
HOMWORK 4 – JENKINS

Part 1: Setup Jenkins on your machine

Start the orchestration

```
GNU nano 6.2 Dockerfile
FROM jenkins/jenkins:latest
USER root
RUN apt-get update && apt-get install -y lsb-release ca-certificates curl && \
    install -m 0755 -d /etc/apt/keyrings && \
    curl -fsSL https://download.docker.com/linux/debian/gpg -o /etc/apt/keyrings/docker.asc && \
    chmod a+r /etc/apt/keyrings/docker.asc && \
    echo "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] \
    https://download.docker.com/linux/debian $(. /etc/os-release && echo \"$VERSION_CODENAME\") stable" \
    | tee /etc/apt/sources.list.d/docker.list > /dev/null && \
    apt-get update && apt-get install -y docker-ce-cli && \
    apt-get clean && rm -rf /var/lib/apt/lists/*
USER jenkins
RUN jenkins-plugin-cli --plugins "blueocean docker-workflow"
```

```
GNU nano 6.2 docker-compose.yml *
version: '3.1'

services:
  docker:
    image: docker:dind
    privileged: true
    environment:
      - DOCKER_TLS_CERTDIR=/certs
    volumes:
      - ./jenkins-docker-certs:/certs/client
      - ./jenkins-data:/var/jenkins_home

  jenkins-blueocean:
    build: .
    environment:
      - DOCKER_HOST=tcp://docker:2376
      - DOCKER_CERT_PATH=/certs/client
      - DOCKER_TLS_VERIFY=0
    ports:
      - 8080:8080
      - 50000:50000
    volumes:
      - ./jenkins-data:/var/jenkins_home
      - ./jenkins-docker-certs:/certs/client:ro

networks:
  jenkins:
    name: jenkins
    driver: bridge
```

```
bojana@Dell: /mnt/d/Fax_D/Shesti Semestar/Kontinuirana Integracija i Isporaka/Jenkins$ docker compose up -d
WARN[0000] /mnt/d/Fax_D/Shesti Semestar/Kontinuirana Integracija i Isporaka/Jenkins/docker-compose.yml: 'version' is obsolete
[+] Running 17/17
✔ docker Pulled
✔ f18232174bc9 Pull complete
✔ 532d671d7887 Pull complete
✔ 4f4fb700ef54 Pull complete
✔ 059e69770cd7 Pull complete
✔ a91a67d14af0 Pull complete
✔ 400f9b604068 Pull complete
✔ 992adfb269ce Pull complete
✔ 0d632c4828a1 Pull complete
✔ 5a6d9202faad Pull complete
✔ 3971f1ed9686 Pull complete
✔ 0c40a16065be Pull complete
✔ bb3e0f30d232 Pull complete
✔ f6257f3aeaf0 Pull complete
✔ e7a779817a63 Pull complete

bojana@Dell: /mnt/d/Fax_D/Shesti Semestar/Kontinuirana Integracija i Isporaka/Jenkins$ docker compose ps
WARN[0000] /mnt/d/Fax_D/Shesti Semestar/Kontinuirana Integracija i Isporaka/Jenkins/docker-compose.yml: 'version' is obsolete
NAME                                IMAGE                                COMMAND                                SERVICE    CREATED          STATUS          PORTS
jenkins-docker-1                    docker:dind                          "dockerd-entrypoint..."            docker     About a minute ago    Up About a minute    2375-2376/tcp
jenkins-jenkins-blueocean-1        jenkins-jenkins-blueocean          "/usr/bin/tini -- /u..."            jenkins-blueocean    About a minute ago    Up About a minute    0.0.0.0:8080->8080/tcp, 0.0.0.0:50000->50000/tcp
```

Unlock and select plugins to install

Getting Started

Organization and Administration

Build Features

Build Tools

Build Analysis and Reporting

Pipelines and Continuous Delivery

Source Code Management

Distributed Builds

User Management and Security

Notifications and Publishing

Appearance

Languages

All | None | Suggested

Selected (24/52)

Note that the full list of plugins is not shown here. Additional plugins can be installed in the **Plugin Manager** once the initial setup is complete. [See the documentation for more information.](#)

Organization and Administration (3/4)

☒ **Dashboard View**

Customizable dashboard that can present various views of job information.

24 >

☒ **Folders Plugin**

4 >

☐ **Configuration as Code**

17 >

This plugin allows configuration of Jenkins based on human-readable declarative configuration files.

☒ **OWASP Markup Formatter**

Uses the OWASP Java HTML Sanitizer to allow safe-seeming HTML markup to be entered in project descriptions and the like.

Build Features (4/9)

☐ **Build Name and Description Setter**

27 >

This plug-in sets the display name and description of a build to something other than #1, #2, #3, ...

