Procedure to install Jenkins

========

=======

step1) make sure that Jdk 11/17 (1 is recomanded) in ur computer

step2) dowload Jenkins setup file

```
C:\Users\Nataraz>java -version
java version "17.0.9" 2023-10-17 LTS
Java(TM) SE Runtime Environment (build 17.0.9+11-LTS-201)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.9+11-LTS-201, mixed mode, sharing)
```

Goto https://www.jenkins.io/download/ --->select windows ---> automatically the Jenkins.msi file will be downloaded

Ubuntu/Debian

Red Hat/Fedora/Alma/Rocky/CentOS

Windows

step3) Install Jenkins

Click on Jenkins.msi file ---> next ---> choose location (c:\Program files\Jenkins) ---->next---> choose port number (6677) ---> check port numbe availability ---> next ---> choose jdk1 location ---->next ---> next -->finish

step4) start Jenkins server from services.msc

open services app ---> select jenkis --> change startup type to manual ---> start

step5) open Jenkins home page and create admin user

http://localhost:6677/--> gives the home page

also gives the screen to submit the initial admim password (collect from C:\Program Files\Jenkins\secrets \initialAdminPassword file ---> (648b5eb5494a48cf8d05acd022a6e9ff) and sumbit it..

if this option is not coming automatically then

go to dashboard ---> manage Jenkins ---> security --->users ---> +create new user

-->create new admi user

username::admin password: admin

--> ..

...

-->submit

(note :: after this process restart the Jenkins)

step6) Login to Jenkins as the admin

https://loclahost:6767 -->username ::admin, password: admin ---> login

Example App

============

maven tool plugin

Jenkins server

Tomcat

Server

Eclipse IDE (a)

('d

(d)

maven web application

web application

(war file)

web application deployment

commit

GIT/GIT HUB tool (b) plugin

deploy to container plugin

step1) make sure that maven is installed in ur computer by downloading and extracting the zip file (apache-maven-3.9.5.bin.zip)

↓

https://maven.apache.org/download.cgi?.

>This PC > Local Disk (D:) > apache-maven-3.9.5-bin> apache-maven-3.9.5

Name

Date modified

bin

01-10-2023 18:38

boot

01-10-2023 18:38

conf

01-10-2023 18:38

lib

01-10-2023 18:38

LICENSE

01-10-2023 18:38

NOTICE

01-10-2023 18:38

README

01-10-2023 18:38

step2) install GIT/GIT BASH to ur computer

by download

Git-2.42.0.2-64-bit

(collect using this URL)

file

17-10-2023 20:49

Application

59,829 KB

(https://git-scm.com/download/win)

C:\Program Files\Git

)

Name

Date modified

Type

Size

bin

cmd

17-10-2023 20:49 17-10-2023 20:50

File folder

File folder

dev

17-10-2023 20:50

File folder

etc

17-10-2023 20:50

File folder

mingw64

17-10-2023 20:49

File folder

tmp

17-10-2023 20:49

File folder

es

17-10-2023 20:50

File folder

es (x86)

→git-bash

git-cmd

LICENSE

30-08-2023 09:49

30-08-2023 09:49

Application Application

135 KB

134 KB

30-08-2023 10:56

Text Document

19 KB

ReleaseNotes

30-08-2023 10:56

Chrome HTML Do...

247 KB

10.x

step3) install tomcat

server in ur computer having port number other than 8080 (taken 5454)

step4) update the admin user roles in <Tomcat_home>\conf\tomcat-users.xml file

In tomcat-users.xml file

add these these lines in the place of existing <user> tag

<role rolename="admin-gui,manager-gui,manager-script, manager-jmx,manager-status,admin-gui"/> <user username="admin" password="admin" roles="admin-gui,manager-gui,manager-script"/>

step5) Configure the following tools in jenkins as the jenkin plugins (By starting the

Jenkins login ---> dashboard ---> manage Jenkins ---> tools

Git installations

Jenkins server)

=

Git

Name

Default

add this

open services.msi ---> search Jenkins -->start

in

note: if GIT option is not coming tools section to configure then add we need to that plugin as shown below

dashboard -->manage Jenkins ---> plugins ---> available plugins---> search GIT ---> select gIT, GITHUB, Git Client, GitHub API ---> install plugins

note:: All the tools that u want to configure with Jenkins must be installed as plugins by going "plugins" section.. i.e all tools will appear in tools section only when their respective plugins are installed from the plugins section

Path to Git executable ?

