



Week 13 : SOFTWARE DEVELOPMENT TOOLS AND ENVIRONMENTS

# **LAB 01 : Run Jenkinfile using SCM From Github**

In Jenkins, "SCM" stands for Source Code Management. SCM in Jenkins refers to the process of managing and integrating source code from version control systems into Jenkins projects.

Tuchsanai / DevTools

Code Issues Pull requests Actions Projects Security Insights Settings

main DevTools / 03\_Jenkins / week13 / 01\_Run\_Jenkinfile\_From\_Github\_WithSCM /

Tuchsanai d c89be10 · now History

Name	Last commit message	Last commit date
JENKINFILE	d	now
readme.md	ww	1 minute ago
status.py	ww	1 minute ago
readme.md		

Tuchsanai / DevTools

Type ⌘ to search

Code Issues Pull requests Actions Projects Security Insights Settings

dev DevTools / 03\_Jenkins / week13 / 01\_Run\_Jenkinfile\_From\_Github / status.py

Tuchsanai s

Code Blame 14 lines (12 loc) · 286 Bytes

```
1 import os
2
3 def main():
4     # Displaying status
5     print("System Status:")
6     print("-----")
7     print("Operating System:", os.name)
8     print("\n")
9     print("Environment Variables:", os.environ)
10    print("\n")
11    print("finished.")
12
13 if __name__ == "__main__":
14     main()
```

main DevTools / 03\_Jenkins / week13 / 01\_Run\_Jenkinfile\_From\_Github / JENKINFILE

Tuchsanai aa 65dd21b · 6 minutes ago History

29 lines (27 loc) · 814 Bytes

Code Blame Raw ⌂ ⌂ ⌂ ⌂ ⌂

```
1 pipeline {
2     agent any
3
4     stages {
5         stage('Check Python Installation') {
6             steps {
7                 script {
8                     // Check if Python is installed
9                     def pythonInstalled = sh(script: "which python3", returnStatus: true) == 0
10                    if (!pythonInstalled) {
11                        // Install Python if not installed
12                        sh 'sudo apt update'
13                        sh 'sudo apt install -y python3'
14                    }
15                }
16            }
17        }
18
19        stage('Run Python Script') {
20            steps {
21                script {
22                    // Run Python script with only os library
23                    sh 'python3 status.py'
24                    sh 'ls -l'
25                }
26            }
27        }
28    }
29 }
```

**1**

# Jenkins

Dashboard >

+ New Item

People

Build History

Project Relationship

Check File Fingerprint

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Build Executor Status

1 Idle

2 Idle

Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

Create a job

Set up a distributed build

Set up an agent

Configure a cloud

Learn more about distributed builds

**2**

# Jenkins

Search (⌘+K)

Tuchsanai Ploysuwan

Dashboard > All >

Enter an item name

jenkins\_file

» Required field

**3**

**Freestyle project**  
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

**Pipeline**  
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

**Multi-configuration project**  
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

**Folder**  
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

**Multibranch Pipeline**  
Creates a set of Pipeline projects according to detected branches in one SCM repository.

**Organization Folder**  
Creates a set of multibranch project subfolders by scanning for repositories.

OK

## Build Triggers

### Configure

#### General

- Build after other projects are built ?
- Build periodically ?
- GitHub hook trigger for GITScm polling ?
- Poll SCM ?
- Quiet period ?
- Trigger builds remotely (e.g., from scripts) ?

#### Advanced Project Options

#### Pipeline

### Advanced Project Options

Advanced ▾

## Pipeline

### Definition

- Pipeline script
- Pipeline script from SCM

Script ?

1

try sample Pipeline... ▾

4

DevTools / 03\_Jenkins / week13  
/ 01\_Run\_Jenkinfile\_From\_Github\_WithSCM  
/ JENKINFILE

Tuchsanai d c89be10 · 1 minute ago History

30 lines (27 loc) · 894 Bytes

Code Blame

```
1 pipeline {  
2     agent any  
3  
4     stages {  
5         stage('Check Python Installation') {  
6             steps {  
7                 script {  
8                     // Check if Python is installed  
9                     def pythonInstalled = sh(script: "which python3", returnStatus: true) == 0  
10                    if (!pythonInstalled) {  
11                        // Install Python if not installed  
12                        sh 'sudo apt update'  
13                        sh 'sudo apt install -y python3'  
14                    }  
15                }  
16            }  
17        }  
18  
19        stage('Run Python Script') {  
20            steps {  
21                script {  
22                    // Run Python script with only os library  
23                    sh 'ls -l'  
24                    sh 'python3 ./03_Jenkins/week13/01_Run_Jenkinfile_From_Github_WithSCM/status.py'  
25                }  
26            }  
27        }  
28    }  
29}  
30}
```

Configure

General

Build Triggers

- Throttle builds
- Build after other projects are built
- Build periodically
- GitHub hook trigger for GITScm polling
- Poll SCM
- Quiet period
- Trigger builds remotely (e.g., from scripts)

Advanced Project Options

Copy path of Jenkinfile

Pipeline

Definition

Pipeline script from SCM

SCM

- None
- Git

Script Path

/03\_Jenkins/week13/01\_Run\_Jenkinfile\_From\_Github\_WithSCM/JENKINFILE

Lightweight checkout

Pipeline Syntax

Save Apply

7

Repository URL ?  
`https://github.com/Tuchsanai/DevTools.git`

Credentials ?  
tuchsanai/\*\*\*\*\*\*\*\* (github account)

+ Add ▾

Advanced ▾

Add Repository

Branches to build ?

Branch Specifier (blank for 'any') ?  
\*/dev

Add Branch

Repository browser ?  
(Auto)

Additional Behaviours

Add ▾

Script Path ?  
./03\_Jenkins/week13/01\_Run\_Jenkinfile\_From\_Github\_WithSCM/JENKINFILE

Save Apply

8 # If privated repo, you need credentials

9 # Selected dev branch

10

# Jenkins

Dashboard > jenkins\_file >

## jenkins\_file

- Status
- </> Changes
- Build Now
- Configure
- Delete Pipeline
- Full Stage View
- Rename
- Pipeline Syntax

### Stage View

Declarative: Checkout SCM	Check Python Installation	Run Python Script
Average stage times: (Average full run time: ~3s) #3 n.w. 27 10:44 2 commits	1s 394ms 982ms	1s 394ms 982ms

### Permalinks

- Last build (#3), 2 min 15 sec ago
- Last stable build (#3), 2 min 15 sec ago
- Last successful build (#3), 2 min 15 sec ago
- Last completed build (#3), 2 min 15 sec ago

