JENKINS LAB3

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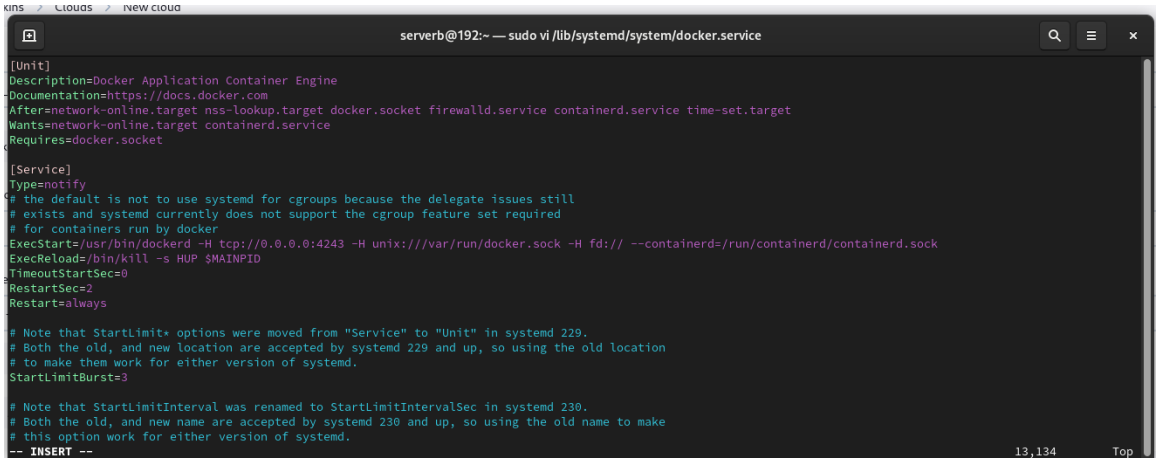
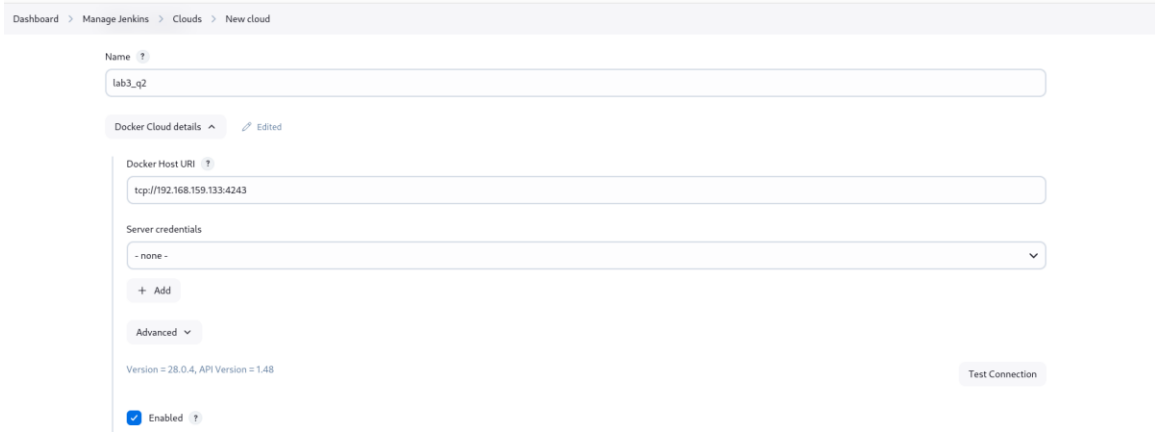
Track: System Administration
Branch: Aswan

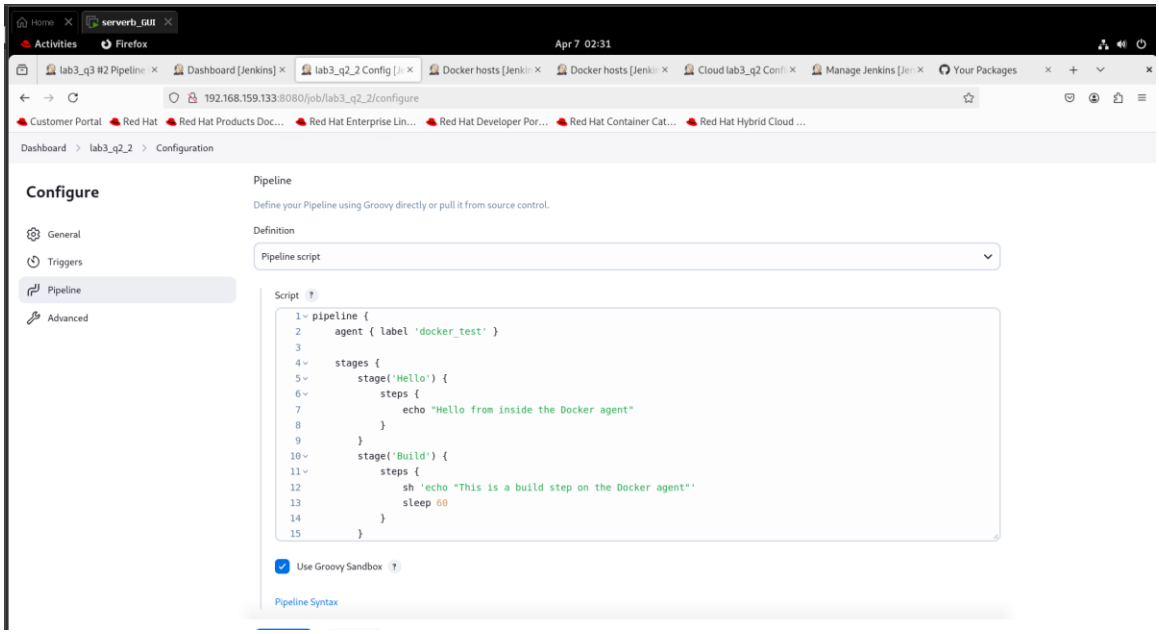
1-what is the benefit of using master-slave architecture rather than building on master only ?

