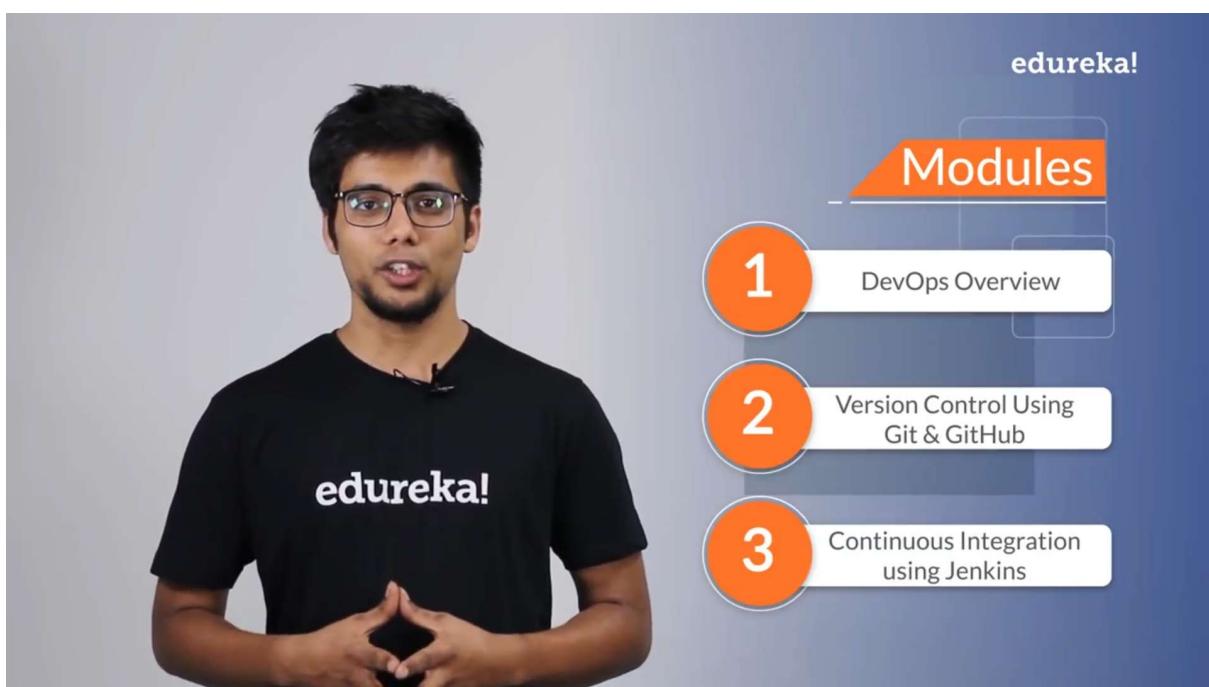
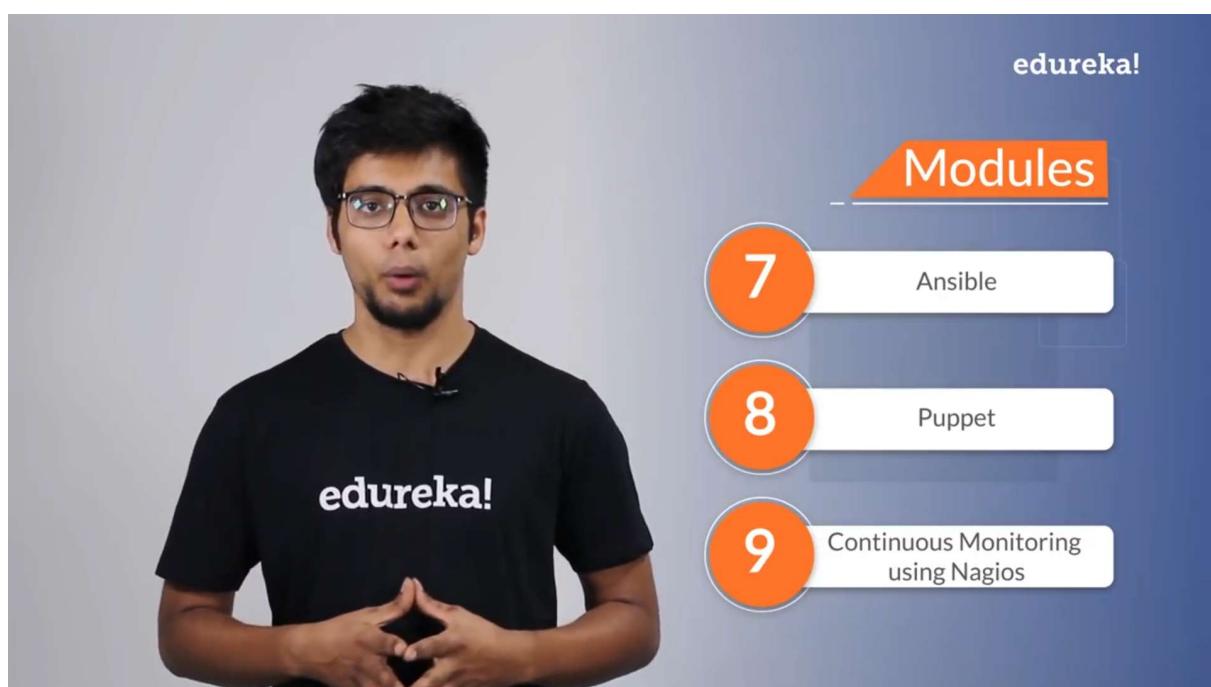
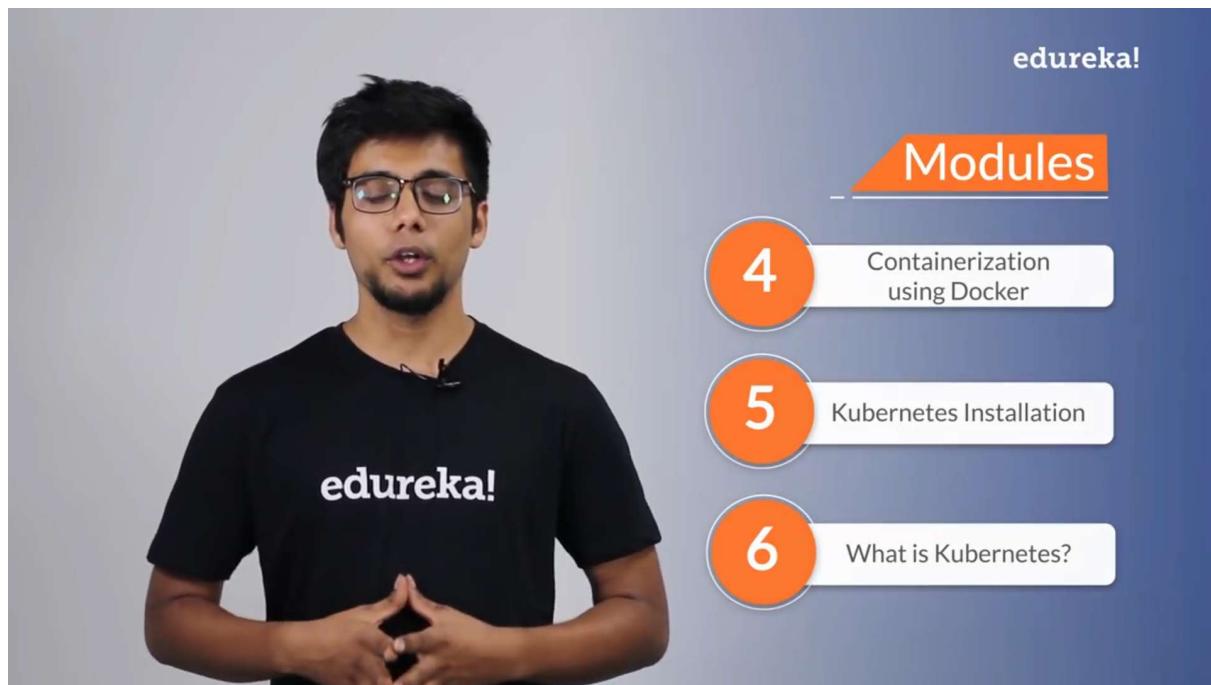