☒ **Build Timeout**

5 >

Jenkins 2.503

Back

Install

Getting Started

Getting Started

✓ Folders Plugin	✓ OWASP Markup Formatter	✓ Build Timeout	✓ Credentials Binding Plugin	** JSON Path API
✓ Timestamper	✓ Workspace Cleanup	✓ Ant	✓ Gradle	** Token Macro
✓ Pipeline	✓ GitHub Branch Source	✓ Pipeline: GitHub Groovy Libraries	✓ Pipeline Graph View	Build Timeout
✓ Git plugin	✓ SSH Build Agents	✓ Matrix Authorization Strategy	<input type="radio"/> PAM Authentication	Credentials Binding
<input type="radio"/> LDAP	<input checked="" type="radio"/> Email Extension	<input type="radio"/> Mailer Plugin	<input type="radio"/> Dark Theme	Timestamper
<input type="radio"/> Dashboard View	<input checked="" type="radio"/> Git Parameter	✓ GitHub	<input checked="" type="radio"/> GitLab	** Resource Disposer
				Workspace Cleanup
				Ant
				Gradle
				Pipeline
				GitHub
				GitHub Branch Source
				Pipeline: GitHub Groovy Libraries
				** Metrics
				Pipeline Graph View
				Git
				** EDDSA API
				** Trilead API
				SSH Build Agents
				Matrix Authorization Strategy
				** - required dependency

Jenkins 2.503

Create Admin profile

Getting Started

Create First Admin User

Username

bojana.andonova

Password

.....

Confirm password

.....

Full name

Bojana Andonova

E-mail address

Jenkins 2.503

[Skip and continue as admin](#)

[Save and Continue](#)

Create an ngrok temporary public URL

```
bojana@Dell:/mnt/c/Users/Bojana$ /mnt/c/ProgramData/chocolatey/bin/ngrok.exe http 8080
♦ Protect endpoints w/ IP Intelligence: https://ngrok.com/r/ipintel

Session Status      online
Account             bojana.andonova3@gmail.com (Plan: Free)
Update              update available (version 3.22.0, Ctrl-U to update)
Version             3.20.0
Region              Europe (eu)
Latency              49ms
Web Interface        http://127.0.0.1:4040
Forwarding           https://0b25-77-29-190-195.ngrok-free.app -> http://localhost:8080

Connections          ttl      opn      rt1      rt5      p50      p90
                    0        0        0.00     0.00     0.00     0.00
```

Getting Started

Instance Configuration

Jenkins URL:

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the BUILD_URL environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Jenkins 2.503Not nowSave and Finish

Setup secret credentials

Global credentials (unrestricted)

+ Add Credentials

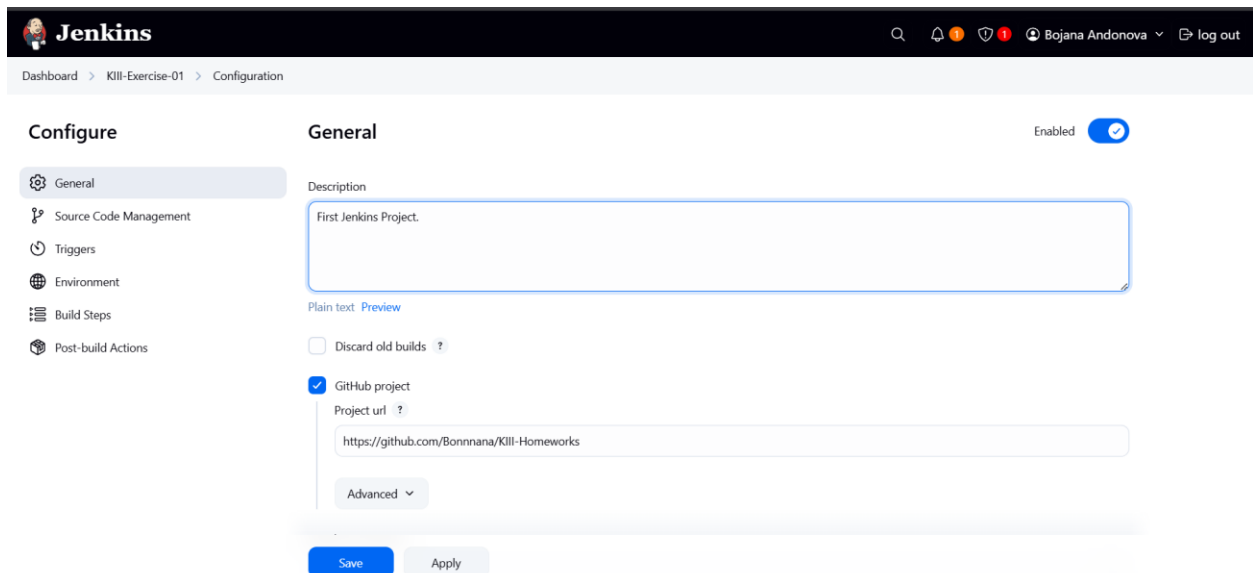
Credentials that should be available irrespective of domain specification to requirements matching.

