

Multi-Branch Project

Project Overview

- Create a simple Java Maven project
- Version-control the project using Git with multiple branches.
- Set up Jenkins multi-branch pipeline for automated build and deployment.
- Utilize Jenkins environment variables in the Jenkinsfile.

Project Objectives

- Version-control using Git.
- Jenkins multi-branch pipeline setup.
- Environment variable management using Jenkinsfile.

Project Deliverables

1. Git Repository:

- Local Git repository initialized.
- Branches: **development**, **staging**, and **production**.
- Repository pushed to remote Git server (e.g., GitHub, GitLab, Bitbucket)
- Initialized Github repository and created branches development, staging and production. Then pushed the repository to the remote Git server.

```
einfochips@AHMLPT2484: ~/multistage-pipeline-project
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git init
Reinitialized existing Git repository in /home/einfochips/multistage-pipeline-project/.git/
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git add .
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git commit -m "Initial commit"
[main (root-commit) 53fc30b] Initial commit
2 files changed, 20 insertions(+)
create mode 100644 pom.xml
create mode 100644 src/main/java/com/example/App.java
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git branch development
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git branch staging
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git branch production
```

```

einfochips@AHMLPT2484: ~/multistage-pipeline-project
Branch 'development' set up to track remote branch 'development' from 'origin'.
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git checkout staging
Switched to branch 'staging'
einfochips@AHMLPT2484:~/multistage-pipeline-project$ ls
pom.xml  src
einfochips@AHMLPT2484:~/multistage-pipeline-project$ cd src/main/java/com/example/
einfochips@AHMLPT2484:~/multistage-pipeline-project/src/main/java/com/example$ nano App.java
einfochips@AHMLPT2484:~/multistage-pipeline-project/src/main/java/com/example$ cd ..
einfochips@AHMLPT2484:~/multistage-pipeline-project/src/main/java/com$ cd ..
einfochips@AHMLPT2484:~/multistage-pipeline-project/src/main/java$ cd ..
einfochips@AHMLPT2484:~/multistage-pipeline-project/src/main$ cd ..
einfochips@AHMLPT2484:~/multistage-pipeline-project/src$ cd ..
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git add src/main/java/com/example/App.java
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git commit -m "Update App.java in Staging branch"
[staging adfd66e] Update App.java in Staging branch
 1 file changed, 1 insertion(+)
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git push -u origin staging
Username for 'https://github.com': ghp_7JTUJbGob65bJQ9mcmfjxcyNM4pAzu46U63j
Password for 'https://ghp_7JTUJbGob65bJQ9mcmfjxcyNM4pAzu46U63j@github.com':
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (8/8), 578 bytes | 192.00 KiB/s, done.
Total 8 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'staging' on GitHub by visiting:
remote:   https://github.com/02Poonam/multistage-pipeline-project/pull/new/staging
remote:
To https://github.com/02Poonam/multistage-pipeline-project.git
 * [new branch]   staging -> staging
Branch 'staging' set up to track remote branch 'staging' from 'origin'.
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git checkout production
Switched to branch 'production'
einfochips@AHMLPT2484:~/multistage-pipeline-project$ ls
pom.xml  src
einfochips@AHMLPT2484:~/multistage-pipeline-project$ cd src/main/java/com/example/
einfochips@AHMLPT2484:~/multistage-pipeline-project/src/main/java/com/example$ nano App.java

einfochips@AHMLPT2484:~/multistage-pipeline-project$ git add src/main/java/com/example/App.java
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git commit -m "Update App.java in Production branch"
[production 1969c9e] Update App.java in Production branch
 1 file changed, 1 insertion(+)
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git push -u origin production
Username for 'https://github.com': ghp_7JTUJbGob65bJQ9mcmfjxcyNM4pAzu46U63j
Password for 'https://ghp_7JTUJbGob65bJQ9mcmfjxcyNM4pAzu46U63j@github.com':
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (8/8), 585 bytes | 195.00 KiB/s, done.
Total 8 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'production' on GitHub by visiting:
remote:   https://github.com/02Poonam/multistage-pipeline-project/pull/new/production
remote:
To https://github.com/02Poonam/multistage-pipeline-project.git
 * [new branch]   production -> production
Branch 'production' set up to track remote branch 'production' from 'origin'.
einfochips@AHMLPT2484:~/multistage-pipeline-project$ ls
pom.xml  src
einfochips@AHMLPT2484:~/multistage-pipeline-project$ git checkout main
Switched to branch 'main'
Your branch is behind 'origin/main' by 1 commit, and can be fast-forwarded.
(use "git pull" to update your local branch)
einfochips@AHMLPT2484:~/multistage-pipeline-project$ l
pom.xml  src/
einfochips@AHMLPT2484:~/multistage-pipeline-project$ touch Jenkinsfile
einfochips@AHMLPT2484:~/multistage-pipeline-project$ ls
Jenkinsfile  pom.xml  src
einfochips@AHMLPT2484:~/multistage-pipeline-project$

