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Batch 3 – DevOps

Lab Exercise 20

Creating a Pipeline Script

Objective: To create a pipeline script for automating build processes in Jenkins

Tools required: Jenkins

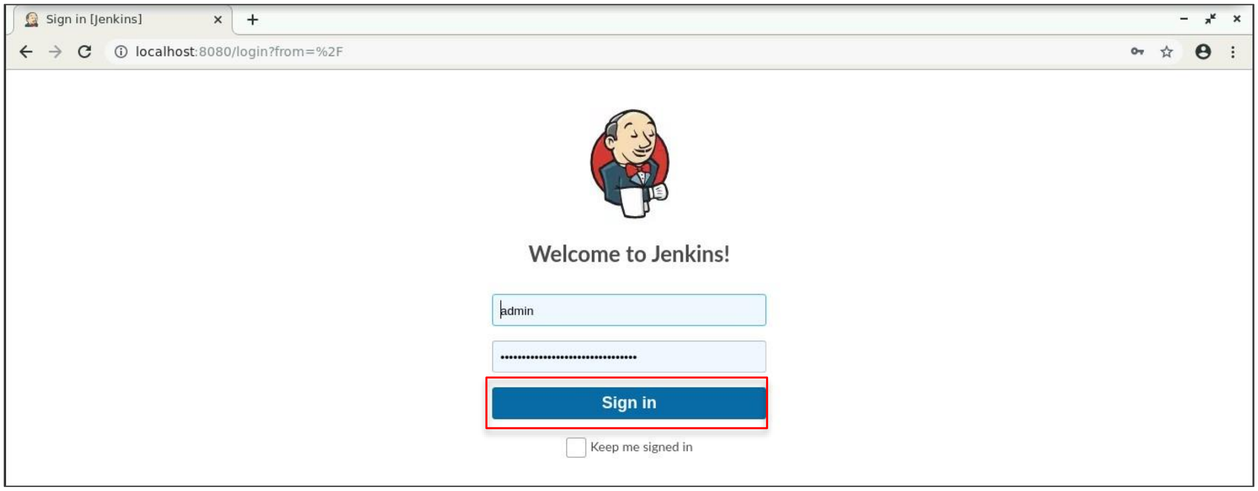
Prerequisites: None

Steps to be followed:

1. Log in to the Jenkins CI tool and create a pipeline script

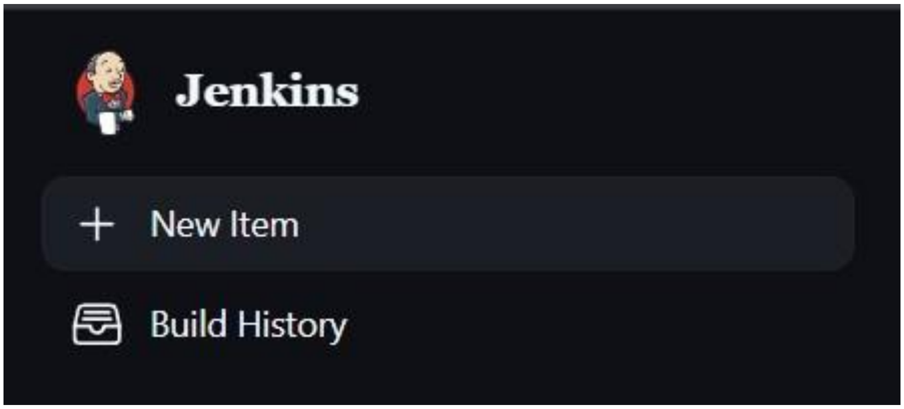
Step 1: Log in to the Jenkins Cl tool and create a pipeline script

1.1 Open the browser, go to the Jenkins **Dashboard** by typing **localhost:8080** in your browser, provide the credentials, and click the **Sign in** button

