on container level depends on load and hits
5. Can act as load balancer to get end point for a services running on multiple cluster
6. Monitor healths for cluster VM
7. Kubernetes, Docker Swarm, OpenShift is an orchestration tool

From: Vishal Gupta <Vishal.Gupta@synechron.com>
Sent: 18 September 2019 18:05
To: Vishal Gupta <Vishal.Gupta@synechron.com>
Subject: Re: dev-ops training materials

Command to change hostname

```
root@ip-172-31-31-55:/home/ubuntu# hostnamectl set-hostname master
root@ip-172-31-31-55:/home/ubuntu#
```

install ansible

```
root@master:/home/ubuntu# apt-get update
```

```
apt-get update
apt-key adv --keyserver keyserver.ubuntu.com --recv-keys 93C4A3FD7BB9C367 (add key for authentication purpose)
apt-add-repository "deb http://ppa.launchpad.net/ansible/ansible/ubuntu bionic main" (download repository)
```

```
apt-get update
apt-get install ansible
ansible --version
```

Add client to master ansible server

```
root@master:/etc/ansible# rm /etc/ansible/hosts
root@master:/etc/ansible# vi /etc/ansible/hosts
root@master:/etc/ansible# cat /etc/ansible/hosts
[web]
172.31.27.132
```

authentication between master and client

```
root@master:/etc/ansible# ssh-keygen (this needs to be done on master)
copy the content of public key from master server; and paste in to /root/.ssh/authorized_keys file to client server (either to start/end of the file)
```

ping with ansible

```
root@master:~/ssh# ansible web -m ping
172.31.27.132 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
```

```
root@master:~# ansible web -m setup (information about the web note -client server information)
```

```
root@master:/etc/ansible# ansible-doc -l (information about ansible modules)
root@master:/etc/ansible# ansible-doc ping
```

```
root@master:/etc/ansible# ansible web -a "ls -ltr /tmp" (-a option to execute linux command on client machine)
172.31.27.132 | CHANGED | rc=0 >>
total 12
drwx----- 3 root root 4096 Sep 18 05:57 systemd-private-e0097854d7eb49dcb5ac32958a3809e9-systemd-timesyncd.service-IDStQA
drwx----- 3 root root 4096 Sep 18 05:57 systemd-private-e0097854d7eb49dcb5ac32958a3809e9-systemd-resolved.service-WmnEMR
drwx----- 3 root root 4096 Sep 18 09:09 ansible_command_payload_ygiz0I37
```

```
root@master:/etc/ansible# ansible web -a "useradd vishal"
root@master:/etc/ansible# ansible web -a "uname -a"
```

create user on host machine using ansible

```
root@master:/etc/ansible# ansible web -m user -a "name=synechron state=present"
```

create file, directory, symlink, change permission etc on host machine

```
root@master:/etc/ansible# ansible web -m file -a "name=/tmp/guptav state=directory"
```

Installation of package using ansible

```
root@master:/etc/ansible# ansible web -a "apt-get update"
root@master:/etc/ansible# ansible web -m package -a "name=mysql-client state=present"
```

play book in ansible

```
root@master:/home/ubuntu# mkdir playbook
root@master:/home/ubuntu# cd playbook/
root@master:/home/ubuntu/playbook# vi user.yaml
```

```
root@master:/home/ubuntu/playbook# cat user.yaml
```

```
---
- hosts: web
  tasks:
    - name: create user
      user:
        name: aws
        state: present
```

```
root@master:/home/ubuntu/playbook# ansible-playbook user.yaml --syntax
```

```
playbook: user.yaml
```

dry run for the changes

```
root@master:/home/ubuntu/playbook# ansible-playbook user.yaml --check
```

```
PLAY [web]
```

```
*****
*****
```

TASK [Gathering Facts]

ok: [172.31.27.132]

TASK [create user]

changed: [172.31.27.132]

PLAY RECAP

172.31.27.132 : ok=2 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

execute the change

root@master:/home/ubuntu/playbook# ansible-playbook user.yaml

PLAY [web]

TASK [Gathering Facts]

ok: [172.31.27.132]

