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Department of Computer Science and Engineering
Cloud Computing Assignment

Assignment 2 – Jenkins (Creating a DevOps Pipeline, CI/CD tool)

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SRN : PES2UG20CS414

Section : G

Task 1:

```
-/Downloads/Jenkins_lab-main/Dockerfile -c.com.docker.cli - sudo

For more examples and ideas, visit:  
https://docs.docker.com/get-started/  
  
[base] adityashkot@Adityas-MacBook-Air Dockerfile % sudo docker run -p 8080:8080 -p 50000:50000 -it jenkins:PE52U020CS414  
Password:  
Running from: /usr/share/jenkins/jenkins.war  
webroot: EnvVars.masterEnvVars.get("JENKINS_HOME")  
  
2023-02-18 05:27:08.164+0000 [id=30] INFO winstone.Logger@LogInternal: Beginning extraction from war file  
2023-02-18 05:27:08.884+0000 [id=30] WARNING o.j.s.handler.ContextHandler@setContextPath: Empty contextPath  
2023-02-18 05:27:09.000+0000 [id=30] INFO org.eclipse.jetty.util.log.Slf4jLog@start: 2022-09-14T01:54:40.076Z; git: 408d91398e7a57b54ed52ed92a36731a7e88; jvm 11.0.18+10  
2023-02-18 05:27:09.115+0000 [id=30] INFO o.j.s.StandardDescriptorScanner@visitEntry: Let NO SUPPORT for /, did not find org.eclipse.jetty.jsp.JspServlet  
2023-02-18 05:27:09.142+0000 [id=30] INFO o.j.s.s.DefaultSessionIdManager@doStart: Session workerName=node0  
2023-02-18 05:27:09.392+0000 [id=30] INFO hudson.WebAppMain@contextInitialized: Jenkins home directory: /var/jenkins_home found at: EnvVars.masterEnvVars.get("JENKINS_HOME")  
2023-02-18 05:27:09.542+0000 [id=30] INFO o.j.s.handler.ContextHandler@doStart: Started w.6cc6d5321Jenkins v2.375.3,,/file:///var/jenkins_home/war,/AVAILABLE{/var/jenkins_home/war}  
2023-02-18 05:27:09.555+0000 [id=30] INFO o.j.s.server.AbstractConnector@doStart: Started ServerConnector@2ce9fda69[HTTP/1.1, (http/1.1)]{0.0.0.0:8080}  
2023-02-18 05:27:09.567+0000 [id=30] INFO o.j.s.server.JettyServer@doStart: Started Server@4f70521[STARTING]{16.0.12,stop@1818ms  
2023-02-18 05:27:09.570+0000 [id=30] INFO o.j.s.server.JettyServer@doStart: Jenkins is now running. controlPort=disabled  
2023-02-18 05:27:09.683+0000 [id=30] INFO Jenkins.InitReactorRunner$1@onAttained: Started initialization  
2023-02-18 05:27:09.698+0000 [id=29] INFO Jenkins.InitReactorRunner$1@onAttained: Listed all plugins  
2023-02-18 05:27:10.071+0000 [id=34] INFO Jenkins.InitReactorRunner$1@onAttained: Prepared all plugins  
2023-02-18 05:27:10.074+0000 [id=35] INFO Jenkins.InitReactorRunner$1@onAttained: Started all plugins  
2023-02-18 05:27:10.077+0000 [id=36] INFO Jenkins.InitReactorRunner$1@onAttained: Augmented extensions  
2023-02-18 05:27:10.150+0000 [id=32] INFO Jenkins.InitReactorRunner$1@onAttained: Configuration loaded  
2023-02-18 05:27:10.195+0000 [id=29] INFO Jenkins.InitReactorRunner$1@onAttained: System config adapted  