Dashboard > jenkins\_file > #3

## Console Output

Started by user Tuchsanai Ploysuwan  
Obtained ./.jenkins/week13/01\_Run\_Jenkinfile\_From\_Github/JENKINFILE from git https://github.com/Tuchsanai/DevTools.git  
[Pipeline] Start of Pipeline  
[Pipeline] node  
Running on Jenkins in /var/lib/jenkins/workspace/jenkins\_file  
[Pipeline] {  
[Pipeline] stage  
[Pipeline] { (Declarative: Checkout SCM)  
[Pipeline] checkout  
The recommended git tool is: git  
using credential id\_github  
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/jenkins\_file/.git # timeout=10  
Fetching changes from the remote Git repository  
> git config remote.origin.url https://github.com/Tuchsanai/DevTools.git # timeout=10  
Fetching upstream changes from https://github.com/Tuchsanai/DevTools.git  
> git --version # timeout=10  
git version # git version 2.34.1  
using GIT\_ASKPASS to set credentials github account  
> git fetch --tags --force --progress -- https://github.com/Tuchsanai/DevTools.git +refs/heads/\*:refs/remotes/origin/\* # timeout=10  
[Pipeline] { (Check Python Installation)  
[Pipeline] script  
[Pipeline] {  
[Pipeline] sh  
+ which python3  
/usr/bin/python3  
[Pipeline] }  
[Pipeline] // stage  
[Pipeline] withEnv  
[Pipeline] {  
[Pipeline] stage  
[Pipeline] { (Run Python Script)  
[Pipeline] script  
[Pipeline] {  
[Pipeline] sh  
+ pwd  
/var/lib/jenkins/workspace/jenkins\_file  
[Pipeline] sh  
+ python3 ./03\_Jenkins/week13/01\_Run\_Jenkinfile\_From\_Github/status.py  
System Status:  
Operating System: posix  
  
Environment Variables: environ({'JENKINS\_HOME': '/var/lib/jenkins', 'USER': 'jenkins', 'CI': 'true', 'RUN\_DISPLAY\_URL': 'http://54.251.188.144:8080/job/jenkins\_file/3/display/redirect?page=changes', 'NODE\_LABELS': 'built-in', 'HUDSON\_URL': 'http://54.251.188.144:8080', 'GIT\_COMMIT': 'ad4c6fcbe6618509afecc13d26c1406fd5dbf3', 'HUDSON\_COOKIE': '49a06cf3-5d30-418d-b9f6-8226', 'JENKINS\_SERVER\_COOKIE': 'urable-d5f3f7cf430a25df33ccb3cf7f939bc2452d2ea1b2523a2a26025dc82651f', 'NOTIFY\_SOCKET': '/run/systemd/notify', 'SYSTEM\_EXEC\_PID': '8226', 'WORKSPACE': '/var/lib/jenkins/workspace/jenkins\_file', 'LOGNAME': 'jenkins', 'NODE\_NAME': 'built-in', 'JOURNAL\_STREAM': '8:46337', 'RUN\_ARTIFACTS\_DISPLAY\_URL': 'http://54.251.188.144:8080/job/jenkins\_file/3/display/redirect?page=artifacts', 'STAGE\_NAME': 'Run Python Script', 'EXECUTOR\_NUMBER': '0', 'GIT\_BRANCH': 'origin/dev', 'RUN\_TESTS\_DISPLAY\_URL': 'http://54.251.188.144:8080/job/jenkins\_file/3/display/redirect?page=tests', 'BUILD\_DISPLAY\_NAME': '#3', 'HUDSON\_HOME': '/var/lib/jenkins', 'JOB\_BASENAME': 'jenkins\_file', 'PATH': '/usr/local/bin:/usr/bin:/bin:/sbin:/bin:/snap/bin', 'INVOCATION\_ID': '3dd1667cf5244899512e0c5fa349e4', 'BUILD\_ID': '3', 'BUILD\_TAG': 'jenkins-jenkins\_file-3', 'LANG': 'C.UTF-8', 'JENKINS\_URL': 'http://54.251.188.144:8080', 'JOB\_URL': 'http://54.251.188.144:8080/job/jenkins\_file/', 'GIT\_URL': 'https://github.com/Tuchsanai/DevTools.git', 'JENKINS\_NODE\_COOKIE': '96b09257-aaae-44dc-aed4-6773be818705', 'SHELL': '/bin/bash', 'RUN\_DISPLAY\_URL': 'http://54.251.188.144:8080/job/jenkins\_file/3/display/redirect', 'HUDSON\_SERVER\_COOKIE': '25d157583dcefe', 'JOB\_DISPLAY\_URL': 'http://54.251.188.144:8080/job/jenkins\_file/3/display/redirect', 'JOB\_NAME': 'jenkins\_file', 'PWD': '/var/lib/jenkins/workspace/jenkins\_file', 'GIT\_PREVIOUS\_COMMIT': '32de38e6ab198bf44721d9a241c74dc5f92a427', 'WORKSPACE\_TMP': '/var/lib/jenkins/workspace/jenkins\_file@tmp'})  
finished.

# **LAB 02 : Run Jenkinfile without SCM From Github**

**Jenkins**

Dashboard >

**+ New Item** 1

People

Build History

Project Relationship

Check File Fingerprint

Manage Jenkins

My Views

Build Queue No builds in the queue.

Build Executor Status 1 Idle  
2 Idle

## Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

Create a job +

Set up a distributed build

Set up an agent monitor icon

Configure a cloud cloud icon

Learn more about distributed builds ?

Enter an item name

No\_SCM » Required field

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 Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

**Pipeline** 2  
 Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

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**OK**

**Configure****General** Advanced Project Options**Pipeline**

- Throttle builds ?
- Build Triggers**
- Build after other projects are built ?
- Build periodically ?
- GitHub hook trigger for GITScm polling ?
- Poll SCM ?
- Quiet period ?
- Trigger builds remotely (e.g., from scripts) ?

**Advanced Project Options**

Advanced ▾

**Pipeline****Definition**

Pipeline script

```

1> pipeline {
2>   agent any
3>
4>   stages {
5>     5>       stage('copy repository') {
6>         steps {
7>           7>             // Copy the repository
8>           8>         }
9>       }
10>      10>      stage('Check Python Installation') {
11>        steps {
12>          12>        }
13>      }
14>      14>      stage('Run Python Script') {
15>        steps {
16>          16>        }
17>      }
18>    }
19>  }
20>
```

Use Groovy Sandbox ?

Apply

#3 ## Copy code

status.py

ww

readme.md

**Jenkins file with GitHub****- detail in slides**

```

pipeline {
  agent any

  stages {
    stage('copy repository') {
      steps {
        // Copy the repository
        checkout scmGit(branches: [[name: './dev']], extensions: [], userRemoteConfigs: [[credentialsId: 'g
      }
    }

    stage('Check Python Installation') {
      steps {
        script {
          // Check if Python is installed
          def pythonInstalled = sh(script: "which python3", returnStatus: true) == 0
          if (!pythonInstalled) {
            // Install Python if not installed
            sh 'sudo apt update'
            sh 'sudo apt install -y python3'
          }
        }
      }
    }

    stage('Run Python Script') {
      steps {
        script {
          // Run Python script with only os library
          sh 'pwd'
          sh 'python3 ./03_Jenkins/week13/02_Run_Jenkinfile_From_Github_withoutSCM/status.py'

          sh 'ls -l'
        }
      }
    }
  }
}
```

**4**

## Overview

This **Snippet Generator** will help you learn the Pipeline Script code which can be used to define various steps. Pick a step you are interested in from the list, configure it, click **Generate Pipeline Script**, and you will see a Pipeline Script statement that would call the step with that configuration. You may copy and paste the whole statement into your script, or pick up just the options you care about. (Most parameters are optional and can be omitted in your script, leaving them at default values.)

