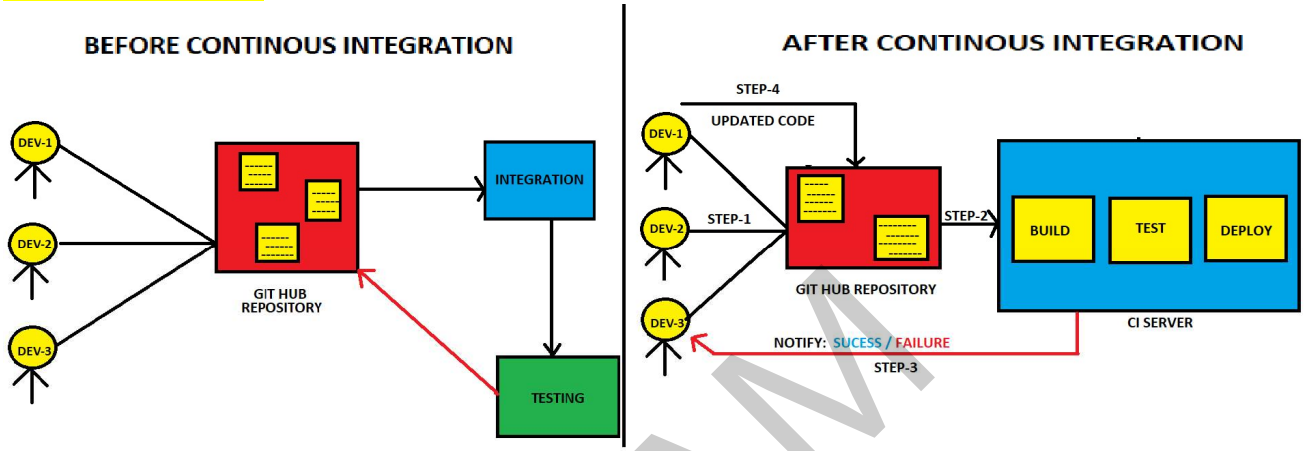
JENKINS

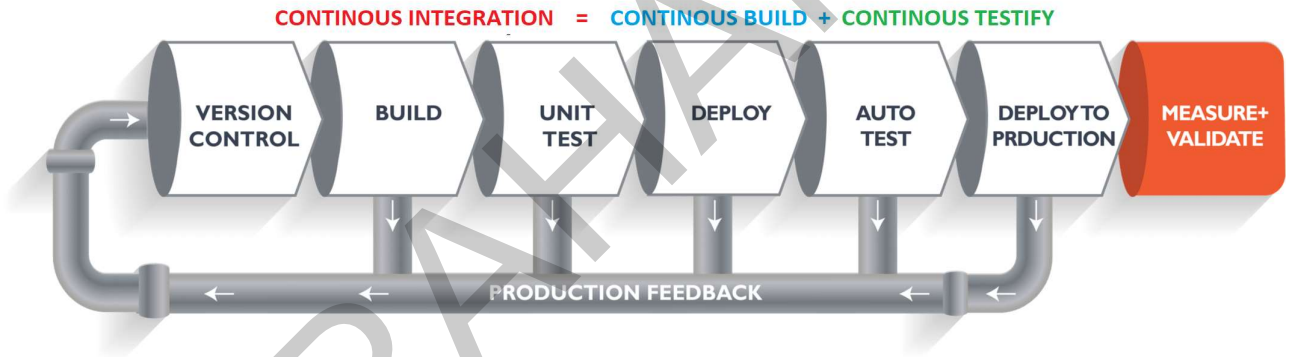
CI = CONTINOUS INTEGRATION CD = CONTINOUS DELIVERY/DEPLOYMENT

CI/CD means it is not a tool a it is a methodology/Framework which used to develop SDLC.

