

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

Task-1

```
r/,AVAILABLE:{}[/var/jenkins_home/war]
2023-02-14 17:12:39.645+0000 [id=1] INFO o.e.j.server.AbstractConnector$doStart: Started ServerConnector@2e9fda69[HTTP/1.1, {http/1.1}]{0.0.0.0:8080}
2023-02-14 17:12:39.672+0000 [id=1] INFO org.eclipse.jetty.server.Server$doStart: Started Server@40cf78521[STARTING][10.0.12.sto=0] @3071ms
2023-02-14 17:12:39.679+0000 [id=25] INFO winstone.Logger$logInternal: Winstone Servlet Engine running: controlPort=disabled
2023-02-14 17:12:39.985+0000 [id=32] INFO jenkins.InitReactorRunner$1#onAttained: Started initialization
2023-02-14 17:12:40.010+0000 [id=34] INFO jenkins.InitReactorRunner$1#onAttained: Listed all plugins
2023-02-14 17:12:40.941+0000 [id=42] INFO jenkins.InitReactorRunner$1#onAttained: Prepared all plugins
2023-02-14 17:12:40.949+0000 [id=41] INFO jenkins.InitReactorRunner$1#onAttained: Started all plugins
2023-02-14 17:12:40.960+0000 [id=39] INFO jenkins.InitReactorRunner$1#onAttained: Augmented all extensions
2023-02-14 17:12:41.384+0000 [id=38] INFO jenkins.InitReactorRunner$1#onAttained: System config loaded
2023-02-14 17:12:41.385+0000 [id=36] INFO jenkins.InitReactorRunner$1#onAttained: System config adapted
2023-02-14 17:12:41.387+0000 [id=44] INFO jenkins.InitReactorRunner$1#onAttained: Loaded all jobs
2023-02-14 17:12:41.390+0000 [id=39] INFO jenkins.InitReactorRunner$1#onAttained: Configuration for all jobs updated
2023-02-14 17:12:41.492+0000 [id=58] INFO hudson.util.Retrier$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.vmplugin.v7.Java7$1 (file:/var/jenkins_home/war/WEB-INF/lib/groovy-all-2.4.21.jar) to constructo
r java.lang.invoke.MethodHandles$Lookup(java.lang.Class,int)
WARNING: Please consider reporting this to the maintainers of org.codehaus.groovy.vmplugin.v7.Java7$1
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
2023-02-14 17:12:42.035+0000 [id=35] INFO jenkins.install.SetupWizard$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:

OUTPUT TERMINAL DEBUG CONSOLE COMMENTS docker + v [] [] ... ^ x

This may also be found at: /var/jenkins_home/secrets/initialAdminPassword

*****
*****
*****


2023-02-14 17:13:08.491+0000 [id=58] INFO h.m.DownloadService$Downloadable$load: Obtained the updated data file for hudson.tasks.Maven.MavenInstalle
r
2023-02-14 17:13:08.493+0000 [id=58] INFO hudson.util.Retrier$start: Performed the action check updates server successfully at the attempt #1
2023-02-14 17:13:09.408+0000 [id=36] INFO jenkins.InitReactorRunner$1#onAttained: Completed initialization
2023-02-14 17:13:09.480+0000 [id=24] INFO hudson.lifecycle.Lifecycle$onReady: Jenkins is fully up and running

OUTPUT TERMINAL DEBUG CONSOLE COMMENTS docker + v [] [] ... ^ x

2023-02-14 17:26:13.452+0000 [id=302] INFO jenkins.InitReactorRunner$1#onAttained: Started initialization
2023-02-14 17:26:13.469+0000 [id=313] INFO jenkins.InitReactorRunner$1#onAttained: Listed all plugins
2023-02-14 17:26:13.479+0000 [id=302] INFO jenkins.InitReactorRunner$1#onAttained: Prepared all plugins
2023-02-14 17:26:13.530+0000 [id=315] INFO jenkins.InitReactorRunner$1#onAttained: Started all plugins
2023-02-14 17:26:13.544+0000 [id=304] INFO jenkins.InitReactorRunner$1#onAttained: Augmented all extensions
2023-02-14 17:26:13.548+0000 [id=314] INFO jenkins.InitReactorRunner$1#onAttained: System config loaded
2023-02-14 17:26:13.549+0000 [id=316] INFO jenkins.InitReactorRunner$1#onAttained: System config adapted
2023-02-14 17:26:13.658+0000 [id=308] INFO jenkins.InitReactorRunner$1#onAttained: Loaded all jobs
2023-02-14 17:26:13.664+0000 [id=316] INFO jenkins.InitReactorRunner$1#onAttained: Configuration for all jobs updated
2023-02-14 17:26:14.517+0000 [id=312] INFO jenkins.InitReactorRunner$1#onAttained: Completed initialization
2023-02-14 17:26:14.534+0000 [id=93] INFO h.m.UpdateCenter$CompleteBatchJob$run: Completed installation of 83 plugins in 5 min 29 sec
```