DevOps Edureka







01

DevOps Overview

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Topics for Today's Session

- 1 Why DevOps?
- 2 What is DevOps?
- 3 DevOps Stages
- 4 DevOps Tools
- 5 DevOps Use-Case



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Waterfall Model

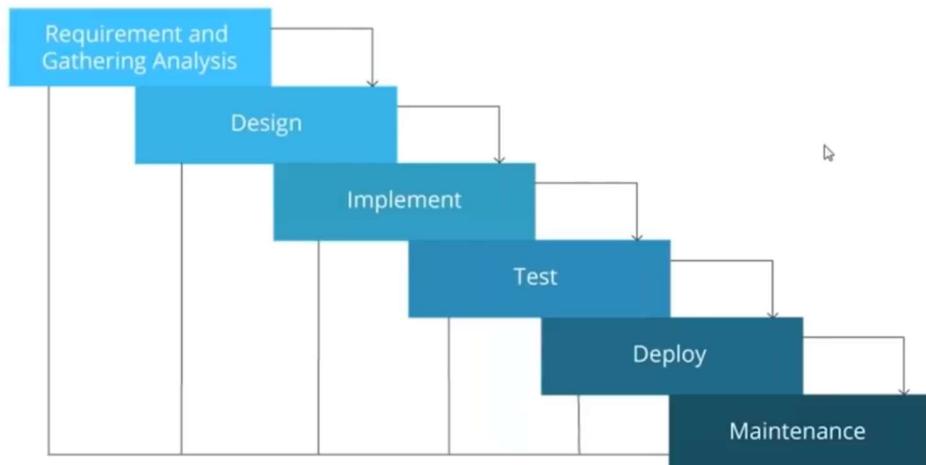
It has distinct goals for each phase of development. Imagine a waterfall on the cliff of a steep mountain. Once the water has flowed over the edge of the cliff, it cannot turn back.



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Traditional Waterfall Model



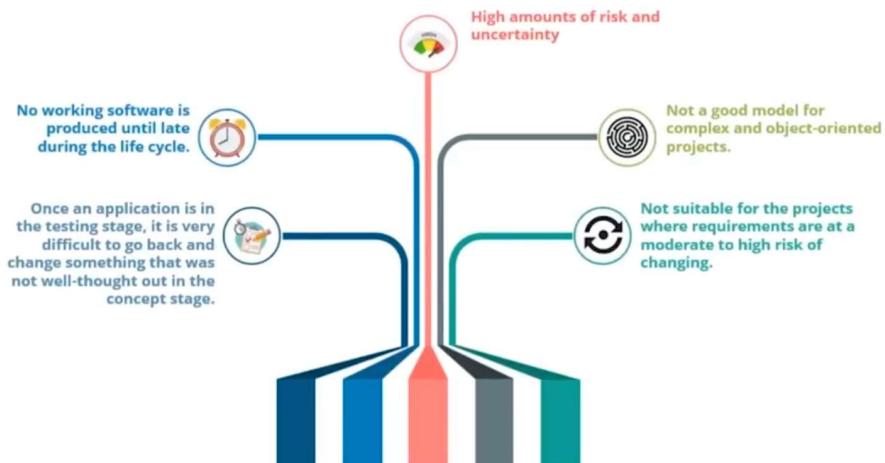
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Limitations of Waterfall Model



DevOps Tutorial

What is Agile Methodology?

In the Agile Methodology each project is broken up into several 'Iterations'

All Iterations should be of the same time duration (between 2 to 8 weeks)

At the end of each iteration, a working product should be delivered



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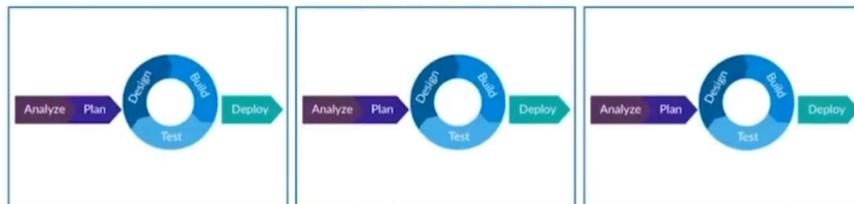
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Waterfall vs Agile

Waterfall

Analyze → Plan → Design → Build → Test → Deploy

Agile



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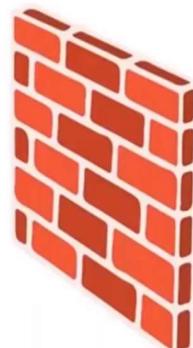
Limitations of Agile

Code works fine
in my laptop



DEVELOP TEAM

Wants Change



There is some
problem with the
code, it does not
work in
production`



OPERATION TEAM

Wants Stability

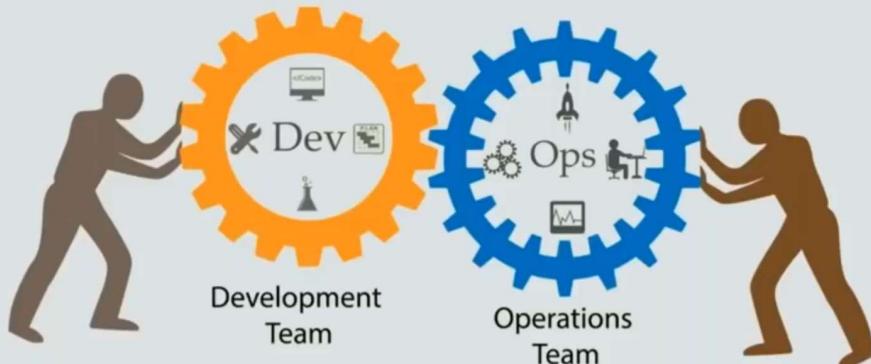
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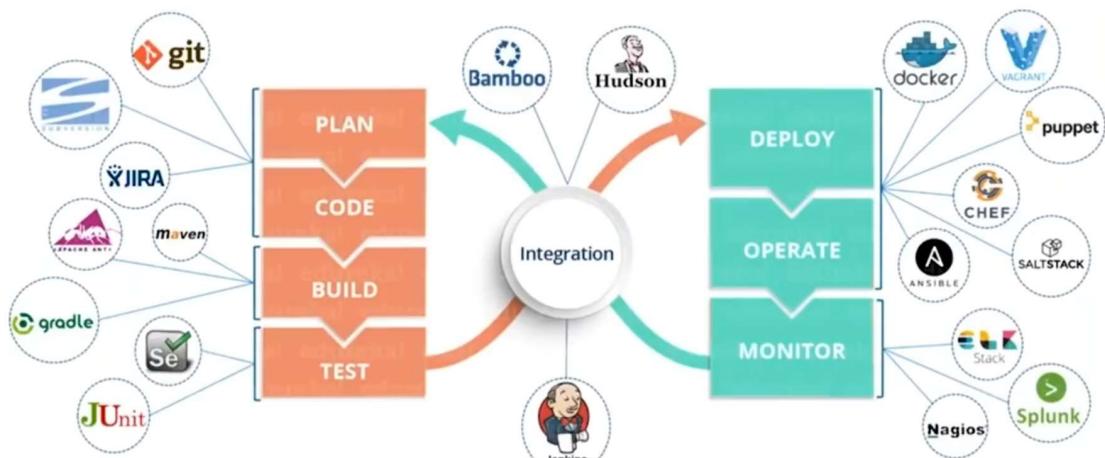
DevOps Tutorial