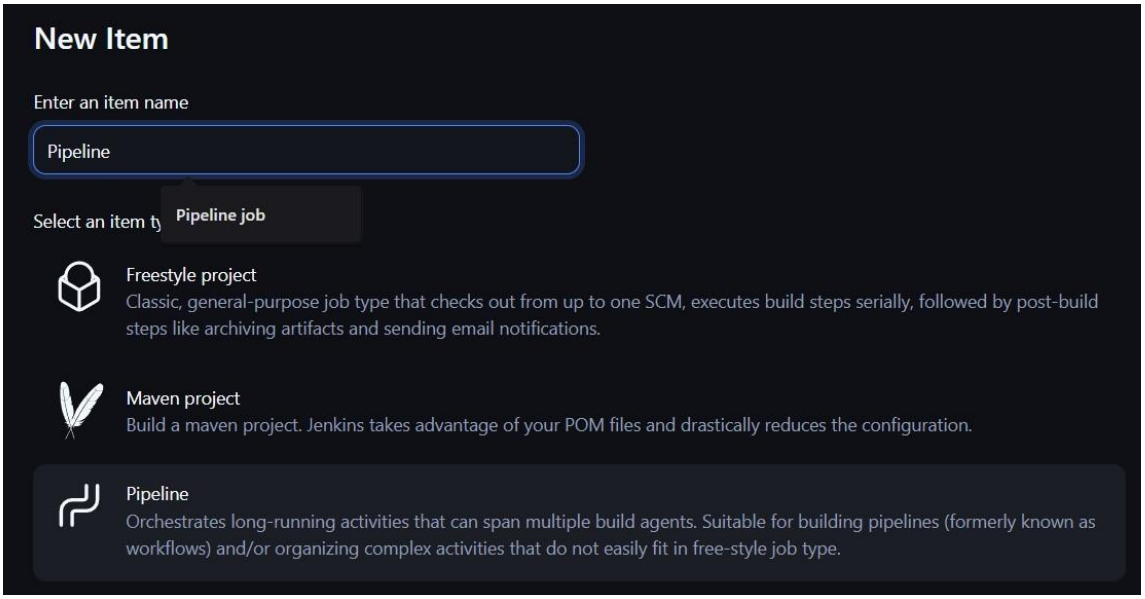


Note: The credentials for accessing Jenkins in the lab are Username: **admin** and Password: **admin**.

1.2 Click on the **New Item** option as shown in the screenshot below:



1.3 Enter a desired name for the project, select **Pipeline**, and then click on **OK** as shown in the screenshot below:



New Item

Enter an item name

Pipeline

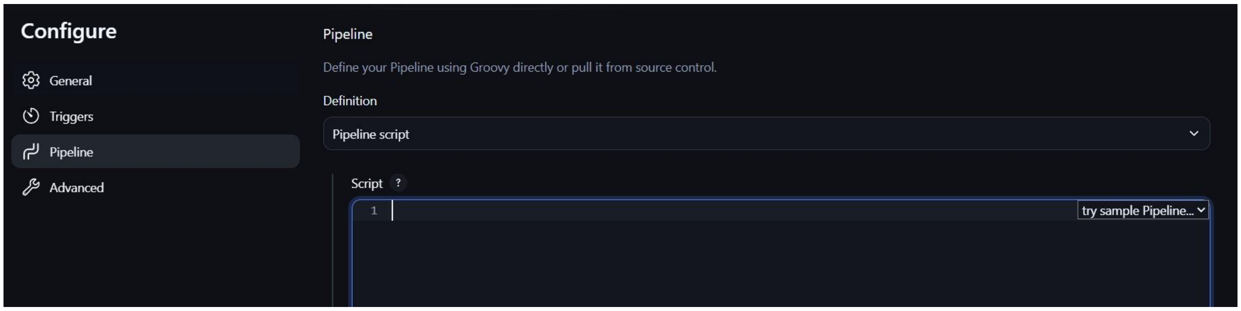
Select an item ty Pipeline job

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.

