

(21CC505PC)
SOFTWARE ENGINEERING LAB
LAB EXERCISE - 6

CONTINUOUS INTEGRATION TOOLS
TOPIC -2

BUILDING THE CI/CD FREESTYLE PIPELINE
USING JENKINS FOR MAVEN WEB PROJECT
WITH POLL SCM

List of Experiments:

Do the following exercises for any one project given in the list of sample projects or any other projects?

1. Development of problem statement.
2. Preparation of Software Requirement Specification Document, Design Documents and Testing Phase related documents.
3. Study and usage of any Design phase CASE tool
4. Creating the project and committing using Git and GitHub
5. Creating Maven Java and Maven Web project using Eclipse and Push them to GitHub.
6. Building the CI/CD pipeline using Jenkins for the project in the previous experiment.
7. Local Deployment of project using Docker, Kubernetes and Monitoring using Nagios tool.
8. Cloud Deployment of a project in the AWS Cloud using EC2 instance.

Enter an item name

» Required field



Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.



Maven project

Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.



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

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

OK

General

Source Code Management

Build Triggers

Build Environment

Build

Post-build Actions

Description

Demo for web Project

[Plain text] Preview

☐ Discard old builds ?

☐ GitHub project

☐ Permission to Copy Artifact

☐ This build requires lockable resources

☐ This project is parameterized ?

☐ Throttle builds ?

☐ Disable this project ?

☐ Execute concurrent builds if necessary ?

Advanced...

Source Code Management

☐ None

☒ Git ?

Repositories ?

Repository URL ?

Save

Apply

General

Source Code Management

Build Triggers

Build Environment

Build

Post-build Actions

☐ Throttle builds ?

☐ Disable this project ?

☐ Execute concurrent builds if necessary ?

Advanced...

Source Code Management

None

☒ Git ?

Repositories ?

Repository URL ?

https://github.com/budarajumadhurika/PresentWebProject.git

Credentials ?

- none -

Add

Advanced...

Add Repository

Branches to build ?

Save

Apply

Windows taskbar with icons for Start, Edge, File Explorer, Chrome, PowerPoint, and a globe icon. System tray shows 37°C Sunny, 04:40 PM, 29-04-2022, and a notification icon.

General Source Code Management Build Triggers Build Environment Build Post-build Actions

Repositories ?

Repository URL ?

https://github.com/budarajumadhurika/PresentWebProject.git

Credentials ?

- none - Add

Advanced...

Add Repository

Branches to build ?

Branch Specifier (blank for 'any') ?

*/main

Add Branch

Repository browser ?

Save Apply

Configure



General



Source Code Management



Build Triggers



Build Environment



Build Steps



Post-build Actions

Build Triggers

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

Schedule ?

* * * * *

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

Would last have run at Monday, 11 November, 2024 at 12:39:01 AM India Standard Time; would next run at Monday, 11 November, 2024 at 12:39:01 AM India Standard Time.

Save

Apply

Activate Windows

Go to Settings to activate Windows.

localhost:8080/job/PresentWebProject_build/configure

Dashboard > PresentWebProject_build

GeneralSource Code ManagementBuild TriggersBuild EnvironmentBuildPost-build Actions

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

☐ Build after other projects are built ?

☐ Build periodically ?

☐ GitHub hook trigger for GITScm polling ?

☐ Poll SCM ?

Copy artifacts from another project

Execute Windows batch command

Execute shell

Invoke Ant

Invoke Gradle script

Invoke top-level Maven targets

Provide Configuration files

Run with timeout

Set build status to "pending" on GitHub commit

Trigger/call builds on other projects

Add build step ^

Post-build Actions

Add post-build action v

Save

Apply

localhost:8080/job/PresentWebProject_build/configure#

37°C Sunny04:40 PM29-04-2022

General Source Code Management Build Triggers Build Environment **Build** Post-build Actions

Invoke top-level Maven targets

?