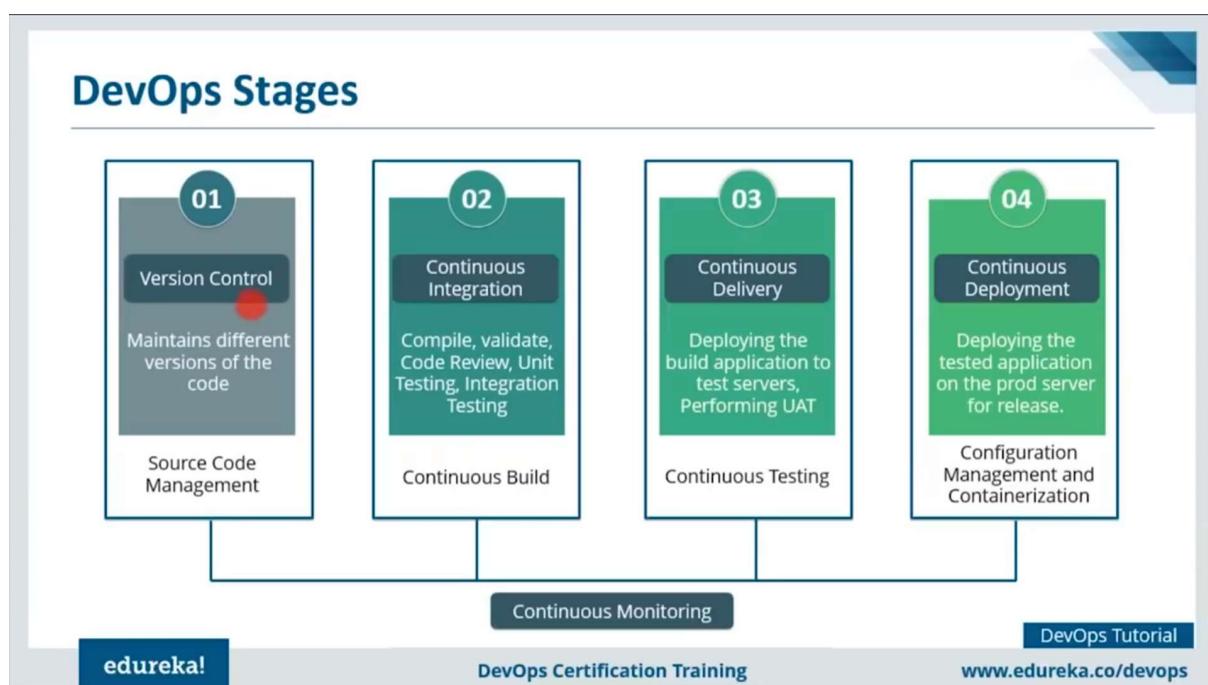
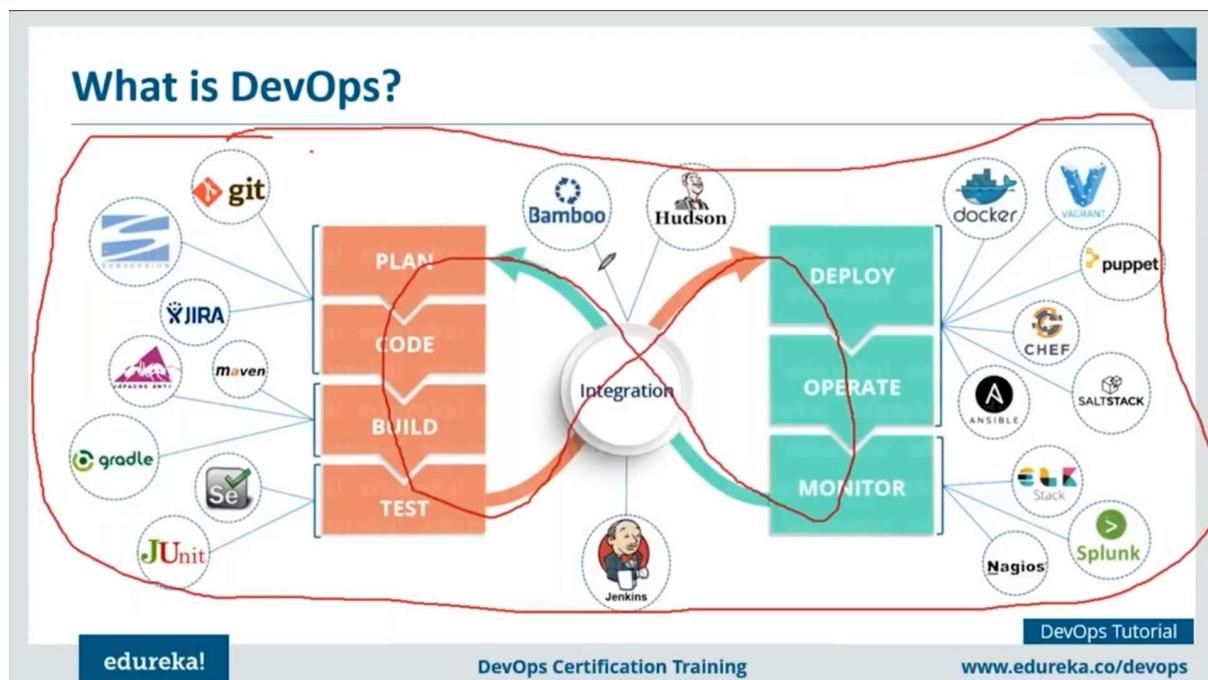
www.edureka.co/devops