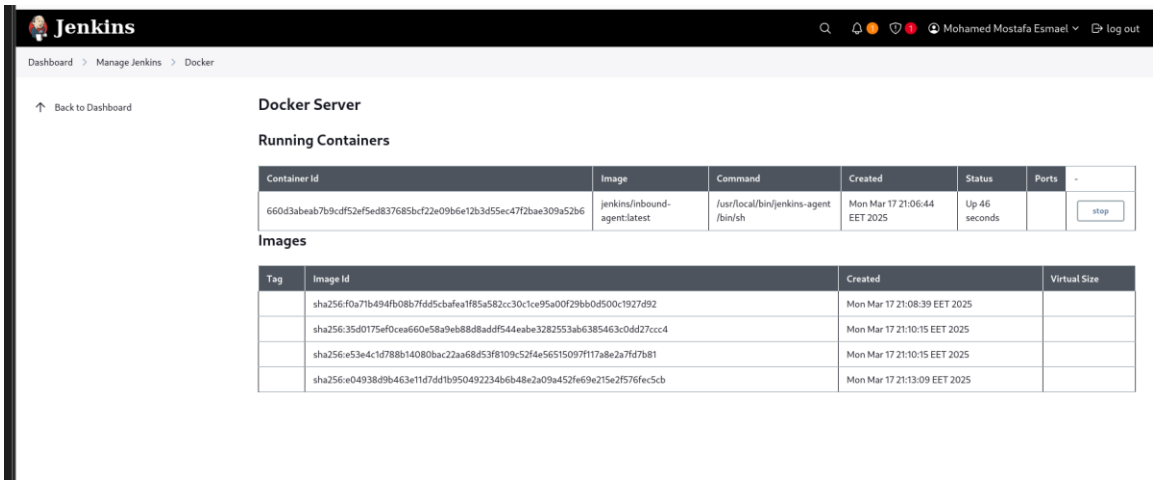
- **Resource Isolation:**
  Offloading builds to agent nodes prevents the master from being overloaded. This keeps the master responsive and available for administrative tasks.
- **Scalability:**
  You can add as many agents as needed, allowing builds to run concurrently. This improves overall throughput and shortens build times.
- **Environment Specialization:**
  Agents can be tailored with specific software, OS versions, or hardware configurations required by different projects. This helps test across multiple environments without affecting the master.
- **Security & Stability:**
  Isolating build environments minimizes the risk of a faulty build affecting the master. It also helps contain security issues by limiting the exposure of the master node.
- **Maintenance Flexibility:**
  Agents can be updated, restarted, or replaced independently from the master. This improves maintenance without impacting the entire CI/CD pipeline.

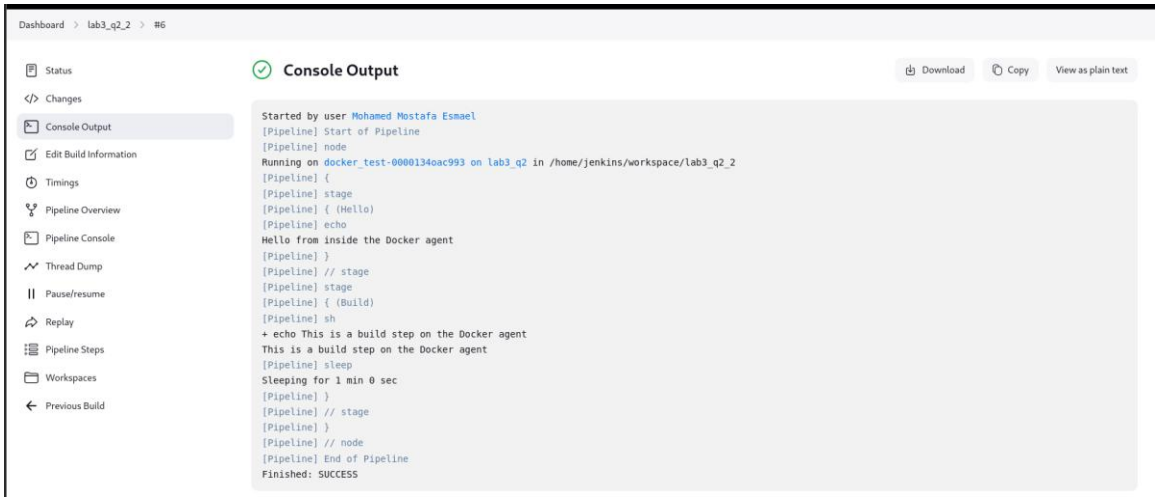
2-try to make new agent as container using docker plugin and configure master to use it and build pipeline on this agent