Task-2

Console output after the build is successful

 Jenkins

Search (CTRL+K)

admin log out

Dashboard > PES2UG20CS199-1 > #1

Status

Changes

Console Output

View as plain text

Edit Build Information

Delete build '#1'

Git Build Data

Next Build

Console Output

Started by user admin

Running as SYSTEM

Building in workspace /var/jenkins_home/workspace/PES2UG20CS199-1

The recommended git tool is: NONE

No credentials specified

Cloning the remote Git repository

Cloning repository https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git

> git init /var/jenkins_home/workspace/PES2UG20CS199-1 # timeout=10

Fetching upstream changes from https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git

> git --version # timeout=10

> git --version # 'git version 2.30.2'

> git fetch --tags --force --progress -- https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git +refs/heads/*:refs/remotes/origin/* # timeout=10

> git config remote.origin.url https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git # 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 2aa7e1fa2fcb5242b7505b1704ac41c1764b63c (origin/main)

> git config core.sparsecheckout # timeout=10

> git checkout -f 2aa7e1fa2fcb5242b7505b1704ac41c1764b63c # timeout=10

Commit message: "first commit"

First time build. Skipping changelog.

[PES2UG20CS199-1] \$ /bin/sh -xe /tmp/jenkins6307534662917632425.sh

+ make -C main


make: Entering directory '/var/jenkins_home/workspace/PES2UG20CS199-1/main'

g++ hello.cpp -o hello_exec

make: Leaving directory '/var/jenkins_home/workspace/PES2UG20CS199-1/main'

Finished: SUCCESS

Stable state of the task in Build History of Jenkins

 Jenkins

Search (CTRL+K)

admin log out

Dashboard > PES2UG20CS199-1 > #1

Status

Changes

Console Output

Edit Build Information

Delete build '#1'

Git Build Data

Next Build

Build #1 (Feb 14, 2023, 5:49:04 PM)

Keep this build forever

Started 1 hr 21 min ago

Took 6.2 sec

Add description

No changes.