### Steps

**Sample Step**

archiveArtifacts: Archive the artifacts

archiveArtifacts

Files to archive ?

Advanced ▾

**Generate Pipeline Script**

Global Variables

There are many features of the Pipeline that are not steps. These are often exposed via global variables, which are not supported by the snippet generator. See the [Global Variables Reference](#) for details.

**Snippet Generator**

- ① Declarative Directive Generator
- ② Declarative Online Documentation
- ③ Steps Reference
- ④ Global Variables Reference
- ⑤ Online Documentation
- ⑥ Examples Reference
- ⑦ IntelliJ IDEA GDSL

**5**

**Back**

## Overview

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### Steps

**Sample Step**

archiveArtifacts: Archive the artifacts  
bat: Windows Batch Script  
build: Build a job  
catchError: Catch error and set build result to failure  
checkout: Check out from version control  
cleanWs: Delete workspace when build is done  
configFileProvider: Provide Configuration files  
deleteDir: Recursively delete the current directory from the workspace  
dir: Change current directory  
echo: Print Message  
emailExt: Extended Email  
emailExtRecipients: Extended Email Recipients  
error: Error signal  
fileExists: Verify if file exists in workspace  
findBuildScans: Find published build scans  
fingerprint: Record fingerprints of files to track usage  
git: Git  
input: Wait for interactive input  
isUnix: Checks if running on a Unix-like node  
junit: Archive JUnit-formatted test results  
library: Load a library on the fly

**6**

**Back****Snippet Generator**

- ① Declarative Directive Generator
- ② Declarative Online Documentation
- ③ Steps Reference
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**Overview**

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**Steps****Sample Step**

archiveArtifacts: Archive the artifacts  
bat: Windows Batch Script  
build: Build a job  
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checkout: Check out from version control  
cleanWs: Delete workspace when build is done  
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deleteDir: Recursively delete the current directory from the workspace  
dir: Change current directory  
echo: Print Message  
emailExt: Extended Email  
emailExtRecipients: Extended Email Recipients  
error: Error signal  
fileExists: Verify if file exists in workspace  
findBuildScans: Find published build scans  
fingerprint: Record fingerprints of files to track usage  
git: Git  
input: Wait for interactive input  
isUnix: Checks if running on a Unix-like node  
junit: Archive JUnit-formatted test results  
library: Load a library on the fly

checkout ?

SCM

Git

Repositories ?

Repository URL ?  
https://github.com/Tuchsanai/DevTools.git

Credentials ?  
tuchsanai/\*\*\*\*\*

+ Add -

Advanced ▾

Add Repository

Branches to build ?

Branch Specifier (blank for 'any') ?  
\*/dev

Add Branch

Repository browser ?  
(Auto)

Additional Behaviours

Add ▾

Include in polling? ?

Include in changelog? ?

Generate Pipeline Script

Push button

7

# If privated repo, you need credentials

8

9

checkout ?

SCM

Git

Repositories ?

Repository URL ?  
https://github.com/Tuchsanai/DevTools.git

Credentials ?  
tuchsanai/\*\*\*\*\*

+ Add -

Advanced ▾

Add Repository

Branches to build ?

Branch Specifier (blank for 'any') ?  
\*/dev

Add Branch

Repository browser ?  
(Auto)

Additional Behaviours

Add ▾

Include in polling? ?

Include in changelog? ?

Generate Pipeline Script

COPY

10

```
checkout scmGit(branches: [[name: '**/dev']], extensions: [], userRemoteConfigs: [[credentialsId: 'github', url: 'https://github.com/Tuchsanai/DevTools.git']])
```

## Configure

Preserve stashes from completed builds [?](#)

This project is parameterized [?](#)

### General

Advanced Project Options

### Pipeline

#### Build Triggers

- Build after other projects are built [?](#)
- Build periodically [?](#)
- GitHub hook trigger for GITScm polling [?](#)
- Poll SCM [?](#)
- Quiet period [?](#)
- Trigger builds remotely (e.g., from scripts) [?](#)

#### Advanced Project Options

Advanced [▼](#)

#### Pipeline

##### Definition

Pipeline script

```
1v pipeline {  
2v   agent any  
3v  
4v   stages {  
5v     stage('copy repository') {  
6v       steps {  
7v         checkout scmGit(branches: [[name: '*dev']], extensions: [], userRemoteConfigs: [])  
8v       }  
9v     }  
10v    // Copy the repository  
11v    checkout scmGit(branches: [[name: '*dev']], extensions: [], userRemoteConfigs: [])  
12v  }  
13v}  
14v  
15v
```

Use Groovy Sandbox [?](#)

Pipeline Syntax

Save

Apply

## Console Output

```
Started by user tp  
[Pipeline] Start of Pipeline  
[Pipeline] node  
Running on Jenkins in /var/lib/jenkins/workspace/No_SCM  
[Pipeline] stage  
[Pipeline] { (copy repository)  
[Pipeline] checkout  
The recommended git tool is: NONE  
using credential github  
> git rev-parse --resolve-dir /var/lib/jenkins/workspace/No_SCM.git # timeout=10  
Fetching changes from the remote Git repository  
> git config remote.origin.url https://github.com/Tuchsana1/DevTools.git # timeout=10  
Fetching upstream changes from https://github.com/Tuchsana1/DevTools.git  
> git fetch --tags --force --progress -- https://github.com/Tuchsana1/DevTools.git +refs/heads/*:refs/remotes/origin/* # timeout=10  
Checking out Revision 777695d8493e3e2f982eb6cede9ab80461af605 (refs/remotes/origin/dev)  
> git checkout -f 777695d8493e3e2f982eb6cede9ab80461af605 # timeout=10  
Commit message: "delete files"  
First time build. Skipping changelog.  
[Pipeline] }
```

```
[Pipeline] // stage  
[Pipeline] { (Check Python Installation)  
[Pipeline] script  
[Pipeline] sh  
+ which python3  
/usr/bin/python3  
[Pipeline] }
```