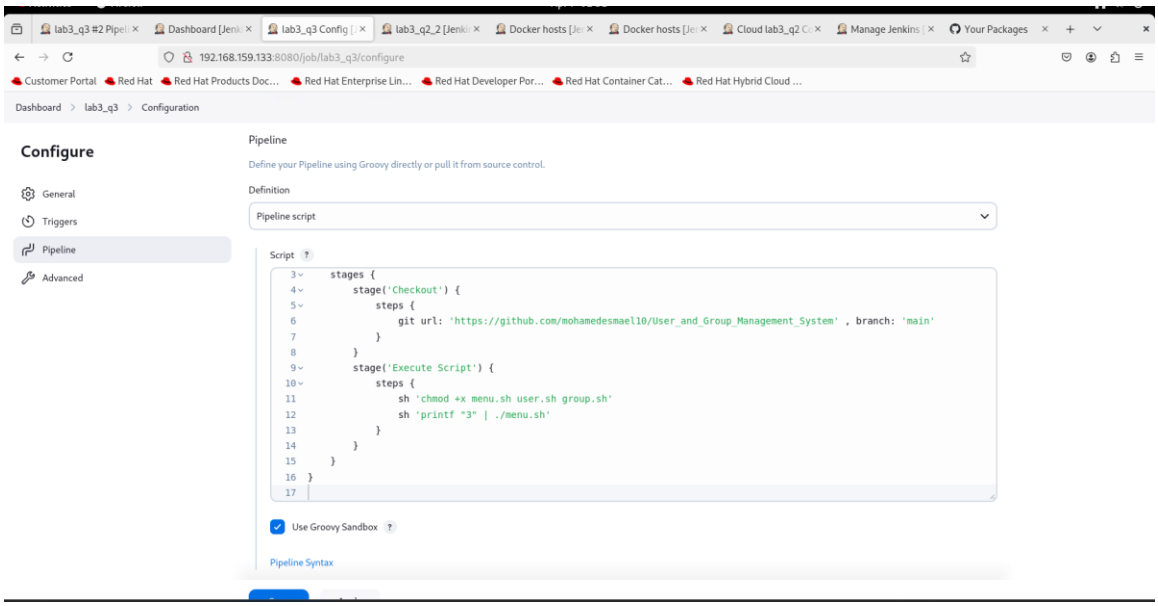

Activities
Firefox
Apr 7 02:31
192.168.159.133:8080/job/lab3_q2_2/configure
Dashboard > lab3_q2_2 > Configuration
Configure
General
Triggers
Pipeline
Advanced
Pipeline
Define your Pipeline using Groovy directly or pull it from source control.
Definition
Pipeline script
Script
pipeline {
agent { label 'docker_test' }
stages {
stage('Hello') {
steps {
echo "Hello from inside the Docker agent"
}
}
stage('Build') {
steps {
sh 'echo "This is a build step on the Docker agent"'
sleep 60
}
}
Use Groovy Sandbox
Pipeline Syntax

