

Roll NO : C24116

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Practical 1 : Demonstrate basic Git commands

```
MINGW64:/d/Sem 2 Lab/C24116_DevOps/prac1
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps
$ cd "/d/Sem 2 Lab/C24116_DevOps"
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps
$ pwd
/d/Sem 2 Lab/C24116_DevOps

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps
$ git init
Initialized empty Git repository in D:/Sem 2 Lab/C24116_DevOps/.git/
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ git status
On branch main

No commits yet

nothing to commit (create/copy files and use "git add" to track)

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ mkdir prac1

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ cd prac1/

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ git init
Initialized empty Git repository in D:/Sem 2 Lab/C24116_DevOps/prac1/.git/
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ |
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ git config --global user.name "Jatin Talavdekar"

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ git config --global user.email "jatindes347@gmail.com"

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ git config --global user.name
Jatin Talavdekar

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ git config --global user.email
jatindes347@gmail.com
```

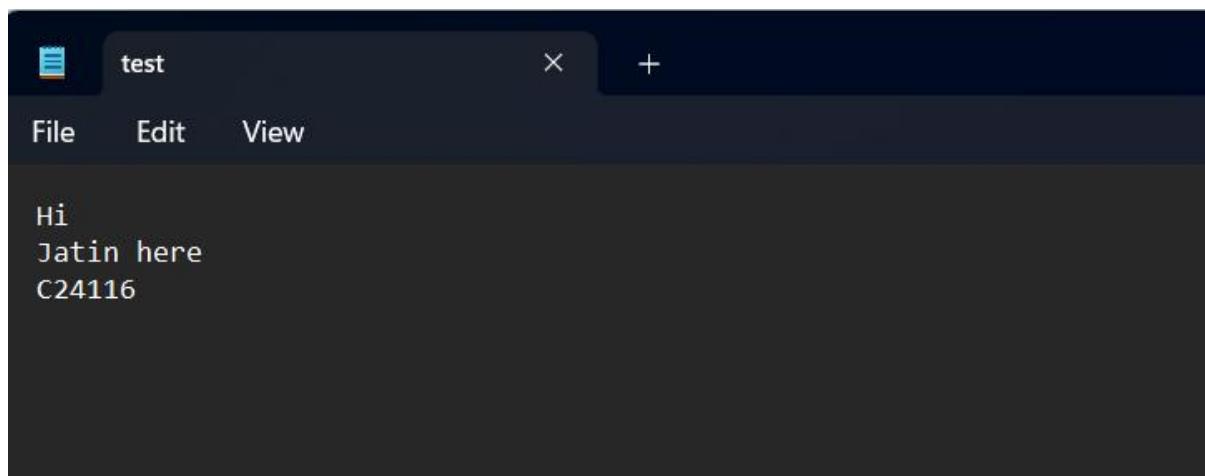
```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ git commit -m "first commit"
[main (root-commit) 0f68081] first commit
 1 file changed, 3 insertions(+)
 create mode 100644 test.txt
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ git branch new

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ git checkout new
Switched to branch 'new'

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (new)
$ git log
commit 0f68081f1ad5e82b52b6c6995bea01d57457b5e3 (HEAD -> new, main)
Author: Jatin Talavdekar <jatindes347@gmail.com>
Date:   Tue May 20 20:46:49 2025 +0530

    first commit
```



Practical 2 : Create and fork repositories in Git Hub. Apply branch, merge and rebase concepts.

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ cd ..
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ mkdir prac2
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ cd prac2
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ pwd
/d/Sem 2 Lab/C24116_DevOps/prac2
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git init
Initialized empty Git repository in D:/Sem 2 Lab/C24116_DevOps/prac2/.git/
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git config --global user.name
Jatin Talavdekar
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git config --global user.email
jatindes347@gmail.com
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git add test2.txt
fatal: pathspec 'test2.txt' did not match any files
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git add test2.txt
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git status
On branch main
```

No commits yet

Changes to be committed:
(use "git rm --cached <file>..." to unstage)
 new file: test2.txt

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git commit -m "second"
[main (root-commit) 44c1502] second
1 file changed, 3 insertions(+)
create mode 100644 test2.txt
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
```

 MINGW64:/d/Sem 2 Lab/C24116_DevOps/prac2

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ cd ..

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ mkdir prac2

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ cd prac2

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ pwd
/d/Sem 2 Lab/C24116_DevOps/prac2

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ |
```

```
MINGW64:/d/Sem 2 Lab/C24116_DevOps/prac2
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac1 (main)
$ cd ..

