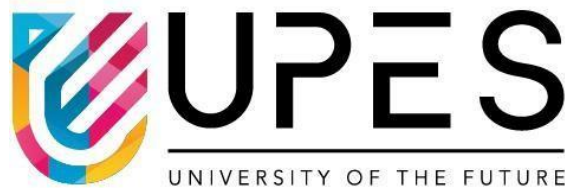


School of Computer Science

**UNIVERSITY OF PETROLEUM AND ENERGY
STUDIES DEHRADUN, UTTARAKHAND**



**Continuous Integration and Continuous
Delivery Lab**

**Lab File (2023-2024)
for
5th Semester**

Submitted To:

Dr. Hitesh Kumar Sharma

Submitted By:

Shivam Arora

B. Tech. CSE


[DevOps]

500094155

R2142210733

B2- Devops (Non-Hons)

Lab Exercise 1

 Jenkins

Dashboard >

+ New Item

People

Build History

Manage Jenkins

Build Queue

No builds in the queue.

Build Executor Status

Build-In-Node

1 Idle

2 Idle

Slave-1 (offline)

All +

S	W	Name	Last Success	Last Failure	Last Duration
✓	☁	BRM_Exp4	7 mo 23 days #5	7 mo 25 days #2	12 sec
☹	☀	MvnTesting	N/A	N/A	N/A

Icon: S M L

Icon legend

Atom feed for all

Atom feed for failures

Atom feed for just latest builds

Add description

Git ?

Repositories ?

Repository URL ?

https://github.com/jenkins-docs/simple-java-maven-app.git

Credentials ?

- none -

+ Add

Advanced

Add Repository

Branches to build ?

Branch Specifier (blank for 'any') ?

*/master

Add Branch

Repository browser ?

(Auto)

Build Triggers

☐ Build after other projects are built ?

☐ Build periodically ?

☐ GitHub hook trigger for GITScm polling ?

☒ Poll SCM ?

Schedule ?

H *****

Would last have run at Sunday, 3 December, 2023 at 2:21:34 pm India Standard Time; would next run at Sunday, 3 December, 2023 at 3:21:34 pm India Standard Time.

☐ Ignore post-commit hooks ?

Build Steps

Invoke top-level Maven targets ?

Goals

clean install

Advanced ▾

Add build step ▾

Post-build Actions

Add post-build action ▾

Save Apply

```
Dashboard > MavenBuild > #3 > Console Output

Progress (3): 12 kB | 38 kB | 159/230 kB
Progress (3): 12 kB | 38 kB | 163/230 kB
Progress (3): 12 kB | 38 kB | 167/230 kB
Progress (3): 12 kB | 38 kB | 171/230 kB
Progress (3): 12 kB | 38 kB | 176/230 kB
Progress (3): 12 kB | 38 kB | 180/230 kB
Progress (3): 12 kB | 38 kB | 184/230 kB
Progress (3): 12 kB | 38 kB | 188/230 kB
Progress (3): 12 kB | 38 kB | 192/230 kB
Progress (3): 12 kB | 38 kB | 196/230 kB
Progress (3): 12 kB | 38 kB | 200/230 kB
Progress (3): 12 kB | 38 kB | 204/230 kB
Progress (3): 12 kB | 38 kB | 208/230 kB
Progress (3): 12 kB | 38 kB | 212/230 kB
Progress (3): 12 kB | 38 kB | 217/230 kB
Progress (3): 12 kB | 38 kB | 221/230 kB
Progress (3): 12 kB | 38 kB | 225/230 kB
Progress (3): 12 kB | 38 kB | 229/230 kB
Progress (3): 12 kB | 38 kB | 230 kB

Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.0-jar (12 kB at 82 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/classworlds/classworlds/1.1-alpha-2/classworlds-1.1-alpha-2.jar (38 kB at 255 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/1.0.5/plexus-utils-1.0.5.jar (230 kB at 1.5 MB/s)
[INFO] Installing C:\ProgramData\Jenkins\jenkins\workspace\MavenBuild\target\my-app-1.0-SNAPSHOT.jar to C:\WINDOWS\system32\config\systemprofile\.m2\repository\com\mycompany\app\my-app\1.0-SNAPSHOT\my-app-1.0-SNAPSHOT.jar
[INFO] Installing C:\ProgramData\Jenkins\jenkins\workspace\MavenBuild\pom.xml to C:\WINDOWS\system32\config\systemprofile\.m2\repository\com\mycompany\app\my-app\1.0-SNAPSHOT\my-app-1.0-SNAPSHOT.pom
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 36.866 s
[INFO] Finished at: 2023-12-03T14:58:26+05:30
[INFO] -----
Finished: SUCCESS
```