2023-02-18 05:27:10.195+0000 [id=34] INFO Jenkins.InitReactorRunner$1@onAttained: Loaded all jobs  
2023-02-18 05:27:10.197+0000 [id=29] INFO Jenkins.InitReactorRunner$1@onAttained: Configuration for all jobs updated  
2023-02-18 05:27:10.225+0000 [id=34] INFO Hudson.util.Retrigger$1@start: Attempt #1 to do the action check updates server  
WARNING: An illegal reflective access operation has occurred  
WARNING: Illegal reflective access by org.codehaus.groovy.vmgroovy.v7.Java$71 (file:/var/jenkins_home/web/WEB-INF/lib/groovy-all-2.4.21.jar) to constructor java.lang.invoke.MethodHandles$Lookup(java.lang.Class,int)  
WARNING: Please consider reporting this to the maintainers of org.codehaus.groovy.vmgroovy.v7.Java$71  
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations  
WARNING: All illegal access operations will be denied in a future release  
2023-02-18 05:27:10.565+0000 [id=34] INFO jenkins.install.SetupWizard$init:  
  
*****  
*****  
*****  
*****  
*****  
*****  
  
Jenkins initial setup is required. An admin user has been created and a password generated.  
Please use the following password to proceed to installation:  
  
Gf#4481Bbbbc4b7b7d2132294/cz7d4  
  
This may also be found at: /var/jenkins_home/secrets/initialAdminPassword  
  
*****  
*****  
*****  
*****  
*****  
  
2023-02-18 05:27:19.652+0000 [id=30] INFO Jenkins.InitReactorRunner$1@onAttained: Completed initialization  
2023-02-18 05:27:19.675+0000 [id=30] INFO hudson.model.UpdateSite$1@onAttained: Jenkins is fully initialized  
2023-02-18 05:27:20.000+0000 [id=30] INFO hudson.model.UpdateSite$1@onAttained: Obtained the updated data file for hudson.tasks.Maven.MavenInstaller  
2023-02-18 05:27:20.655+0000 [id=49] INFO HudsonUtil$Retrigger$1@start: Performed the action check updates server successfully at the attempt #1  
2023-02-18 05:28:33.286+0000 [id=35] INFO hudson.PluginManager$Install: Starting installation of a batch of 29 plugins plus their dependencies  
2023-02-18 05:28:33.294+0000 [id=35] INFO hudson.model.UpdateSite$PluginDeploy: Adding dependent install of ionicons-api for plugin cloudbees-folder  
2023-02-18 05:28:33.295+0000 [id=35] INFO hudson.model.UpdateSite$PluginDeploy: Adding dependent install of instance-identity for plugin ionicons-api  
2023-02-18 05:28:33.296+0000 [id=35] INFO hudson.model.UpdateSite$PluginDeploy: Adding dependent install of bouncycastle-api for plugin instance-identity  
2023-02-18 05:28:33.297+0000 [id=35] INFO hudson.model.UpdateSite$PluginDeploy: Adding dependent install of javax-mail-api for plugin bouncycastle-api  
2023-02-18 05:28:33.296+0000 [id=35] INFO hudson.model.UpdateSite$PluginDeploy: Adding dependent install of javax-activation-api for plugin javax-mail-api  
2023-02-18 05:28:33.299+0000 [id=82] INFO h.model.UpdateCenter$DownloadJob$run: Starting the installation of javax-activation-api on behalf or admin
```