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ mkdir prac2

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps (main)
$ cd prac2

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ pwd
/d/Sem 2 Lab/C24116_DevOps/prac2

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git init
Initialized empty Git repository in D:/Sem 2 Lab/C24116_DevOps/prac2/.git/

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git config --global user.name
Jatin Talavdekar

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git config --global user.email
jatinedes347@gmail.com

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git add test2.txt
fatal: pathspec 'test2.txt' did not match any files

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git add test2.txt

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git status
On branch main

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   test2.txt

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git commit -m "second"
[main (root-commit) 44c1502] second
  1 file changed, 3 insertions(+)
  create mode 100644 test2.txt

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git commit -m "second"
[main (root-commit) 44c1502] second
  1 file changed, 3 insertions(+)
  create mode 100644 test2.txt
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git push origin main
fatal: 'origin' does not appear to be a git repository
fatal: Could not read from remote repository.
```

Please make sure you have the correct access rights
and the repository exists.

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git branch
* main
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git remote add origin https://github.com/Jatin-codes-dev/prac2.git
git branch -M main
git push -u origin main
info: please complete authentication in your browser...
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 254 bytes | 254.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Jatin-codes-dev/prac2.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
```

The screenshot shows a GitHub repository interface. At the top, there's a navigation bar with links for Code, Issues, Pull requests, Actions, Projects, Security, Insights, and Settings. The repository name is 'prac2' and it's marked as Private. Below the navigation, there's a summary showing 1 Branch and 0 Tags. The main branch is 'main'. A single commit is listed: 'Jatin-codes-dev' committed 'second' at 44c1502, pushed 7 minutes ago. The commit message is 'second'. A file named 'test2.txt' is shown under the commit details.

The screenshot shows a GitHub repository named 'prac2'. At the top, there are tabs for Code, Issues, Pull requests, Actions, Projects, Security, Insights, and Settings. The Code tab is selected. Below the tabs, there's a search bar and a button to 'Add file'. A 'main' branch is selected. In the main area, there's a commit from 'Jatin-codes-dev' titled 'second' made 15 minutes ago. A file named 'test2.txt' was added at the same time. Below this, there's a section to 'Add a README' with a green button labeled 'Add a README'.

This screenshot shows the 'test2.txt' file within the 'prac2' repository. The left sidebar shows the repository navigation and a 'Files' section with 'test2.txt' selected. The main panel displays the file content under the 'Code' tab. The file contains three lines of text: 'hi this is practical 2', 'Jatin here', and 'C24116'. There are also tabs for 'Blame' and 'Code 55% faster with GitHub Copilot'.

The screenshot shows the repository 'prac2' again. The left sidebar has the 'Files' section open. The main panel shows the commit history for 'test2.txt'. A new commit was made by 'Jatin-codes-dev' titled 'new file: hi this is practical 2.txt' 14 minutes ago. Below this, another commit for 'test2.txt' is listed, made 24 minutes ago. At the bottom, there's a section to 'Add a README' with a green button labeled 'Add a README'.

prac2 / test2.txt in main

Edit Preview Code 55% faster with GitHub Copilot Cancel changes Commit changes... Spaces 2 Soft wrap

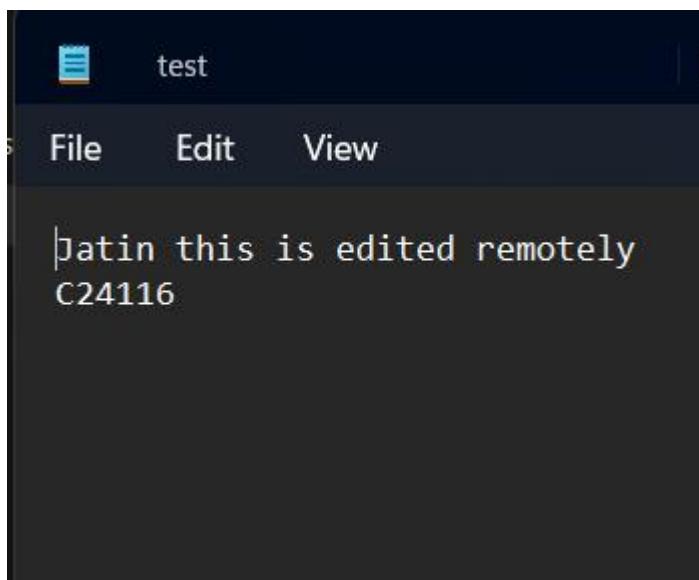
```
1 Jatin this is edited remotely
2 C24116
```

```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git merge new
Already up to date.

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
$ git pull origin main
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 934 bytes | 233.00 KiB/s, done.
From https://github.com/Jatin-codes-dev/prac2
 * branch            main      -> FETCH_HEAD
   0d4abd9..633f726  main      -> origin/main
Updating 0d4abd9..633f726
Fast-forward
 test2.txt | 5 +----
 1 file changed, 2 insertions(+), 3 deletions(-)

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac2 (main)
```