TASK [create user]

changed: [172.31.27.132]

PLAY RECAP

172.31.27.132 : ok=2 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

root@master:/home/ubuntu/playbook#

create directory on client machine

root@master:/home/ubuntu/playbook# cat file.yaml

- hosts: web

tasks:

- name: create directory

file:

name: /tmp/dev-ops

state: directory

root@master:/home/ubuntu/playbook# ansible-playbook file.yaml --check

PLAY [web]

TASK [Gathering Facts]

ok: [172.31.27.132]

TASK [create directory]

changed: [172.31.27.132]

PLAY RECAP

172.31.27.132 : ok=2 changed=1 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

root@master:/home/ubuntu/playbook#

install using ansible

root@master:/home/ubuntu/playbook# cat install.yaml

- hosts: web

tasks:

- name: install apache

package:

name: apache2

state: present

stop apacah service

```
root@master:/home/ubuntu/playbook# cat stop.yaml
---
- hosts: web
  tasks:
    - name: stop apache
      service:
        name: apache2
        state: started
```

create directory and file in same play book

```
root@master:/home/ubuntu/playbook# cat club_task.yaml
---
- hosts: web
  tasks:
    - name: create dierctory
      file:
        name: /home/ubuntu/dev-ops
        state: directory
    - name: create file
      file:
        name: /home/ubuntu/dev-ops/vishal1.txt
        state: touch
```

```
root@master:/home/ubuntu/playbook# ansible-playbook club_task.yaml
```

copy file from master to client

```
root@master:/home/ubuntu/playbook# cat copy.yaml
---
- hosts: web
  tasks:
    - name: copy file
      copy:
        src: index.html
        dest: /var/www/html
root@master:/home/ubuntu/playbook#
```

ansible handlers

- handlers gets executed at end

```
root@master:/home/ubuntu/playbook# cat handlers.yaml
---
- hosts: web
  tasks:
    - name: copy file
      copy:
        src: index.html
        dest: /var/www/html
      notify: restart apache
  handlers:
    - name: restart apache
      service:
        name: apache2
        state: restarted
root@master:/home/ubuntu/playbook# ansible-playbook handlers.yaml
```

From: Vishal Gupta <Vishal.Gupta@synechron.com>
Sent: 17 September 2019 17:29
To: Vishal Gupta <Vishal.Gupta@synechron.com>
Subject: dev-ops traning material

```
apt-get update
apt-get install apache2
curl localhost
```

<https://us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:>

```
apt-get update
apt-get install git
git --version
```

```
root@ip-172-31-46-92:/home/ubuntu# git config --global user.name "Vishal Gupta"
root@ip-172-31-46-92:/home/ubuntu# git config --global user.email "vishal.gupta@synechron.com"
root@ip-172-31-46-92:/home/ubuntu# git config --global -l
user.name=Vishal Gupta
user.email=vishal.gupta@synechron.com
root@ip-172-31-46-92:/home/ubuntu#
root@ip-172-31-46-92:/home/ubuntu#
root@ip-172-31-46-92:/home/ubuntu#
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git init
Initialized empty Git repository in /home/ubuntu/repo/.git/
root@ip-172-31-46-92:/home/ubuntu/repo#
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git status
On branch master
```

No commits yet

```
nothing to commit (create/copy files and use "git add" to track)
root@ip-172-31-46-92:/home/ubuntu/repo# vi first
root@ip-172-31-46-92:/home/ubuntu/repo# git status
On branch master
```

No commits yet

```
Untracked files:
(use "git add <file>..." to include in what will be committed)
```

first

```
nothing added to commit but untracked files present (use "git add" to track)
root@ip-172-31-46-92:/home/ubuntu/repo# git add first
root@ip-172-31-46-92:/home/ubuntu/repo# git status
On branch master
```