Started by user admin

git

Revision: 2aa7e1fa2fcb5242b7505b1704ac41c1764b63c

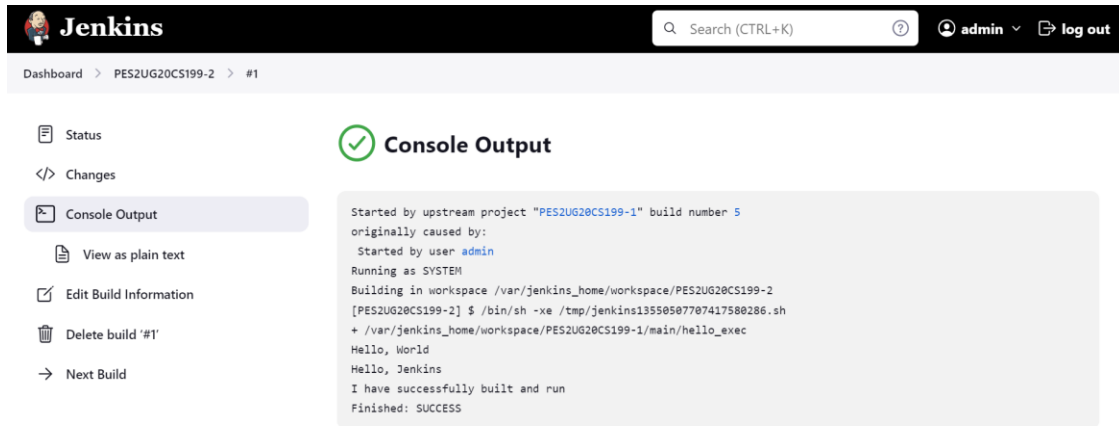
Repository: https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git

• origin/main

REST API Jenkins 2.375.3

Task-3

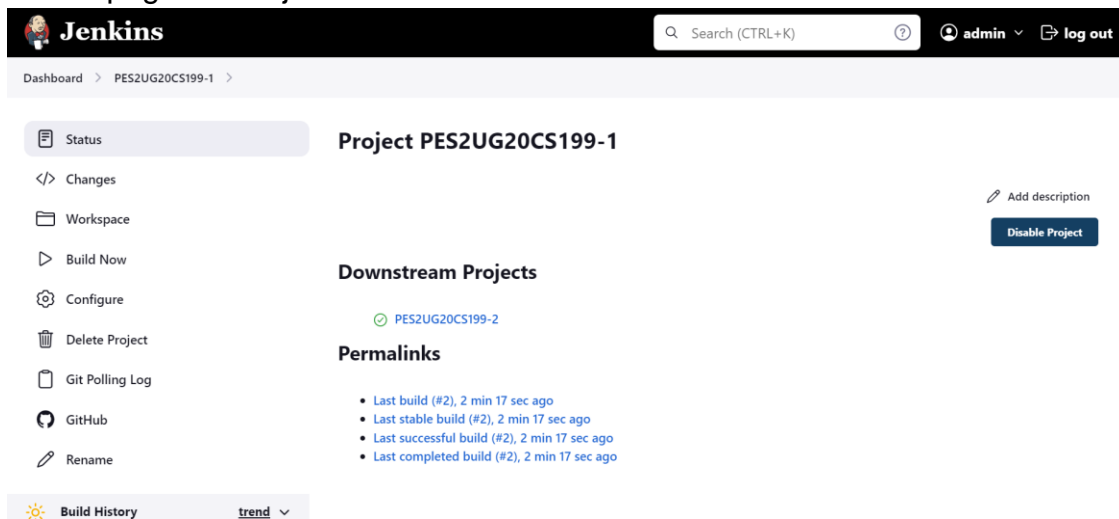
Console output of second job



The screenshot shows the Jenkins interface for the 'Console Output' of a job. The top navigation bar includes the Jenkins logo, a search bar, and user information (admin, log out). The breadcrumb trail is 'Dashboard > PES2UG20CS199-2 > #1'. On the left sidebar, 'Console Output' is selected, with options to 'View as plain text', 'Edit Build Information', 'Delete build '#1'', and 'Next Build'. The main content area, titled 'Console Output' with a green checkmark icon, displays the following text:

```
Started by upstream project "PES2UG20CS199-1" build number 5
originally caused by:
  Started by user admin
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/PES2UG20CS199-2
[PES2UG20CS199-2] $ /bin/sh -xe /tmp/jenkins13550507707417500286.sh
+ /var/jenkins_home/workspace/PES2UG20CS199-1/main/hello_exec
Hello, World
Hello, Jenkins
I have successfully built and run
Finished: SUCCESS
```

Status page of first job



The screenshot shows the Jenkins 'Project PES2UG20CS199-1' status page. The top navigation bar is identical to the previous screenshot. The breadcrumb trail is 'Dashboard > PES2UG20CS199-1 >'. The left sidebar lists various project actions: Status, Changes, Workspace, Build Now, Configure, Delete Project, Git Polling Log, GitHub, and Rename. The main content area is titled 'Project PES2UG20CS199-1' and includes an 'Add description' link and a 'Disable Project' button. Below this, the 'Downstream Projects' section shows 'PES2UG20CS199-2' with a green checkmark. The 'Permalinks' section lists four links, all pointing to the last build (#2) from 2 minutes and 17 seconds ago. At the bottom, the 'Build History' section is visible, showing a 'trend' dropdown.