Maven Version

MAVEN HOME

Goals

clean

Advanced...

Invoke top-level Maven targets

?

Maven Version

MAVEN HOME

Goals

install

Advanced...

Save

Apply

localhost:8080/job/PresentWebProject_build/configure

DashboardPresentWebProject_build

GeneralSource Code ManagementBuild TriggersBuild EnvironmentBuildPost-build Actions

Invoke top-level Maven targets

Aggregate downstream test results

Archive the artifacts

Build other projects

Publish JUnit test result report

Publish Javadoc

Record fingerprints of files to track usage

Git Publisher

Build other projects (manual step)

Deploy war/ear to a container

E-mail Notification

Editable Email Notification

Set GitHub commit status (universal)

Set build status on GitHub commit [deprecated]

Trigger parameterized build on other projects

Delete workspace when build is done

Add post-build action

Save

Apply

Advanced...

REST APIJenkins 2.332.2

localhost:8080/job/PresentWebProject_build/configure#

37°C Sunny

04:41 PM29-04-2022

GeneralSource Code ManagementBuild TriggersBuild EnvironmentBuildPost-build Actions

MAVEN HOME

Goals

install

Advanced...

Add build step

Post-build Actions

Archive the artifacts

Files to archive

**/*

Advanced...

Add post-build action

Save

Apply

General Source Code Management Build Triggers Build Environment **Build** Post-build Actions

MAVEN HOME

Goals

install

Advanced...

Aggregate downstream test results

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Trigger parameterized build on other projects

Delete workspace when build is done

Add post-build action

Advanced...

Save Apply

✓ Saved

General Source Code Management Build Triggers Build Environment Build **Post-build Actions**

Add build step ▾

Post-build Actions

Archive the artifacts

?

Files to archive ?

**/*

Advanced...

Build other projects

?

Projects to build

PresentWebProject_test

❌ No such project 'PresentWebProject_test'. Did you mean 'PresentProject_test'?

☒ Trigger only if build is stable

☐ Trigger even if the build is unstable

Save

Apply

Enter an item name

» Required field



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OK

General

Source Code Management

Build Triggers

Build Environment

Build

Post-build Actions

Description

Demo web project

[Plain text] [Preview](#)

☐ Discard old builds ?

☐ GitHub project

☐ Permission to Copy Artifact

☐ This build requires lockable resources

☐ This project is parameterized ?

☐ Throttle builds ?

☐ Disable this project ?

☐ Execute concurrent builds if necessary ?

Advanced...

Source Code Management

☒ None

☐ Git ?

Save

Apply

General

Source Code Management

Build Triggers

Build Environment

Build

Post-build Actions

☐ Throttle builds ?

☐ Disable this project ?

☐ Execute concurrent builds if necessary ?

Advanced...

Source Code Management

☒ None

☐ Git ?

Build Triggers

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

☐ Build after other projects are built ?

☐ Build periodically ?

☐ GitHub hook trigger for GITScm polling ?

☐ Poll SCM ?

Build Environment

☒ Delete workspace before build starts

Advanced...

☐ Use secret text(s) or file(s) ?

☐ Provide Configuration files ?

☐ Abort the build if it's stuck

☐ Add timestamps to the Console Output

☐ Inspect build log for published Gradle build scans

Save

Apply

General Source Code Management Build Triggers **Build Environment** Build Post-build Actions

Build Environment

☒ Delete workspace before build starts

Advanced...

☐ Use secret text(s) or file(s) ?

☐ Provide Configuration files ?

☐ Abort the build if it's stuck

☐ Add timestamps to the Console Output

☐ Inspect build log for published Gradle build scans

☐ With Ant ?

Build

Add build step ^

Copy artifacts from another project

Execute Windows batch command

Execute shell

Invoke Ant

Invoke Gradle script

Invoke top-level Maven targets

Provide Configuration files

Run with timeout

Set build status to "pending" on GitHub commit

Trigger/call builds on other projects

General

Source Code Management

Build Triggers

Build Environment

Build

Post-build Actions

☐ Use secret text(s) or file(s) ?