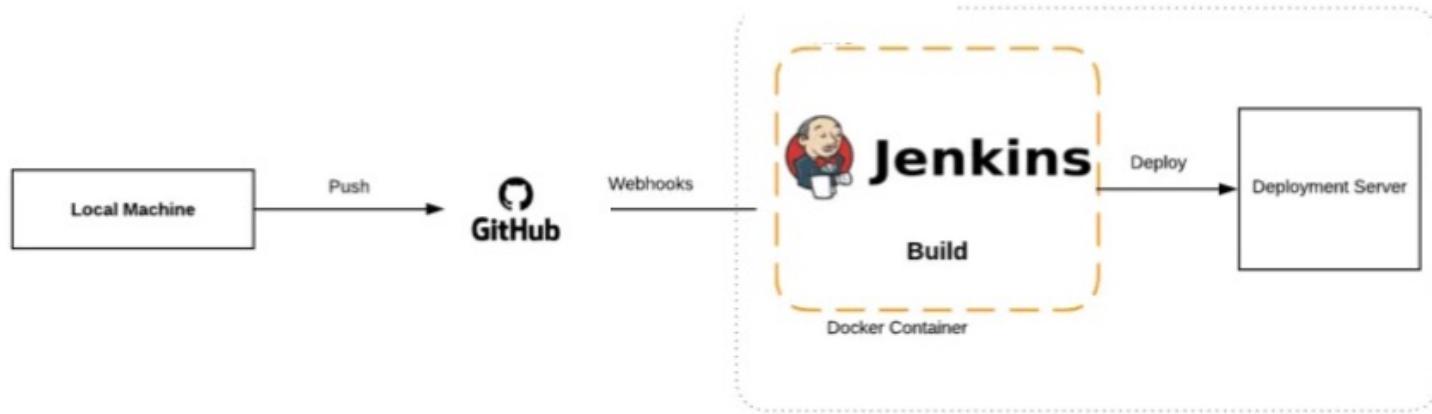
```
[Pipeline] // script  
[Pipeline] }
```

```
[Pipeline] // stage  
[Pipeline] stage  
[Pipeline] { (Run Python Script)  
[Pipeline] script  
[Pipeline] script  
[Pipeline] sh  
+ pwd  
/var/lib/jenkins/workspace/No_SCM  
[Pipeline] sh
```

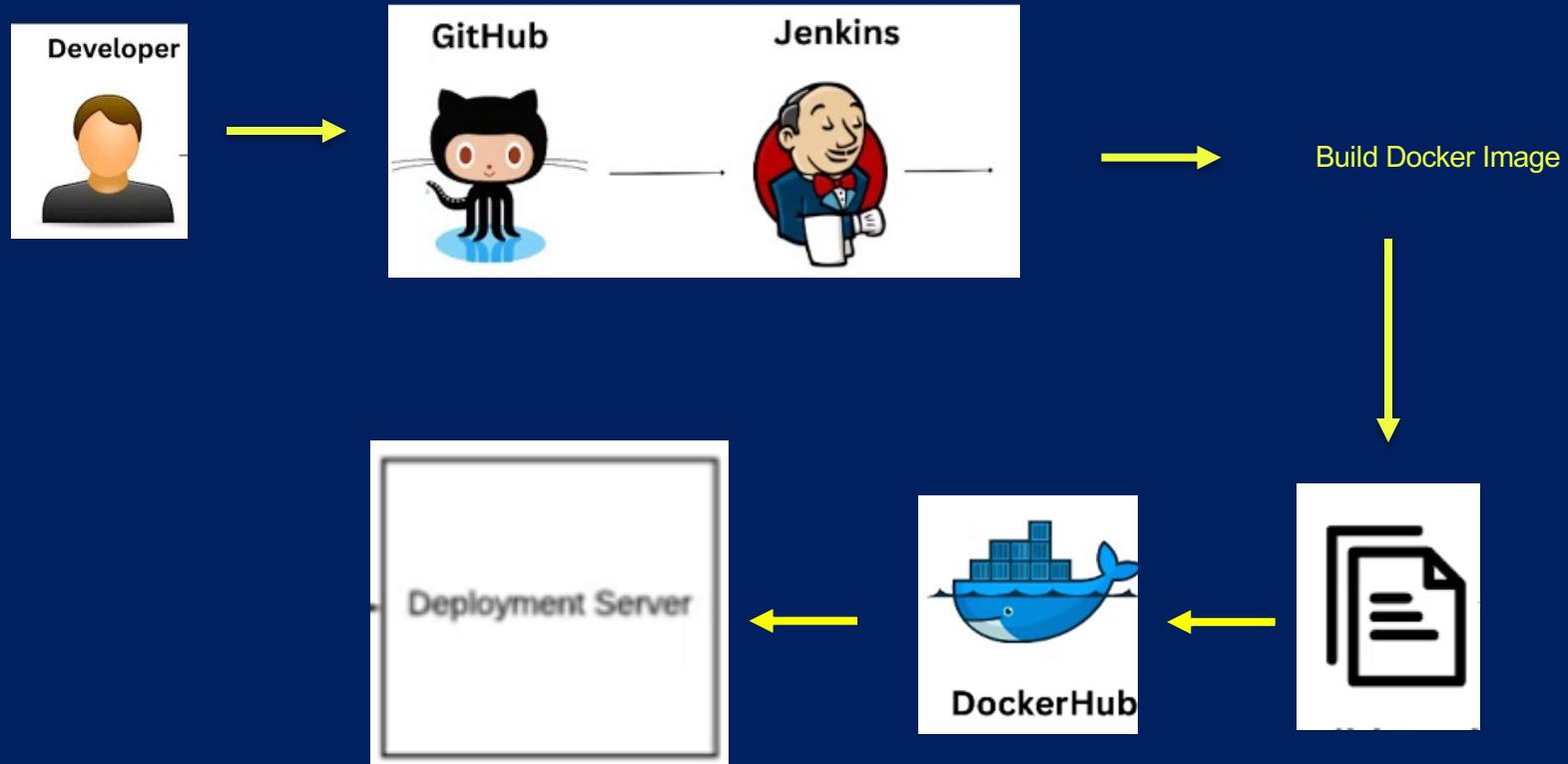
```
+ python3 ./03_Jenkins/week13/02_Run_Jenkinsfile_From_Github_withoutSCM/status.py  
System Status:  
Operating System: posix  
  
Environment Variables: environ({'JENKINS_HOME': '/var/lib/jenkins', 'USER': 'jenkins', 'CI': 'true', 'RUN_CHANGES_DISPLAY_URL': 'http://175.41.181.239.8080/job/No\_SCM/2/display/redirect?page=changes', 'NODE_LABELS': 'built-in', 'HUDSON_URL': 'http://175.41.181.239.8080', 'HOME': '/var/lib/jenkins', 'BUILD_URL': 'http://175.41.181.239.8080/job/No\_SCM/2/', 'HUDSON_COOKIE': 'a7b58642-e0f8-4b73-9815-31ababfe139f', 'JENKINS_SERVER_COOKIE': 'duration=586d74ee4c1e74ecf80c3ed72fb78e91ca847f6738989c02a53e38619', 'NOTIFY_SOCKET': '/run/systemd/notify', 'SYSTEMD_EXEC_PID': '7568', 'WORKSPACE': '/var/lib/jenkins/workspace/No_SCM', 'LOGNAME': 'jenkins', 'NODE_NAME': 'built-in', 'JOURNAL_STREAM': '8:44809', 'RUN_ARTIFACTS_DISPLAY_URL': 'http://175.41.181.239.8080/job/No\_SCM/2/display/redirect?page=artifacts', 'STAGE_NAME': 'Run Python Script', 'EXECUTOR_NUMBER': '1', 'RUN_DISPLAY_URL': 'http://175.41.181.239.8080/job/No\_SCM/2/display/redirect?page=tests', 'BUILD_DISPLAY_NAME': '#2', 'HUDSON_HOME': '/var/lib/jenkins', 'JOB_BASE_NAME': 'No_SCM', 'PATH': '/usr/local/bin:/usr/local/bin:/usr/sbin:/usr/bin:/snap/bin', 'INVOCATION_ID': 'aca235982c43aaa08d8f676ec08ae', 'BUILD_URL': 'http://175.41.181.239.8080/job/No\_SCM/', 'BUILD_NUMBER': '2', 'JENKINS_NODE_COOKIE': '3b108ed5-a913-4708-9984-2549fe7ea95', 'SHELL': '/bin/sh', 'JOE_URL': 'http://175.41.181.239.8080/job/No\_SCM/2/', 'JOE_NAME': 'No_SCM', 'PWD': '/var/lib/jenkins/workspace/No_SCM', 'WORKSPACE_TMP': '/var/lib/jenkins/workspace/No_SCM/tmp'})
```