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.

1.4 Click on **Pipeline** as shown in the screenshot below:



Pipeline

Define your Pipeline using Groovy directly or pull it from source control.

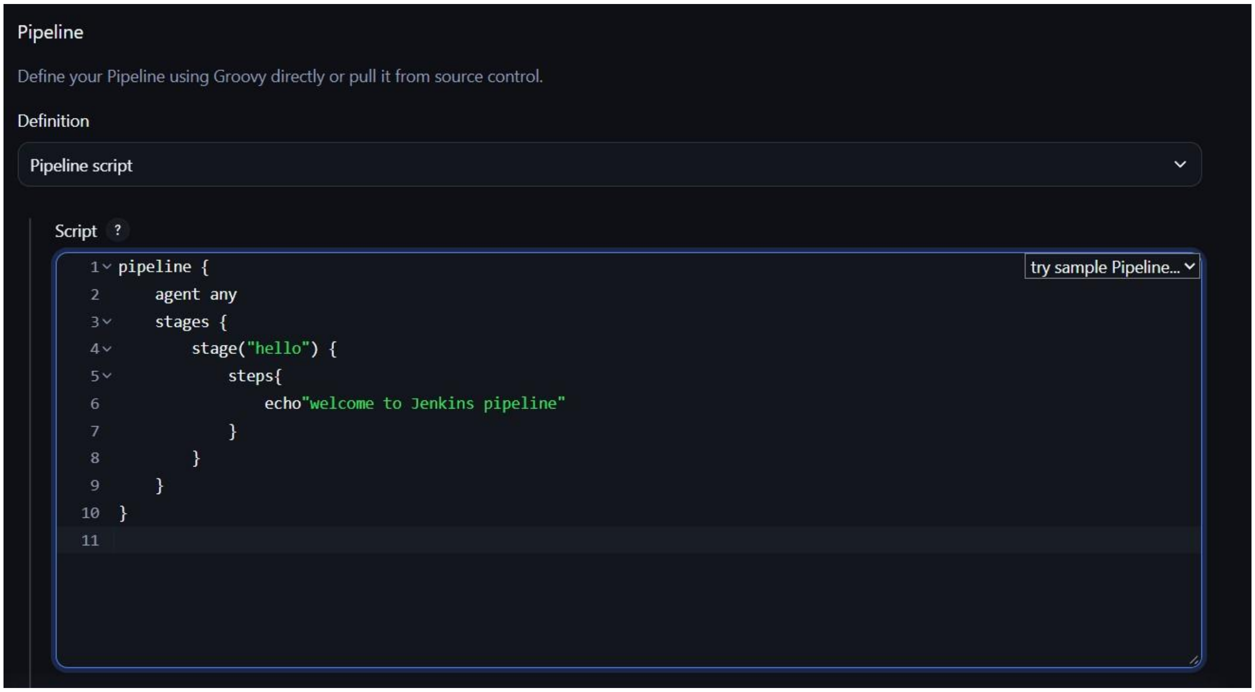
Definition

Pipeline script

Script ?

1.5 Enter the following pipeline script in the script editor and click on **Save** as shown in the screenshot below:

```
pipeline {     agent
any     stages {
stage("hello") {
            steps{
                echo"welcome to Jenkins pipeline"
            }
        }
    }
}
```



Pipeline

Define your Pipeline using Groovy directly or pull it from source control.