☐ Provide Configuration files ?

☐ Abort the build if it's stuck

☐ Add timestamps to the Console Output

☐ Inspect build log for published Gradle build scans

☐ With Ant ?

Build

Copy artifacts from another project

Project name ?

PresentWebProject_build

Which build ?

Latest successful build

☒ Stable build only

Artifacts to copy ?

**/*

Artifacts not to copy ?

Save

Apply

General Source Code Management Build Triggers Build Environment **Build** Post-build Actions

Target directory ?

- Copy artifacts from another project
- Execute Windows batch command
- Execute shell
- Invoke Ant
- Invoke Gradle script
- Invoke top-level Maven targets
- Provide Configuration files
- Run with timeout
- Set build status to "pending" on GitHub commit
- Trigger/call builds on other projects

☒ Fingerprint Artifacts ?

Advanced...

Add build step ^

Post-build Actions

Add post-build action v

Save

Apply

GeneralSource Code ManagementBuild TriggersBuild EnvironmentBuildPost-build Actions

☐ Flatten directories☐ Optional☒ Fingerprint Artifacts ?

Advanced...

Invoke top-level Maven targets ?

Maven Version

MAVEN HOME

Goals

test

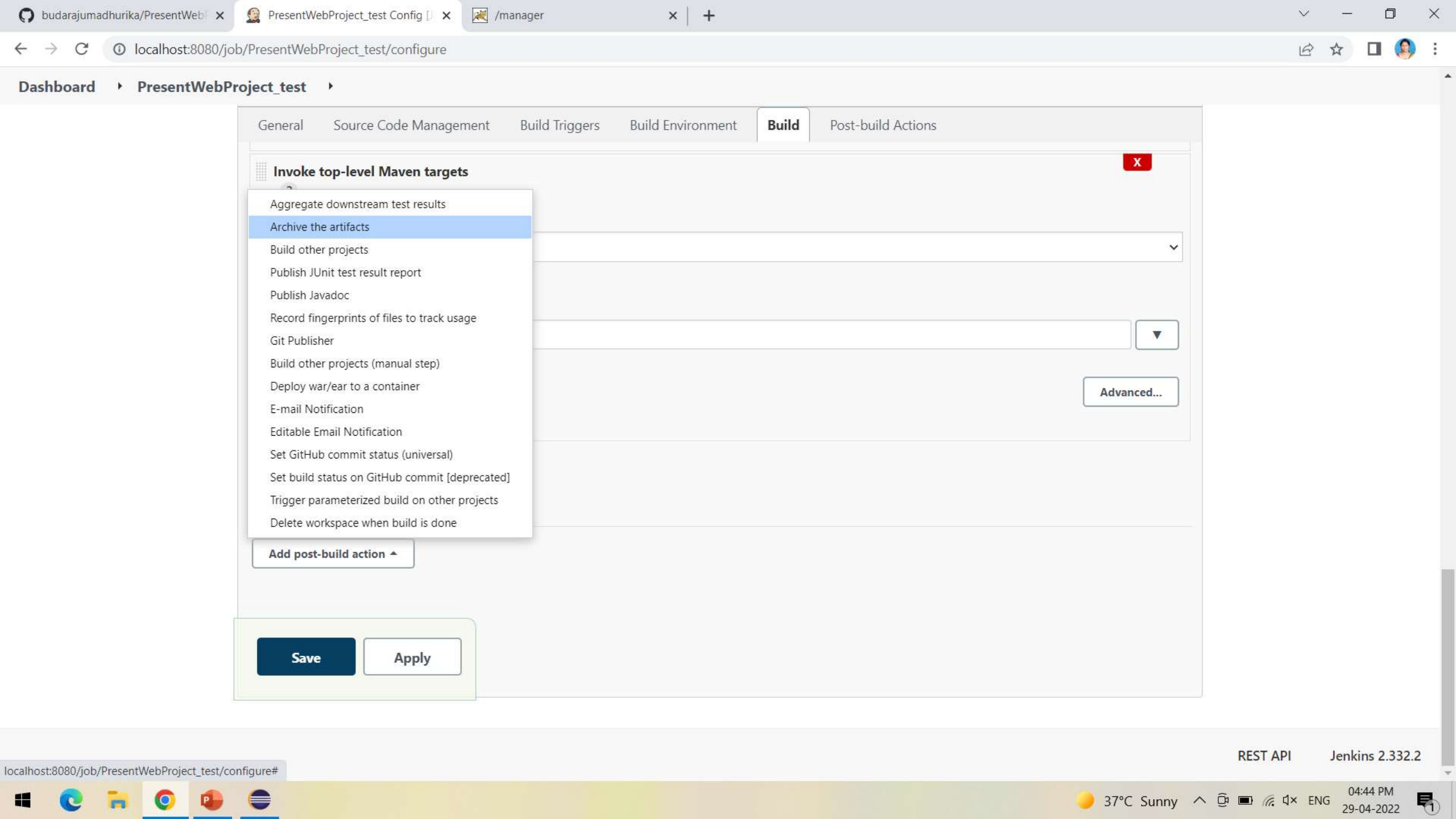
Advanced...