Task 2:

The screenshot shows a Jenkins build summary for a job named 'PES2UG20CS414-1'. The build number is #1, and it was completed successfully on 18-Feb-2023 at 6:19:53 AM. The build took 4.7 seconds. The status bar indicates 'Started 18 sec ago'.

Build #1 (18-Feb-2023, 6:19:53 AM)

Status: Success

Changes: No changes.

Started by user: Aditya Khot

Revision: 72718cce4046303319122f52c42cf028f4e1ef

Repository: https://github.com/AdityaKhot/Jenkins_PES2UG20CS414

Commits:

- origin/main

Action Buttons: Keep this build forever, Add description, Start over, Delete build '#1', Git Build Data, Next Build.

The screenshot shows a Jenkins interface with the following details:

- Job Information:** PES2UG20CS414-1 #1
- Build Status:** Success (green checkmark)
- Console Output:** Started by user Aditya Khot, Running as SYSTEM, Building in workspace /var/jenkins_home/workspace/PES2UG20CS414-1.
- Log Content:** The log details the git clone process, fetching upstream changes from https://github.com/AdityaKhot/Jenkins_PES2UG20CS414, and setting up remote origin URLs. It also shows the compilation of a C++ hello world program named hello_exec.

```
Started by user Aditya Khot
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/PES2UG20CS414-1
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/AdityaKhot/Jenkins_PES2UG20CS414
> git init /var/jenkins_home/workspace/PES2UG20CS414-1 # timeout=10
Fetching upstream changes from https://github.com/AdityaKhot/Jenkins_PES2UG20CS414
> git --version # timeout=10
> git --version # git version 2.30.2'
> git fetch --tags --force --progress -- https://github.com/AdityaKhot/Jenkins_PES2UG20CS414
+refs/heads/*:refs/remotes/origin/* # timeout=10
> git config remote.origin.url https://github.com/AdityaKhot/Jenkins_PES2UG20CS414 # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
Seen branch in repository origin/main
Seen 1 remote branch
> git show-ref --tags -d # timeout=10
Checking out Revision 72718ccccc40464303319122f52c42cf028f4e1ef (origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 72718ccccc40464303319122f52c42cf028f4e1ef # timeout=10
Commit message: "Add files via upload"
First time build. Skipping changelog.
[PES2UG20CS414-1] $ /bin/sh -xe /tmp/jenkins398064492029737468.sh
+ make -C main
make: Entering directory '/var/jenkins_home/workspace/PES2UG20CS414-1/main'
g++ hello.cpp -o hello_exec
make: Leaving directory '/var/jenkins_home/workspace/PES2UG20CS414-1/main'
Finished: SUCCESS
```

Build History of Jenkins

| S | Build | Time Since | Status | Actions |
|---|--------------------|--------------|--------|---------|
| ✓ | PES2UG20CS414-1 #2 | 1 min 53 sec | stable | [View] |
| ✓ | PES2UG20CS414-1 #1 | 1 min 57 sec | stable | [View] |

Task 3:

The screenshot shows the Jenkins interface on a Mac OS X desktop. The title bar says "localhost". The top navigation bar includes links for WhatsApp, docker - An error, "failed to sol...", PES2UG20CS414-2 #1 Console..., Controller Isolation, Docker Hub, and AdityaKhot/Jenkins_PES2UG20... . The user "Aditya Khot" is logged in.

The main content area is titled "Console Output" with a green checkmark icon. It displays the build log for build #1 of the project "PES2UG20CS414-1". The log output is as follows:

```
Started by upstream project "PES2UG20CS414-1" build number 3
originally caused by:
    Started by user Aditya Khot
    Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/PES2UG20CS414-2
[PES2UG20CS414-2] $ /bin/sh -xe /tmp/jenkins12584986274028307077.sh
+ /var/jenkins_home/workspace/PES2UG20CS414-1/main/hello_exec
Hello, World
Hello, Jenkins
I have successfully built and run
Finished: SUCCESS
```

The sidebar on the left contains links for Status, Changes, Console Output (which is selected), View as plain text, Edit Build Information, Delete build '#1', and Next Build.

The screenshot shows the Jenkins interface on a Mac OS X desktop. The title bar says "localhost". The top navigation bar includes links for WhatsApp, docker - An error, "failed to sol...", PES2UG20CS414-1 [Jenkins], Controller Isolation, Docker Hub, and AdityaKhot/Jenkins_PES2UG20... . The user "Aditya Khot" is logged in.

The main content area is titled "Project PES2UG20CS414-1". The sidebar on the left contains links for Status, Changes, Workspace, Build Now, Configure, Delete Project, Git Polling Log, GitHub, and Rename. On the right, there are buttons for "Add description" and "Disable Project".

Key sections visible include:

- Downstream Projects:** Shows a single downstream project: PES2UG20CS414-2.
- Permalinks:** Lists the last four builds:
 - Last build (#3), 1 min 20 sec ago
 - Last stable build (#3), 1 min 20 sec ago
 - Last successful build (#3), 1 min 20 sec ago
 - Last completed build (#3), 1 min 20 sec ago
- Build History:** A table showing the last three builds:

| # | Date |
|----|----------------------|
| #3 | 18-Feb-2023, 6:25 AM |
| #2 | 18-Feb-2023, 6:19 AM |
| #1 | 18-Feb-2023, 6:19 AM |

The bottom right corner shows "REST API" and "Jenkins 2.375.3".

Screenshot of the Jenkins Build History page (localhost:8080). The page shows the build history for the PES2UG20CS414-2 and PES2UG20CS414-1 projects. The timeline spans from Feb 16 to Feb 20.