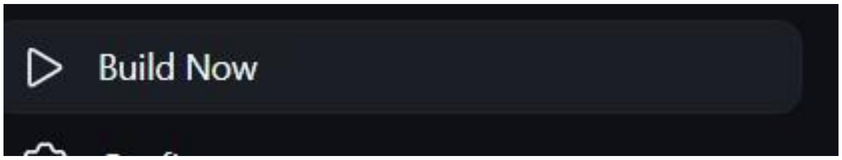
Definition

Pipeline script

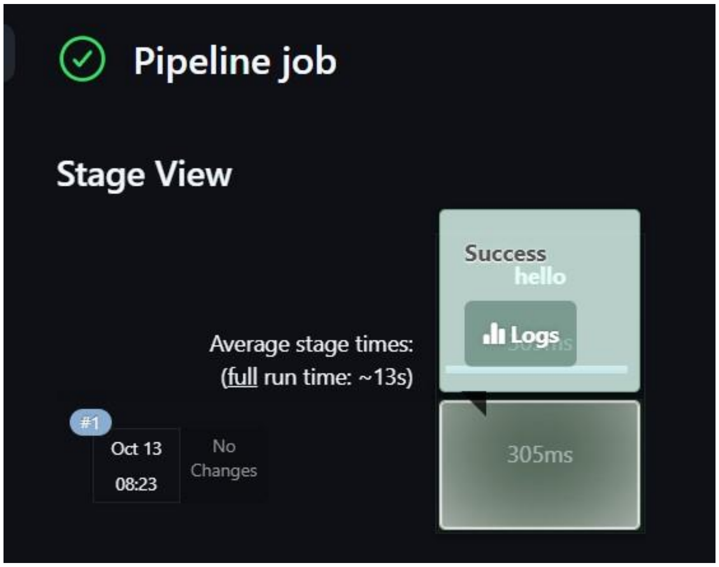
Script ?

```
pipeline {
    agent any
    stages {
        stage("hello") {
            steps{
                echo"welcome to Jenkins pipeline"
            }
        }
    }
}
```

1.6 Click on **Build Now** to run the pipeline script as shown in the screenshot below:

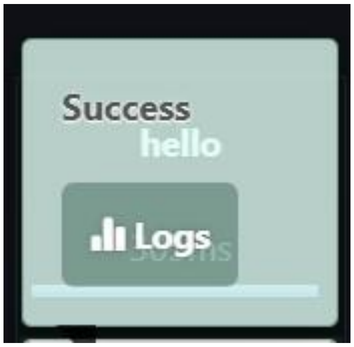


1.7 Hover over the milliseconds number next to the build stage name as shown in the screenshot below:

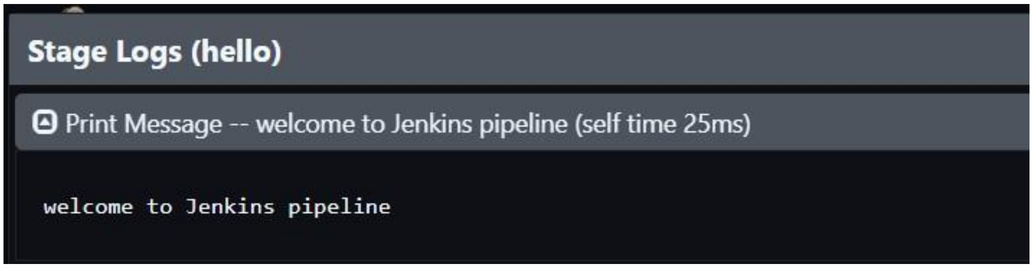


Note: Ensure that you hover the cursor over the milliseconds number without clicking on it

1.8 Click on **Logs** as shown in the screenshot below:



1.9 Check for the message in the top-left corner to confirm the successful execution of the pipeline stage as shown in the screenshot below:



Stage Logs (hello)