Solution is DevOps

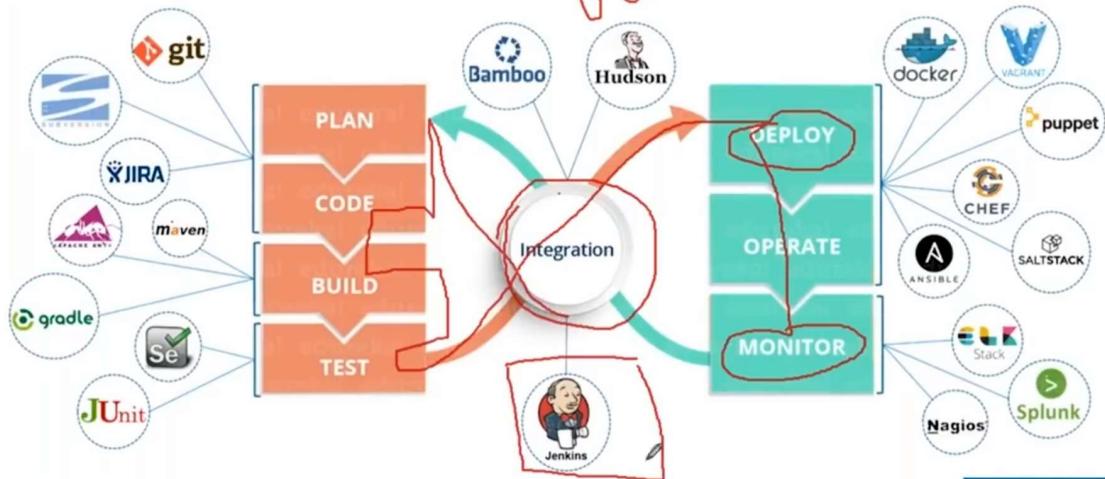


What is DevOps?





What is DevOps?



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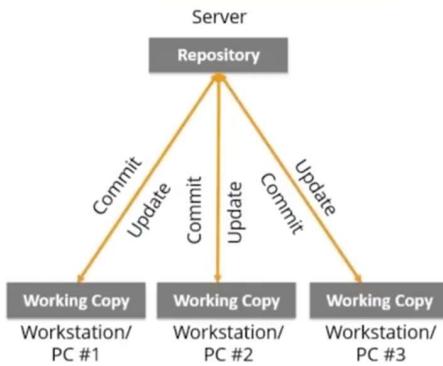
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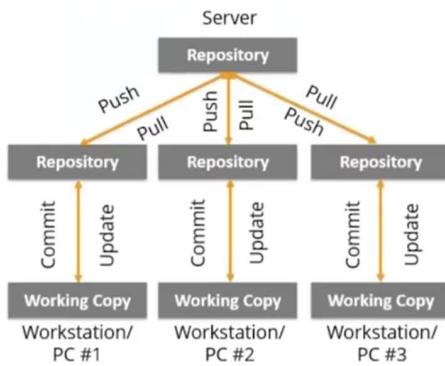
Source Code Management

The management of changes to documents, computer programs, large websites and other collection of information

Centralized Version Control System



Distributed Version Control System



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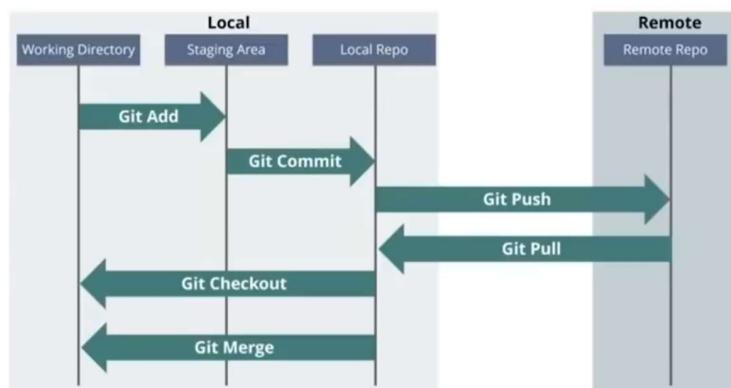
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Source Code Management



Git is a Distributed Version Control tool that supports distributed non-linear workflows by providing data assurance for developing quality software



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A screenshot of a terminal window titled 'Terminal'. The window shows a command-line session:

```
[edureka@localhost edureka-repo]$ git push origin master
Counting objects: 5, done.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (5/5), 542 bytes | 0 bytes/s, done.
Total 5 (delta 0), reused 0 (delta 0)
To git@github.com:saurabh0010/Git-Tutorial-DevOps.git
  2d9eaf0..4548b46  master -> master
[edureka@localhost edureka-repo]$
```

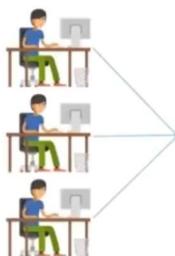
The terminal window has a dark background and light-colored text. The status bar at the bottom shows the URL 'saurabh0010/Git-Tutorial-DevOp...' and the command 'git push origin master'.

1 / 4

Continuous Integration



Jenkins

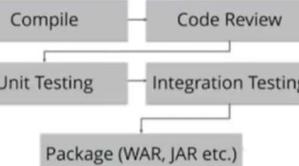


Commit code to a
shared repository

Jenkins Server



Build



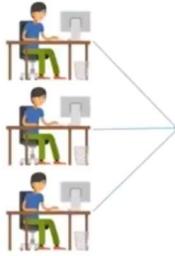
DevOps Tutorial

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Continuous Deployment



Jenkins

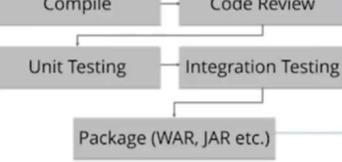


Commit code to a
shared repository

Jenkins Server



Build



Deploy the build application
on the test server for UAT
(User Acceptance Test)



Deploy the build
application on the prod
server for release

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Dashboard [Jenkins] – Mozilla Firefox

localhost:8080/jenkins/

Jenkins

New Item | People | Build History | Project Relationship | Check File Fingerprint | Manage Jenkins | My Views | Credentials | New View

All | S | W | Name | Last Success | Last Failure | Last Duration

edureka-pipeline | 5 days 3 hr · #1 | N/A | 1 min 52 sec

Icon: S M L | Legend: RSS for all | RSS for failures | RSS for just latest builds

Build Queue: No builds in the queue.

Build Executor Status: 1 Idle, 2 Idle

Dashboard [Jenkins] – Mozilla Firefox | edureka@localhost:~/tomcat9 | 1 / 4

Configuration Management

- Configuration Management is the practice of handling changes systematically so that a system maintains its integrity over time
-
-
-
- Configuration Management (CM) ensures that the current design and build state of the system is known, good & trusted
-
-
-
- It doesn't rely on the tacit knowledge of the development team

Code for the infrastructure

DEV { }

TEST { }

PROD { }

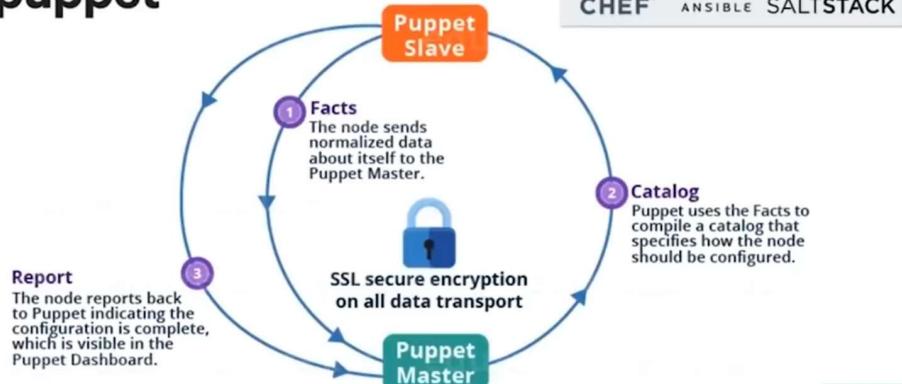
Provisioning of Dev, Test and Prod environment by writing code in one centralized location