Add build step

Post-build Actions

Add post-build action

SaveApply



Invoke top-level Maven targets

- Aggregate downstream test results
- Archive the artifacts**
- Build other projects
- Publish JUnit test result report
- Publish Javadoc
- Record fingerprints of files to track usage
- Git Publisher
- Build other projects (manual step)
- Deploy war/ear to a container
- E-mail Notification
- Editable Email Notification
- Set GitHub commit status (universal)
- Set build status on GitHub commit [deprecated]
- Trigger parameterized build on other projects
- Delete workspace when build is done

Add post-build action ^

Save Apply

Advanced...

- Aggregate downstream test results
- Archive the artifacts
- Build other projects
- Publish JUnit test result report
- Publish Javadoc
- Record fingerprints of files to track usage
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- Set GitHub commit status (universal)
- Set build status on GitHub commit [deprecated]
- Trigger parameterized build on other projects
- Delete workspace when build is done

Add post-build action ^

Advanced...

Save

Apply

✓ Saved

General Source Code Management Build Triggers Build Environment Build **Post-build Actions**

Advanced...

Add build step ▾

Post-build Actions

Archive the artifacts

?

Files to archive ?

**/*

Advanced...

Build other projects

?

Projects to build

PresentWebProject_deploy

❌ No such project 'PresentWebProject_deploy'. Did you mean 'PresentWebProject_build'?

☒ Trigger only if build is stable

Save

Apply

☐ Trigger even if the build is unstable

Enter an item name

» Required field



Freestyle project

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OK

General

Source Code Management

Build Triggers

Build Environment

Build

Post-build Actions

☐ Throttle builds ?

☐ Disable this project ?

☐ Execute concurrent builds if necessary ?

Advanced...

Source Code Management

☒ None

☐ Git ?

Build Triggers

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

☐ Build after other projects are built ?

☐ Build periodically ?

☐ GitHub hook trigger for GITScm polling ?

☐ Poll SCM ?

Build Environment

☒ Delete workspace before build starts

Advanced...

☐ Use secret text(s) or file(s) ?

☐ Provide Configuration files ?

☐ Abort the build if it's stuck

☐ Add timestamps to the Console Output

☐ Inspect build log for published Gradle build scans

Save

Apply

Dashboard > PresentWebProject_deploy >

General Source Code Management **Build Triggers** Build Environment Build Post-build Actions

- ☐ Build periodically ?
- ☐ GitHub hook trigger for GITScm polling ?
- ☐ Poll SCM ?