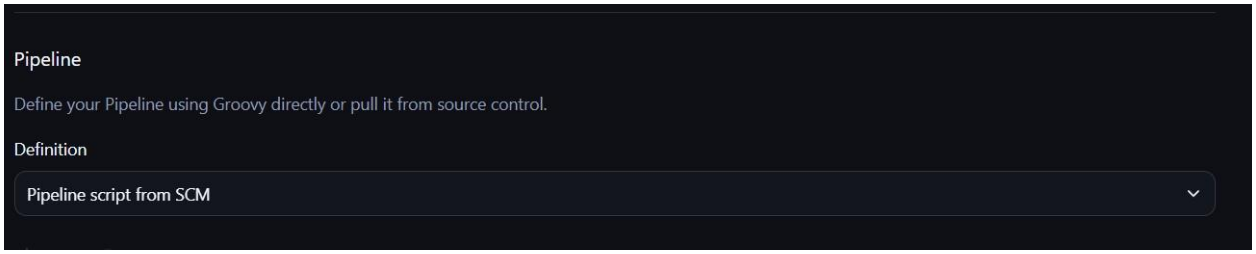
Print Message -- welcome to Jenkins pipeline (self time 25ms)

```
welcome to Jenkins pipeline
```

Implementing Pipeline Script from SCM

Step 1: Change Pipeline Definition

In the pipeline configuration screen, select "Pipeline script from SCM" from the **Definition** dropdown menu. This configures the Jenkins job to retrieve the pipeline script from a version control system like Git.



Pipeline

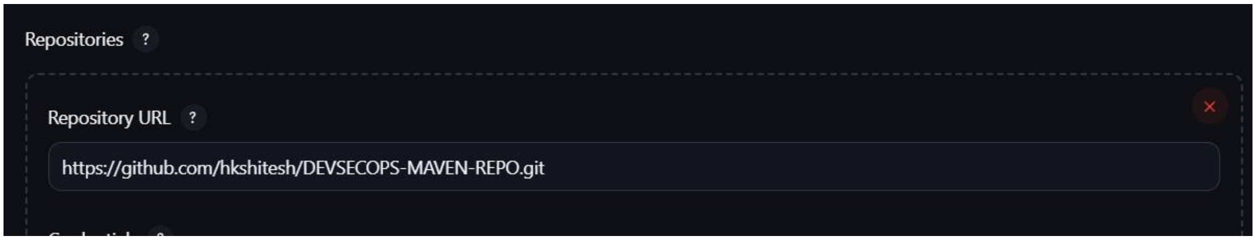
Define your Pipeline using Groovy directly or pull it from source control.

Definition: Pipeline script from SCM

Step 2: Configure Repository

After selecting "Pipeline script from SCM", new options will appear. In the **Repositories** section, enter the **Repository URL** where the `JenkinsFile` is located.