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Configuration Management



Other Tools



CHEF



ANSIBLE



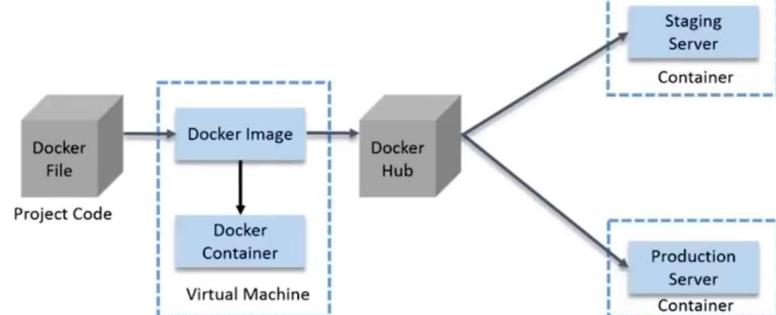
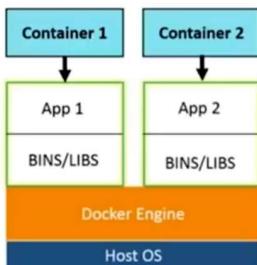
SALTSTACK

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Containerization



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```
[edureka@localhost ~]$ systemctl start docker
```

The screenshot shows a Firefox browser window with the URL <https://hub.docker.com> in the address bar. The page displays the user's repositories under the heading "Repositories". A single repository is listed: "edureka1/edureka" (public). The repository details show 0 stars, 6 pulls, and a "DETAILS" button.

Repository	Stars	Pulls
edureka1/edureka	0	6

At the bottom of the browser window, the URL <https://hub.docker.com/r/edureka1/edureka/> is visible.

Applications ▾ Places ▾ Firefox Web Browser ▾

Search - Docker Hub - Mozilla Firefox

Git-Tutorial-DevOps/... x Dashboard [Jenkins] x Dashboard [Jenkins] x Search - Docker Hub x

https://hub.docker.com/search/?isAutomated=0&isOfficial=0&page=1&pullCount=0&q=hadoop&starCount=0

Docker Store is the new place to discover public Docker content. Check it out →

hadoop

Dashboard Explore Organizations Create edureka! ▾

Repositories (2633)

All

		STARS	PULLS	
 uhopper/hadoop	public automated build	56	500K+	DETAILS
 sequenceiq/hadoop-docker	public automated build	526	500K+	DETAILS
 bde2020/hadoop-namenode	public automated build	4	500K+	DETAILS

https://hub.docker.com/r/sequenceiq/hadoop-docker/

Search - Docker Hub - Mozilla Firefox edureka@localhost:~ 1 / 4

Applications ▾ Places ▾ Terminal ▾

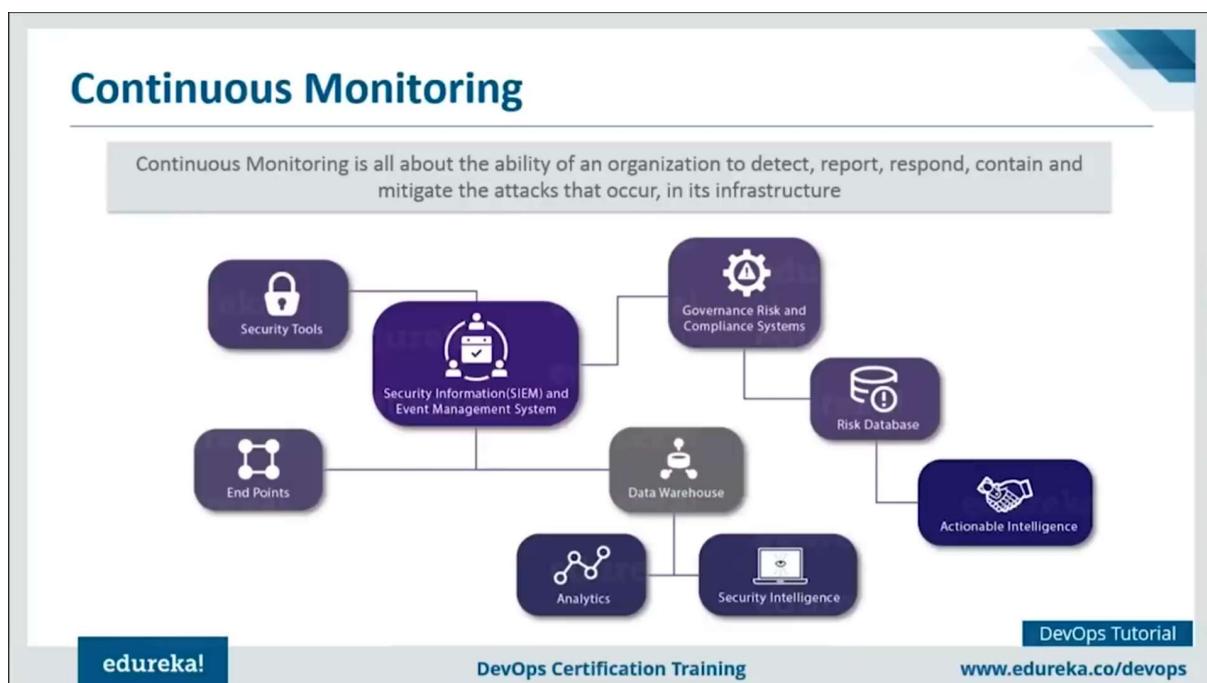
edureka@localhost:~

File Edit View Search Terminal Help