C:\Program Files\Git\bin\git.exe

(select from file system) (if git is not

installed separately, choose install automatically)

JDK installations

Add Maven

Maven Name

maven1

(logical name)

MAVEN HOME

D:\apache-maven-3.9.5-bin\apache-maven-3.9.5

save

(maven installation folder where

the bin directory is avaialble)

JDK installations ^

Edited

Add JDK

add JDK ----->

= JDK

Name

jdk p

JAVA_HOME

C:\Program Files\Java\jdk-17

(Here prefer choosing the JDK path, not the install

step6) install "deploy to container plugin in"

Jenkins login ---> dashboard ---> manage Jenkins ---> plugins

--> available plugins ---> search and select "deploy to container" plugin -->install

step7) create maven web application in eclipse IDE

-> create maven web project

note: if any tool is not appearing in the Jenkins tools section for configuration, then we need to install that as jenkins plugin from dashboard --> manage jenkins ---> plugins section

...

-> add servlet api to pom.xml file

<!-- https://mvnrepository.com/artifact/jakarta.servlet/jakarta.servlet-api --> <dependency>

let-api -->

<groupId>jakarta.servlet</groupId>

<artifactId>jakarta.servlet-api</artifactId>

<version>6.1.0</version>

<scope>provided</scope>

</dependency>

step8)

-> write code in src/main/webapp/index.jsp file

jenkins_maven_webapp [FullStackRepo11 master]

> a Deployment Descriptor: Archetype Created Web Ap

>Java Resources

>

Worskpaces

>

Deployed Resources

✓ src

veg main

webapp

> WEB-INF

index.jsp

<h1 style="color:red;text-align:center"> Welcome to Jenkins --- Date and time :: <%= new java.util.Date() %></h1>

test the application locally

-->right click on the project --->run as ---> run on server --->select tomcat server --> ....

step9) keep the project in GITHUB

right click on the Project ---> team ---> share Project ---> git URL :: FullStackRepo11 - C:\Users\NATARAJ\git\FullStackRepo11\.git -->next -->finish

Goto git staging tab---> press ++ symbol ---> write commit ---> commit and push

step10) create job in Jenkins to enable CI and CD on GIT hub project

Jenkins dashboard ----> new job ----> job name :: Jenkins_job2

automatically option)

-->

General

Description

Jenkins CI/CD

Discard old builds ?

↓

Source Code Management

-->fres style project --> ok ↓

|---> In every free style project we need to specify the following six elements

General (For general information)

Source Code Management (For GIT configuration)

Build Triggers (When build processs should start (manual or periodical or git commits)

Build Environment (maven tool cfg)

Build Steps (war file location)

None

Git ?

Repositories ?

Repository URL?

https://github.com/natarazworld/FullStackRepo1.git

Credentials ?

- none -

(optional for public git repository)

Add ▾

Branches to build ?

Branch Specifier (blank for 'any') ?

*/master

Add Branch

Repository browser ?

(Auto)

Additional Behaviours

Add -

Post-build Actions

Build Environment

Delete workspace before build starts

Advanced

Build Triggers

00000

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

Build after other projects are built?

To run the build manually nothing is selected here

Build periodically ?

GitHub hook trigger for GITScm polling ?

Poll SCM ?

Build Steps

↓

Invoke top-level Maven targets ?