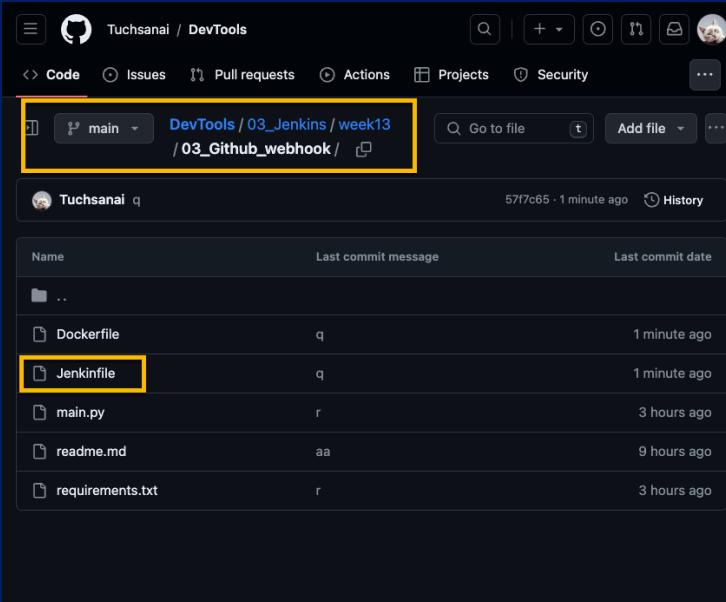
```
finished.  
[Pipeline] sh  
+ ls -l  
total 28  
drwxr-xr-x 6 jenkins jenkins 4096 Feb 28 08:53 @_GIT  
drwxr-xr-x 3 jenkins jenkins 4096 Feb 28 08:53 @_Google Cloud  
drwxr-xr-x 4 jenkins jenkins 4096 Feb 28 08:53 @_Docker  
drwxr-xr-x 3 jenkins jenkins 4096 Feb 28 08:53 @_Artifactory  
drwxr-xr-x 2 jenkins jenkins 4096 Feb 28 08:53 @_Kubernetes  
drwxr-xr-x 1 jenkins jenkins 1605 Feb 28 08:53 README.md
```

# **LAB 03 : Github Webhook with Jenkinfile , Docker and Docker-Hub using SCM**



Delivery (CD).





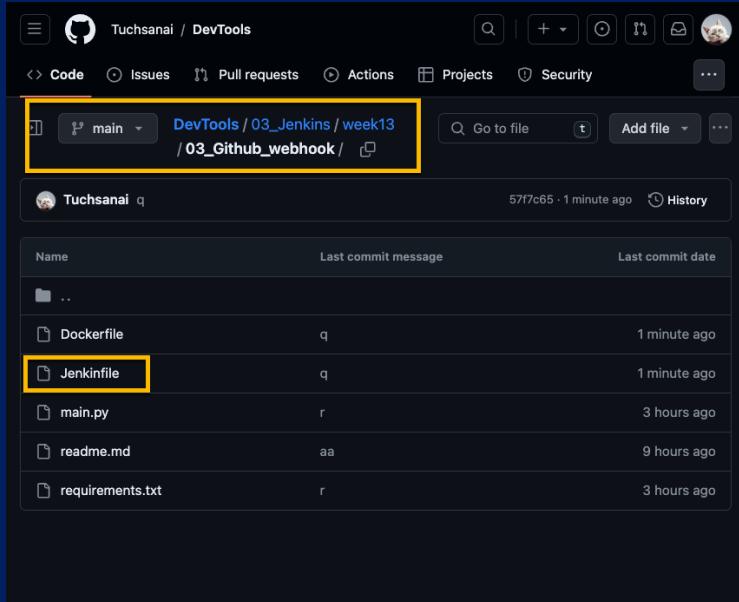
```
pipeline {
    agent any

    environment {
        // Define variables
        DOCKER_IMAGE      = 'tuchsanai/fastapi-webhook:latest'
        DOCKER_CREDENTIALS = credentials('dockerhub')
    }

    stages {
        stage('Start Jenkins') {
            steps {
                // Checkout your source code from version control
                sh 'echo Start Jenkins.....'
                sh 'echo docker : user = $DOCKER_CREDENTIALS_USR : password = $DOCKER_CREDENTIALS_PSW'
            }
        }

        stage('Build Docker Image') {
            steps {
                // Build the Docker image
                dir('./03_Jenkins/week13/03_Github_webhook') {
                    sh 'echo "Running in $(pwd)"'
                    sh 'echo start build the Docker image = $DOCKER_IMAGE'
                    sh 'docker build -t $DOCKER_IMAGE .'
                }
            }
        }

        stage('Push to Docker Hub') {
            steps {
                script {
                    // Login to Docker Hub
                    sh '$DOCKER_CREDENTIALS_PSW | docker login --username $DOCKER_CREDENTIALS_USR --password-stdin'
                    // Push the image
                    sh 'docker push $DOCKER_IMAGE'
                }
            }
        }
    }
}
```



```
stage('Clear Docker Components') {
    steps {
        script {
            // Remove Docker images and containers
            sh 'docker system prune -af'
        }
    }
}

stage('Deploy') {
    steps {
        script {
            // Pull the Docker image from Docker Hub
            sh 'docker pull $DOCKER_IMAGE'
            // Run the Docker container
            sh 'docker run -d --name fastapi-webhook -p 8085:80 $DOCKER_IMAGE'
        }
    }
}

post {
    always {
        // Logout from Docker Hub
        sh 'docker logout'
    }
}
```

# Configure with github

A screenshot of a GitHub repository page for 'Tuchsanai / DevTools'. The top navigation bar includes links for Code, Issues, Pull requests, Actions, Projects, Security, Insights, and Settings. The Settings link is circled in red and has a large red number '1' above it. Below the navigation bar, there's a header for the repository 'DevTools' (Public) with options to Unpin, Unwatch, Fork, Star, and Edit. The main content area shows a list of files and folders in the 'main' branch, including '00\_GIT', '01\_Google Cloud', '02\_Docker', '03\_Jenkins', '04\_kubernetes', 'Mini\_Project', '.gitignore', and 'README.md'. To the right of the file list are sections for 'About' (No description, website, or topics provided), 'Releases' (No releases published), 'Packages' (No packages published), and 'Languages'. A large red number '1' is placed above the 'Settings' tab in the navigation bar.