Build Environment

☒ Delete workspace before build starts

- Copy artifacts from another project
- Execute Windows batch command
- Execute shell
- Invoke Ant
- Invoke Gradle script
- Invoke top-level Maven targets
- Provide Configuration files
- Run with timeout
- Set build status to "pending" on GitHub commit
- Trigger/call builds on other projects

Add build step ^

Post-build Actions

Add post-build action v

Save

Apply

General Source Code Management Build Triggers Build Environment **Build** Post-build Actions

- ☐ Inspect build log for published Gradle build scans
- ☐ With Ant ?

Build

 **Copy artifacts from another project** 

Project name ?

PresentWebProject_test

Which build ?

Latest successful build

☒ Stable build only

Artifacts to copy ?

**/*

Artifacts not to copy ?

Target directory ?

Save

Apply

Dashboard PresentWebProject_deploy

General Source Code Management Build Triggers Build Environment **Build** Post-build Actions

**/*

Artifacts not to copy ?

Target directory ?

- Copy artifacts from another project
- Execute Windows batch command
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- Invoke Ant
- Invoke Gradle script
- Invoke top-level Maven targets
- Provide Configuration files
- Run with timeout
- Set build status to "pending" on GitHub commit
- Trigger/call builds on other projects

☒ Fingerprint Artifacts ?

Advanced...

Add build step ^

Post-build Actions

Add post-build action ▾

Save

Apply

General Source Code Management Build Triggers Build Environment **Build** Post-build Actions

Advanced...

Copy artifacts from another project

Project name ?

PresentWebProject_test

Which build ?

Latest successful build

☒ Stable build only

Artifacts to copy ?

**/*

Artifacts not to copy ?

Target directory ?

Save Apply

localhost:8080/job/PresentWebProject_deploy/configure

Dashboard > PresentWebProject_deploy >

GeneralSource Code ManagementBuild TriggersBuild EnvironmentBuildPost-build Actions

Target directory ?

Aggregate downstream test results

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Deploy war/ear to a container

E-mail Notification

Editable Email Notification

Set GitHub commit status (universal)

Set build status on GitHub commit [deprecated]

Trigger parameterized build on other projects

Delete workspace when build is done

Add post-build action ^

SaveApply

☒ Fingerprint Artifacts ?

Advanced...

localhost:8080/job/PresentWebProject_deploy/configure#37°C Sunny04:48 PM29-04-2022

General

Source Code Management

Build Triggers

Build Environment

Build

Post-build Actions

Advanced...

Add build step

Post-build Actions

Deploy war/ear to a container
WAR/EAR files ?



**/*.war

Context path ?

projecttest

Containers

Tomcat 9.x Remote
Credentials



- none -


Add

Tomcat URL ?


Save

Apply

Advanced...



Jenkins Credentials Provider: Jenkins



Add Credentials

Domain

Global credentials (unrestricted)

Kind

Username with password

Scope ?

Global (Jenkins, nodes, items, all child items, etc)

Username ?

☐ Treat username as secret ?

Password ?

General Source Code Management Build Triggers Build Environment Build Post-build Actions

**/*.war

Context path ?
projecttest

Containers

Tomcat 9.x Remote Credentials X










admin/***** Add

Tomcat URL ?
http://localhost:8081/ Advanced...

Add Container

☐ Deploy on failure

Save Apply

-  **New Item**
-  **People**
-  **Build History**
-  **Project Relationship**
-  **Check File Fingerprint**
-  **Manage Jenkins**
-  **My Views**
-  **Lockable Resources**
-  **New View**

Build Queue ^

No builds in the queue.