No commits yet

```
Changes to be committed:
(use "git rm --cached <file>..." to unstage)
```

new file: first

```
root@ip-172-31-46-92:/home/ubuntu/repo# git commit -m"first commit"
[master (root-commit) 5742437] first commit
1 file changed, 2 insertions(+)
create mode 100644 first
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git log
commit a6659a7f6bfa83d8288d9334d755291aae3832e9 (HEAD -> master)
Author: Vishal Gupta <vishal.gupta@synechron.com>
Date: Tue Sep 17 06:52:33 2019 +0000
```

second commit

```
commit 57424370dfb305c7e51fd7633e3b2934251efe3f
Author: Vishal Gupta <vishal.gupta@synechron.com>
Date: Tue Sep 17 06:44:55 2019 +0000
```

```
first commit
root@ip-172-31-46-92:/home/ubuntu/repo#
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git branch
* master
root@ip-172-31-46-92:/home/ubuntu/repo#
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git branch trading
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git branch
* master
trading
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git checkout trading
M first
Switched to branch 'trading'
root@ip-172-31-46-92:/home/ubuntu/repo#
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git branch
master
```

* trading

```
root@ip-172-31-46-92:/home/ubuntu/repo# git status
On branch trading
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)
```

modified: first

```
no changes added to commit (use "git add" and/or "git commit -a")
root@ip-172-31-46-92:/home/ubuntu/repo#
root@ip-172-31-46-92:/home/ubuntu/repo#
root@ip-172-31-46-92:/home/ubuntu/repo# git add first
root@ip-172-31-46-92:/home/ubuntu/repo#
root@ip-172-31-46-92:/home/ubuntu/repo#
root@ip-172-31-46-92:/home/ubuntu/repo# git commit -m"child branch"
[trading 8dc4053] child branch
1 file changed, 1 insertion(+), 5 deletions(-)
root@ip-172-31-46-92:/home/ubuntu/repo#
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# cat first
hello world 1`
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git checkout master
Switched to branch 'master'
root@ip-172-31-46-92:/home/ubuntu/repo#
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# cat first
1
:!
```

```
root@ip-172-31-46-92:/home/ubuntu/repo# git merge trading
Updating a6659a7..8dc4053
Fast-forward
 first | 6 +----
1 file changed, 1 insertion(+), 5 deletions(-)
root@ip-172-31-46-92:/home/ubuntu/repo#
root@ip-172-31-46-92:/home/ubuntu/repo#
```


```
hdhd
root@ip-172-31-46-92:/home/ubuntu/repo#
```

tried creating conflict by making changes in master & child branch files manually.

```
root@ip-172-31-46-92:/home/ubuntu/repo# git merge trading
Auto-merging first
CONFLICT (content): Merge conflict in first
Automatic merge failed; fix conflicts and then commit the result.
root@ip-172-31-46-92:/home/ubuntu/repo# vi first
root@ip-172-31-46-92:/home/ubuntu/repo#
```

Steps to connect to reomte git hub

```
root@ip-172-31-46-92:/home/ubuntu/repo# git remote add origin https://github.com/vikasam1/devops-viksam (origin is key to GIT repository -
vikasam1/Lalganj@1234)
```



[vikasam1/devops-viksam](https://github.com/vikasam1/devops-viksam)

Contribute to vikasam1/devops-viksam development by creating an account on GitHub.

github.com

```
root@ip-172-31-46-92:/home/ubuntu/repo# git remote -v
origin https://github.com/vikasam1/devops-viksam (fetch)
origin https://github.com/vikasam1/devops-viksam (push)
root@ip-172-31-46-92:/home/ubuntu/repo#
```

push code to GIT hub

```
root@ip-172-31-46-92:/home/ubuntu/repo#
root@ip-172-31-46-92:/home/ubuntu/repo# git push origin master
```



```

Username for 'https://github.com': vikasam1
Password for 'https://vikasam1@github.com':
Counting objects: 18, done.
Compressing objects: 100% (6/6), done.
Writing objects: 100% (18/18), 1.31 KiB | 672.00 KiB/s, done.
Total 18 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), done.
To https://github.com/vikasam1/devops-viksam
 * [new branch] master -> master
root@ip-172-31-46-92:/home/ubuntu/repo#
root@ip-172-31-46-92:/home/ubuntu/repo#