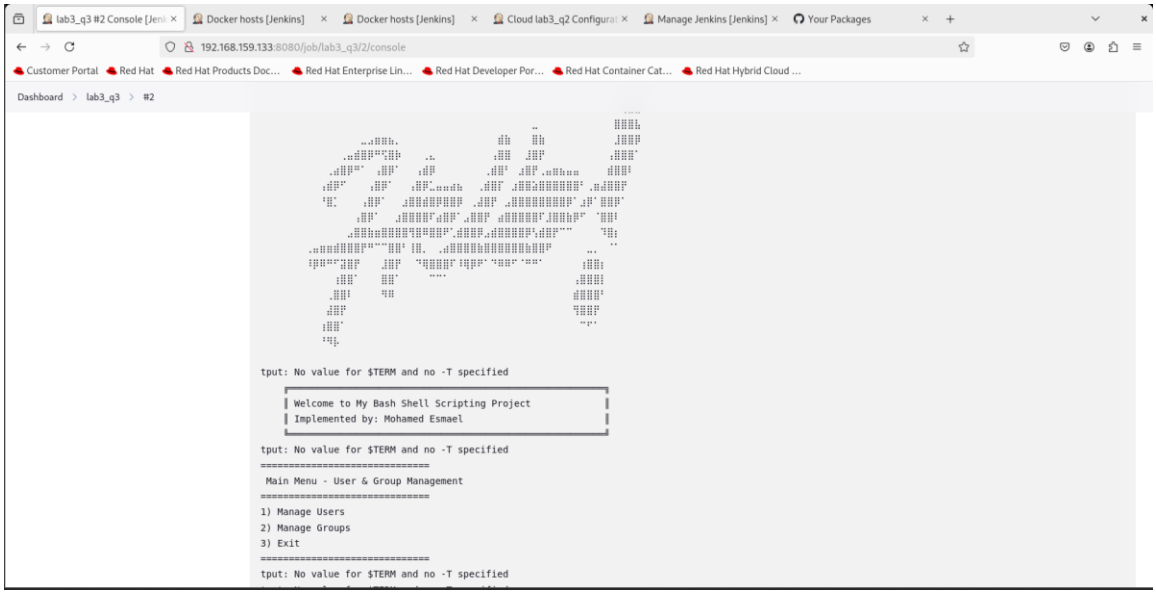

Jenkins
Mohamed Mostafa Esmael
log out
Dashboard > Manage Jenkins > Docker
Back to Dashboard
Docker Server
Running Containers
Container Id
Image
Command
Created
Status
Ports
660d3abeab7b9cdf52ef5ed837685bcf22e09b6e12b3d55ec47f2bae309a52b6
jenkins/inbound-agent:latest
/usr/local/bin/jenkins-agent /bin/sh
Mon Mar 17 21:06:44 EET 2025
Up 46 seconds
stop
Images
Tag
Image Id
Created
Virtual Size
sha256:f0a71b494fb08b7fdd5cbafea1f85a582cc30c1ce95a00f29bb0d500c1927d92
Mon Mar 17 21:08:39 EET 2025
sha256:35d0175ef0cea660e58a9eb88d8addf544eabe3282553ab6385463c0dd27ccc4
Mon Mar 17 21:10:15 EET 2025
sha256:e53e4c1d788b14080bac22aa68d53f8109c52f4e56515097f117a8e2a7fd7b81
Mon Mar 17 21:10:15 EET 2025
sha256:e04938d9b463e11d7dd1b950492234b6b48e2a09a452fe69e215e2f576fec5cb
Mon Mar 17 21:13:09 EET 2025

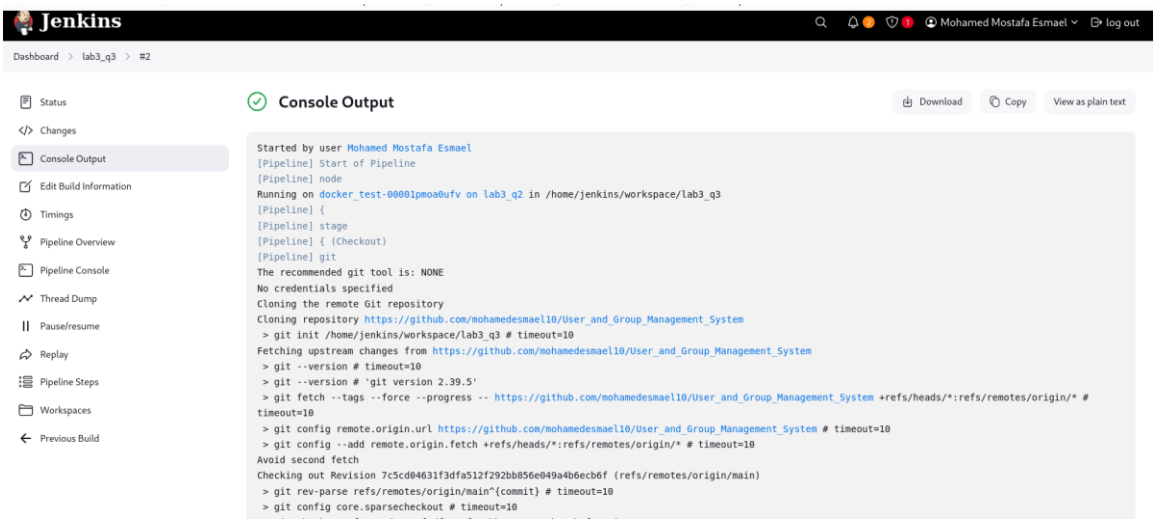

Dashboard > lab3_q2_2 > #6
Status
Changes
Console Output
Edit Build Information
Timings
Pipeline Overview
Pipeline Console
Thread Dump
Pause/resume
Replay
Pipeline Steps
Workspaces
Previous Build
Console Output
Download
Copy
View as plain text
Started by user Mohamed Mostafa Esmael
[Pipeline] Start of Pipeline
[Pipeline] node
Running on docker_test-0000134oac993 on lab3_q2 in /home/jenkins/workspace/lab3_q2_2
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Hello)
[Pipeline] echo
Hello from inside the Docker agent
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build)
[Pipeline] sh
+ echo This is a build step on the Docker agent
This is a build step on the Docker agent
[Pipeline] sleep
Sleeping for 1 min 0 sec
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