Build Executor Status ^

1	Idle
2	Idle

New view

Name

Type

- ☒ **Build Pipeline View**
Shows the jobs in a build pipeline view. The complete pipeline of jobs that a version propagates through are shown as a row in the view.
- ☐ **List View**
Shows items in a simple list format. You can choose which jobs are to be displayed in which view.
- ☐ **My View**
This view automatically displays all the jobs that the current user has an access to.

New View

Build Queue ^

No builds in the queue.

Build Executor Status ^

1 Idle

2 Idle

Pipeline Flow

Layout

Based on upstream/downstream relationship

This layout mode derives the pipeline structure based on the upstream/downstream trigger relationship between jobs. This is the only out-of-the-box supported layout mode, but is open for extension.

Upstream / downstream config

Select Initial Job ?

PresentWebProject_build

Trigger Options

Build Cards

Standard build card

Use the default build cards

Restrict triggers to most recent successful builds ?

☐ Yes ☒ No

Always allow manual trigger on pipeline steps ?

☐ Yes ☒ No

OK

Apply

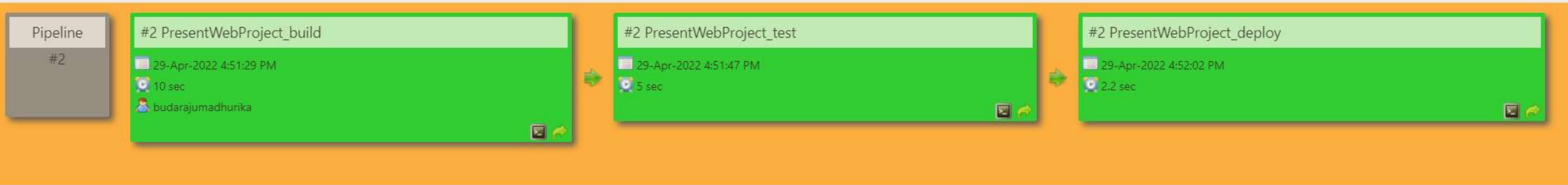
Build Pipeline

-  Run
-  History
-  Configure
-  Add Step
-  Delete
-  Manage

This view has no jobs associated with it. You can either add some existing jobs to this view or create a new job in this view.

Build Pipeline

- Run
- History
- Configure
- Add Step
- Delete
- Manage



budarajumadhurika/PresentWeb

PresentWebProject_Pipeline [Jen]

/manager

localhost:8081/manager/html

message

ok

Manager

List Applications

HTML Manager Help

Manager Help

Server Status

Applications

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	<div>Start Stop Reload Undeploy</div> <div>Expire sessions with idle ≥ 30 minutes</div>
/PresentWebProject	None specified	Archetype Created Web Application	true	0	<div>Start Stop Reload Undeploy</div> <div>Expire sessions with idle ≥ 30 minutes</div>
/examples	None specified	Servlet and JSP Examples	true	0	<div>Start Stop Reload Undeploy</div> <div>Expire sessions with idle ≥ 30 minutes</div>
/host-manager	None specified	Tomcat Host Manager Application	true	0	<div>Start Stop Reload Undeploy</div> <div>Expire sessions with idle ≥ 30 minutes</div>
/manager	None specified	Tomcat Manager Application	true	1	<div>Start Stop Reload Undeploy</div> <div>Expire sessions with idle ≥ 30 minutes</div>
/projecttest	None specified	Archetype Created Web Application	true	0	<div>Start Stop Reload Undeploy</div> <div>Expire sessions with idle ≥ 30 minutes</div>
/test	None specified	Archetype Created Web Application	true	0	<div>Start Stop Reload Undeploy</div> <div>Expire sessions with idle ≥ 30 minutes</div>
/webapplication	None specified	Archetype Created Web Application	true	0	<div>Start Stop Reload Undeploy</div> <div>Expire sessions with idle ≥ 30 minutes</div>

Deploy

Deploy directory or WAR file located on server

Context Path:

Windows Taskbar

38°C Sunny 04:52 PM 29-04-2022

Hello World!