=

Maven Version

maven1

Goals

clean package

(nick name given in global tool configuration)

Advanced A

Edited

POM ?

jenkins_maven_webapp (name of the web application)

Post-build Actions

Deploy war/ear to a container

WAR/EAR files ?

jenkins_maven_webapp/target/*.war

Context path? jenkins_maven_webapp

Containers

Tomcat 9.x Remote

Credentials

admin/******

(Selec the added user)

Add ▼

add username(admin) and password(admin) --->related tomcat server

Tomcat URL?

http://localhost:5454

(tomcat home page url)

Advanced

-->save

step11) make sure that Tomcat server is running mode (External Tomcat server that is started using

<Tomcat_home>\bin\tomcat<n>.exe file)

step12) Run the jenkinks job

goto Jenkins_job2 ---> build now

To see the success /error conolse :: cloud symbol ---> console window

To enable scheduling on build and deployment

Build Triggers

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

Build after other projects are built?

✓ Build periodically?

Schedule ?

H/3****

(buidls the app for every 3 minutes)

(Deployment configurations)

This field follows the syntax of cron (with minor differences). Specifically, each line consists of 5 fields

separated by TAB or whitespace:

MINUTE HOUR DOM MONTH DOW

MINUTE Minutes within the hour (0-59)

HOUR

The hour of the day (0-23)

DOM

The day of the month (1-31)

MONTH The month (1-12)

DOW The day of the week (0-7) where 0 and 7 are Sunday.

To specify multiple values for one field, the following operators are available. In the order of precedence,

*** specifies all valid values**

M-N specifies a range of values

M-N/X or */X steps by intervals of X through the specified range or whole valid range

A,B,...,Z enumerates multiple values

To allow periodically scheduled tasks to produce even load on the system, the symbol H (for "hash") should be used wherever possible. For example, using 0 0 * * * for a dozen daily jobs will cause a large spike at midnight. In contrast, using H H * each job once a day, but not all at the same time, better using limited resources.

The H symbol can be used with a range. For example, H H(0-7) * means some time between 12:00 AM (midnight) to 7:59 AM. You can also use step intervals with H, with or without ranges.**

The H symbol can be thought of as a random value over a range, but it actually is a hash of the job name, not a random function, so that the value remains stable for any given project.

I would still execute

Beware that for the day of month field, short cycles such as */3 or H/3 will not work consistently near the end of most months, due to variable month lengths. For example, */3 will run on the 1st, 4th, ...31st days of a long month, then again the next day of the next month. Hashes are always chosen in the 1-28 range, so H/3 will produce a gap between runs of between 3 and 6 days at the end of a month. (Longer cycles will also have inconsistent lengths but the effect may be relatively less noticeable.)

Empty lines and lines that start with # will be ignored as comments.

In addition, @yearly, @annually, @monthly, @weekly, @daily, @midnight, and @hourly are supported as convenient aliases. These use the hash system for automatic balancing. For example, @hourly is the same as H ** and could mean at any time during the hour. @midnight actually means some time between 12:00 AM and 2:59 AM.**

Examples:

# Every fifteen minutes (perhaps at :07, :22, :37, :52):

H/15****

# Every ten minutes in the first half of every hour (three times, perhaps at :04, :14, :24):

H(0-29)/10 ****

# Once every two hours at 45 minutes past the hour starting at 9:45 AM and finishing at 3:45 PM every weekday:

```
45 9-16/2** 1-5
# Once in every two hour slot between 8 AM and 4 PM every weekday (perhaps at 9:38 AM, 11:38 AM, 1:38 PM, 3:38 PM):
H H(8-15)/2** 1-5
# Once a day on the 1st and 15th of every month except December:
HH 1,15 1-11*
```

Time zone specification

Periodic tasks are normally executed at the scheduled time in the time zone of the Jenkins master JVM (currently Asia/Calcutta). This behavior can optionally be changed by specifying an alternative time zone in the first line of the field. Time zone specification starts

with TZ=, followed by the ID of a time zone.

Complete example of a schedule with a time zone specification:

```
TZ=Europe/London
# This job needs to be run in the morning, London time
H8***
# Butlers do not have a five o'clock, so we run the job again
H(0-30) 17***
```

What

Making the Jenkins to build its job automatically for every code commit that happens

in the Code Reppsitory

========

How to make Jenkins to build the Project for any commits happens on the GIT repository?

Ans)

use

SCM poll option of Build trigger section as shown below

Polling the repository

Now, it is possible to setup a Build Trigger to get Jenkins to poll for changes in a

Git repository. You do this using the Poll SCM option on the project

configuration page in Jenkins.