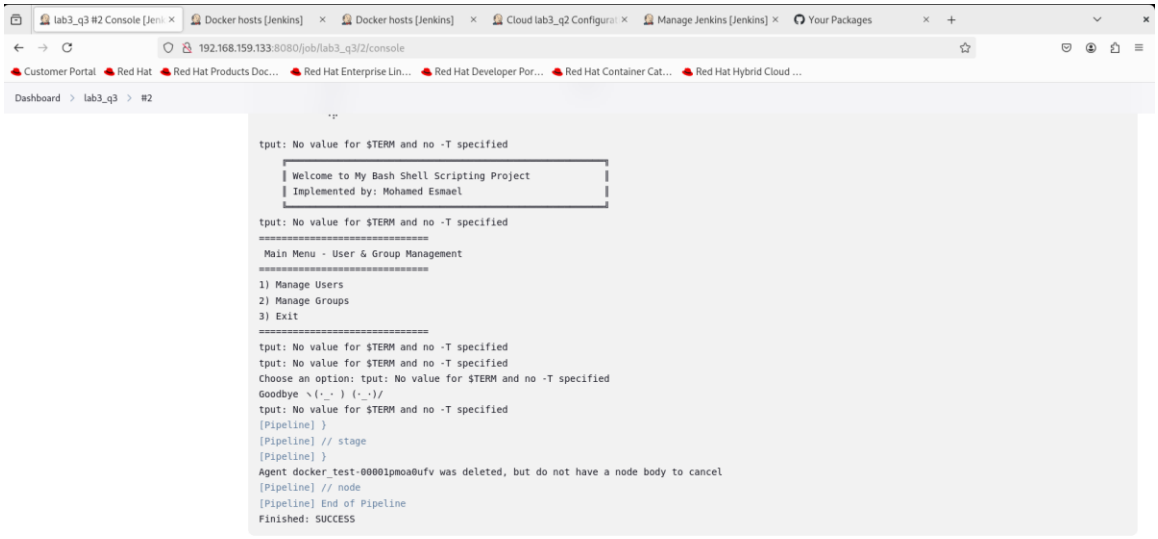

Build #6
Rebuild
Overview
Configure
Success 1 min 57 sec ago in 1 min 15 sec
Hello
Build
Stage 'Build'
Started 1 min 46 sec ago
Queued 0 ms
Took 1 min 4 sec
Success
Running on docker_test-0000134oac993
View as plain text
echo "This is a build step on the Docker agent"
Shell Script
3.9 sec
60
Sleep
1 min 0 sec
0 Sleeping for 1 min 0 sec

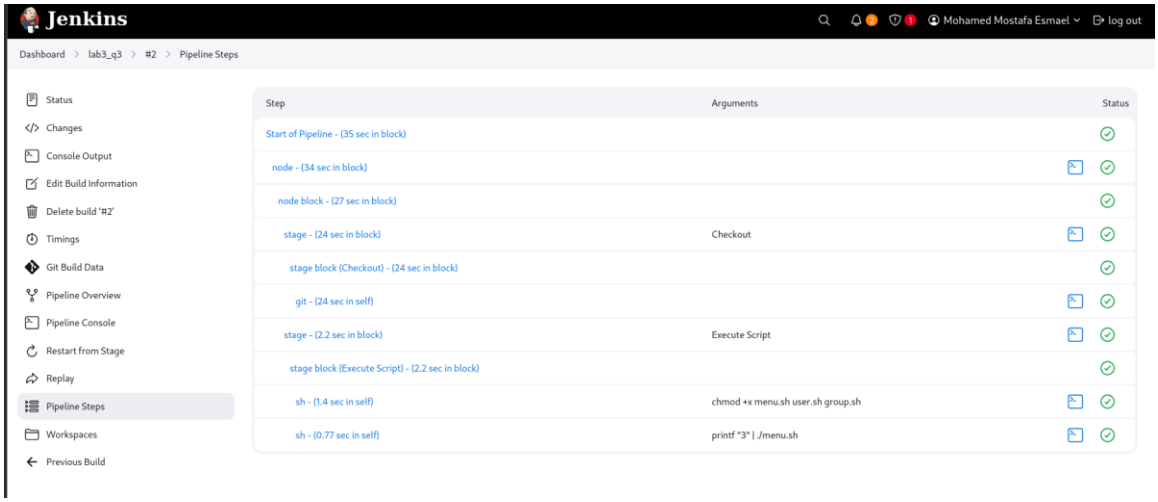
3-run pipeline to run bash script located on github repo