- **Repository URL**: `https://github.com/hkshitesh/DEVSECOPS-MAVEN-REPO.git`



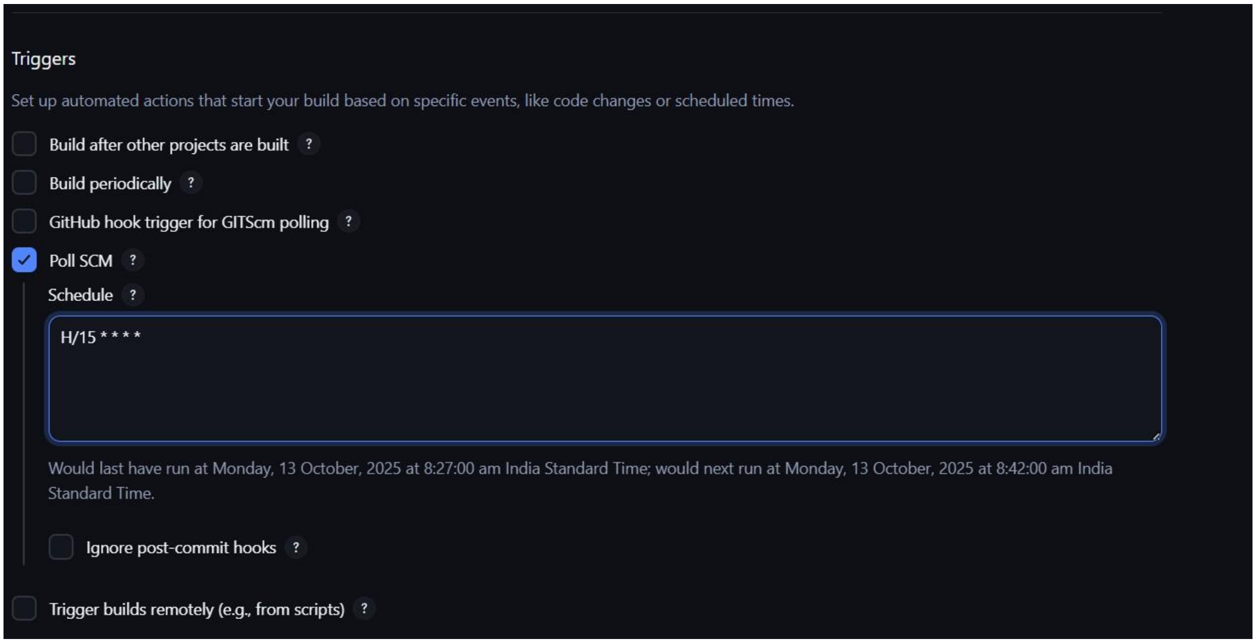
Repositories

Repository URL: https://github.com/hkshitesh/DEVSECOPS-MAVEN-REPO.git

Step 3: Configure Build Triggers

Set up an automated action to start the build based on specific events.

- Select the **Poll SCM** checkbox.
- In the **Schedule** text box, enter `H/15 * * * *` to instruct Jenkins to check the repository for any changes approximately every 15 minutes.



Triggers

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

□ Build after other projects are built

□ Build periodically

□ GitHub hook trigger for GITScm polling

☑ Poll SCM

Schedule

```
H/15 * * * *
```

Would last have run at Monday, 13 October, 2025 at 8:27:00 am India Standard Time; would next run at Monday, 13 October, 2025 at 8:42:00 am India Standard Time.

□ Ignore post-commit hooks

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

JenkinsFile used:

```
pipeline {
agent any
        tools
          {
                    maven 'MAVEN_HOME'
          }

          stages
          {
                    stage('Welcome Stage')
                    {
                              steps
                              {
                                        echo 'Welcome to Jenkins Pipeline'
                              }
                    }

                    stage('Clean Stage')
                    {
                              steps
                              {
                                        bat 'mvn clean'
                              }
                    }
     stage('Clean Success Stage')
                    {
                              steps
                              {
                                        echo 'clean success'
                              }
                    }
                    stage('Build & Install Stage')
                    {
                              steps
                              {
                                        bat 'mvn install'
                              }
                    }

                    stage('Build Success')
                    {
                              steps
```

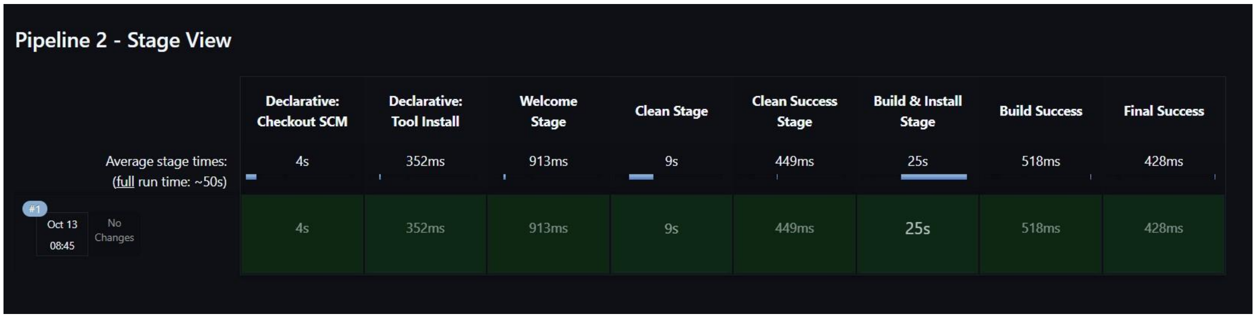
```
                {
                        echo 'Build successful'
                }
        }
        stage('Final Success')
        {
                steps
                {
                        echo 'Final successful'
                }
        }

}}
```