✓ Console Output

Skipping 73 KB.. [Full Log](#)

Downloading from central: <https://repo.maven.apache.org/maven2/org/apache/maven/reporting/maven-reporting-2.0.6/maven-reporting-2.0.6.pom>
Progress (1): 1.4 kB

Downloaded from central: <https://repo.maven.apache.org/maven2/org/apache/maven/reporting/maven-reporting/2.0.6/maven-reporting-2.0.6.pom> (1.4 kB at 11 kB/s)
Downloading from central: <https://repo.maven.apache.org/maven2/org/apache/maven/doxia/doxia-sink-api/1.0-alpha-7/doxia-sink-api-1.0-alpha-7.pom>
Progress (1): 424 B

Downloaded from central: <https://repo.maven.apache.org/maven2/org/apache/maven/doxia/doxia-sink-api/1.0-alpha-7/doxia-sink-api-1.0-alpha-7.pom> (424 B at 3.2 kB/s)
Downloading from central: <https://repo.maven.apache.org/maven2/org/apache/maven/doxia/doxia/1.0-alpha-7/doxia-1.0-alpha-7.pom>
Progress (1): 3.9 kB

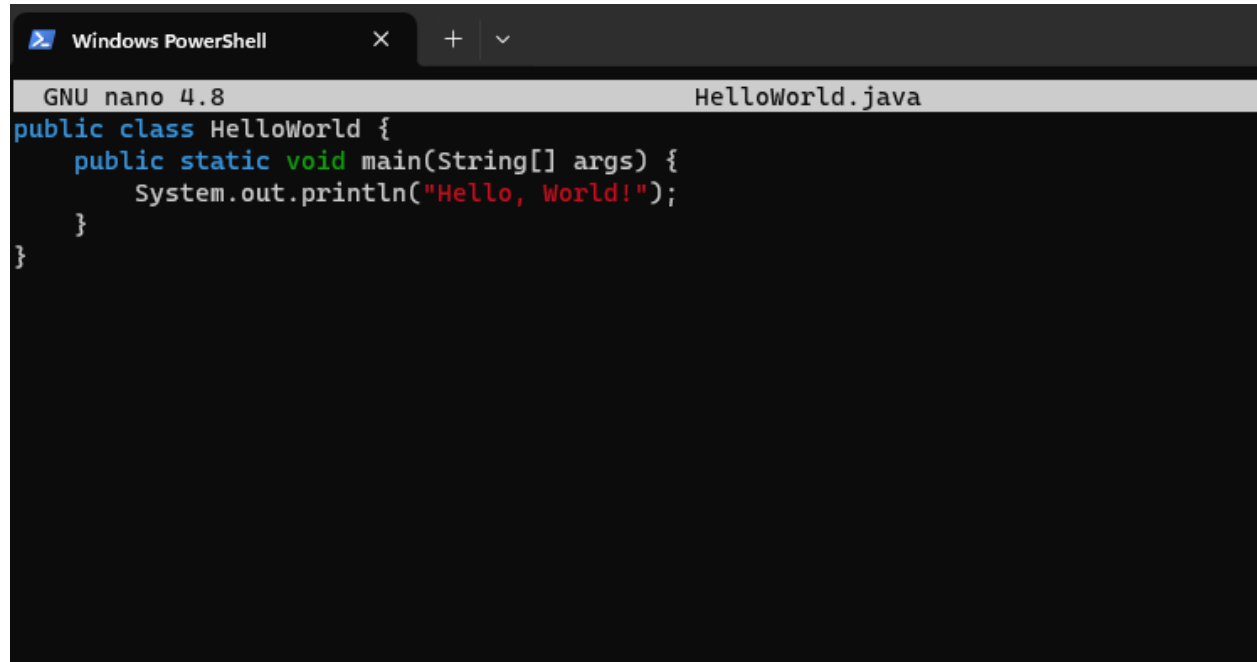
Downloaded from central: <https://repo.maven.apache.org/maven2/org/apache/maven/doxia/doxia/1.0-alpha-7/doxia-1.0-alpha-7.pom> (3.9 kB at 29 kB/s)
Downloading from central: <https://repo.maven.apache.org/maven2/org/apache/maven/maven-error-diagnostics/2.0.6/maven-error-diagnostics-2.0.6.pom>
Progress (1): 1.7 kB