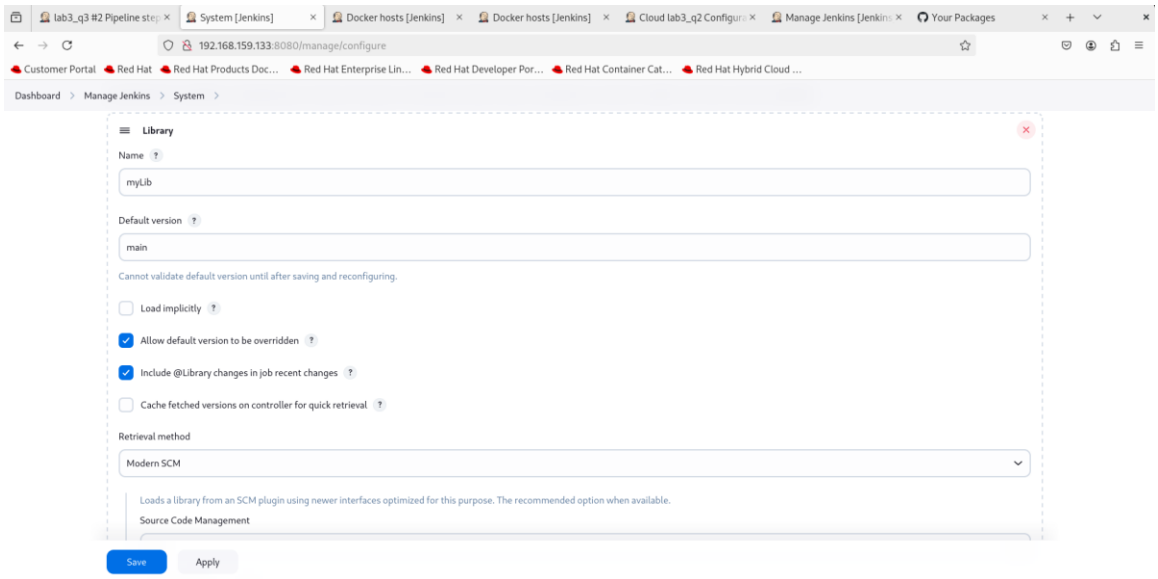

Jenkins
Mohamed Mostafa Esmael
log out
Dashboard > lab3_q3 > #2
Status
Changes
Console Output
Edit Build Information
Timings
Pipeline Overview
Pipeline Console
Thread Dump
Pause/resume
Replay
Pipeline Steps
Workspaces
Previous Build
Console Output
Download
Copy
View as plain text
Started by user Mohamed Mostafa Esmael
[Pipeline] Start of Pipeline
[Pipeline] node
Running on docker_test-00001pmoa0ufv on lab3_q2 in /home/jenkins/workspace/lab3_q3
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Checkout)
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/mohamedesmael10/User_and_Group_Management_System
> git init /home/jenkins/workspace/lab3_q3 # timeout=10
Fetching upstream changes from https://github.com/mohamedesmael10/User_and_Group_Management_System
> git --version # timeout=10
> git --version # 'git version 2.39.5'
> git fetch --tags --force --progress -- https://github.com/mohamedesmael10/User_and_Group_Management_System +refs/heads/*:refs/remotes/origin/* # timeout=10
> git config remote.origin.url https://github.com/mohamedesmael10/User_and_Group_Management_System # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
Checking out Revision 7c5cd04631f3dfa512f292bb856e049a4b6ecb6f (refs/remotes/origin/main)
> git rev-parse refs/remotes/origin/main^{commit} # timeout=10
> git config core.sparsecheckout # timeout=10