ID	Name	Kind	Description
github-token	GitHub token for accessing repos from Jenkins	Username with password	GitHub token for accessing repos from Jenkins
dockerhub	DockerHub token for Jenkins	Username with password	DockerHub token for Jenkins

Icon: S M L

Part 2: Create a Freestyle project

Connect it to a simple GitHub repository from your account



The screenshot shows the Jenkins configuration page for a new project. The top navigation bar includes the Jenkins logo, a search icon, and user information (Bojana Andonova) with a 'log out' link. The breadcrumb trail is 'Dashboard > Kill-Exercise-01 > Configuration'. On the left, the 'Configure' sidebar lists various tabs: General (selected), Source Code Management, Triggers, Environment, Build Steps, and Post-build Actions. The main area is titled 'General' and shows a description field with the text 'First Jenkins Project.' Below this is a 'Plain text' preview button. There is an unchecked checkbox for 'Discard old builds'. The 'GitHub project' checkbox is checked, and the 'Project url' field contains 'https://github.com/Bonnana/Kill-Homeworks'. An 'Advanced' dropdown menu is visible at the bottom of the configuration section. At the very bottom are 'Save' and 'Apply' buttons.

Jenkins

Dashboard > Kill-Exercise-01 > Configuration

Configure

General

Enabled

Description

First Jenkins Project.

Plain text Preview

☐ Discard old builds

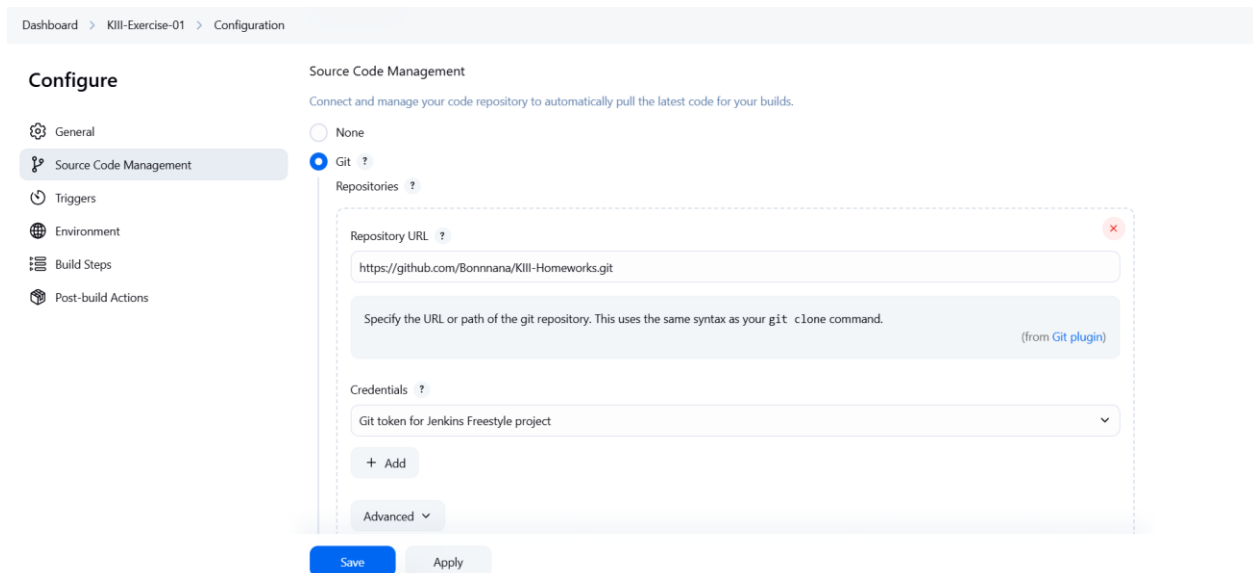
☒ GitHub project

Project url

https://github.com/Bonnana/Kill-Homeworks

Advanced

Save Apply



This screenshot shows the 'Source Code Management' tab of the Jenkins configuration page. The breadcrumb trail remains 'Dashboard > Kill-Exercise-01 > Configuration'. In the left sidebar, 'Source Code Management' is now selected. The main area is titled 'Source Code Management' and includes a sub-header: 'Connect and manage your code repository to automatically pull the latest code for your builds.' There are two radio buttons: 'None' and 'Git' (which is selected). Below the 'Git' option is a 'Repositories' section. It contains a 'Repository URL' field with the value 'https://github.com/Bonnana/Kill-Homeworks.git'. A tooltip explains: 'Specify the URL or path of the git repository. This uses the same syntax as your git clone command. (from Git plugin)'. Below this is a 'Credentials' dropdown menu showing 'Git token for Jenkins Freestyle project'. There is an '+ Add' button and an 'Advanced' dropdown at the bottom of the configuration area. 'Save' and 'Apply' buttons are at the bottom.

Dashboard > Kill-Exercise-01 > Configuration

Configure

Source Code Management

Connect and manage your code repository to automatically pull the latest code for your builds.

☐ None

☒ Git

Repositories

Repository URL

https://github.com/Bonnana/Kill-Homeworks.git

Specify the URL or path of the git repository. This uses the same syntax as your git clone command. (from Git plugin)

Credentials

Git token for Jenkins Freestyle project

+ Add

Advanced

Save Apply

Set up an automatic build, on each minute

Dashboard > Kill-Exercise-01 > Configuration

Configure

General

Source Code Management

Triggers

Environment

Build Steps

Post-build Actions

Triggers

Set up automated actions that start your build based on specific events, like code changes or scheduled times.