A screenshot of the 'General' settings page for the same GitHub repository. The left sidebar lists 'Access', 'Collaborators', 'Moderation options', 'Code and automation', 'Branches', 'Tags', 'Rules', 'Actions', and 'Webhooks'. The 'Webhooks' section is circled in red and has a large red number '2' above it. The main content area is titled 'General' and contains sections for 'Repository name' (set to 'DevTools'), 'Template repository' (unchecked), 'Require contributors to sign off on web-based commits' (unchecked), 'Default branch' (set to 'main'), and 'Social preview'. A URL 'https://github.com/Tuchsanai/DevTools/settings/hooks' is shown at the bottom. A large red number '2' is placed above the 'Webhooks' section in the sidebar.

Tuchsanai / DevTools

Code Issues Pull requests Actions Projects Security Insights Settings

## Webhooks

3

Add webhook

Webhooks allow external services to be notified when certain events happen. When the specified events happen, we'll send a POST request to each of the URLs you provide. Learn more in our [Webhooks Guide](#).

General

Access

Collaborators

Moderation options

Code and automation

Branches

Tags

Rules

Actions

Webhooks

Environments

Codespaces

Pages

Code Issues Pull requests Actions Projects Security Insights Settings

## Webhooks / Add webhook

We'll send a POST request to the URL below with details of any subscribed events. You can also specify which data format you'd like to receive (JSON, x-www-form-urlencoded, etc). More information can be found in [our developer documentation](#).

Payload URL \*

http://175.41.181.239:8080/github-webhook/

Content type

application/json

Secret

Which events would you like to trigger this webhook?

Just the push event.

Send me everything.

Let me select individual events.

Active

We will deliver event details when this hook is triggered.

Add webhook

4

http://yourJenkinsIP:8080/github-webhook/

<> Code ⏪ Issues ⏪ Pull requests ⏪ Actions ⏪ Projects ⏪ Security ⏪ Insights ⏪ Settings

Okay, that hook was successfully created. We sent a ping payload to test it out! Read more about it at <https://docs.github.com/webhooks/#ping-event>.

**Webhooks**

Add webhook

General

Access

Collaborators

Moderation options

Code and automation

Branches

Tags

Rules

Actions

**Webhooks**

Environments

Codespaces

Pages

Security

Code security and analysis

Deploy keys

Secrets and variables

Integrations

GitHub Apps

Email notifications

Webhooks allow external services to be notified when certain events happen. When the specified events happen, we'll send a POST request to each of the URLs you provide. Learn more in our [Webhooks Guide](#).

● <http://175.41.181.239:8080/github...> (push)

Edit Delete

5

# Configure with Jenkins

Not Secure 175.41.181.239:8080/view/all/newJob

Jenkins

Dashboard > All >

Enter an item name

webhook  
» Required field

6

Freestyle project

Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

7

Pipeline

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

Multi-configuration project

Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

Folder

Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

Multibranch Pipeline

Creates a set of Pipeline projects according to detected branches in one SCM repository.

Organization Folder

Creates a set of multibranch project subfolders by scanning for repositories.

8

OK

## Configure

### General

- Do not allow concurrent builds
- Do not allow the pipeline to resume if the controller restarts
- GitHub project
- Pipeline speed/durability override ?
- Preserve stashes from completed builds ?
- This project is parameterized ?
- Throttle builds ?

### Build Triggers

- Build after other projects are built ?
- Build periodically ?
- GitHub hook trigger for GITScm polling ?
- Poll SCM ?
- Quiet period ?
- Trigger builds remotely (e.g., from scripts) ?

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### Advanced Project Options

Advanced ▼

### Pipeline

#### Definition

 Pipeline script Pipeline script from SCM

#### Script

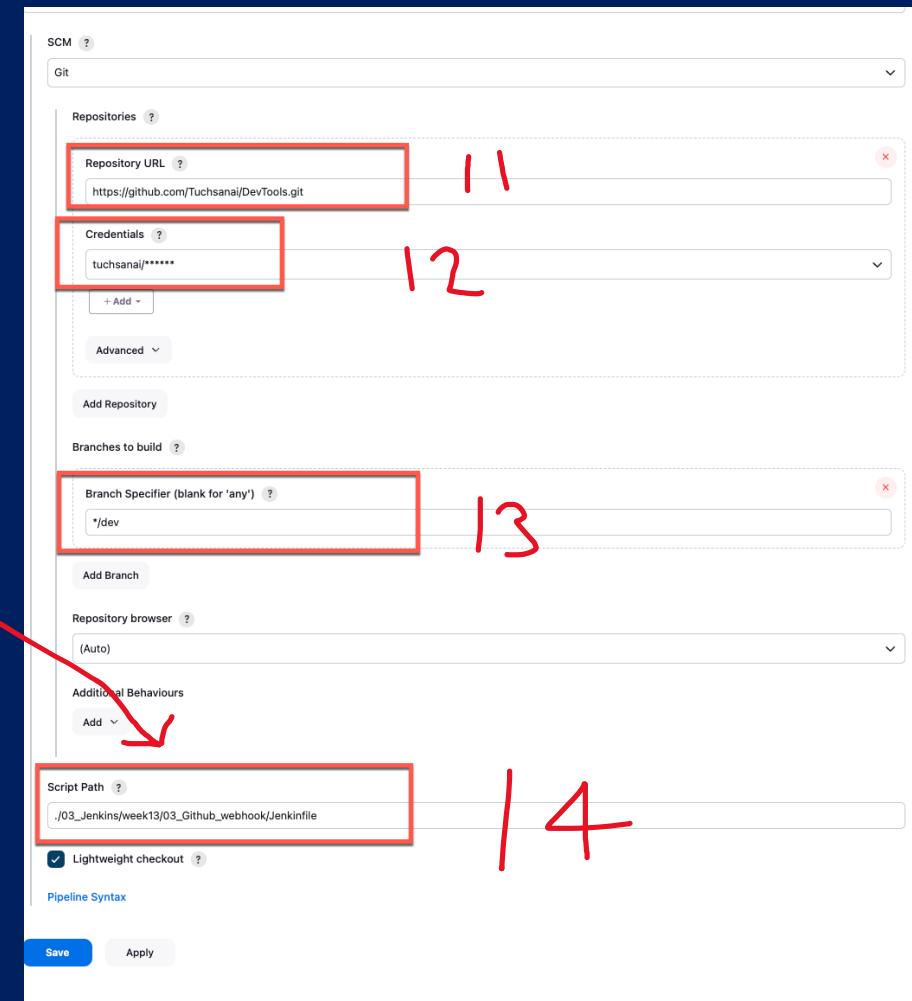
1

try sample Pipeline... ▼

10

Screenshot of a GitHub repository page for 'Tuchsanai / DevTools'. The repository path is highlighted with a yellow box: 'DevTools / 03\_Jenkins / week13 / 03\_Github\_webhook /'. The 'Jenkinsfile' file is also highlighted with a yellow box. The table below shows file details:

Name	Last commit message	Last commit date
..		
Dockerfile	q	1 minute ago
Jenkinsfile	q	1 minute ago
main.py	r	3 hours ago
readme.md	aa	9 hours ago
requirements.txt	r	3 hours ago



\*\*\* Run Jenkins by apply git push to repository for test github web-hook  
\*\* Do not run with Build Now button in Jenkins