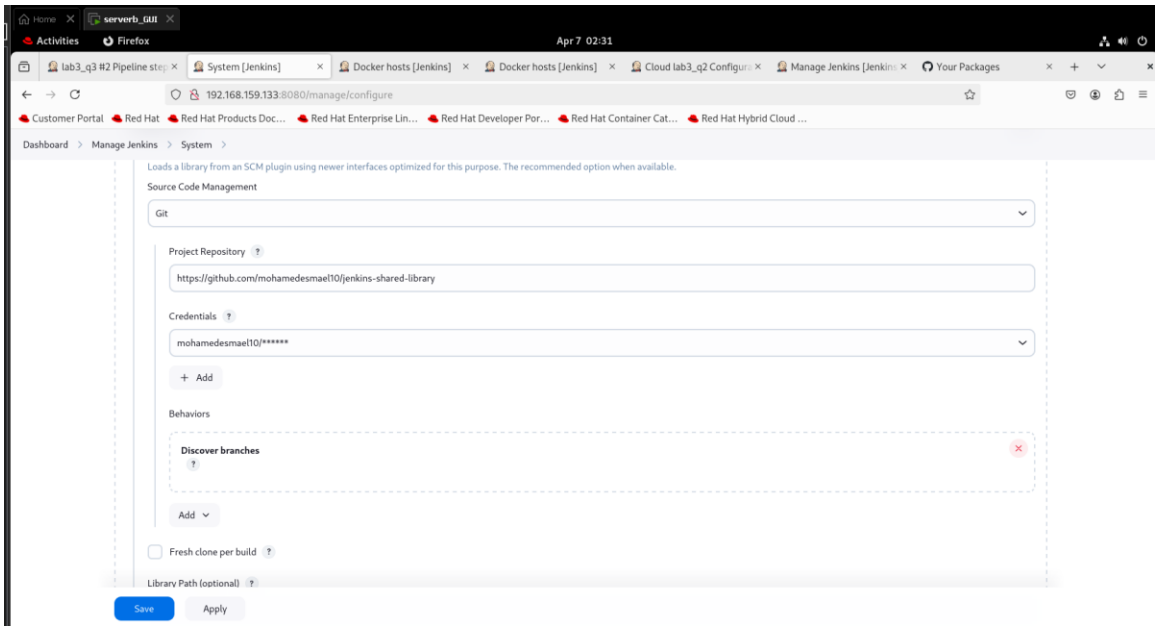

lab3_q3 #2 Console [Jenk
Docker hosts [Jenkins]
Docker hosts [Jenkins]
Cloud lab3_q2 Configurat
Manage Jenkins [Jenkins]
Your Packages
192.168.159.133:8080/job/lab3_q3/2/console
Customer Portal
Red Hat
Red Hat Products Doc...
Red Hat Enterprise Lin...
Red Hat Developer Por...
Red Hat Container Cat...
Red Hat Hybrid Cloud ...
Dashboard > lab3_q3 > #2
tput: No value for $TERM and no -T specified
Welcome to My Bash Shell Scripting Project
Implemented by: Mohamed Esmael
tput: No value for $TERM and no -T specified
Main Menu - User & Group Management
1) Manage Users
2) Manage Groups
3) Exit
tput: No value for $TERM and no -T specified
tput: No value for $TERM and no -T specified
Choose an option: tput: No value for $TERM and no -T specified
Goodbye ヽ(･_･) (･_･)/
tput: No value for $TERM and no -T specified
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
Agent docker_test-00001pmoa0ufv was deleted, but do not have a node body to cancel
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

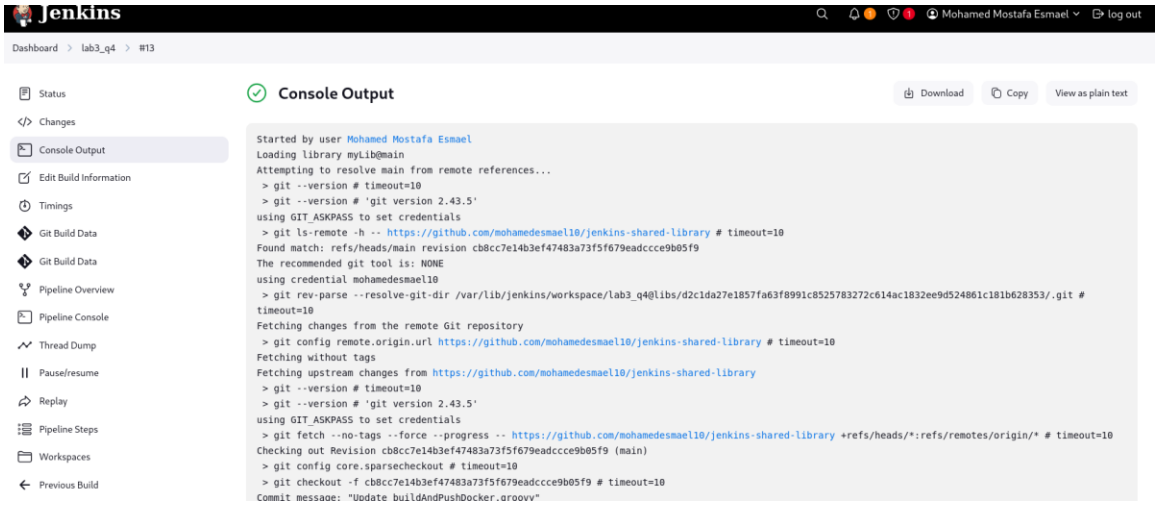

Jenkins
Mohamed Mostafa Esmael
log out
Dashboard > lab3_q3 > #2 > Pipeline Steps
Status
Changes
Console Output
Edit Build Information
Delete build '#2'
Timings
Git Build Data
Pipeline Overview
Pipeline Console
Restart from Stage
Replay
Pipeline Steps
Workspaces
Previous Build
Step
Arguments
Status
Start of Pipeline - (35 sec in block)
node - (34 sec in block)
node block - (27 sec in block)
stage - (24 sec in block)
Checkout
stage block (Checkout) - (24 sec in block)
git - (24 sec in self)
stage - (2.2 sec in block)
Execute Script
stage block (Execute Script) - (2.2 sec in block)
sh - (1.4 sec in self)
chmod +x menu.sh user.sh group.sh
sh - (0.77 sec in self)
printf "3" | ./menu.sh

