Module Checklist
Build Automation & CI/CD with Jenkins

By TechWorld with Nana

Video Overview

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Introduction to Build Automation

❏   Watched video

Install Jenkins

❏   Watched video
❏   **Demo executed**
    ❏   Created a Server (Droplet) on DigitalOcean
    ❏   Configured Firewall Rules to open port 22 and port 8080 for our new server
    ❏   Installed Docker on DigitalOcean Droplet
    ❏   Started Jenkins Docker container with named volume
    ❏   Initialized Jenkins

Useful Links:

• Jenkins Docker Image: https://hub.docker.com/r/jenkins/jenkins

Useful Commands:

```
docker run -p 8080:8080 -p 50000:50000 -d -v
jenkins_home:/var/jenkins_home jenkins/jenkins:lts
docker volume inspect jenkins_home

# print the initialisation password
cat
/var/snap/docker/common/var-lib-docker/volumes/jenkins_home/
_data/secrets/initialAdminPassword
```

Jenkins UI Tour

❏   Watched video

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Install Build Tools

- ❑ Watched video
- ❑ **Demo executed**
    - ❑ Configured Plugin for Maven
    - ❑ Installed npm and node in Jenkins container

Useful Links:

- Node Installation for Linux distributions: https://github.com/nodesource/distributions
- Jenkins Plugins: https://plugins.jenkins.io/

Useful Commands:

```
# enter container as root
docker exec -u 0 -it a3f305b0b63f bash

# check with Linux distro container is running
cat /etc/issue

apt update
apt install curl

curl -sL https://deb.nodesource.com/setup_20.x -o nodesource_setup.sh
bash nodesource_setup.sh
apt install nodejs

node -v
npm -v
```

Jenkins Basics Demo

- ❑ Watched video
- ❑ **Demo executed - create a simple Freestyle Job**
    - ❑ Configured Git Repository to checkout the code from
    - ❑ Configured Job to run tests and build Java Application

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Docker in Jenkins

- ❏ Watched video
- ❏ **Demo executed - push Image to DockerHub Repository**
    - ❏ Made Docker available in Jenkins container (mount docker runtime inside container as a volume)
    - ❏ Fixed permissions on docker.sock
    - ❏ Configured Job to build Docker Image
    - ❏ Configured Job to push Image to DockerHub
        - ❏ <u>Prerequisite</u>: Account on DockerHub
        - ❏ Created a repository on DockerHub
        - ❏ Created Credentials for DockerHub in Jenkins UI
        - ❏ Tag Docker Image with your DockerHub repository, login and push to repository
- ❏ **Demo executed - push Image to Nexus Repository**
    - ❏ Configured "insecure-registries" on Droplet server (daemon.json file)
    - ❏ Fixed permission for docker.sock again after restart of Jenkins container
    - ❏ Created Credentials for Nexus in Jenkins UI
    - ❏ Tag Docker Image with your Nexus host and repository, login and push to repository

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Docker in Jenkins

Useful Commands:

```
# create jenkins container with mounted docker
docker run -p 8080:8080 -p 50000:50000 -d -v jenkins_home:/var/jenkins_home -v
/var/run/docker.sock:/var/run/docker.sock

# enter as root and complete docker installation
docker exec -u 0 -it 0c73a1692b75 bash
curl https://get.docker.com/ > dockerinstall && chmod 777 dockerinstall && ./dockerinstall

# modify docker socket file permissions
chmod 666 /var/run/docker.sock

# edit or create /etc/docker/daemon.json ON THE HOST
vim /etc/docker/daemon.json
{
  "insecure-registries" : ["167.99.248.163:8083"]
}

# restart docker
systemctl restart docker

# start container again
docker start 0c73a1692b75

# enter as root and modify docker.sock permission
docker exec -u 0 -it 0c73a1692b75 bash
chmod 666 /var/run/docker.sock
```

❏   Watched video

Introduction to Pipeline Job

❏   Watched video
❏   **Demo executed - create a basic Pipeline Job**
  ❏   Configured Git Repository
  ❏   Created a valid Jenkinsfile with required field

Jenkinsfile Syntax

- ❏ Watched video
- ❏ **Demo executed**
    - ❏ Used Post attribute
    - ❏ Defined a Condition
    - ❏ Used an environment variable
    - ❏ Used Tools Attribute
    - ❏ Used a Parameter
    - ❏ Used an external Groovy Script
    - ❏ Used an Input Parameter

Useful Links:

- • List available environment variables: *<your-ip-of-jenkins>:8080*//env-vars.html

Create full Pipeline

- ❏ Watched video
- ❏ **Demo executed - create a full Pipeline Job**
    - ❏ Build Jar
    - ❏ Build Docker Image
    - ❏ Push to private Repository DockerHub

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Check your progress... 6/7

Introduction to Multibranch Job

- ❏ Watched video
- ❏ **Demo executed**
    - ❏ Added branch based logic in Jenkinsfile

Wrap Up Jenkins Jobs

- ❏ Watched video

Credentials in Jenkins

- ❏ Watched video

Jenkins Shared Library

- ❏ Watched video
- ❏ **Demo executed**
    - ❏ Created Shared Library Project/Repository
    - ❏ Made Shared Library globally available in Jenkins
    - ❏ Used Shared Library in Jenkinsfile
    - ❏ Used Parameters in Shared Library
    - ❏ Extracted logic into Groovy Classes
    - ❏ Define Shared Library in Jenkinsfile directly (project scoped)

Trigger Jenkins Jobs - Webhooks

- ❏ Watched video
- ❏ **Demo executed**

Versioning your application - Part I

- ❏ Watched video
- ❏ **Demo executed: Increment version locally with maven build tool**
- ❏ **Demo executed: Increment version in Jenkins Pipeline**
    - ❏ Configured Jenkinsfile to increment version
    - ❏ Adjusted Dockerfile file
    - ❏ Executed Jenkins Pipeline

Useful Links:

- ● Maven Build-Helper Plugin:
  https://www.mojohaus.org/build-helper-maven-plugin/parse-version-mojo.html

Versioning your application - Part II

- ❏ Watched video
- ❏ **Demo executed: Commit version upgrade from Jenkins to Git**
- ❏ **Demo executed: Ignore Jenkins Commit from Triggering Pipeline**

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