```

Clone repository to local system

```

root@ip-172-31-46-92:/home/ubuntu# git clone https://github.com/vikasam1/hello-world.git
Cloning into 'hello-world'...
remote: Enumerating objects: 7, done.
remote: Counting objects: 100% (7/7), done.
remote: Compressing objects: 100% (6/6), done.
remote: Total 7 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (7/7), done.
root@ip-172-31-46-92:/home/ubuntu#
root@ip-172-31-46-92:/home/ubuntu#
root@ip-172-31-46-92:/home/ubuntu# ls -ltr
total 16
-rwxr-xr-x 1 root root 19 Sep 17 06:27 xyx.txt
drwxr-xr-x 3 root root 4096 Sep 17 07:33 repo
drwxr-xr-x 4 root root 4096 Sep 17 09:28 repo1
drwxr-xr-x 4 root root 4096 Sep 17 09:30 hello-world
root@ip-172-31-46-92:/home/ubuntu/hello-world# git remote -v
origin https://github.com/vikasam1/hello-world.git (fetch)
origin https://github.com/vikasam1/hello-world.git (push)

```

SSH authentication to GIT hub

```

root@ip-172-31-46-92:~/.ssh# ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:0zhKzplK1Dmyom42GxeRatX0yeY1FyTVHbgiby+75sY root@ip-172-31-46-92

```

```

-rw-r--r-- 1 root root 402 Sep 17 09:51 id_rsa.pub
-rw----- 1 root root 1675 Sep 17 09:51 id_rsa
root@ip-172-31-46-92:~/.ssh#
root@ip-172-31-46-92:~/.ssh#
root@ip-172-31-46-92:~/.ssh# cat id_rsa.pub
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAQACyWfjjddtdx7pCXyikTP6SxX5U2lJrHCaxUOFYBy79bCl6dFLY3ITGItT+Ue2+FT7cCEEq32m4jwd8kZZat08jAkL/qZV8cNX
4jM/tMXB7dfvHy8CSf7ZAdlF654ArPYHM1VfBP4Ko3my5T1OdyfGiBB5jwlzrE3Wxcy72MkNaX9N17WI9gweIhnBPYPPhd6Fb4C7gzyHHrZiGhg3gBgu95nqxOlkgJY
4jwhqMJTpnhNbANKoWh2oZa4WK+YbeEwiz1Fbw3cUC/ZrL6EtMfEHZx898OrRFodlGPEmv7kz45F3HFFrIYcEayiAcVJZ/vfKeBpxhgZU1RtHXGRQf6Nz/ root@ip-
172-31-46-92

```

add the public key to git-repo -> settings -> deploy key (provide write access)

```

root@ip-172-31-46-92:/home/ubuntu/hello-world# git remote add tex git@github.com:vikasam1/hello-world.git (the link should not be https)
root@ip-172-31-46-92:/home/ubuntu/hello-world# git push tex master

```

pull and merge

pull = fetch+merge
 fetch = this will fetch details from remote

```

root@ip-172-31-46-92:/home/ubuntu/repo3# git fetch delta master
From https://github.com/vikasam1/dev-ops-clean
 * branch      master    -> FETCH_HEAD
root@ip-172-31-46-92:/home/ubuntu/repo3# ls -ltr
total 8
-rw-r--r-- 1 root root 11 Sep 17 11:11 index.html
-rw-r--r-- 1 root root 12 Sep 17 11:11 contact.txt
root@ip-172-31-46-92:/home/ubuntu/repo3# git branch -a
* master
  mycode
  remotes/delta/master
  remotes/delta/mycode
root@ip-172-31-46-92:/home/ubuntu/repo3# git checkout master
Already on 'master'
root@ip-172-31-46-92:/home/ubuntu/repo3# ls
contact.txt index.html
root@ip-172-31-46-92:/home/ubuntu/repo3# git merge remotes/delta/master

```

```
Updating 5a6afb5..65f6781
Fast-forward
test.txt | 1 +
1 file changed, 1 insertion(+)
create mode 100644 test.txt
root@ip-172-31-46-92:/home/ubuntu/repo3# ls
contact.txt  index.html  test.txt
root@ip-172-31-46-92:/home/ubuntu/repo3#
```

lsblk (*list block devices*)

Regards,

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