Build History:

| Date | Build | Status |
|--------|--------------------|--------|
| Feb 18 | PES2UG20CS414-2 #2 | stable |
| Feb 18 | PES2UG20CS414-2 #1 | stable |
| Feb 18 | PES2UG20CS414-1 #3 | stable |
| Feb 18 | PES2UG20CS414-1 #2 | stable |
| Feb 18 | PES2UG20CS414-1 #1 | stable |

Build Executor Status:

| Executor | Build | Time Since | Status |
|----------|--------------------|--------------|--------|
| 1 | PES2UG20CS414-2 #2 | 59 sec | stable |
| 1 | PES2UG20CS414-2 #1 | 1 min 19 sec | stable |
| 1 | PES2UG20CS414-1 #3 | 1 min 29 sec | stable |
| 1 | PES2UG20CS414-1 #2 | 7 min 28 sec | stable |
| 1 | PES2UG20CS414-1 #1 | 7 min 33 sec | stable |

Icon legend: S M L

Atom feed links: for all, for failures, for latest builds

Screenshot of the Jenkins Dashboard (localhost:8080). The dashboard shows the status of two build executors: PES2UG20CS414-1 and PES2UG20CS414-2.

Build Executors:

| Name | Last Success | Last Failure | Last Duration |
|-----------------|-----------------|--------------|---------------|
| PES2UG20CS414-1 | 1 min 38 sec #3 | N/A | 0.75 sec |
| PES2UG20CS414-2 | 1 min 8 sec #2 | N/A | 28 ms |

Icon legend: S M L

Atom feed links: for all, for failures, for latest builds

REST API Jenkins 2.375.3

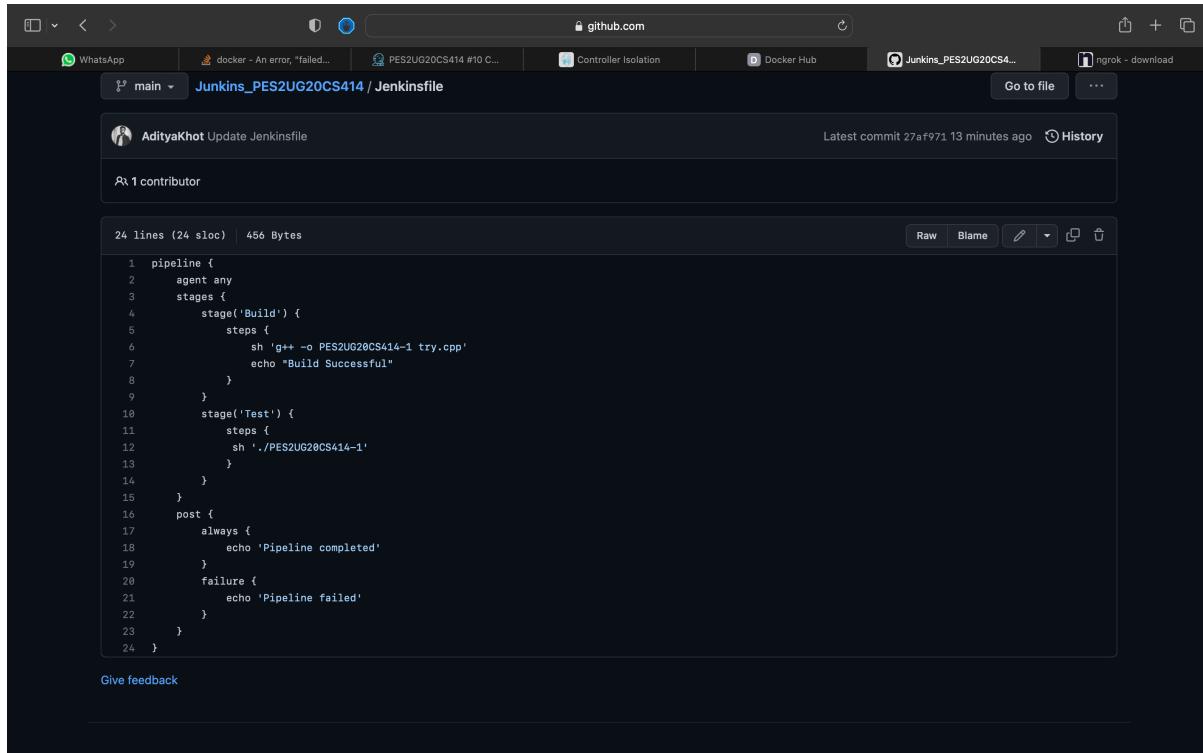
Task 4:

The screenshot shows the GitHub settings page for the repository "AdityaKhot / Jenkins_PES2UG20CS414". The "Webhooks" tab is selected. A single webhook is listed with the URL "https://03af-103-215-237-10.in.ngrok.io/push". The status message indicates that a ping payload was sent to test the webhook.