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

☐ Build after other projects are built ?

☒ Build periodically ?

Schedule ?

⚠ Do you really mean "every minute" when you say "*****"? Perhaps you meant "H * * * * *" to poll once per hour

Would last have run at Sunday, March 30, 2025 at 12:01:00 PM Coordinated Universal Time; would next run at Sunday, March 30, 2025 at 12:02:00 PM Coordinated Universal Time.

☐ Build when a change is pushed to GitLab. GitLab webhook URL: <https://0b25-77-29-190-195.ngrok-free.app/project/Kill-Exercise-01> ?

☐ GitHub hook trigger for GITScm polling ?

☐ Poll SCM ?

Save

Apply

Add a Build Step with a simple ls -l command

Configure

General

Source Code Management

Triggers

Environment

Build Steps

Post-build Actions

Build Steps

Automate your build process with ordered tasks like code compilation, testing, and deployment.

Execute shell ?

Command

[See the list of available environment variables](#)

ls -l

Advanced ▾


Add build step ▾

Post-build Actions

Save

Apply

Project builds

 **Jenkins**

Dashboard > KIII-Exercise-01 >

Status

Changes

Workspace

Build Now

Configure

Delete Project

GitHub

Favorite

Open Blue Ocean

Rename

KIII-Exercise-01

First Jenkins Project.

Permalinks


- Last build (#2), 56 sec ago
- Last stable build (#2), 56 sec ago
- Last successful build (#2), 56 sec ago
- Last completed build (#2), 56 sec ago

Edit description

Builds

Filter

Today

 **Jenkins**

Dashboard > KIII-Exercise-01 > #3 > Console Output

Status

Changes

Console Output

Edit Build Information

Delete build '#3'