15

Jenkins

Dashboard > webhook >

Status webhook

</> Changes

▷ Build Now

⚙ Configure

Delete Pipeline

🔍 Full Stage View

✍ Rename

Pipeline Syntax

GitHub Hook Log

Build History trend ▾

Filter... /

#2 4 月, 2024 14:58 No Changes 21:58

Atom feed for all Atom feed for failures

Stage View

Average stage times:  
(Average full run time: ~1min 6s)

Declarative: Checkout SCM	Start Jenkins	Build Docker Image	Push to Docker Hub	Clear Docker Components	Deploy	Declarative: Post Actions
1s	611ms	12s	20s	2s	27s	323ms

Permalinks

-  Status
-  Changes
-  **Console Output**
-  View as plain text
-  Edit Build Information
-  Delete build '#2'
-  Polling Log
-  Git Build Data
-  Restart from Stage
-  Replay
-  Pipeline Steps
-  Workspaces

## Console Output

```
Started by GitHub push by Tuchsanal
Originated in /03_Jenkins/week13/03_Github_webhook/Jenkinsfile from git https://github.com/Tuchsanal/DevTools.git
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/webhook
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
The recommended git tool is: git
using credential github
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/webhook/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/Tuchsanal/DevTools.git # timeout=10
Fetching upstream changes from https://github.com/Tuchsanal/DevTools.git
> git --version # timeout=10
> git --version # git version 2.34.1'
using GIT_ASKPASS to set credentials
> git fetch --tags --force --progress -- https://github.com/Tuchsanal/DevTools.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/dev^{commit} # timeout=10
Checking out Revision 55836241f6fffd5c482624a7763957bff763446dc (refs/remotes/origin/dev)
> git config core.sparsecheckout # timeout=10
> git checkout -f 55836241f6fffd5c482624a7763957bff763446dc # timeout=10
Commit message: "delete files"
First time build. Skipping changelog.
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] withCredentials
Masking supported pattern matches of $DOCKER_CREDENTIALS or $DOCKER_CREDENTIALS_PSW
[Pipeline] {
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Start Jenkins)
[Pipeline] sh
+ echo Start Jenkins.....
Start Jenkins.....
[Pipeline] sh
+ echo docker : user = tuchsanal : password = *****
docker : user = tuchsanal : password = *****
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build Docker Image)
[Pipeline] dir
Running in /var/lib/jenkins/workspace/webhook/03_Jenkins/week13/03_Github_webhook
[Pipeline] {
[Pipeline] sh
+ pwd
+ echo Running in /var/lib/jenkins/workspace/webhook/03_Jenkins/week13/03_Github_webhook
Running in /var/lib/jenkins/workspace/webhook/03_Jenkins/week13/03_Github_webhook
[Pipeline] sh
+ echo start build the Docker image = tuchsanal/fastapi-webhook:latest
start build the Docker image = tuchsanal/fastapi-webhook:latest
[Pipeline] sh
+ docker build -t tuchsanal/fastapi-webhook:latest .
#0 building with "default" instance using docker driver
```

```
[Pipeline] sh
+ docker build -t tuchsanai/fastapi-webhook:latest .
#0 building with "default" instance using docker driver

#1 [internal] load build definition from Dockerfile
#1 transferring dockerfile: 472B done
#1 DONE 0.0s

#2 [internal] load metadata for docker.io/library/python:3.9
#2 DONE 2.5s

#3 [internal] load .dockerrigignore
#3 transferring context: 2B done
#3 DONE 0.0s

#4 [internal] load build context
#4 transferring context: 477B done
#4 DONE 0.0s

#5 [1/5] FROM docker.io/library/python:3.9@sha256:383d027c4b840507f25453cf10969aa1e1d13e47731f294a88890e53f834bd
#5  resolver docker.io/library/python:3.9@sha256:383d072c4b840507f25453cf10969aa1e1d13e47731f294a88890e53f834bdf 0.0s done
#5  sha256:5304b4737b7c8797ce2d011a0187edca5d7218fc06fe644708d4a49b5c5e9 2.01kB / 2.01kB done
#5  sha256:c301b6ca47814a933dd480240cfbe9980b5363a43d3e864453d547ffcc1f6a7a5 7.33kB / 7.33kB done
#5  sha256:383d027c4b840507f25453cf10969aa1e1d13e47731f294a88890e53f834bd 1.86kB / 1.86kB done
#5 DONE 0.2s

#6 [2/5] WORKDIR /code
#6 DONE 0.0s

#7 [3/5] COPY requirements.txt .
#7 DONE 0.0s

#8 [4/5] COPY main.py .
#8 DONE 0.0s

#9 [5/5] RUN pip install --no-cache-dir -r requirements.txt
#9 2.384 Collecting fastapi
#9 2.444   Downloading fastapi-0.110.0-py3-none-any.whl (92 kB)
#9 2.463   ━━━━━━━━━━━━━━━━━━━━ 92.1/92.1 kB 5.3 MB/s eta 0:00:00
#9 2.526 Collecting uvicorn[standard]
#9 2.538   Downloading uvicorn-0.27.1-py3-none-any.whl (60 kB)
#9 2.534   ━━━━━━━━━━━━━━━━ 60.8/60.8 kB 59.3 MB/s eta 0:00:00
#9 2.937 Collecting pydantic!=1.8,...!=1.8.1,...!=2.0.0,...!=2.0.1,...!=1.1.0,...<3.0.0,...>1.7.4
#9 2.943   Downloading pydantic-2.6.3-py3-none-any.whl (395 kB)
#9 2.956   ━━━━━━━━━━━━━━━━ 395.2/395.2 kB 44.3 MB/s eta 0:00:00
#9 3.021 Collecting starlette<0.37.0,>=0.36.3
#9 3.026   Downloading starlette-0.36.3-py3-none-any.whl (71 kB)
#9 3.030   ━━━━━━━━━━━━━━ 71.5/71.5 kB 126.1 MB/s eta 0:00:00
#9 3.067 Collecting typing-extensions>=4.8.0
#9 3.071   Downloading typing_extensions-4.10.0-py3-none-any.whl (33 kB)
#9 3.122 Collecting h11<0.8
#9 3.126   Downloading h11-0.14.0-py3-none-any.whl (58 kB)
#9 3.130   ━━━━━━━━━━━━━━ 58.3/58.3 kB 115.5 MB/s eta 0:00:00
#9 3.175 Collecting click=>7.0
#9 3.179   Downloading click-8.1.1.7-py3-none-any.whl (97 kB)
#9 3.183   ━━━━━━━━━━━━━━ 97.9/97.9 kB 142.9 MB/s eta 0:00:00
#9 3.228 Collecting python-dotenv=>0.13
#9 3.225   Downloading python_dotenv-1.0.1-py3-none-any.whl (19 kB)
#9 3.294 Collecting httptools=>0.5.0
#9 3.300   Downloading httptools-0.6.1-cp39-cp39-manylinux_2_5_x86_64_manylinux1_x86_64_manylinux_2_17_x86_64_manylinux2014_x86_64.whl (345 kB)
#9 3.306   ━━━━━━━━━━━━━━ 345.2/345.2 kB 153.9 MB/s eta 0:00:00
#9 3.419 Collecting watchfiles=>0.13
#9 3.431   Downloading watchfiles-0.21.0-cp39-cp39-manylinux_2_17_x86_64_manylinux2014_x86_64.whl (1.3 MB)
#9 3.443   ━━━━━━━━━━━━━━ 1.3/1.3 kB 160.1 MB/s eta 0:00:00
#9 3.553 Collecting pyyaml=>5.1
```

```

#9 3.294 Collecting httptools==0.5.0
#9 3.300  Downloading httptools-0.6.1-cp39-cp39-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_17_x86_64.manylinux2014_x86_64.whl (345 kB)
#9 3.306          345.2/345.2 kB 153.9 MB/s eta 0:00:00
#9 3.419 Collecting watchfiles==0.13
#9 3.420  Downloading watchfiles-0.21.0-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (1.3 MB)
#9 3.443          1.3/1.3 MB 160.1 MB/s eta 0:00:00
#9 3.553 Collecting pyyaml>=5.1
#9 3.560  Downloading PyYAML-6.0.1-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (738 kB)
#9 3.568          738.9/738.9 kB 151.7 MB/s eta 0:00:00
#9 3.687 Collecting uvloop!=0.15.0,!=0.15.1,>=0.14.0
#9 3.694  Downloading uvloop-0.19.0-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (3.5 MB)
#9 3.721          3.5/3.5 MB 149.1 MB/s eta 0:00:00
#9 3.955 Collecting websockets==10.4
#9 3.962  Downloading websockets-12.0-cp39-cp39-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_17_x86_64.manylinux2014_x86_64.whl (130 kB)
#9 3.966          130.8/130.8 kB 138.9 MB/s eta 0:00:00
#9 4.036 Collecting annotated-types==0.4.0
#9 4.040  Downloading annotated_types-0.6.0-py3-none-any.whl (12 kB)
#9 5.791 Collecting pydantic-core==2.16.3
#9 5.808  Downloading pydantic_core-2.16.3-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (2.2 MB)
#9 5.820          2.2/2.2 MB 124.8 MB/s eta 0:00:00
#9 5.982 Collecting anyio<5,>=3.4.0
#9 5.984  Downloading anyio-4.3.0-py3-none-any.whl (85 kB)
#9 5.912          85.6/85.6 kB 134.6 MB/s eta 0:00:00
#9 6.059 Collecting idna>=2.8
#9 6.063  Downloading idna-3.6-py3-none-any.whl (61 kB)
#9 6.067          61.6/61.6 kB 126.5 MB/s eta 0:00:00
#9 6.099 Collecting exceptiongroup==1.0.2
#9 6.104  Downloading exceptiongroup-1.2.0-py3-none-any.whl (16 kB)
#9 6.122 Collecting sniffio==1.1
#9 6.126  Downloading sniffio-1.3.1-py3-none-any.whl (10 kB)
#9 6.286 Installing collected packages: websockets, uvloop, typing-extensions, sniffio, pyyaml, python-dotenv, idna, httptools, h11, exceptiongroup, click, annotated-type, pydantic-core, anyio, watchfiles, starlette, pydantic, fastapi
#9 7.738 Successfully installed annotated-types-0.6.0 anyio-4.3.0 click-8.1.7 exceptiongroup-1.2.0 fastapi-0.110.0 h11-0.14.0 httptools-0.6.1 idna-3.6 pydantic-2.6.3 py-2.16.3 python-dotenv-1.0.1 pyyaml-6.0.1 sniffio-1.3.1 starlette-0.36.3 typing-extensions-4.10.0 uvicorn-0.27.1 uvloop-0.19.0 watchfiles-0.21.0 websockets-12.0
#9 7.738 WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a environment instead: https://pip.pya.io/warnings/env
#9 7.888
#9 7.888 [notice] A new release of pip is available: 23.0.1 -> 24.0
#9 7.888 [notice] To update, run: pip install --upgrade pip
#9 DONE 8.2s

#10 exporting to image
#10 exporting layers
#10 exporting layers 0.4s done
#10 writing image sha256:987dbd998de666db7541c9a2a5296362d32a67ec50a872163de1e85429f7c done
#10 naming to docker.io/tuchsanai/fastapi-webhook:latest done
#10 DONE 8.4s
[Pipeline]
[Pipeline] // dir
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { Push to Docker Hub
[Pipeline] script
[Pipeline]
[Pipeline] sh
+ echo ****
+ docker login --username tuchsanai --password-stdin
WARNING! Your password will be stored unencrypted in /var/lib/jenkins/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
[Pipeline] sh
+ docker push tuchsanai/fastapi-webhook:latest
The push refers to repository [docker.io/tuchsanai/fastapi-webhook]
b5231aa32421: Preparing
74f1795c57c: Preparing
b308376ade3b: Renaming