Downloaded from central: <https://repo.maven.apache.org/maven2/org/apache/maven/maven-error-diagnostics/2.0.6/maven-error-diagnostics-2.0.6.pom> (1.7 kB at 12 kB/s)
Downloading from central: <https://repo.maven.apache.org/maven2/org/apache/maven/commons-cli/commons-cli/1.0/commons-cli-1.0.pom>
Progress (1): 2.1 kB

Downloaded from central: <https://repo.maven.apache.org/maven2/org/apache/maven/commons-cli/commons-cli/1.0/commons-cli-1.0.pom> (2.1 kB at 16 kB/s)
Downloading from central: <https://repo.maven.apache.org/maven2/org/apache/maven/maven-plugin-descriptor/2.0.6/maven-plugin-descriptor-2.0.6.pom>
Progress (1): 2.0 kB

Downloaded from central: <https://repo.maven.apache.org/maven2/org/apache/maven/maven-plugin-descriptor/2.0.6/maven-plugin-descriptor-2.0.6.pom> (2.0 kB at 15 kB/s)

Lab Exercise 2



```
Windows PowerShell
GNU nano 4.8 HelloWorld.java
public class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }
}
```

```
pipeline {
  agent any

  stages {
    stage('Checkout') {
      steps {
        checkout scm
      }
    }

    stage('Build') {
      steps {
        sh 'javac HelloWorld.java'
      }
    }

    stage('Test') {
      steps {
        sh 'echo "No tests for HelloWorld"'
      }
    }

    stage('Deploy') {
      steps {
        sh 'echo "Deploying HelloWorld"'
        // Add deployment steps here
      }
    }
  }

  post {
    success {
      echo 'Pipeline succeeded! Project built and deployed.'
    }
    failure {
      echo 'Pipeline failed! Check logs for details.'
    }
  }
}
```

```

PS C:\Users\1100a\Desktop\CICD_exp2> bash -c "nano HelloWorld.java"
PS C:\Users\1100a\Desktop\CICD_exp2> bash -c "nano Jenkinsfile"
PS C:\Users\1100a\Desktop\CICD_exp2> ls

Directory: C:\Users\1100a\Desktop\CICD_exp2


Mode                LastWriteTime         Length Name
----                -
-a-----          03-12-2023      15:17           124 HelloWorld.java
-a-----          03-12-2023      15:21           796 Jenkinsfile

PS C:\Users\1100a\Desktop\CICD_exp2> git init
Initialized empty Git repository in C:/Users/1100a/Desktop/CICD_exp2/.git/
PS C:\Users\1100a\Desktop\CICD_exp2> git add .
warning: in the working copy of 'HelloWorld.java', LF will be replaced by CRLF the next time Git touches it
warning: in the working copy of 'Jenkinsfile', LF will be replaced by CRLF the next time Git touches it
PS C:\Users\1100a\Desktop\CICD_exp2> git commit -m "first commit"
[master (root-commit) 92ce51e] first commit
 2 files changed, 44 insertions(+)
 create mode 100644 HelloWorld.java
 create mode 100644 Jenkinsfile
PS C:\Users\1100a\Desktop\CICD_exp2> git remote add origin https://github.com/ShivamA96/cicd_exp2.git

```

```

PS C:\Users\1100a\Desktop\CICD_exp2> git remote add origin https://github.com/ShivamA96/cicd_exp2.git
error: remote origin already exists.
PS C:\Users\1100a\Desktop\CICD_exp2> git push
fatal: The current branch main has no upstream branch.
To push the current branch and set the remote as upstream, use

    git push --set-upstream origin main

To have this happen automatically for branches without a tracking
upstream, see 'push.autoSetRemote' in 'git help config'.

PS C:\Users\1100a\Desktop\CICD_exp2> git push --set-upstream origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 16 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 607 bytes | 607.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/ShivamA96/cicd_exp2.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
PS C:\Users\1100a\Desktop\CICD_exp2> |