```

- Git Repository

- App.java

```
GNU nano 6.2 App.java
package com.example;

public class App {
    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }
}
```

- pom.xml

```
GNU nano 6.2 pom.xml
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/POM/4.0.0/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>com.example</groupId>
  <artifactId>multistage-pipeline-project</artifactId>
  <version>1.0-SNAPSHOT</version>
  <properties>
    <maven.compiler.source>1.8</maven.compiler.source>
    <maven.compiler.target>1.8</maven.compiler.target>
  </properties>
</project>
```

3. Jenkins Setup:

- Multi-branch pipeline job configured in Jenkins.
 - Jenkinsfile defining build and deployment steps.
 - Environment variables managed using Jenkins environment variable settings.
- **Environment Variables settings**

← → ↻ 🌐 localhost:8080/manage/configure ☆ 👤 ⋮

Dashboard > Manage Jenkins > System >

Without a resource root URL, resources will be served from the Jenkins URL with Content-Security-Policy set.

Global properties

☐ Disable deferred wipeout on this node ?

☐ Disk Space Monitoring Thresholds

☒ Environment variables

List of variables ?

Name

poonam

Value

poonam02

Save

Apply

- **Multibranch pipeline job Configuration**

Health metrics

Properties

Branch Sources

GitHub

Credentials ?

poonam/*****

+ Add

Repository HTTPS URL

Repository HTTPS URL ?

https://github.com/02Poonam/multistage-pipeline-project.git

Validate

☐ Repository Scan - Depreciated Visualization

Save

Apply

Property strategy

All branches get the same properties

Suppress automatic SCM triggering ?

Branch names to build automatically ?

^\$

Suppression strategy

For matching branches schedule all builds (nothing is suppressed)

Add property

Add source

Save

Apply

Behaviours

Discover branches

?

Strategy ?

Exclude branches that are also filed as PRs

×

Discover pull requests from origin

?

Strategy ?

The current pull request revision

×

Discover pull requests from forks

?

Strategy ?

The current pull request revision

×

Save

Apply

- Jenkinsfile

Jenkinsfile - multistage-pipeline-project - Visual Studio Code

Terminal Help

Jenkinsfile pom.xml

Jenkinsfile

```
...
1 pipeline {
2   agent any
3
4   stages {
5     stage('Build') {
6       steps {
7         echo 'Building...'
8         // Add your build steps here
9       }
10    }
11    stage('Test') {
12      steps {
13        echo 'Testing...'
14        // Add your test steps here
15      }
16    }
17    stage('Deploy') {
18      steps {
19        echo 'Deploying...'
20        // Add your deploy steps here
21      }
22    }
23  }
24
25  post {
26    success {
27      echo 'Build and test succeeded!'
28    }
29    failure {
30      echo 'Build or test failed!'
31    }
32  }
33 }
34
```

Output


← → ↺ 🌐 localhost:8080/job/my-multibranch-pipeline/job/main/lastSuccessfulBuild/console ☆ 👤 ⋮

Dashboard > my-multibranch-pipeline > main > #5

```
[Pipeline] { (Test)
[Pipeline] echo
Test Successful
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy)
[Pipeline] echo
Deploy Successful
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions) (hide)
[Pipeline] echo
Build and test succeeded!
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline

GitHub has been notified of this commit's build result

Finished: SUCCESS
```

 Jenkins

🔍 Search (CTRL+K) ?