```
registry.hub.docker.com/getintodevops/hellonode      11          470500081651    11 days ago
go          662MB
registry.hub.docker.com/getintodevops/hellonode      12          470500081651    11 days ago
go          662MB
registry.hub.docker.com/getintodevops/hellonode      13          470500081651    11 days ago
go          662MB
registry.hub.docker.com/getintodevops/hellonode      14          470500081651    11 days ago
go          662MB
saurabh0010/devops-tutorial                         latest        f1d915fbc9ce    11 days ago
go          662MB
hub.docker.com/saurabh0010/devops-tutorial          10          f1d915fbc9ce    11 days ago
go          662MB
registry.hub.docker.com/saurabh0010/devops-tutorial  9           fa0108bdbe66    11 days ago
go          662MB
registry.hub.docker.com/getintodevops/hellonode      7           b5f5855c02cb    12 days ago
go          662MB
registry.hub.docker.com/getintodevops/hellonode      8           b5f5855c02cb    12 days ago
registry.hub.docker.com/getintodevops/hellonode      6           ffbbbf733b187   12 days ago
go          662MB
ubuntu                                latest        f975c5035748    5 weeks ago
go          112MB
node                                  7-onbuild     3de424ca76d2    8 months ago
ago          660MB
[edureka@localhost ~]$
```

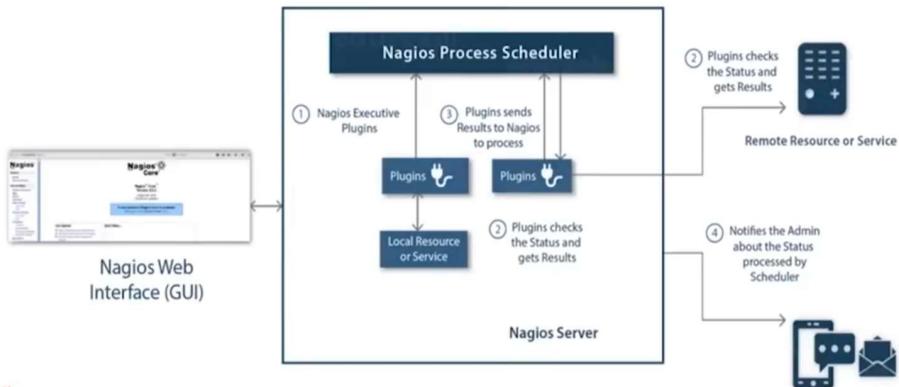
Search - Docker Hub - Mozilla Firefox edureka@localhost:~ 1 / 4

A screenshot of a terminal window titled 'Terminal'. The window shows the command `[edureka@localhost ~]$ docker pull ubuntu` being typed. The terminal is running on a Linux system, as indicated by the file menu and the prompt. The background of the terminal window is black.



Continuous Monitoring

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Subscribe

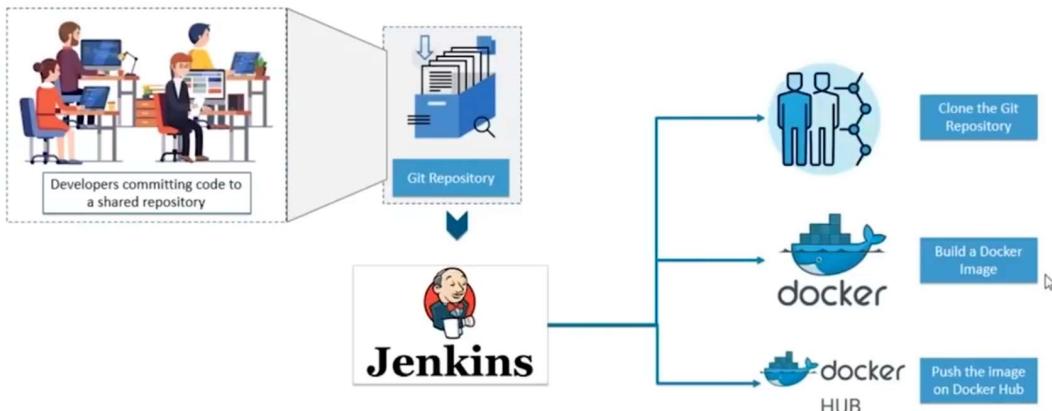
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DevOps Use-Case Part - 1



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The screenshot shows a Firefox browser window with the following details:

- Address Bar:** https://github.com/saurabh0010/Git-Tutorial-DevOps/blob/master/edureka.py
- Header:** This repository · saurabh0010/Git-Tutorial-DevOps · Mozilla Firefox
- Repository Overview:** Branch: master · Git-Tutorial-DevOps / edureka.py
- Commit Details:** saurabh0010 First Commit · c62b9b5 3 hours ago
- Code Preview:** 2 lines (1 sloc) | 29 Bytes
print("welcome To edureka!")

Bottom Navigation: © 2018 GitHub, Inc. Terms Privacy Security Status Help | Contact GitHub API Training Shop Blog About

The screenshot shows a terminal window with the following details:

- Title Bar:** Applications ▾ Places ▾ Terminal ▾
- Terminal Output:** edureka@localhost:~/Downloads/devops-tutorial-master
- Commands Run:**[edureka@localhost devops-tutorial-master]\$ ls
Dockerfile Jenkinsfile main.js package.json README.md test.js
[edureka@localhost devops-tutorial-master]\$ gedit Dockerfile

Bottom Navigation: 1 / 4

A screenshot of a terminal window titled "gedit". The window shows a file named "Dockerfile" with the following content:

```
[edureka@localhost ~]$ gedit Dockerfile
[edureka@localhost ~]$ # use a node base image
[edureka@localhost ~]$ FROM node:7-onbuild
[edureka@localhost ~]$ # set maintainer
[edureka@localhost ~]$ LABEL maintainer "miro@getintodevops.com"
[edureka@localhost ~]$ # set a health check
[edureka@localhost ~]$ HEALTHCHECK --interval=5s \
[edureka@localhost ~]$   --timeout=5s \
[edureka@localhost ~]$   CMD curl -f http://127.0.0.1:8000 || exit 1
[edureka@localhost ~]$ # tell docker what port to expose
[edureka@localhost ~]$ EXPOSE 8000
```

The terminal window also displays the following status bar information: Plain Text ▾ Tab Width: 8 ▾ Ln 1, Col 1 ▾ INS.

A screenshot of a terminal window titled "Terminal". The window shows the following command being run:

```
[edureka@localhost devops-tutorial-master]$ ls
Dockerfile Jenkinsfile main.js package.json README.md test.js
[edureka@localhost devops-tutorial-master]$ gedit Dockerfile
[edureka@localhost devops-tutorial-master]$ sudo docker build /home/edureka/Downloads/devops-tutorial-master/
```

The terminal window also displays the following status bar information: File Edit View Search Terminal Help.

```
Applications Places Terminal edureka@localhost:/Downloads/devops-tutorial-master
File Edit View Search Terminal Help
[edureka@localhost devops-tutorial-master]$ ls
Dockerfile Jenkinsfile main.js package.json README.md test.js
[edureka@localhost devops-tutorial-master]$ gedit Dockerfile
[edureka@localhost devops-tutorial-master]$ sudo docker build /home/edureka/Downloads/devops-tutorial-master/
[sudo] password for edureka:
Sending build context to Docker daemon 8.192kB
Step 1/4 : FROM node:7-onbuild
# Executing 5 build triggers
--> Using cache
--> Using cache
--> Using cache
--> Using cache
--> 30cea022a14b
Step 2/4 : LABEL maintainer "miiro@getintodevops.com"
--> Running in dc当地09d14411
Removing intermediate container dc当地09d14411
--> c4fbc08693ff
Step 3/4 : HEALTHCHECK --interval=5s --timeout=5s CMD curl -f http://127.0.0.1:8000 || exit 1
--> Running in bb19cc896221