Timings

Git Build Data

Open Blue Ocean

Previous Build

Next Build

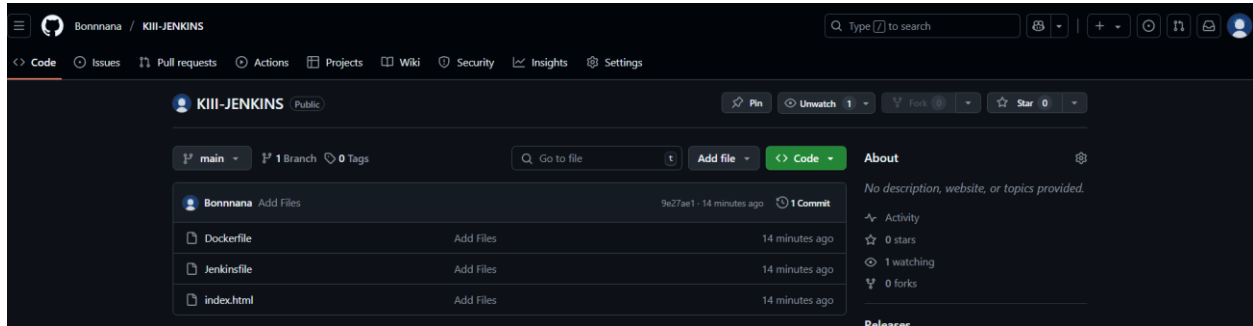
Console Output

Download Copy View as plain text

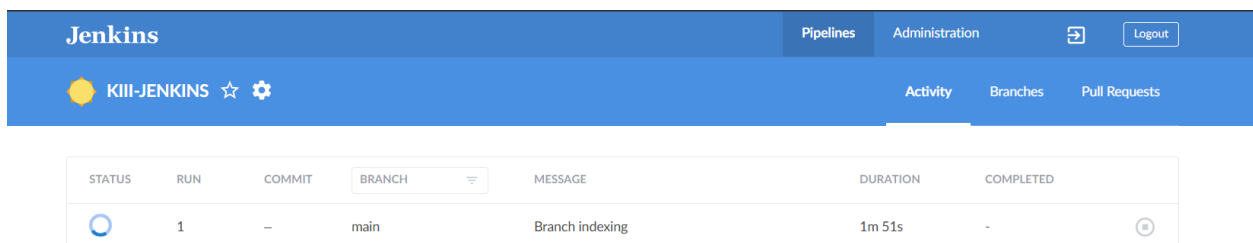
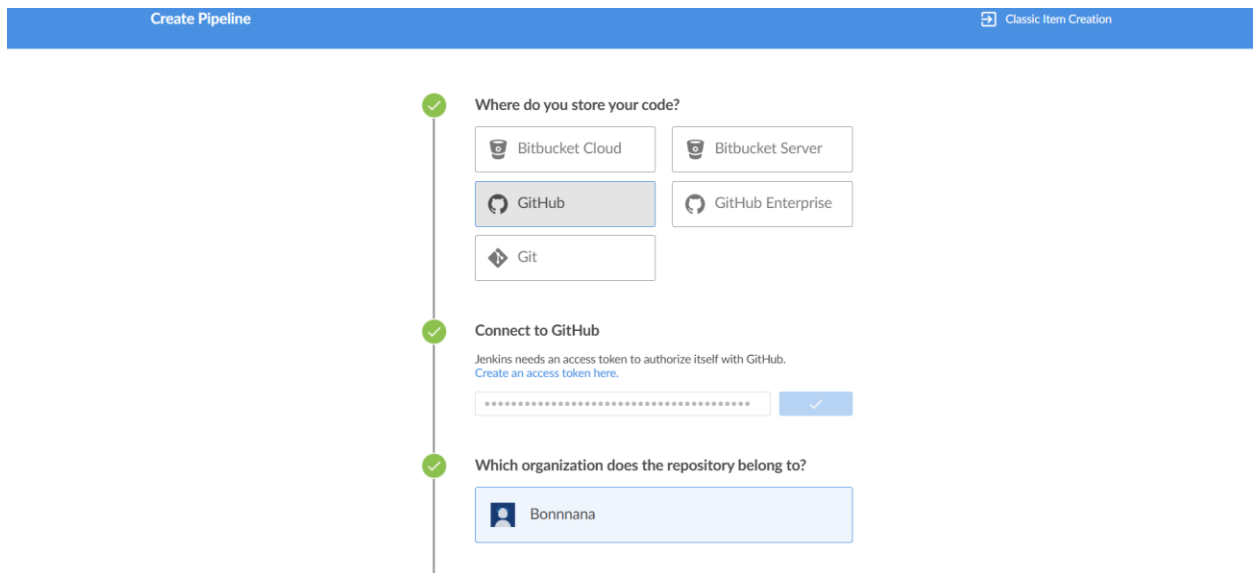
```
Started by timer
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/KIII-Exercise-01
The recommended git tool is: NONE
using credential git-token-2
> git rev-parse --resolve-git-dir /var/jenkins_home/workspace/KIII-Exercise-01/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/Bonnnana/KIII-Homeworks.git # timeout=10
Fetching upstream changes from https://github.com/Bonnnana/KIII-Homeworks.git
> git --version # timeout=10
> git --version # 'git version 2.39.5'
using GIT_ASKPASS to set credentials Git token for Jenkins Freestyle project
> git fetch --tags --force --progress -- https://github.com/Bonnnana/KIII-Homeworks.git +refs/heads/*:refs/remotes/origin/* # timeout=10
Seen branch in repository origin/develop
Seen branch in repository origin/main
Seen branch in repository origin/production
Seen branch in repository origin/test
Seen 4 remote branches
> git show-ref --tags -d # timeout=10
Checking out Revision 909426f7f411a83435fc91965662ac5090acdf0 (origin/main)
> git config core.sparsecheckout # timeout=10
```

Part 3: Create a Pipeline in Blue Ocean

Create a new GitHub repository with the supplied Dockerfile and Jenkinsfile files