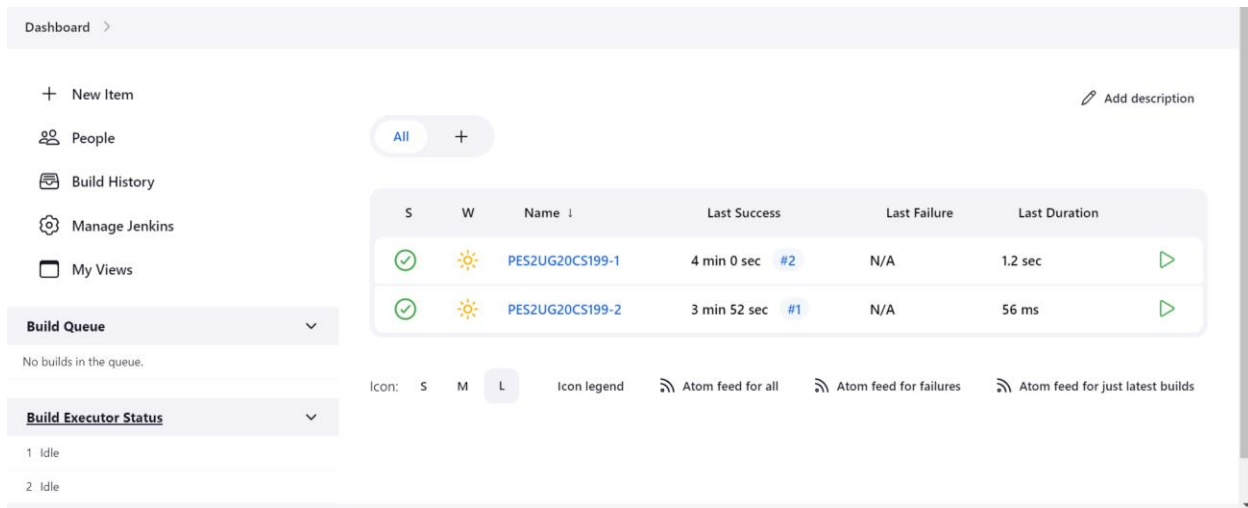
Build History of Jenkins



The screenshot shows the Jenkins 'Build History of Jenkins' page. The top navigation bar is identical. The breadcrumb trail is 'Dashboard > All >'. The left sidebar lists actions: New Item, People, Build History (selected), Manage Jenkins, and My Views. The main content area is titled 'Build History of Jenkins' and features a Gantt chart showing build timelines. The chart has a vertical axis for 'Time' (17hr to 20hr) and a horizontal axis for dates (Feb 13 to Feb 16). Three builds are visible: 'PES2UG20CS199-2 #1' and 'PES2UG20CS199-1 #2' on Feb 14, and 'PES2UG20CS199-1 #1' on Feb 15. Below the chart, a table provides details for the builds:

S	Build	Time Since	Status
1	Idle		
2	Idle		

Jenkins Dashboard

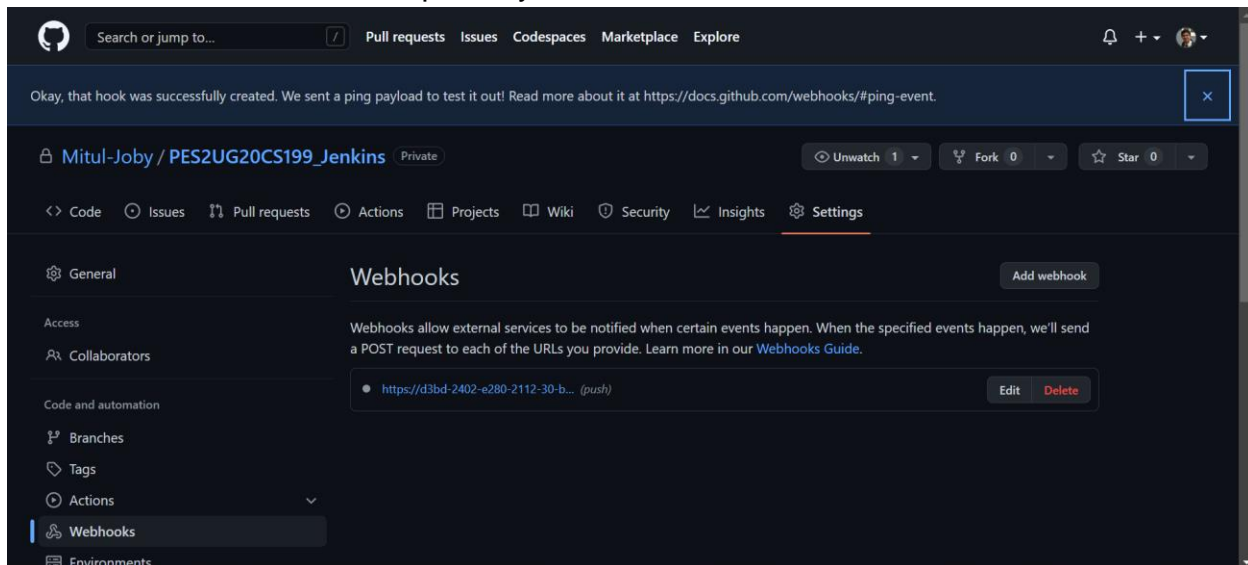


The Jenkins Dashboard shows a sidebar with navigation links: New Item, People, Build History, Manage Jenkins, and My Views. The main area displays a table of recent builds for the 'PES2UG20CS199' job. The table has columns for status (S), weather icon (W), Name, Last Success, Last Failure, and Last Duration. Two builds are listed: PES2UG20CS199-1 (4 min 0 sec, 1.2 sec) and PES2UG20CS199-2 (3 min 52 sec, 56 ms). Below the table, there are links for 'Build Queue' (No builds in the queue) and 'Build Executor Status' (2 Idle).

S	W	Name	Last Success	Last Failure	Last Duration
✓	☀	PES2UG20CS199-1	4 min 0 sec #2	N/A	1.2 sec
✓	☀	PES2UG20CS199-2	3 min 52 sec #1	N/A	56 ms

Task-4


Webhook added to GitHub repository



The screenshot shows the GitHub repository settings for 'Mitul-Joby / PES2UG20CS199_Jenkins'. A notification at the top states: 'Okay, that hook was successfully created. We sent a ping payload to test it out! Read more about it at https://docs.github.com/webhooks/#ping-event.' The 'Webhooks' section is active, showing a list of webhooks with one entry: 'https://d3bd-2402-e280-2112-30-b... (push)'. The 'Add webhook' button is visible.

Console Output of second job displaying the change made in hello.cpp file

```
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git commit -m "Modified hello.cpp"
[main cf9f004] Modified hello.cpp
1 file changed, 1 insertion(+)
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git push
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 8 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 409 bytes | 409.00 KiB/s, done.
Total 4 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git
2aa7e1f..cf9f004 main -> main
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins>
```

 **Jenkins**

Search (CTRL+K) ? admin log out

Dashboard > PES2UG20CS199-2 > #2

Status

Changes

Console Output

View as plain text

Edit Build Information

Delete build '#2'