The screenshot shows the Jenkins console output for build #3 of the project "PES2UG20CS414-2". The output shows the build was started by upstream project "PES2UG20CS414-1" and was triggered by an SCM change. It runs as SYSTEM and prints "Hello, World" and "Hello, Jenkins". The build log concludes with "Finished: SUCCESS".

```
Started by upstream project "PES2UG20CS414-1" build number 4
originally caused by:
Started by an SCM change
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/PES2UG20CS414-2
[PES2UG20CS414-2] $ /bin/sh -xe /tmp/jenkins8362089496721021550.sh
+ /var/jenkins_home/workspace/PES2UG20CS414-1/main/hello_exec
Hello, World
Hello, Jenkins
My name is Aditya, My SRN is PES2UG20CS414
I have successfully built and run
Finished: SUCCESS
```

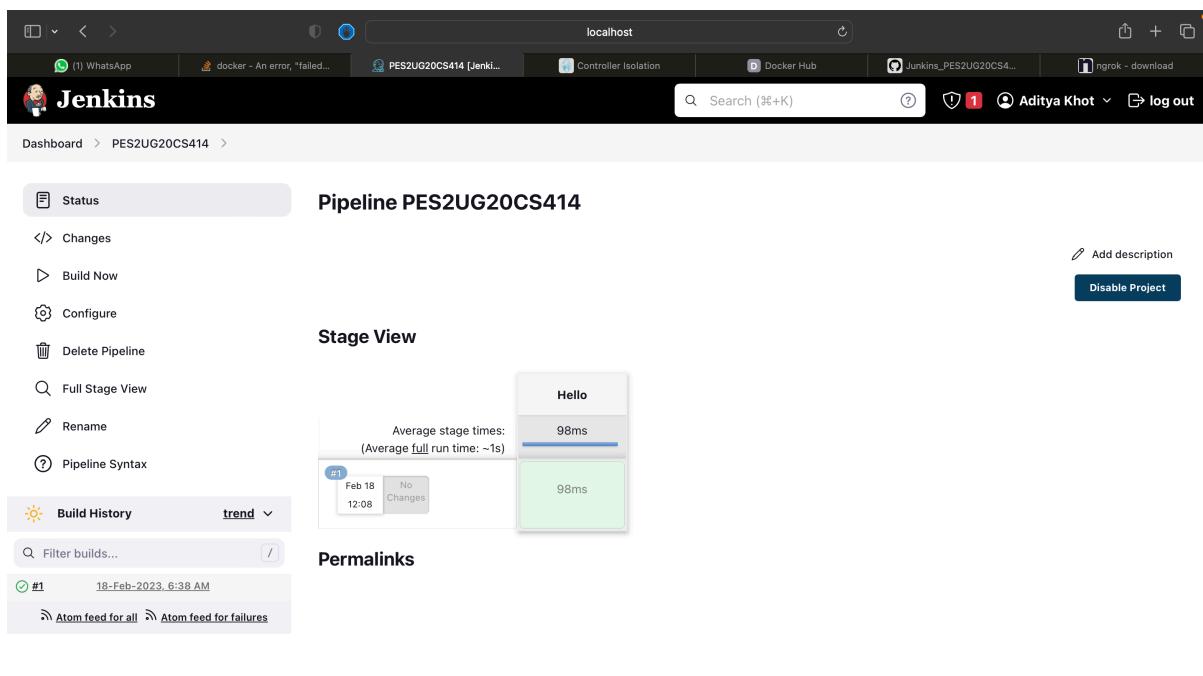
Task 5:



A screenshot of a GitHub commit page for a Jenkinsfile. The commit was made by AdityaKhot and has 1 contributor. The file contains 24 lines (24 sloc) and 456 Bytes. The Jenkinsfile defines a pipeline with stages for Build and Test, and a post section for completion and failure handling.

```
1 pipeline {
2   agent any
3   stages {
4     stage('Build') {
5       steps {
6         sh 'g++ -o PES2UG20CS414-1 try.cpp'
7         echo "Build Successful"
8       }
9     }
10    stage('Test') {
11      steps {
12        sh './PES2UG20CS414-1'
13      }
14    }
15  }
16  post {
17    always {
18      echo 'Pipeline completed'
19    }
20    failure {
21      echo 'Pipeline failed'
22    }
23  }
24 }
```

Stage View



A screenshot of the Jenkins Pipeline Stage View for Pipeline PES2UG20CS414. The view shows a single stage named "Hello" with an average stage time of 98ms. The stage was run on Feb 18 at 12:08 and had no changes. The Pipeline Syntax tab is selected in the sidebar.

Status

- </> Changes
- ▷ Build Now
- ⌚ Configure
- Delete Pipeline
- 🔍 Full Stage View
- ✍ Rename
- Pipeline Syntax

Stage View

| Stage | Average stage times: | (Average full run time: ~1s) |
|-------|----------------------|------------------------------|
| Hello | 98ms | |

Permalinks

- #1 18-Feb-2023, 6:38 AM
- Atom feed for all Atom feed for failures

localhost

Jenkins

Dashboard > PES2UG20CS414 >

Status Pipeline PES2UG20CS414

</> Changes ▶ Build Now ⚙ Configure ⌂ Add description Delete Pipeline Disable Project

Full Stage View Rename Pipeline Syntax

Build History trend Filter builds... #6 18-Feb-2023, 6:48 AM #5 18-Feb-2023, 6:48 AM #4 18-Feb-2023, 6:48 AM #3 18-Feb-2023, 6:44 AM #2 18-Feb-2023, 6:44 AM #1 18-Feb-2023, 6:38 AM Atom feed for all Atom feed for failures

Average stage times: (Average full run time: ~2s)

| Declarative: Checkout SCM | Build | Test | Declarative: Post Actions |
|---------------------------|--------------|-------------|---------------------------|
| 865ms | 337ms | 205ms | 34ms |
| 677ms | 297ms | 314ms | 31ms |
| 888ms | 290ms | 312ms | 28ms |
| 1s | 306ms | 317ms | 32ms |
| 722ms | 327ms failed | 22ms failed | 31ms |