1 / 4
```

```
Applications Places Terminal edureka@localhost:/Downloads/devops-tutorial-master
File Edit View Search Terminal Help
--> Running in dc当地09d14411
Removing intermediate container dc当地09d14411
--> c4fbc08693ff
Step 3/4 : HEALTHCHECK --interval=5s --timeout=5s CMD curl -f http://127.0.0.1:8000 || exit 1
--> Running in bb19cc896221
Removing intermediate container bb19cc896221
--> 34f353575bba
Step 4/4 : EXPOSE 8000
--> Running in 57dbb54953da
Removing intermediate container 57dbb54953da
--> 815a422abcc6
Successfully built 815a422abcc6
[edureka@localhost devops-tutorial-master]$ docker run -it 815a422abcc6
npm info it worked if it ends with ok
npm info using npm@4.2.0
npm info using node@v7.10.1
npm info lifecycle getintodevops-hellonode@1.0.0-prestart: getintodevops-hellonode@1.0.0
npm info lifecycle getintodevops-hellonode@1.0.0-start: getintodevops-hellonode@1.0.0

> getintodevops-hellonode@1.0.0 start /usr/src/app
> node main.js

Server listening at http://127.0.0.1:8000/

1 / 4
```

Dashboard [Jenkins] – Mozilla Firefox

saurabh0010/devops... Dashboard [Jenkins] Dashboard [Jenkins] Search - Docker Hub

localhost:8080/jenkins/

Jenkins

New Item People Build History Project Relationship Check File Fingerprint Manage Jenkins My Views Credentials New View

All S W Name Last Success Last Failure Last Duration

edureka-pipeline 5 days 3 hr · #1 N/A 1 min 52 sec

Icon: S M L Legend RSS for all RSS for failures RSS for just latest builds

Build Queue No builds in the queue.

Build Executor Status 1 Idle 2 Idle

Dashboard [Jenkins] – Mozilla Firefox edureka@localhost:~/Downloads/... 1 / 4

saurabh0010/devops-tutorial – Mozilla Firefox

saurabh0010/devops... Dashboard [Jenkins] Dashboard [Jenkins] Search - Docker Hub

GitHub, Inc. (US) https://github.com/saurabh0010/devops-tutorial

No description, website, or topics provided. Edit

Add topics

7 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

saurabh0010 Final

Dockerfile assa 12 days ago

Jenkinsfile Final 11 days ago

README.md Merge branch 'master' of github.com:saurabh0010/devops-tutorial 12 days ago

main.js assa 12 days ago

package.json assa 12 days ago

test.js assa 12 days ago

README.md

<<<< HEAD

https://github.com/saurabh0010/devops-tutorial/blob/master/Jenkinsfile

Dashboard [Jenkins] – Mozilla Firefox edureka@localhost:~/Downloads/... 1 / 4

Firefox Web Browser

devops-tutorial/Jenkinsfile at master · saurabh0010/devops-tutorial - Mozilla Firefox

GitHub, Inc. (US) https://github.com/saurabh0010/devops-tutorial/blob/master/Jenkinsfile

saurabh0010 Final

1 contributor

37 lines (29 sloc) | 1 KB