```

Lab Exercise 3

```
PS C:\Users\1100a\simple-java-maven-app> ls
```

```
Directory: C:\Users\1100a\simple-java-maven-app
```

Mode	LastWriteTime		Length	Name
----	-----		-----	----
d-----	03-12-2023	23:53		.github
d-----	03-12-2023	23:52		jenkins
d-----	03-12-2023	23:52		src
-a----	03-12-2023	23:52	66	.gitattributes
-a----	03-12-2023	23:52	309	.gitignore
-a----	03-12-2023	23:52	2372	pom.xml
-a----	03-12-2023	23:52	767	README.md

```
PS C:\Users\1100a\simple-java-maven-app> cd .\.github\workflows\
```

```
PS C:\Users\1100a\simple-java-maven-app\.github\workflows> bash -c "nano maven-build.yml"
```



```
Windows PowerShell
GNU nano 4.8
name: Maven Build

on:

push:

branches:

- main # Change this to your main branch name

jobs:

build:

runs-on: ubuntu-latest

steps:

- name: Checkout code
  uses: actions/checkout@v2

- name: Set up Java
  uses: actions/setup-java@v2
  with:
    java-version: '11' # Change this to the desired Java version

- name: Build with Maven
  run: mvn clean install
```

All workflows

Showing runs from all workflows

Filter workflow runs

2 workflow runs

Event

Status

Branch

Actor

✓

Create newaction.yml

Java CI with Maven #1: Commit e44207d pushed by ShivamA96

master

now

29s

...

Lab Exercise 4

CICD-LAB-Exp4 / server.js

ShivamA96 first commit 0945893 · 14 minutes ago History

Code Blame 15 lines (13 loc) · 398 Bytes

Raw Copy Edit View

```
1  const http = require("http");
2
3  // Create a simple HTTP server
4  const server = http.createServer((req, res) => {
5    res.writeHead(200, { "Content-Type": "text/plain" });
6    res.end(
7      "Hello, this is your Node.js server running in a Docker container!\n"
8    );
9  });
10
11 // Listen on port 3000
12 const port = 3000;
13 server.listen(port, () => {
14   console.log(`Server running at http://localhost:${port}/`);
15 });
```

CICD-LAB-Exp4 / Dockerfile




ShivamA96 first commit

Code

Blame

20 lines (14 loc) · 454 Bytes





```
1  # Use an official Node.js runtime as the base image
2  FROM node:14
3
4  # Set the working directory in the container
5  WORKDIR /usr/src/app
6
7  # Copy package.json and package-lock.json to the working directory
8  COPY package*.json ./
9
10 # Install app dependencies
11 RUN npm install
12
13 # Copy the rest of the application files to the working directory
14 COPY . .
15
16 # Expose the port the app runs on
17 EXPOSE 3000
18
19 # Define the command to run the app
20 CMD [ "node", "server.js" ]
```

 ShivamA96 Update buildpush.yml ●**Code** Blame 24 lines (18 loc) · 572 Bytes

```
1  name: Build and Push Docker Image
2
3  on:
4    push:
5      branches: [ "master" ]
6    pull_request:
7      branches: [ "master" ]
8
9  jobs:
10   build-and-push:
11     runs-on: ubuntu-latest
12     steps:
13       - name: Checkout repository
14         uses: actions/checkout@v2
15
16       - name: Login to Docker Hub
17         run: echo ${ secrets.DOCKER_PASSWORD }} | docker login -u ${ secrets.DOCKER_USERNAME }} --password-stdin
18
19
20       - name: Build the Docker image
21         run: docker build -t cicd-lab-exp4 .
22
23       - name: Push the Docker image to Docker Hub
24         run: docker push cicd-lab-exp4
```



build-and-push

failed now in 23s

- >  Set up job
- >  Checkout repository
- >  Login to Docker Hub
- >  Build the Docker image