Build Triggers

Build after other projects are built Build periodically ✔Poll SCM Schedule

FAQs

Do you really mean "every minute" when you say

*******"*?

Perhaps you meant "H ****" to poll once per hour

Ignore post-commit hooks

By enabling Poll SCM and entering a cron expression ***** in the Schedule

text box we can get Jenkins to poll the repository for changes every minute. You can enter whatever cron expression you like but this serves as a simple

example.

========

What is CI/CD tool?

What are different CI/CD tools available in the market

What

are Jenkins Plugins

Explain different types of Jenkins plugins

How Jenkins is used as part Build Automation

(a) for description

General (b) to enable destroy on old builds

different configurations that need to keep as part of Jenkins job configuration?

=>General cfg, build cfg,SCM cfg, build scan,build triggers,post build cfgs,....

What is the difference between Jenkins tools and Jenkins plugin?

=> Jenkins plugins must be installed in order to work with Jenkins Tools for configuration

eg:: Before configuring GIT tool by specifying its location we must install Jenkins git plugins

How to enable scheduled build for Jenkins job?

Ans) Use build periodically in Build trigger section

How to enable Jenkins automatic build for code commits done on the Repository?

Ans) use SCM poll option of Buidl trigger sectiions

How to see build history?

Source Code Management a) for git url cfg

Build Triggers (a) for scheduling,

(b) SCM polling

Build Environment a) To specify maven operations

Build Steps

a) to cfg other tools like sonarqube

Post-build Actions

a) For deployment to contianer

How to see the console of any jenkins build?

jenkins_task_job1 #17

29 min

stable

use console symbol

How reset initial password in jenkis configuration?

what is step by step process to automate build and deployment process using Jenkins?

a) plugins installation b) Tools configuration c) Server installation and Confiuration

d) Keeping the App/Project code in the Code Repository e) Jenkins Job Creation and Configuration

f) Running the Jenkins Job manually or periodically

if ur getting problems towards uninstalling the Jenkins software from window10/11 OS machine

===========:

a) open cmd as the admin

====

=====

window button ---> cmd ---> right click -> run as admin

b) run the wmic application

==========

cmd> wmic

c) get all the installed products

```
C:\Windows\System32>wmic
wmic:root\cli>product get name
```

d) uninstall Jenkins by gathering "jenkis" product actually name from the list of

above details

```
wmic:root\cli>product where name="Jenkins 2.440.1" call uninstall
Execute (\\DESKTOP-JEUKT9C\ROOT\CIMV2:
Win32_Product.IdentifyingNumber="{7C054488-C6AA-4BE1-9641-AFB7D55CFC0D}",Name="Jenkins
2.440.1”,Version="2.255.4401")->Uninstall() (Y/
N/?)? y
Method execution successful.
Out Parameters:
instance of
_PARAMETERS
K
ReturnValue = 0;
```

How to solve 2503 & 2502 error codes that are coming for any software installation that happens in windows?

Ans) open "temp" folder and full control to all the level users

windows button ---> search temp folder ---> right click on "temp" folder ---> properties ---> security tab

----> select any user ---> edit ---> give full controller on the folder to all the users (specially for

currently logged window user)

Q) Jenkins falls under which category tool?

Ans) Build and deployment automation tool or CI and CD Tool

Q) What are alternate tools for Jenkins?

Ans) git hub (some extend), git lab (some extend), autorabit, gearset, ansible automation platform,

bitraise, buddy and etc...

Q) Is Jenkins devOps Tool or DevSecOpsTool?

ans) yes, it is main tool for DevOps (it is ops side tool)

Who needs Jenkins knowledge?

ans) Build and Deployment team (DevOps team)

Any Domain,Full stack developers

Q) Exaplain Master-Agent Arch of Jenkins?

Q) What are the features of Jenkins?

Q) In how many ways we can run Jenkins Job?

a) manually b) PErdiocally c) Poll SCM

Q) Can u explain various things involved in the Jenkins Job Configuration?