```

```

45e6f427b000: Waiting
c558fa597f8: Waiting
2a1e76f73903: Waiting
bf68602430fa: Waiting
ed607b6561ac: Waiting
11402150a57e: Waiting
d662c27d7e57: Waiting
2b9b41aaa3c5: Verifying Checksum
2b9b41aaa3c5: Download complete
7hb465c29149: Verifying Checksum
7hb465c29149: Download complete
49b40be4436e: Verifying Checksum
49b40be4436e: Download complete
11402150a57e: Download complete
d662c27d7e57: Download complete
26ff257bcfc1: Verifying Checksum
26ff257bcfc1: Download complete
5a8f6cc6cb0d2: Verifying Checksum
5a8f6cc6cb0d2: Download complete
c558fa597f8: Verifying Checksum
c558fa597f8: Download complete
45e6f427b000: Download complete
7hb465c29149: Pull complete
2a1e76f73903: Verifying Checksum
2a1e76f73903: Download complete
bf68602430fa: Verifying Checksum
bf68602430fa: Download complete
2b9b41aaa3c5: Pull complete
ed607b6561ac: Verifying Checksum
ed607b6561ac: Download complete
49b40be4436e: Pull complete
c558fa597f8: Pull complete
11402150a57e: Pull complete
d662c27d7e57: Pull complete
26ff257bcfc1: Pull complete
5a8f6cc6cb0d2: Pull complete
45e6f427b000: Pull complete
2a1e76f73903: Pull complete
bf68602430fa: Pull complete
ed607b6561ac: Pull complete
Digest: sha256:94abaf415762976e58224f3fc78d3005b376ed734489e5c0d96af1f595d602601
Status: Downloaded newer image for tuchsanai/fastapi-webhook:latest
docker.io/tuchsanai/fastapi-webhook:latest
[Pipeline] sh
+ docker run -d --name fastapi-webhook -p 8085:80 tuchsanai/fastapi-webhook:latest
a0dc065337fc0b0c84b75d9418c83539f4a92f97bb3e4fa2a3cf1380160ede5
[Pipeline]
[Pipeline] // script
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions)
[Pipeline] sh
+ docker logout
Removing login credentials for https://index.docker.io/v1/
[Pipeline]
[Pipeline] // stage
[Pipeline]
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // withCredentials
[Pipeline]
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

```