Create a new Pipeline with Blue Ocean and connect it to the GitHub repo



✓ KIII-JENKINS < 5

PipelineChangesTestsArtifacts🔄✎⚙️📦Logout✕

Branch: main🔗

🕒 29s

No changes

Commit: 81dec5a

🕒 a few seconds ago

Replayed #4

StartClone repositoryBuild imagePush imageEnd

●

●

●

●

●

Push image - 14s

🔄 Restart Push image🔗📄

✓> Checks if running on a Unix-like node<1s

✓> docker tag "\$JD_ID" "\$JD_TAGGED_IMAGE_NAME" — Shell Script<1s

✓> Checks if running on a Unix-like node<1s

✓> docker push "\$JD_TAGGED_IMAGE_NAME" — Shell Script4s

✓> Checks if running on a Unix-like node<1s

✓> docker tag "\$JD_ID" "\$JD_TAGGED_IMAGE_NAME" — Shell Script<1s

✓> Checks if running on a Unix-like node<1s

✓> docker push "\$JD_TAGGED_IMAGE_NAME" — Shell Script4s

dockerhub

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🔍 Search Docker Hub

🏠bojanaandonova

Docker Personal

🔗Repositories

⚙️Settings

Default privacy

🔔Notifications

💰Billing

📊Usage

Pulls

Storage

Repositories / kiii-jenkins / General

bojanaandonova/kiii-jenkins🔗

Last pushed about 1 hour ago

Add a description✎🔗

Add a category✎🔗

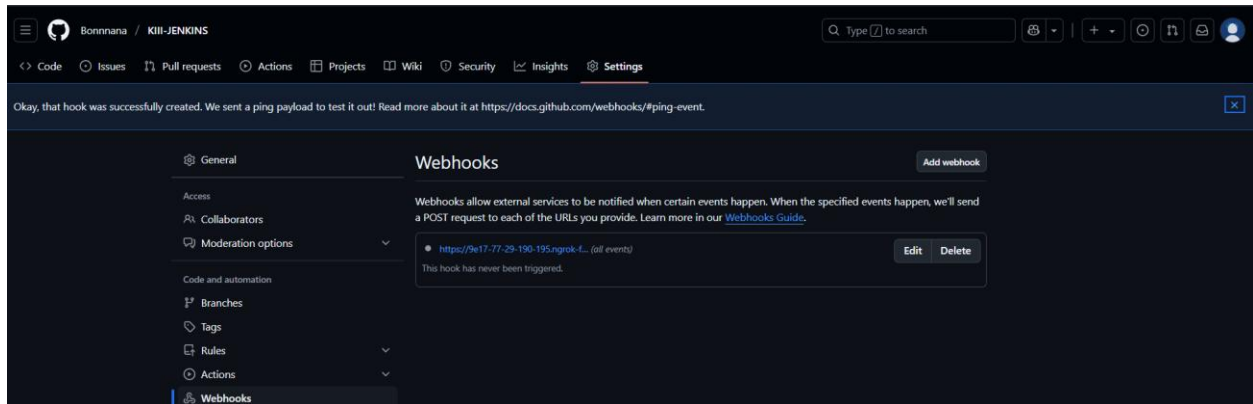
GeneralTagsImage ManagementBETACollaboratorsWebhooksSettings

Tags

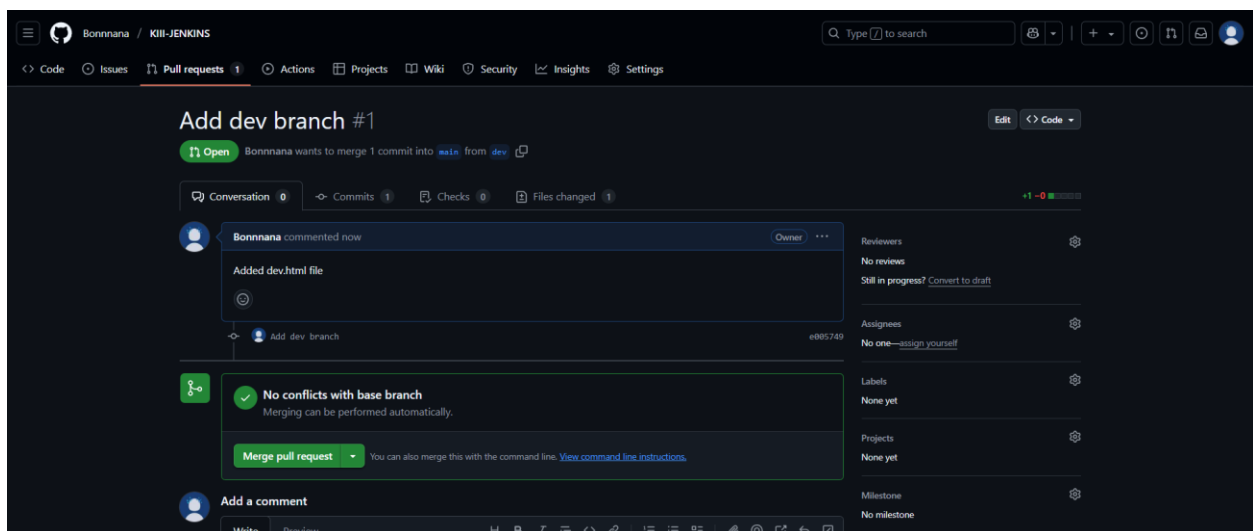
This repository contains 5 tag(s).

Tag	OS	Type	Pulled	Pushed
main-latest	🐧	Image	less than 1 day	about 1 hour
main-5	🐧	Image	less than 1 day	about 1 hour
main-3	🐧	Image	less than 1 day	about 1 hour
main-2	🐧	Image	less than 1 day	about 1 hour
main-1	🐧	Image	less than 1 day	about 1 hour