Step 4: Review the JenkinsFile

The repository contains a `JenkinsFile` that defines the pipeline's stages and steps. The script used in this exercise includes the following stages:

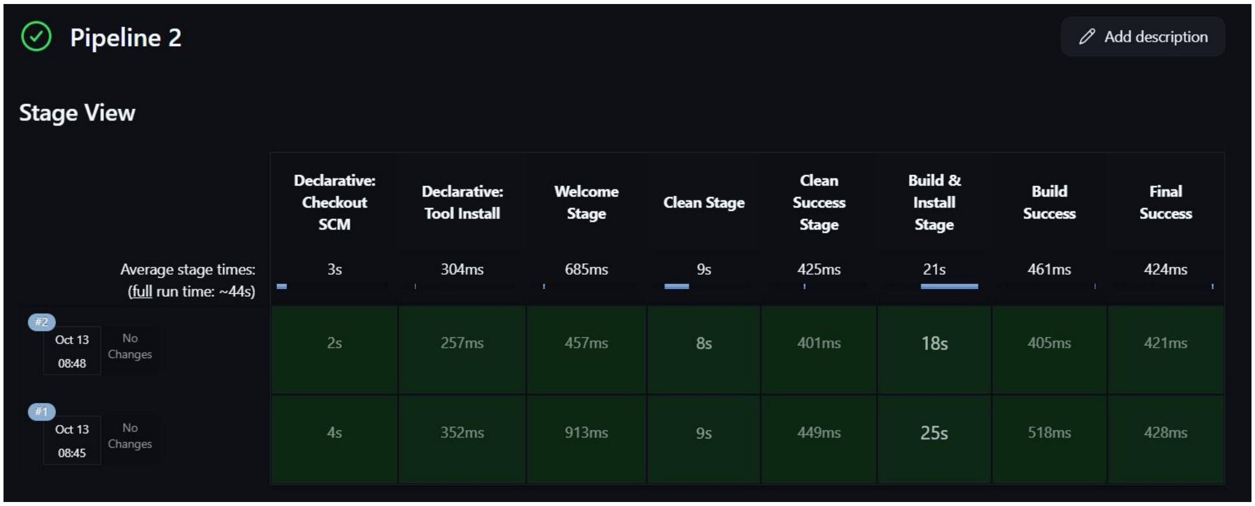
- **Welcome Stage**
- **Clean Stage**
- **Clean Success Stage**
- **Build & Install Stage**
- **Build Success**
- **Final Success**

The script also defines `maven` as a required tool and uses the `bat` step to run maven commands like `mvn clean` and `mvn install`.



Pipeline 2 - Stage View

	Declarative: Checkout SCM	Declarative: Tool Install	Welcome Stage	Clean Stage	Clean Success Stage	Build & Install Stage	Build Success	Final Success
Average stage times: (full run time: ~50s)	4s	352ms	913ms	9s	449ms	25s	518ms	428ms
#1 Oct 13 08:45 No Changes	4s	352ms	913ms	9s	449ms	25s	518ms	428ms



Stage View

	Declarative: Checkout SCM	Declarative: Tool Install	Welcome Stage	Clean Stage	Clean Success Stage	Build & Install Stage	Build Success	Final Success
Average stage times: (full run time: ~44s)	3s	304ms	685ms	9s	425ms	21s	461ms	424ms
#2 Oct 13 08:48 No Changes	2s	257ms	457ms	8s	401ms	18s	405ms	421ms
#1 Oct 13 08:45 No Changes	4s	352ms	913ms	9s	449ms	25s	518ms	428ms