Pipeline follows First come first serve

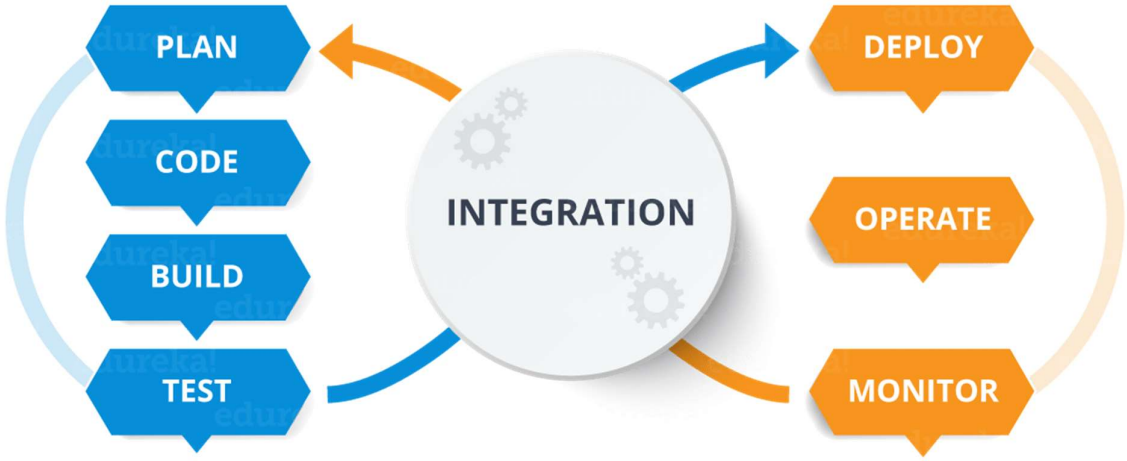
WHY WE USE IT



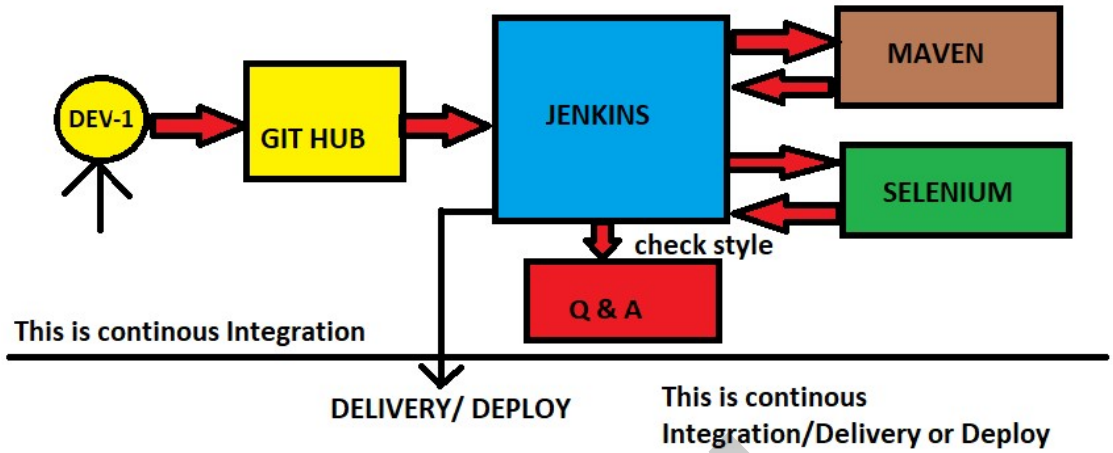


If we have error in **Code** then it will give feedback and it will be corrected, if we have error in **Build** then it will give feedback and it will be corrected, Pipeline will work like this until it reaches **Deploy**.

edureka!



- Jenkins is an Opensource project written in java that runs on Windows, Linux, Mac-OS.
- It is community supported and Free to use and First choice for Continuous Integration.



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- Consist of Plugins
- Automates the Entire Software Development Life Cycle (SDLC).
- It was Originally developed by **Sun Microsystem in 2004 as HUDSON**.
- Hudson was an enterprise Edition we need to pay for it.
- The project was renamed as Jenkins when Oracle brought the Microsystems.
- It can run on any major platform without Compatibility issue.
- Whenever developers write code, we integrate all the code of all developers at any point of time and we build, test and deliver/deploy to client. This is called as CI/CD.
- Because of this CI, Bugs will be reported fast and get rectified so entire development is fast.

WORKFLOW

- We can attach Git, Maven, Selenium and Artifactory plugins to the Jenkins.
- Artifactory consists of final code which is ready to use.
- Once Developer put code in GitHub Jenkins pull that code and send to Maven for Build.
- Once Build is done, Jenkins pull that code and send to Selenium for Testing.
- Once Testing is done, Jenkins pull that code and send to Artifactory as per requirement.
- We can also Deploy with Jenkins.