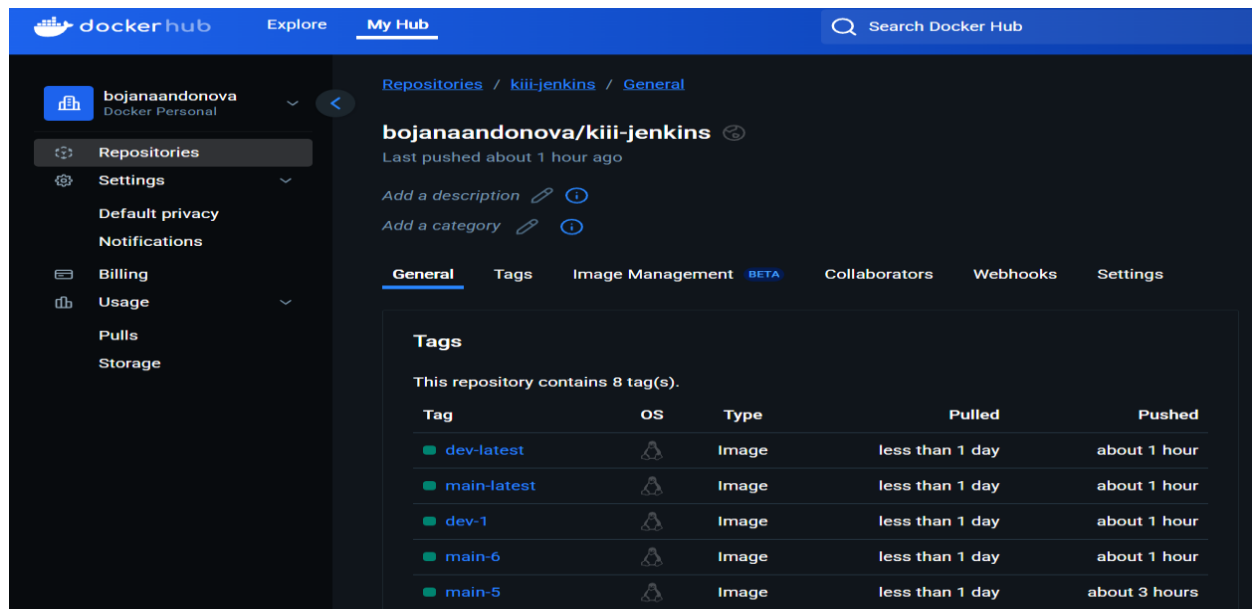
Create a Webhook in the GitHub repository



Create a new 'dev' branch in the repo. Make a change in it. Create a pull request from 'dev' to 'main'. Accept the PR and merge the changes.

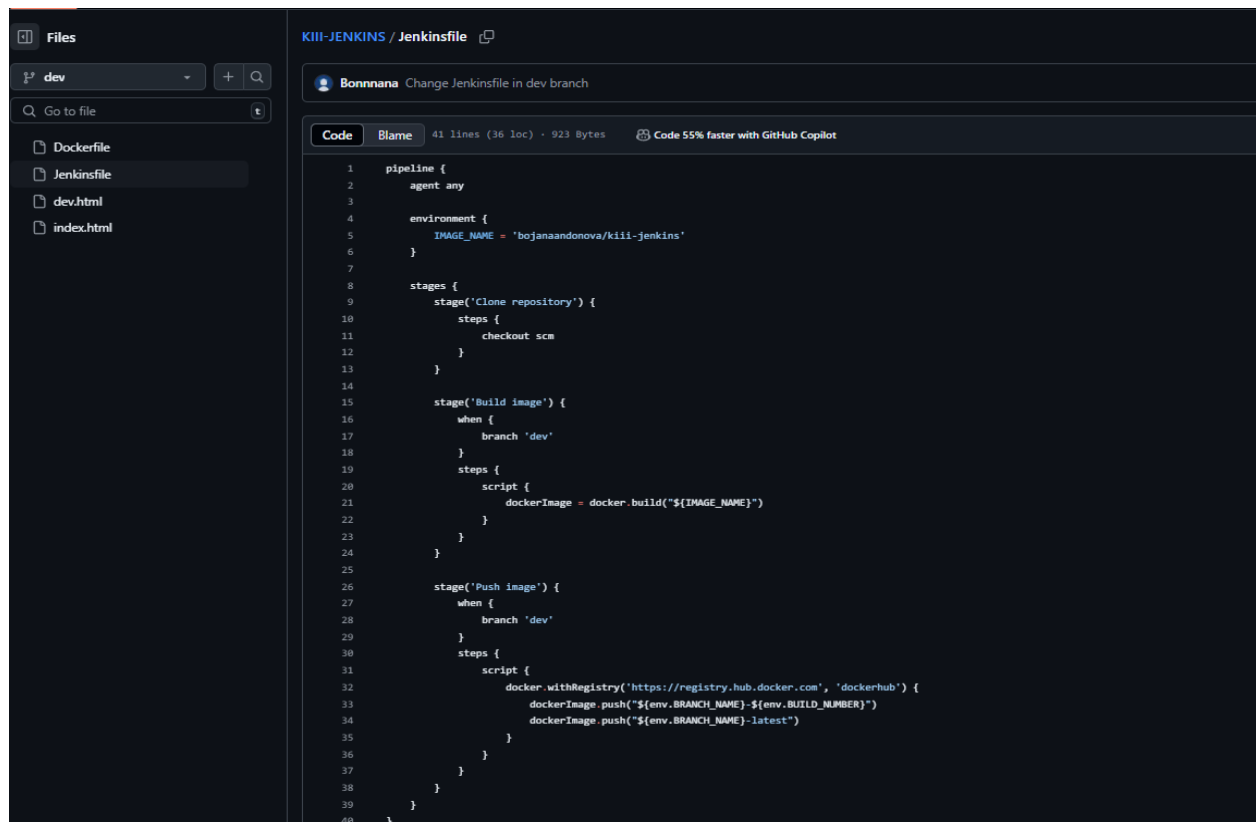


Jenkins							Pipelines	Administration	Logout
KIIL-Exercise-02							Activity	Branches	Pull Requests
STATUS	RUN	COMMIT	BRANCH	MESSAGE	DURATION	COMPLETED			
✓	6	935cb71	main	Add dev branch	35s	6 minutes ago			
✓	1	e005749	dev	Branch indexing	35s	5 minutes ago			
✓	5	81d0c5a	main	Replayed #4	29s	an hour ago			



Part 4 (bonus): Branch-specific Pipeline in Blue Ocean

Modify the Pipeline from Part 3, so that the Docker Image build and push to Docker Hub will only happen if the changes are on the 'dev' branch.