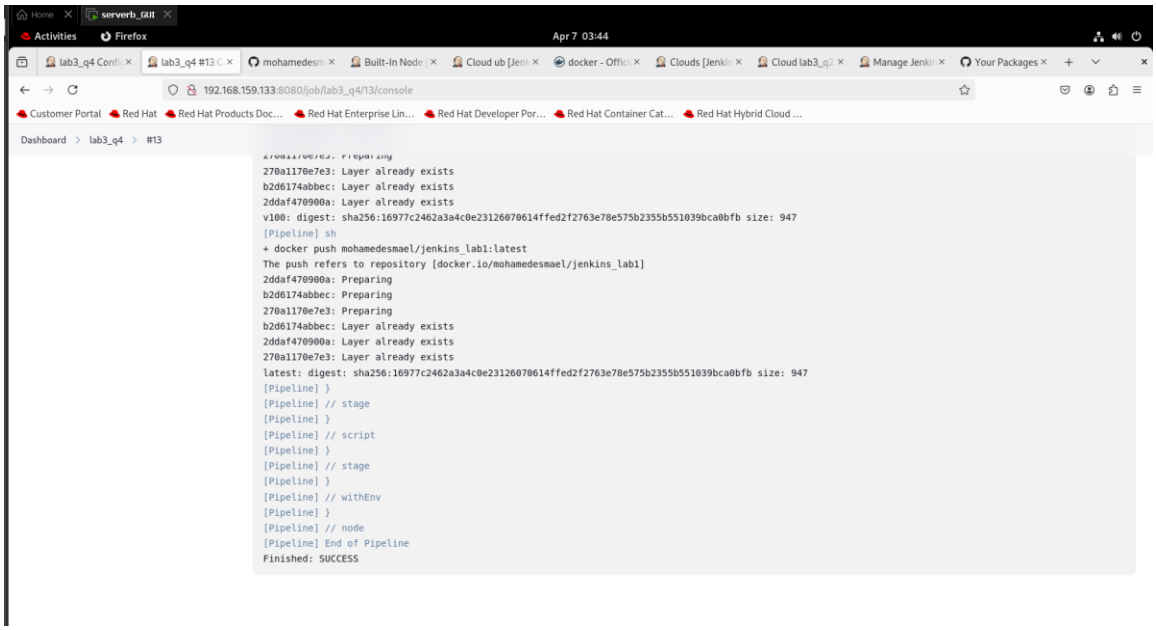
4-run new pipeline using jenkins shared library to build, push dockerfile existed on github repo

GITHUB Repo: https://github.com/mohamedesmael10/jenkins-shared-library






Jenkins
Mohamed Mostafa Esmael
log out
Dashboard > lab3_q4 > #13
Status
Changes
Console Output
Edit Build Information
Timings
Git Build Data
Git Build Data
Pipeline Overview
Pipeline Console
Thread Dump
Pause/resume
Replay
Pipeline Steps
Workspaces
Previous Build
Console Output
Download
Copy
View as plain text
Started by user Mohamed Mostafa Esmael
Loading library myLib@main
Attempting to resolve main from remote references...
> git --version # timeout=10
> git --version # 'git version 2.43.5'
using GIT_ASKPASS to set credentials
> git ls-remote -h -- https://github.com/mohamedesmael10/jenkins-shared-library # timeout=10
Found match: refs/heads/main revision cb8cc7e14b3ef47483a73f5f679eadccce9b05f9
The recommended git tool is: NONE
using credential mohamedesmael10
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/lab3_q4@libs/d2c1da27e1857fa63f8991c8525783272c614ac1832ee9d524861c181b628353/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/mohamedesmael10/jenkins-shared-library # timeout=10
Fetching without tags
Fetching upstream changes from https://github.com/mohamedesmael10/jenkins-shared-library
> git --version # timeout=10
> git --version # 'git version 2.43.5'
using GIT_ASKPASS to set credentials
> git fetch --no-tags --force --progress -- https://github.com/mohamedesmael10/jenkins-shared-library +refs/heads/*:refs/remotes/origin/* # timeout=10
Checking out Revision cb8cc7e14b3ef47483a73f5f679eadccce9b05f9 (main)
> git config core.sparsecheckout # timeout=10
> git checkout -f cb8cc7e14b3ef47483a73f5f679eadccce9b05f9 # timeout=10
Commit message: "Update buildAndPushDocker.groovy"


Home
serverb_GUI
Activities
Firefox
Apr 7 03:44
192.168.159.133:8080/job/lab3_q4/13/console
Customer Portal
Red Hat
Red Hat Products Doc...
Red Hat Enterprise Lin...
Red Hat Developer Por...
Red Hat Container Cat...
Red Hat Hybrid Cloud ...
Dashboard > lab3_q4 > #13
270a1170e7e3: Layer already exists
b2d6174abbec: Layer already exists
2ddaf470900a: Layer already exists
v100: digest: sha256:16977c2462a3a4c0e23126070614ffed2f2763e78e575b2355b551039bca0bfb size: 947
[Pipeline] sh
+ docker push mohamedesmael/jenkins_lab1:latest
The push refers to repository [docker.io/mohamedesmael/jenkins_lab1]
2ddaf470900a: Preparing
b2d6174abbec: Preparing
270a1170e7e3: Preparing
b2d6174abbec: Layer already exists
2ddaf470900a: Layer already exists
270a1170e7e3: Layer already exists
latest: digest: sha256:16977c2462a3a4c0e23126070614ffed2f2763e78e575b2355b551039bca0bfb size: 947
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

Pipeline script

Script

```
    agent any

    environment {
        DOCKER_IMAGE = 'mohamedesmael/jenkins_lab1'
        DOCKER_TAG   = 'v100'
        REPO_URL     = 'https://github.com/mohamedesmael10/Jenkins_lab2.git'
        BRANCH       = 'main'
    }

    stages {
        stage('Build and Push Docker Image') {
            steps {
                script {
                    buildAndPushDocker(env.DOCKER_IMAGE, env.DOCKER_TAG, env.REPO_URL, env.BRANCH)
                }
```

Use Groovy Sandbox