🛡️ 2 👤 Poonam Mahesh Bhavsar ▾ 🚪 log out

Dashboard > my-multibranch-pipeline > main > #5

Status

</> Changes

📄 Console Output

📝 Edit Build Information

🗑️ Delete build '#5'

🕒 Timings

🔍 Git Build Data

🔗 Pipeline Overview

📄 Pipeline Console

🔄 Restart from Stage

👤 Back

✅ Build #5 (26 Jul 2024, 11:45:51)

📝 Add description

🔄 Keep this build forever

Started 13 min ago
Took 7 sec

</> Changes

1. Updated Jenkinsfile (details / githubweb)

🕒 Branch indexing

🕒 This run spent:

- 6.2 sec waiting;
- 7 sec build duration;
- 13 sec total from scheduled to completion.

git

Revision: e5bec95add7f9fd44ee680c6ac93dad592fe1931

Repository: https://github.com/02Poonam/multistage-pipeline-project.git

- main

localhost:8080/job/my-multibranch-pipeline/job/main/lastSuccessfulBuild/pipeline-console/?selected-node=6

Jenkins

Search (CTRL+K)

Poonam Mahesh Bhavsar log out

Dashboard > my-multibranch-pipeline > main > #5 > Pipeline Console

< Build #5

Success 14 min ago in 7 sec

- Checkout SCM
- Build**
- Test
- Deploy
- Post Actions

Stage 'Build'

Started 14 min ago

Queued 0 ms

Took 0.14 sec

Success

[View as plain text](#)

Build Successful 20 ms

Print Message

0 Build Successful

Jenkins 2.452.3

localhost:8080/job/my-multibranch-pipeline/job/main/lastSuccessfulBuild/pipeline-console/?selected-node=6

Jenkins

Search (CTRL+K)

Poonam Mahesh Bhavsar log out

Dashboard > my-multibranch-pipeline > main > #5 > Pipeline Console

< Build #5

Success 14 min ago in 7 sec

- Checkout SCM
- Build
- Test**
- Deploy
- Post Actions

Stage 'Test'

Started 14 min ago

Queued 0 ms

Took 0.11 sec

Success

[View as plain text](#)

Test Successful 14 ms

Print Message

0 Test Successful

Jenkins 2.452.3

localhost:8080/job/my-multibranch-pipeline/job/main/lastSuccessfulBuild/pipeline-console/?selected-node=6

Jenkins

Search (CTRL+K)

Poonam Mahesh Bhavsar log out

Dashboard > my-multibranch-pipeline > main > #5 > Pipeline Console

Build #5

Success 14 min ago in 7 sec

- Checkout SCM
- Build
- Test
- Deploy
- Post Actions

Stage 'Deploy'

Started 14 min ago

Queued 0 ms

Took 0.1 sec

Success

[View as plain text](#)

Deploy Successful 12 ms

Print Message

0 Deploy Successful

Jenkins 2.452.3

localhost:8080/job/my-multibranch-pipeline/job/main/lastSuccessfulBuild/pipeline-console/?selected-node=6

Jenkins

Search (CTRL+K)

Poonam Mahesh Bhavsar log out

Dashboard > my-multibranch-pipeline > main > #5 > Pipeline Console

Build #5

Success 14 min ago in 7 sec

- Checkout SCM
- Build
- Test
- Deploy
- Post Actions

Stage 'Post Actions'

Started 14 min ago

Queued 0 ms

Took 0.13 sec

Success

[View as plain text](#)

Build and test succeeded! 47 ms

Print Message

0 Build and test succeeded!

Jenkins 2.452.3

So, the multibranch pipeline job is successfully built and tested.