Changes reflected :



Practical 3 : Demonstrate Git for Collaboration

The screenshot shows the GitHub interface for creating a new fork. At the top, it displays the repository path: yogeshrathod04 / CollegeWork. Below the header are navigation links: Code, Issues, Pull requests, Actions, Projects, Security, and Insights. A search bar is located at the top right. The main section is titled "Create a new fork". It explains what a fork is and provides fields for "Owner" (set to Jatin-codes-dev) and "Repository name" (set to CollegeWork). A note indicates that "CollegeWork is available". Below these fields, there's a description field labeled "(optional)". Underneath, a checked checkbox says "Copy the main branch only", with a note below it about contributing back to the upstream repository. A warning message states: "You are creating a fork in your personal account." At the bottom right is a prominent green "Create fork" button.

Create a new fork

A *fork* is a copy of a repository. Forking a repository allows you to freely experiment with changes without affecting the original project.

Required fields are marked with an asterisk (*).

Owner * Repository name *

Jatin-codes-dev / CollegeWork
CollegeWork is available.

By default, forks are named the same as their upstream repository. You can customize the name to distinguish it further.

Description (optional)

Copy the main branch only

Contribute back to yogeshrathod04/CollegeWork by adding your own branch. [Learn more...](#)

ⓘ You are creating a fork in your personal account.

Create fork

The screenshot shows the GitHub code editor interface for the file "textfile.txt" in the "CollegeWork" repository. The repository path is Jatin-codes-dev / CollegeWork. The top navigation bar includes Code, Pull requests, Actions, Projects, Wiki, Security, Insights, and Settings. The code editor shows the following content:

```
1  Yogesh Rathod
2  Jatin is great!
```

Below the code editor are buttons for Edit, Preview, and Commit changes... (with a progress bar indicating "Code 55% faster with GitHub Copilot"). There are also settings for Spaces, 2, and Soft wrap.

The screenshot shows the GitHub interface for pull requests. The repository path is Jatin-codes-dev / CollegeWork. The top navigation bar includes Code, Pull requests, Actions, Projects, Wiki, Security, Insights, and Settings. The pull request list is filtered by "is:pr is:open". The interface includes a search bar, a filters dropdown, and buttons for Labels, Milestones, and New pull request. A prominent message reads: "Welcome to pull requests! Pull requests help you collaborate on code with other people. As pull requests are created, they'll appear here in a searchable and filterable list. To get started, you should [create a pull request](#).
ProTip! Follow long discussions with [comments:>50](#)."

Practical 4 : Demonstrate Collaborating and cloning using Git

Discuss and review the changes in this comparison with others. [Learn about pull requests](#)

[Create pull request](#)

-o 1 commit

1 file changed

1 contributor

Commits on May 20, 2025

Update myfile.txt ...

Jatin-codes-dev authored 3 minutes ago

Verified

0ac6703

<>

Showing 1 changed file with 1 addition and 1 deletion.

Split

Unified

Yogesh/textfile.txt

@@ -1,2 +1,2 @@

1 1 Yogesh Rathod

2 - shubham

2 + Jatin is great

The screenshot shows a GitHub pull request interface. At the top, there's a header with 'Add a title' and a text input field containing 'Update myfile.txt'. To the right, there are 'Helpful resources' links for 'GitHub Community Guidelines'. Below the title, there's a 'Add a description' section with a rich text editor toolbar. The main body contains a diff view of a file named 'myfile.txt'. The diff shows the following changes:

```

@@ -1,2 +1,2 @@
1 1 Yogesh Rathod
2 - shubham
2 + Jatin is great

```

Below the diff, there's a note that 'Markdown is supported' and a file upload area with the placeholder 'Paste, drop, or click to add files'. At the bottom, there's a 'Create pull request' button with a dropdown arrow, and a note: 'Remember, contributions to this repository should follow our [GitHub Community Guidelines](#)'.