Previous Build

Next Build

✓ Console Output

Started by upstream project "PES2UG20CS199-1" build number 6
originally caused by:
Started by an SCM change
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/PES2UG20CS199-2
[PES2UG20CS199-2] \$ /bin/sh -xe /tmp/jenkins10123743992922712689.sh
+ /var/jenkins_home/workspace/PES2UG20CS199-1/main/hello_exec
Hello, World
Hello, GitHub
Hello, Jenkins
I have successfully built and run
Finished: SUCCESS

Task-5

Code/script written to create basic pipeline using GitHub repository

```
pipeline {
  agent any
  stages {
    stage('Build') {
      steps {
        sh 'g++ -o PES2UG20CS199 PES2UG20CS199.cpp'
        echo 'Build Successful'
      }
    }
    stage('Test') {
      steps {
        sh './PES2UG20CS199'
        echo 'Test Successful'
      }
    }
    stage('Deploy') {
      steps {
        echo 'Deployment successful'
      }
    }
  }
  post {
    failure {
      echo 'Pipeline failed'
    }
  }
}
```

```

PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git add .
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git commit -m "For pipeline"
[main ebb0029] For pipeline
 2 files changed, 34 insertions(+)
 create mode 100644 Jenkinsfile
 create mode 100644 PES2UG20CS199.cpp
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 678 bytes | 678.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git
 cf9f004..ebb0029  main -> main
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins>

```

Stage view / Execution status of pipeline with all stages succeeded

Dashboard > PES2UG20CS199 >

Status

Changes

Build Now

Configure

Delete Pipeline

Full Stage View

Rename

Pipeline Syntax

Pipeline PES2UG20CS199

Add description

Disable Project

Stage View

Average stage times:
(Average full run time: ~6s)

	Declarative: Checkout SCM	Build	Test	Deploy
#2	1s	992ms	352ms	83ms

Feb 15 24:20 No Changes

Build History

trend

Filter builds...

Verify Declarative: Post Actions stage succeed for handling failures

```

PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git add .
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git commit -m "Intentional Mistake"
[main 54967e3] Intentional Mistake
 1 file changed, 1 insertion(+), 1 deletion(-)
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 312 bytes | 312.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git
 ebb0029..54967e3  main -> main
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins>

```

Stage Logs (Declarative: Post Actions)

Print Message -- Pipeline failed (self time 21ms)

Pipeline failed

Changes

Build Now

Configure

Delete Pipeline

Full Stage View

Rename

Pipeline Syntax

Add description

Disable Project

[illegible]

```

Commit message: "for pipeline"
[Pipeline]
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Build)
[Pipeline] sh
+ git -o /PES2UO2MC5199 PES2UO2MC5199.cpp
Build Successful
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Test)
+ ./PES2UO2MC5199
+ ./PES2UO2MC5199
'hello' m@tUl Toby:PES2UO2MC5199
[Pipeline] echo
Test Successful
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy)
[Pipeline] echo
Deployment successful
[Pipeline]
[Pipeline] // stage
[Pipeline] // withEnv
[Pipeline]
[Pipeline] // mode
[Pipeline] End of Pipeline
Finished: SUCCESS

```

```
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git add .
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git commit -m "Fix"
[main 65f2538] Fix
1 file changed, 1 insertion(+), 1 deletion(-)
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins> git push
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 303 bytes | 303.00 KiB/s, done.
Total 3 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins.git
54967e3..65f2538 main -> main
PS D:\College\Semester-6\CC\CC-Lab\Assignment-2\PES2UG20CS199_Jenkins>
```

		Declaration Checkout SCM	Build	Test	Deploy	Post-Action Post Actions
Average stage times (Average full run time - 5s)		1s	1s	301ms	86ms	128ms
Feb 12 24:30	1 passed	1s	960ms	387ms	84ms	
Feb 13 24:30	1 passed	1s	1s	164ms	97ms	128ms
Feb 13 24:30	1s failed	1s	992ms	352ms	83ms	

Link: https://github.com/Mitul-Joby/PES2UG20CS199_Jenkins