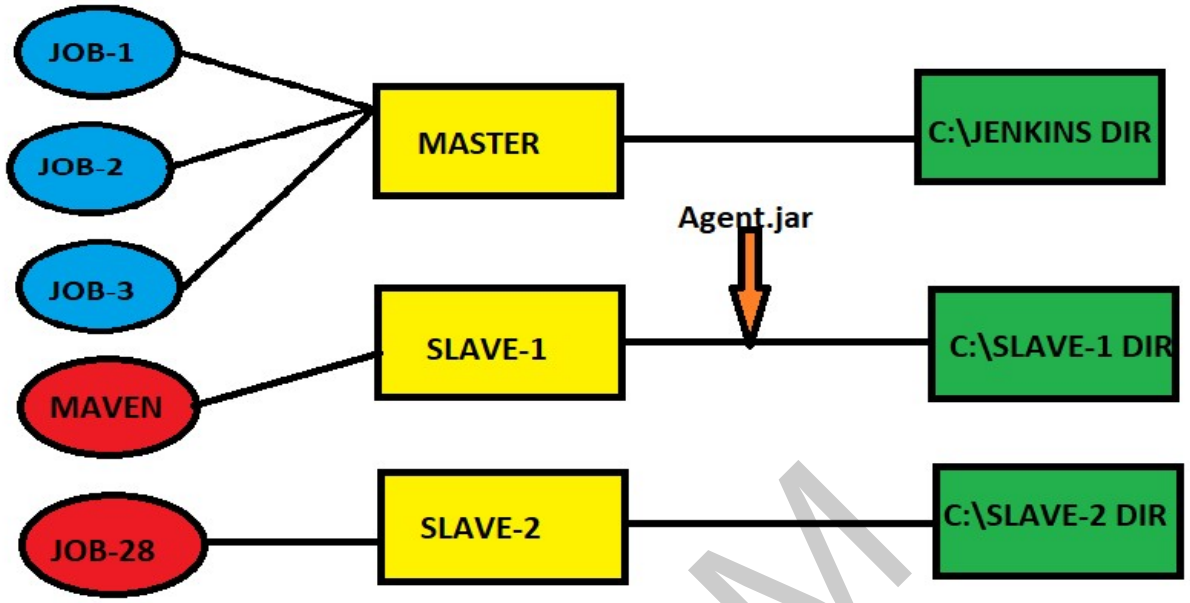
ADVANTAGES

- It has lot of plugins and You can write your own plugin, can use community plugin also.
- It is not a tool it is a framework. i.e., you can do whatever you want all you need is plug-ins.
- Jenkins follows Master-Slave Architecture.
- We can attach slaves (Nodes) to Jenkins's master. It instructs other (Slaves) to do the Job.
- If Slaves are not available Jenkins itself do the job.
- Jenkins also behave as Server Replacement. i.e.., it can do schedule job.
- It can create labels. i.e..., means who will do that task and assigns the tasks.

JENKINS ALTERNATIVES

- Bamboo, Travis CI, Circle CI, Team city, AWS code pipeline, Semaphore, Buddy, Build master.

MASTER-SLAVE CONCEPT



Manage Jenkins -- > new node -- > name -- > ok -- > Remote root dir: c:\slave1dir -- > Launch method Select 2nd method -- > click on question mark -- > download Agent.jar and paste it on c: drive -- > java -jar c:\agent.jar give that on launch command -- > Save

Now you build jobs then either master or slave do that builds.
If some specific job (MAVEN) wants to done by specific node (SLAVE1) then
Slave1 -- > config -- > labels: Maven -- > save
Maven job -- > configure -- > Restrict where this project can be done -- > MAVEN -- > Save.
Now build maven job then it will be done by Slave1.

JENKINS SETUP

```
sudo yum update -y
sudo wget -O /etc/yum.repos.d/jenkins.repo https://pkg.jenkins.io/redhat-stable/jenkins.repo
sudo rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io.key
sudo amazon-linux-extras install epel -y      : Extra package for enterprise linux
sudo yum install java-1.8.0-openjdk -y
sudo yum install git -y
sudo yum install maven -y
sudo yum install jenkins -y
sudo systemctl restart jenkins
sudo systemctl status jenkins
copy the IPV4 and paste it on browser like {ipv4:8080}
sudo cat /var/lib/jenkins/secrets/initialAdminPassword


sudo vim /etc/passwd
sudo passwd jenkins
sudo visudo
sudo vim /etc/ssh/sshd_config
sudo systemctl restart sshd
sudo systemctl status sshd
```

```
================================================================================
LOGIN TO SLAVE SERVER

sudo useradd jenkins
sudo passwd jenkins
sudo visudo
sudo vim /etc/ssh/sshd_config
sudo systemctl restart sshd
sudo systemctl status sshd

================================================================================
GO BACK TO MASTER

sudo su jenkins
ssh-keygen
ssh-copy-id jenkins@localhost
yes
exit
ssh
ssh-copy-id jenkins@public IPV4 of slave
ssg jenkins@public IPV4 of Slave

================================================================================
GO BACK TO SLAVE

sudo su jenkins
ssh jenkins@public IPV4 of Master
yes
password

logout and restart jenkins
================================================================================
```