On the left side of the main content area, there's a sidebar with navigation links: Home, Profile, Compare, Status, Docs, Contact, Manage settings, and a note 'Do not share my personal information'.

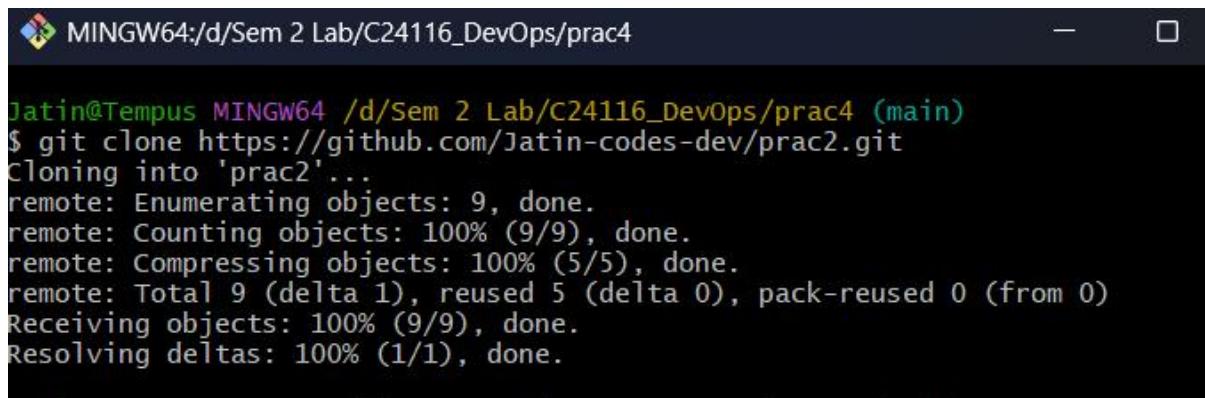
At the very bottom, there's a footer with a note 'Find all pull requests that result related to your query here with [Backlog](#)'.

```

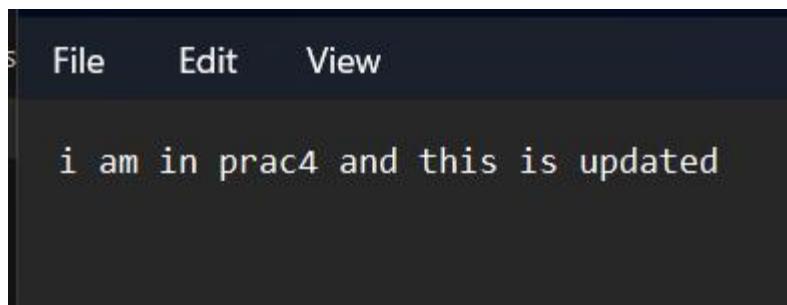
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac4 (main)
$ git clone https://github.com/Jatin-codes-dev/prac2.git
Cloning into 'prac2'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 9 (delta 1), reused 5 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (9/9), done.
Resolving deltas: 100% (1/1), done.

```

Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac4 (main)



```
Jatin@Tempus MINGW64 /d/Sem 2 Lab/C24116_DevOps/prac4 (main)
$ git clone https://github.com/Jatin-codes-dev/prac2.git
Cloning into 'prac2'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (5/5), done.
remote: Total 9 (delta 1), reused 5 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (9/9), done.
Resolving deltas: 100% (1/1), done.
```



Practical 5 : Using GitLab Web IDE

1. Bash demo

build-steps:

script:

- echo "first step"
- echo "second step"

testing-job:

script:

- echo "First Step of Testing"
- echo "Second step of testing"

deploy-job:

script:

- echo "This is deploy Step..."

The screenshot shows the log output for a GitLab CI pipeline. The log is displayed in a terminal-like interface with a search bar at the top right. The log content is as follows:

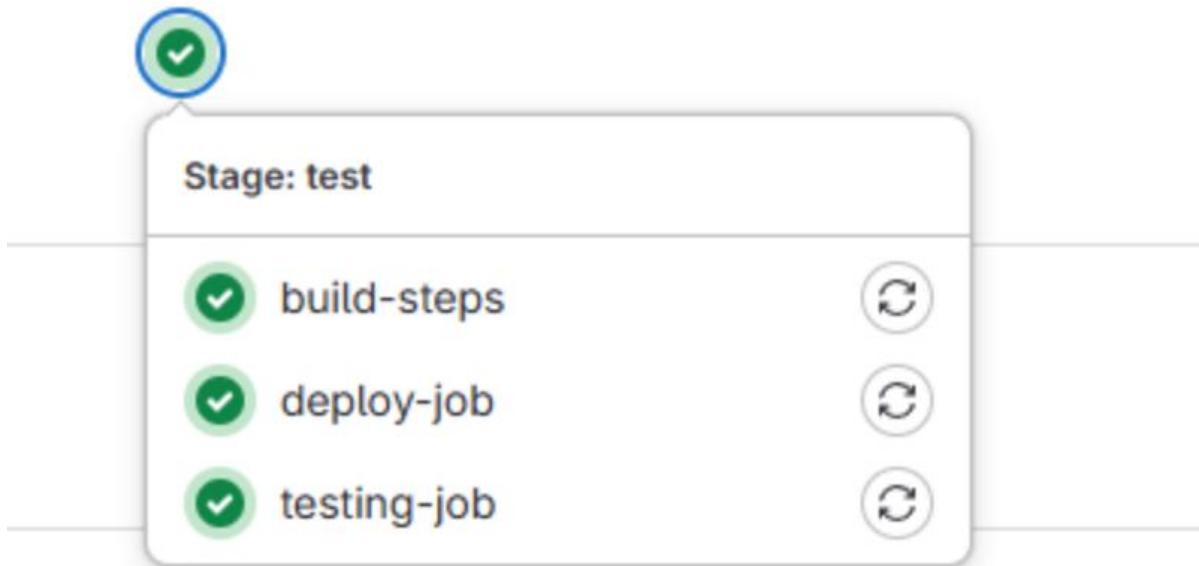
```
1 Running with gitlab-runner 17.10.0~pre.41.g5c23fd8e (5c23fd8e)
2 on blue-1.saas-linux-small.runners-manager.gitlab.com/default j1aldqxs, system ID: s_ccdc2f364be8
3 Preparing the "docker+machine" executor
4 Using Docker executor with image ruby:3.1 ...
5 Pulling docker image ruby:3.1 ...
6 Using docker image sha256:9881df1d883b246c27c62f8ccb9b57d3e07d14cee8092299e102b4a69c35ea61 for ruby:3.1 with digest ruby@sha256:91627ff55e8969006afb930500ff73948803da1350b8a853feceebb5 ...
7 Preparing environment
8 Running on runner-j1aldqxs-project-69244626-concurrent-0 via runner-j1aldqxs-s-1-s-amd64-1745472246-9df792ea...
9 Getting source from Git repository
10 Fetching changes with git depth set to 20...
11 Initialized empty Git repository in /builds/mca5765217/demo/.git/
12 Created fresh repository.
13 Checking out 9a53338b as detached HEAD (ref is main)...
14 Skipping Git submodules setup
15 $ git remote set-url origin "${CI_REPOSITORY_URL}" || echo 'Not a git repository; skipping'
16 Executing "step_script" stage of the job script
17 Using docker image sha256:9881df1d883b246c27c62f8ccb9b57d3e07d14cee8092299e102b4a69c35ea61 for ruby:3.1 with digest ruby@sha256:91627ff55e8969006afb930500ff73948803da1350b8a853feceebb5 ...
18 $ echo "first step"
19 first step
20 $ echo "second step"
21 second step
22 Cleaning up project directory and file based variables
23 Job succeeded
```

The screenshot displays a DevOps tool interface with the following components:

- Header:** Includes a logo, navigation buttons (Next, Back, +), and a search bar.
- Project Overview:** Shows the project "bash-demo" (Pinned), Issues (0), Merge requests (0), and Pipelines.
- Code Editor:** Displays the file "basic.sh" with the following content:

```
#!/bin/bash
echo "This is from bash script"
touch myfile.txt
echo "sample text" > myfile.txt
echo "this is end of script"
```
- Build Pipeline:** A sidebar with options: Build, Secure, Deploy, Operate, Monitor. The "Build" option is currently selected, opening a dropdown menu.
- Selected Options:** The "Build" dropdown menu is open, showing the following items:
 - Pipelines
 - Jobs
 - Pipeline editor
 - Pipeline schedules
 - Artifacts