✓	7	271c340	main	Change Jenkinsfile in dev branch	17s	a few seconds ago	↺
✓	2	37aee5c	dev	Change Jenkinsfile in dev branch	36s	a few seconds ago	↺

docker hub

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Usage

Pulls

Storage

Repositories / kiii-jenkins / General

bojanaandonova/kiii-jenkins

Last pushed 1 minute ago

Add a description

Add a category

General

Tags

Image Management BETA

Collaborators

Webhooks

Settings

Tags

This repository contains 9 tag(s).

Tag	OS	Type	Pulled	Pushed
dev-latest	linux/amd64	Image	less than 1 day	1 minute
dev-2	linux/amd64	Image	less than 1 day	1 minute
main-latest	linux/amd64	Image	less than 1 day	about 2 hours
dev-1	linux/amd64	Image	less than 1 day	about 2 hours

Make changes to the 'dev' branch. What happens in Jenkins?

Bonnnana / KIII-JENKINS

Q

Type to search

<> Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

KIII-JENKINS

Public

Pin

Unwatch

dev

2 Branches

0 Tags

Q

Go to file

t

Add file

<> Code

This branch is 1 commit ahead of, 2 commits behind main

Contribute

Bonnnana

Add file on dev branch

3b1de3a

1 minute ago

7 Commits

Dockerfile	Add Files	4 hours ago
Jenkinsfile	Change Jenkinsfile in dev branch	12 minutes ago
dev.html	Add dev branch	1 hour ago
index.html	Add Files	4 hours ago
test_dev	Add file on dev branch	1 minute ago

STATUS	RUN	COMMIT	BRANCH	MESSAGE	DURATION	COMPLETED
✓	3	3b1de3a	dev	Add file on dev branch	30s	2 minutes ago

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Docker Personal

Repositories

Settings

Default privacy

Notifications

Billing

Usage

Pulls

Storage

Repositories / kiii-jenkins / General

bojanaandonova/kiii-jenkins

Last pushed 2 minutes ago

Add a description

Add a category

General Tags Image Management BETA Collaborators Webhooks Settings

Tags

This repository contains 10 tag(s).

Tag	OS	Type	Pulled	Pushed
dev-latest		Image	less than 1 day	2 minutes
dev-3		Image	less than 1 day	3 minutes

The changes are shown for the dev branch. Docker Image is built and pushed to the Dockerhub.

Make changes to the 'main' branch. What happens in Jenkins?

Bonnana / KIII-JENKINS

Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

KIII-JENKINS

Public

Pin

Unwatch

1

main

2 Branches

0 Tags

Go to file

Add file

Code

Bonnana Merge branch 'main' of https://github.com/Bonnana/KIII-JENKINS

13c1e98 · now

10 Commits

Dockerfile	Add Files	4 hours ago
Jenkinsfile	Change Jenkinsfile in dev branch	24 minutes ago
dev.html	Add dev branch	2 hours ago
index.html	Add Files	4 hours ago
test_main	Add file on main branch	3 minutes ago

KIII-Exercise-02 ☆ ⚙							Activity	Branches	Pull Requests
STATUS	RUN	COMMIT	BRANCH	MESSAGE	DURATION	COMPLETED			
✓	3	3b1de3a	dev	Add file on dev branch	30s	13 minutes ago	↺		
✓	2	37aee5c	dev	Change Jenkinsfile in dev branch	36s	16 minutes ago	↺		
✓	7	271c340	main	Change Jenkinsfile in dev branch	17s	17 minutes ago	↺		
✓	1	e005749	dev	Branch indexing	35s	2 hours ago	↺		
✓	6	935cb71	main	Add dev branch	35s	2 hours ago	↺		
✓	5	81d0c5a	main	Replayed #4	29s	3 hours ago	↺		
✗	4	81d0c5a	main	Restarted from build #3, stage Push image	12s	3 hours ago	↺		
✓	3	81d0c5a	main	Replayed #2	30s	3 hours ago	↺		

New

Introducing our new CEO Don Johnson - Read More →

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bojanaandonova/kiii-jenkins

Last pushed 13 minutes ago

Add a description

Add a category

General

Tags

Image Management BETA

Collaborators

Webhooks

Settings

Tags

This repository contains 10 tag(s).

Tag	OS	Type	Pulled	Pushed
dev-latest		Image	less than 1 day	13 minutes
dev-3		Image	less than 1 day	13 minutes
dev-2		Image	less than 1 day	17 minutes

Making changes on the main branch does not trigger a Docker image build or push. No updates appear in Jenkins or Docker Hub.