JAVA INSTALLATION

- Search jdk download -- > install all default values -- > c:users:programfiles:jdk copy path Environment variables -- > Name: JAVA_HOME Path: copy and paste path for both user and system variables.
- Open bin and copy that path again and paste it on system variable -- > path -- > paste -- >ok.
- Cmd prompt : java -version and echo %JAVA_HOME%

MAVEN INSTALLATION

- Maven.apache.org -- > Binary zip archive -- > extract on C:\Dev tools -- > Open the location And copy path -- > Environment variables -- > System variables -- > name:M2-HOME path: paste the location -- > ok. And open bin folder and copy path and paste it on system variable -- > path -- > paste -- >ok now check version: mvn -version

JOBS IN JENKINS

- Name -- > freestyle -- > ok -- > Build -- > Add build step -- > execute command -- >Echo “hello” -- > save -- > Dashboard -- > Select it and build.
- If build is green, it is success and red it will be failed. Check details in console output.

- If you want to copy the job new item -- > name: copy project -- > copy from: select job want to copy -- > Ok -- > and you will see the same details of your original job.

MAVEN JOB, TASK

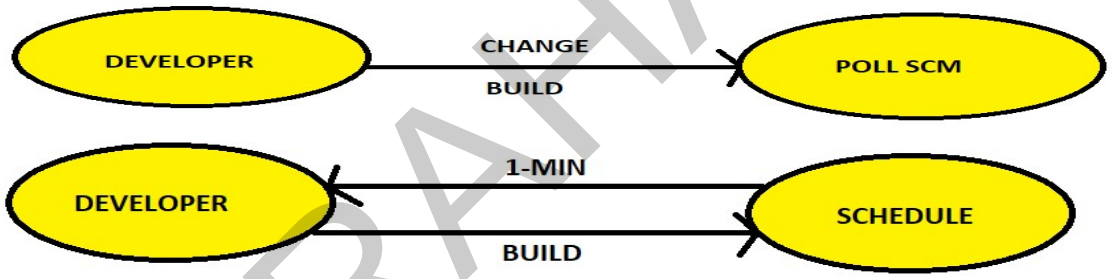
- Manage jenkins -- > Manage plugins -- > Download plugins you need
- Restart jenkins once the plug in installation is done.
- Manage jenkins -- > Global tool config -- > config java and maven by giving url.
- Search github.com/RAHAMUSER1007/time-tracker -- > fork -- > it will come to your GitHub.
- In EC2/cmd prompt give git clone https://github.com/RAHAMUSER1007/time-tracker.git
- cd time-tracker -- > mvn clean package

BY USING JENKINS NOW

Name -- > maven project -- > git -- > url -- > goals and options: clean package -- > save -- > build now

SCHEDULE PROJECT

- click on any project -- > configure -- > build -- > triggers -- > build periodically -- > ***** -- > (1*: minutes, 2*: hours, 3*: days, 4*: month, 5*: week) -- > save.
- Can see automatic build after every minute.
- You can manually trigger build as well.
- For schedule jobs it will be built for every one minute continuously.
- For poll SCM it will het build when there will be only change in the file.



LINKED PROJECTS

- Used to do the job one by one. If job1 is done then it will tell to job2 I'm done you go ahead.

UP STREAM

- Create a job B and copy from job A you previously build and save.
- Select on job A and click configure -- > build other project -- > select the job B gave -- > ok.
- Build job B and the job A will be waiting to get build.

DOWN STREAM

- Create a job B and copy from job A you previously build and save.
- Configure -- > Build after other projects are built -- > select the job you gave -- > save
- Now build the job and the other job will be in waiting process.

USER MANAGEMENT

- Jenkins Homepage -- > Manage Jenkins -- >Manage users by default you see a user.
- Create 2 users -- > User1 and User2 & login as Raham (you have all permissions by default).
- Login as raham again -- > manage Jenkins -- > manage plugins -- > Select Role based Authorization strategy and Authorize project -- > install without restart.
- GO to Jenkins home -- > manage Jenkins -- > Config global security -- > select Jenkins' own user database tick -- > role-based strategy -- > Save and Login as Raham -- > Access denied.
- Now, attach permissions got to Jenkins -- > manage and assign role -- > manage roles -- > role to add -- > Employee.
- Go to item project -- > add developer and tester -- > pattern (dev* and test*) -- > Assign roles user/groups to add User1 and User2 (**User1: developer and User2: tester**).
- Config global security -- > Project-based Matrix Authorization Strategy -- > add the user1 and user2 there and save. Now logout and login as user1 once
- Now you will see the user1 dashboard.