Stage View

localhost

Jenkins

Dashboard > PES2UG20CS414 > #4

Status Console Output

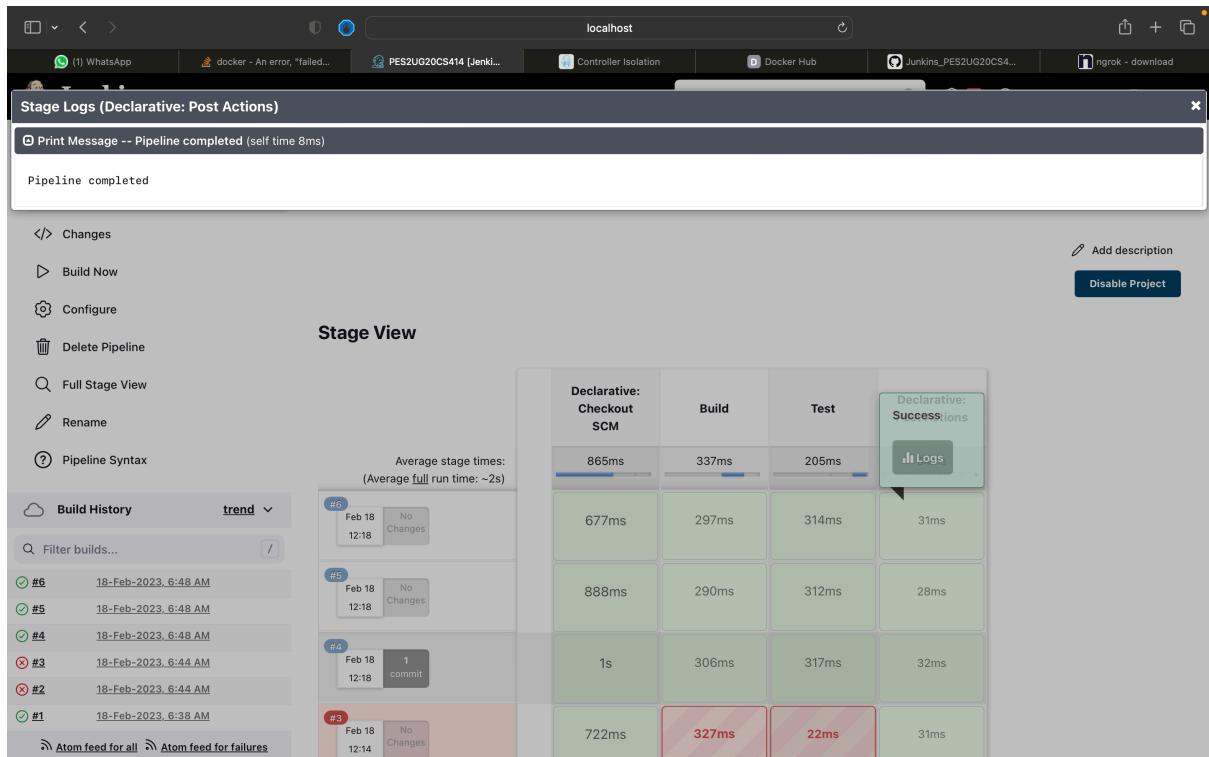
</> Changes

Console Output View as plain text Edit Build Information Delete build '#4' Git Build Data Restart from Stage Replay Pipeline Steps Workspaces Previous Build Next Build