```
1 node {
2     def app
3
4     stage('Clone repository') {
5         /* Let's make sure we have the repository cloned to our workspace */
6
7         checkout scm
8     }
9
10    stage('Build image') {
11        /* This builds the actual image; synonymous to
12           docker build on the command line */
13
14        app = docker.build("edureka/edureka")
15    }
16
17    stage('Test image') {
18        /* Ideally, we would run a test framework against our image.
19           * For this example, we're using a volkswagen-type approach ;-)
20
21        app.inside {
22            sh 'echo "Tests passed"'
23        }
24    }
25}
```

Raw Blame History

edureka@localhost:~/Downloads/... 1 / 4

Firefox Web Browser

System » Global credentials (unrestricted) » edureka1/***** Config [Jenkins] - Mozilla Firefox

localhost:8080/jenkins/credentials/store/system/domain/_/credential/docker-hub-credentials/update

Jenkins

Credentials > System > Global credentials (unrestricted) > edureka1/*****

Back to Global credentials (unrestricted)

Scope: Global (Jenkins, nodes, items, all child items, etc)

Update

Delete

Move

Username: edureka1

Password:

ID: docker-hub-credentials

Description:

Save

Page generated: Apr 16, 2018 6:13:28 AM EDT REST API Jenkins ver. 2.89.4

edureka@localhost:~/Downloads/... 1 / 4

edureka-pipeline Config [Jenkins] - Mozilla Firefox

localhost:8080/jenkins/job/edureka-pipeline/configure

Jenkins

Jenkins > edureka-pipeline >

General Build Triggers Advanced Project Options Pipeline

Pipeline name: edureka-pipeline

Description: edureka-pipeline

[Plain text] Preview

Discard old builds

Do not allow concurrent builds

Do not allow the pipeline to resume if the master restarts.

GitHub project

Pipeline speed/durability override

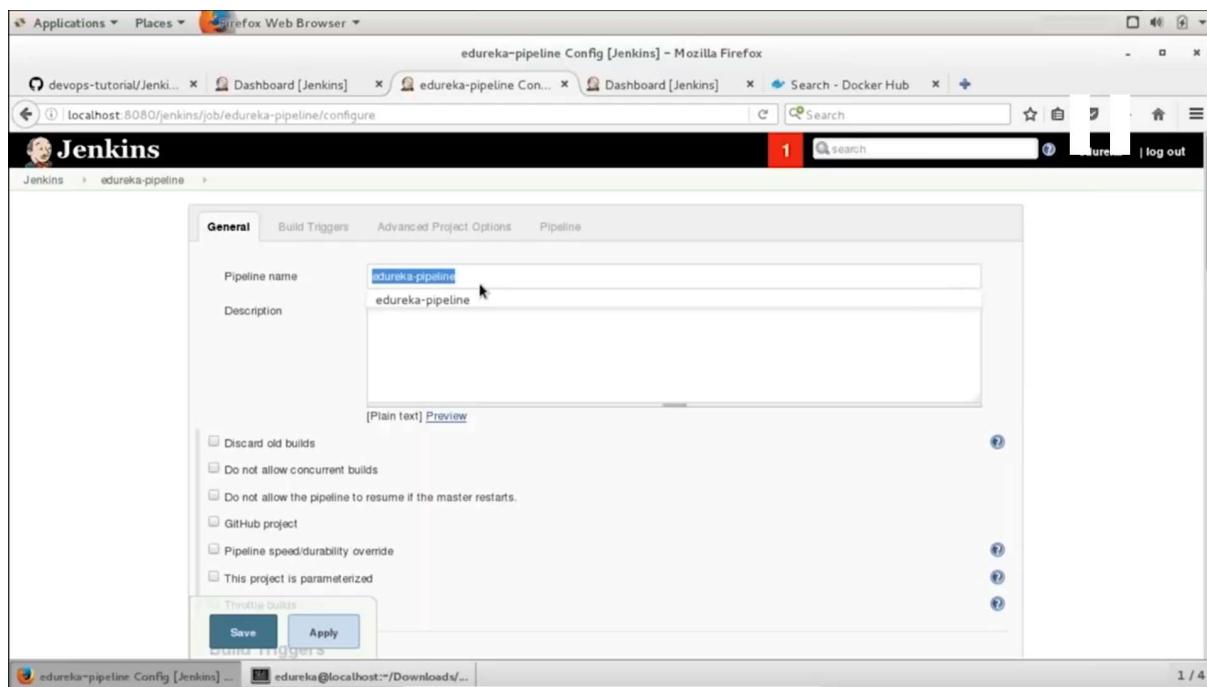
This project is parameterized

Throttle Builds

Save Apply

Build Triggers

edureka-pipeline Config [Jenkins] ... edureka@localhost:~/Downloads/... 1 / 4



edureka-pipeline Config [Jenkins] - Mozilla Firefox

localhost:8080/jenkins/job/edureka-pipeline/configure

Jenkins > edureka-pipeline >

General Build Triggers Advanced Project Options Pipeline

Build Triggers

Build after other projects are built

Build periodically

GitHub hook trigger for GITScm polling

Poll SCM

Schedule: every minute

Do you really mean "every minute" when you say "every minute"? Perhaps you meant "H * * * *" to poll once per hour
Would last have run at Monday, April 16, 2018 6:14:10 AM EDT; would next run at Monday, April 16, 2018 6:14:10 AM EDT.

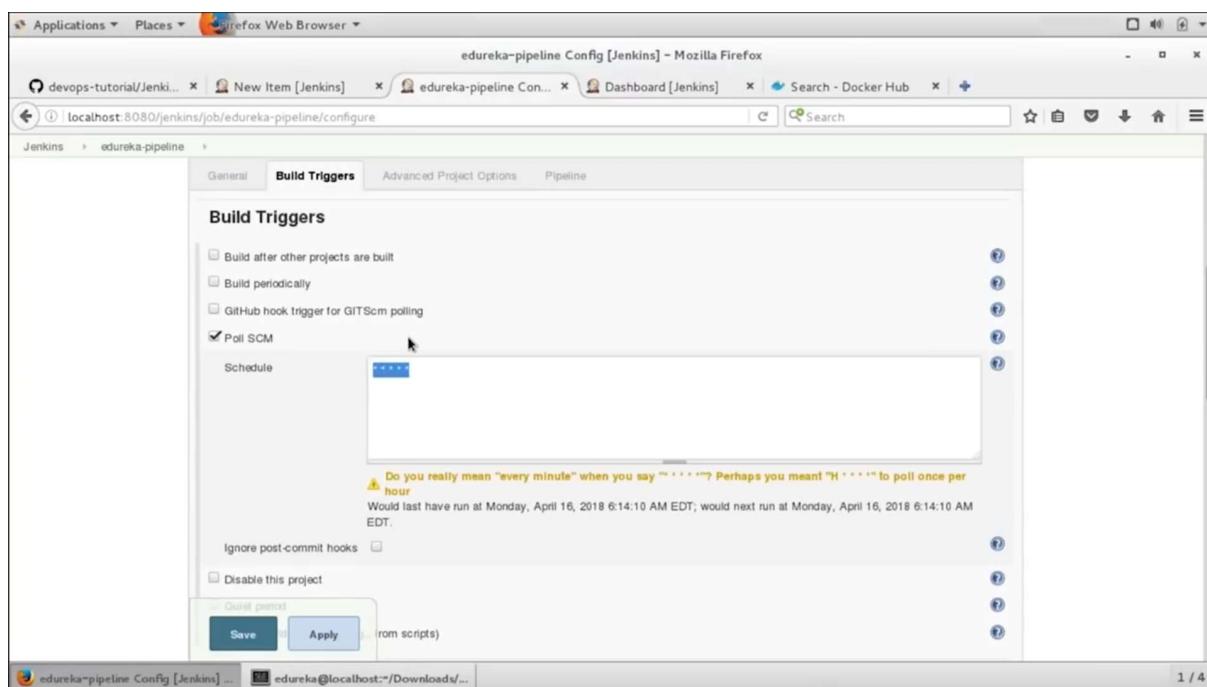
Ignore post-commit hooks:

Disable this project

Quiesce period: from scripts

Save Apply

edureka-pipeline Config [Jenkins] ... edureka@localhost:~/Downloads/... 1 / 4



Firefox Web Browser - Mozilla Firefox

localhost:8080/jenkins/job/edureka-pipeline/ Jenkins - edureka-pipeline [Jenkins] - Mozilla Firefox

edureka-pipeline [Jenkins] - Mozilla Firefox

edureka-pipeline [Jenkins] - Mozilla Firefox

Dashboard [Jenkins]

Search - Docker Hub

localhost:8080/jenkins/job/edureka-pipeline/

Search

edureka | log out

ENABLE AUTO REFRESH

Jenkins

Back to Dashboard

Status

Changes

Build Now

Delete Pipeline

Configure

Full Stage View

Pipeline Syntax

Git Polling Log

Pipeline edureka-pipeline

1

search

Recent Changes

add description

Disable Project

Stage View

Clone repository	Build Image	Test Image	Push Image
18s	26s	7s	42s

Average stage times:
(Average full run time: ~1min 52s)

Apr 16, 2018 6:15 AM

Apr 11, 2018 2:18 AM

BSS for all RSS for failures

1 / 4

edureka-pipeline [Jenkins] - Mozilla Firefox edureka@localhost:~/Downloads/...

Firefox Web Browser - Mozilla Firefox

https://hub.docker.com/r/edureka1/edureka/tags/ Jenkins - edureka-pipeline [Jenkins] - Mozilla Firefox

edureka1/edureka - Docker Hub - Mozilla Firefox

edureka1/edureka - Docker Hub

edureka1

Dashboard Explore Organizations Create

PUBLIC REPOSITORY

edureka1/edureka

Last pushed: in 5 minutes

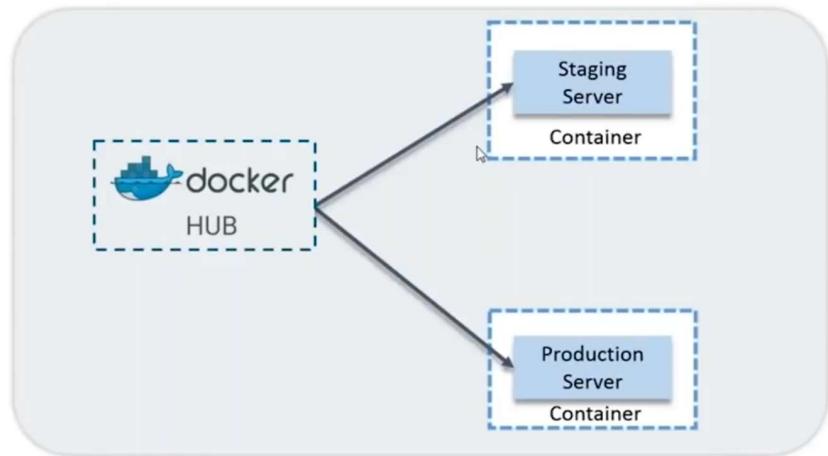
Repo Info Tags Collaborators Webhooks Settings

Tag Name	Compressed Size	Last Updated
latest	264 MB	in 5 minutes
2	264 MB	in 4 minutes
1	264 MB	5 days ago
16	264 MB	11 days ago

edureka1/edureka - Docker Hub edureka@localhost:~/Downloads/...

1 / 4

DevOps Use-Case Part - 2





02

Version Control Using Git & GitHub