✖ Push the Docker image to Docker Hub

```
1 ▶ Run docker push cicd-lab-exp4
4 Using default tag: latest
5 The push refers to repository [docker.io/library/cicd-lab-exp4]
6 d9c6ac16472d: Preparing
7 bdb980344341: Preparing
8 5f70bf18a086: Preparing
9 d0837f0fc5e8: Preparing
10 0d5f5a015e5d: Preparing
11 3c777d951de2: Preparing
12 f8a91dd5fc84: Preparing
13 cb81227abde5: Preparing
14 e01a454893a9: Preparing
15 c45660adde37: Preparing
16 fe0fb3ab4a0f: Preparing
17 f1186e5061f2: Preparing
18 b2dba7477754: Preparing
19 3c777d951de2: Waiting
20 f1186e5061f2: Waiting
21 e01a454893a9: Waiting
22 c45660adde37: Waiting
23 fe0fb3ab4a0f: Waiting
24 f8a91dd5fc84: Waiting
25 cb81227abde5: Waiting
26 b2dba7477754: Waiting
27 denied: requested access to the resource is denied
28 Error: Process completed with exit code 1.
```

- >  Post Checkout repository
- >  Complete job

Lab Exercise 5

Agent Agent-Exp5

Agent is connected.

Labels

agent exp5

Projects tied to Agent-Exp5

None

Name ?

Agent-Exp5

Description ?

Plain text [Preview](#)

Number of executors ?

1

Remote root directory ?

C:\Users\1100a\Documents\jenkins

Labels ?

exp5 agent

Usage ?

Use this node as much as possible

Launch method ?

Save

```
CICD-LAB-SUBMISSION / Experiments5.pdf
Administrator: Command Prompt - java -jar agent.jar -jnlUrl http://localhost:9009/computer/Agent%2DExp5/jenkins-agent.jnlp -workDir "C:\Us
INFO: Both error and output logs will be printed to C:\Users\1100a\Documents\jenkins\remoting
Dec 24, 2023 6:32:06 PM hudson.remoting.jnlp.Main createEngine
INFO: Setting up agent: Agent-Exp5
Dec 24, 2023 6:32:06 PM hudson.remoting.Engine startEngine
INFO: Using Remoting version: 3131.vf2b_b_798b_ce99
Dec 24, 2023 6:32:06 PM org.jenkinsci.remoting.engine.WorkDirManager initializeWorkDir
INFO: Using C:\Users\1100a\Documents\jenkins\remoting as a remoting work directory
Dec 24, 2023 6:32:06 PM hudson.remoting.jnlp.Main$CuiListener status
INFO: Locating server among [http://localhost:9009/]
Dec 24, 2023 6:32:06 PM org.jenkinsci.remoting.engine.JnlpAgentEndpointResolver resolve
INFO: Remoting server accepts the following protocols: [JNLP4-connect, Ping]
Dec 24, 2023 6:32:06 PM hudson.remoting.jnlp.Main$CuiListener status
INFO: Agent discovery successful
Agent address: localhost
Agent port: 63444
Identity: 26:05:ed:81:5a:2a:2b:09:bf:bc:c1:e4:1f:5a:ad:ce
Dec 24, 2023 6:32:06 PM hudson.remoting.jnlp.Main$CuiListener status
INFO: Handshaking
Dec 24, 2023 6:32:06 PM hudson.remoting.jnlp.Main$CuiListener status
INFO: Connecting to localhost:63444
Dec 24, 2023 6:32:06 PM hudson.remoting.jnlp.Main$CuiListener status
INFO: Trying protocol: JNLP4-connect
Dec 24, 2023 6:32:06 PM org.jenkinsci.remoting.protocol.impl.BIONetworkLayer$Reader run
INFO: Waiting for ProtocolStack to start.
Dec 24, 2023 6:32:06 PM hudson.remoting.jnlp.Main$CuiListener status
INFO: Remote identity confirmed: 26:05:ed:81:5a:2a:2b:09:bf:bc:c1:e4:1f:5a:ad:ce
Dec 24, 2023 6:32:06 PM hudson.remoting.jnlp.Main$CuiListener status
INFO: Connected
```

☒ **Restrict** where this project can be run ?

Label Expression ?

agent

Label **agent** matches 1 node. Permissions or other restrictions provided by plugins may further reduce that list.

Advanced ▾

Build #5 (Dec 24, 2023, 6:34:32 PM)



No changes.



Started by anonymous user



Revision: 72032a387979b8e8464390a10b3dd2e2ec98abd1

Repository: <https://github.com/jenkins-docs/simple-java-maven-app.git>

- refs/remotes/origin/master