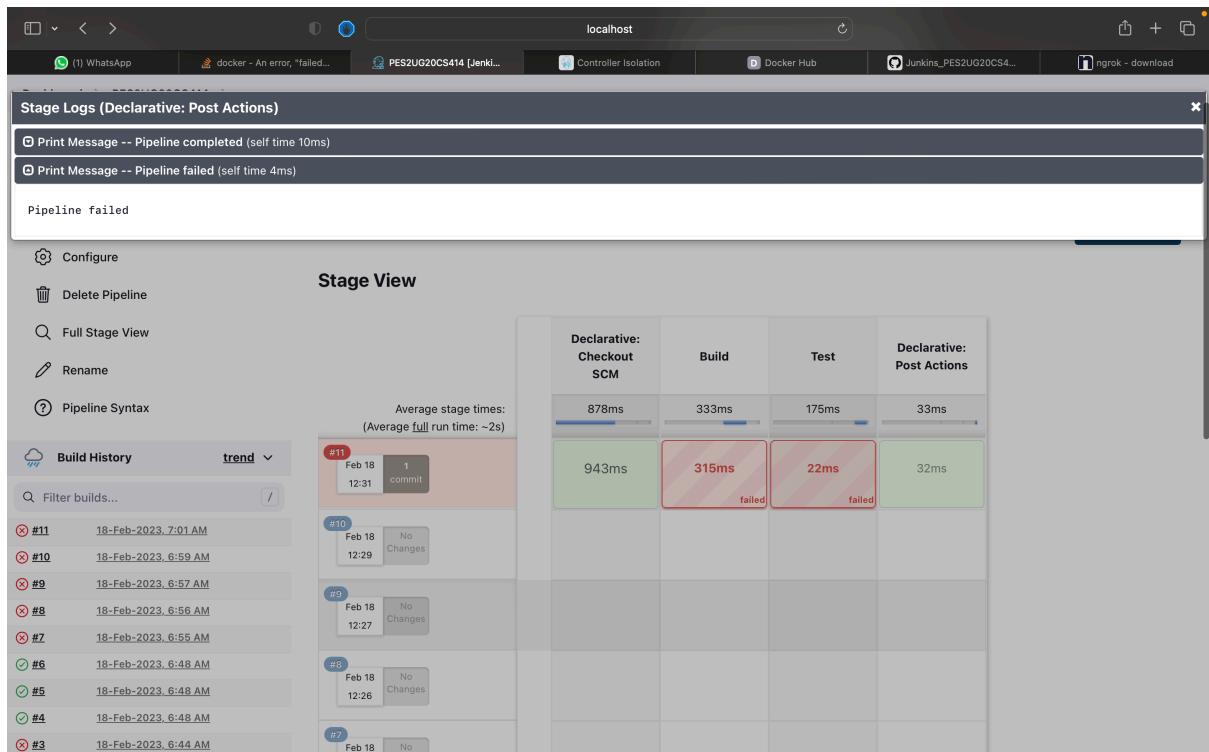
Started by user Aditya Khot
Lightweight checkout support not available, falling back to full checkout.
Checking out git https://github.com/AdityaKhot/Jenkins_PES2UG20CS414 into /var/jenkins_home/workspace/PES2UG20CS414@script/1c194442cfaf0b6c0934af94ed33d033d848bc04994078be7c9718b1c91f55d0 to read Jenkinsfile
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir
/var/jenkins_home/workspace/PES2UG20CS414@script/1c194442cfaf0b6c0934af94ed33d033d848bc04994078be7c9718b1c91f55d0/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/AdityaKhot/Jenkins_PES2UG20CS414 # timeout=10
Fetching upstream changes from https://github.com/AdityaKhot/Jenkins_PES2UG20CS414
+refs/heads/*:refs/remotes/origin/* # timeout=10
Seen branch in repository origin/main
Seen 1 remote branch
> git show-ref --tags -d # timeout=10
Checking out Revision 5d5f04e436bc3b17542fbe3322db49c99cbe709 (origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 5d5f04e436bc3b17542fbe3322db49c99cbe709 # timeout=10
Commit message: "Update new.cpp"
> git rev-list --no-walk 17205f118afbebcd26eb76c6a6c0e19f5ebf7fc # timeout=10
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/jenkins_home/workspace/PES2UG20CS414

```
localhost
Dashboard > PES2UG20CS414 > #4
Restart from Stage
Replay
Pipeline Steps
Workspaces
Previous Build
Next Build
> git config remote.origin.url https://github.com/AdityaKhot/Jenkins_PES2UG20CS414 # timeout=10
Fetching upstream changes from https://github.com/AdityaKhot/Jenkins_PES2UG20CS414
> git --version # timeout=10
> git --version # 'git' version 2.30.2'
> git fetch --tags --force --progress -- https://github.com/AdityaKhot/Jenkins_PES2UG20CS414
+refs/heads/* refs/remotes/origin/* # timeout=10
Seen branch in repository origin/main
Seen 1 remote branch
> git show-ref --tags -d # timeout=10
Checking out Revision 5d5f04e436bc3b17542f1be3322db49c99cbe709 (origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 5d5f04e436bc3b17542f1be3322db49c99cbe709 # timeout=10
Commit message: "Update new.cpp"
> git rev-list --no-walk 17205f118afbebcd26eb76c6a6c0e19f5ebf7fc # timeout=10
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/jenkins_home/workspace/PES2UG20CS414
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/jenkins_home/workspace/PES2UG20CS414/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/AdityaKhot/Jenkins_PES2UG20CS414 # timeout=10
Fetching upstream changes from https://github.com/AdityaKhot/Jenkins_PES2UG20CS414
> git --version # timeout=10
> git --version # 'git' version 2.30.2'
> git fetch --tags --force --progress -- https://github.com/AdityaKhot/Jenkins_PES2UG20CS414
+refs/heads/* refs/remotes/origin/* # timeout=10
Seen branch in repository origin/main
Seen 1 remote branch
> git show-ref --tags -d # timeout=10
Checking out Revision 5d5f04e436bc3b17542f1be3322db49c99cbe709 (origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 5d5f04e436bc3b17542f1be3322db49c99cbe709 # timeout=10
```

```
localhost
Dashboard > PES2UG20CS414 > #4
> git show-ref --tags -d # timeout=10
Checking out Revision 5d5f04e436bc3b17542f1be3322db49c99cbe709 (origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 5d5f04e436bc3b17542f1be3322db49c99cbe709 # timeout=10
Commit message: "Update new.cpp"
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Build)
[Pipeline] sh
+ g++ -o PES2UG20CS414-1 new.cpp
[Pipeline] echo
Build Successful
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Test)
[Pipeline] sh
+ ./PES2UG20CS414-1
Continuous Integration Successful
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions)
[Pipeline] echo
Pipeline completed
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```



After Changes with Mistakes



GitHub Repo Link:

https://github.com/AdityaKhot/Jenkins_PES2UG20CS414