Stages

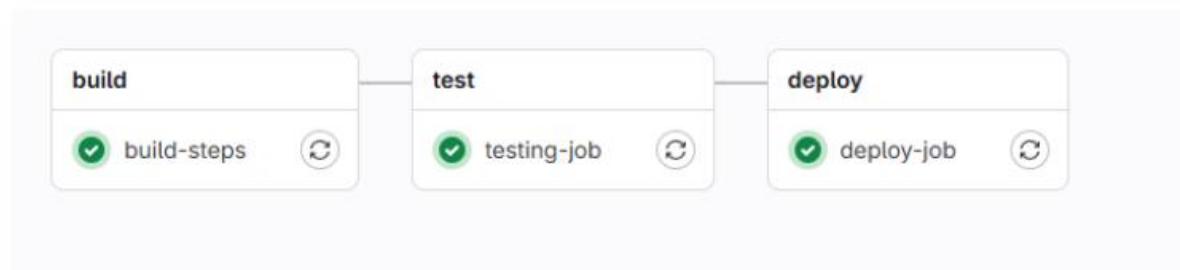


A screenshot of the ".gitlab-ci.yml" file in the GitLab CI Pipeline Editor. The file contains the following YAML code:

```
1 build-steps:
2   script:
3     - echo "first step"
4     - echo "second step"
5
6 testing-job:
7   script:
8     - echo "First Step of Testing"
9     - echo "Second step of testing"
10
11 deploy-job:
12   script:
13     - echo "This is deploy Step..."
```

The editor interface includes buttons for "Edit", "Replace", "Delete", and file navigation. A sidebar on the right provides options for editing the pipeline, opening the Web IDE, and managing workspaces.

Pipeline Jobs 3 Tests 0





```
1 stages:
2   - build
3   - test
4   - deploy
5 build-steps:
6   stage: build
7   script:
8     - echo "first step"
9     - echo "second step"
10 testing-job:
11   stage: test
12   script:
13     - echo "First Step of Testing"
14     - echo "Second step of testing"
15
16 deploy-job:
17   stage: deploy
18   script:
19     - echo "This is deploy Step..."
```

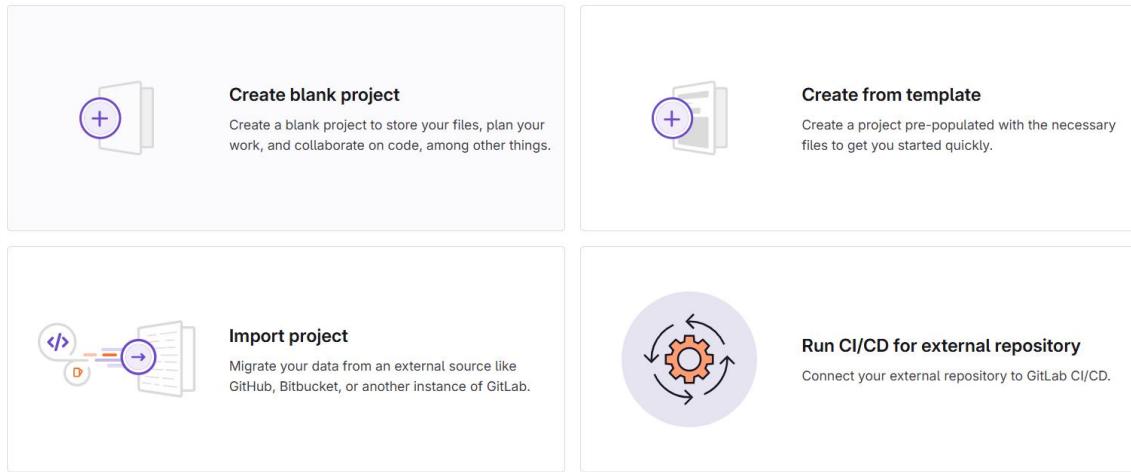
Practical 6 : Demonstrate CI/CD Workflow in GitLab

using .py, .bash, .java file

#to run bash script

Your work / Projects / New project

Create new project



Your work / Projects / New project / Create blank project

Create blank project

Create a blank project to store your files, plan your work, and collaborate on code, among other things.

Project name

prac116

Must start with a lowercase or uppercase letter, digit, emoji, or underscore. Can also contain dots, pluses, dashes, or spaces.

Project URL

https://gitlab.com/ firstprac

Project slug

/ prac116

Project deployment target (optional)

Select the deployment target

Visibility Level

 Private

Project access must be granted explicitly to each user. If this project is part of a group, access is granted to members of the group.

 Internal

The project can be accessed by any logged in user except external users.

 Public

The project can be accessed without any authentication.

Project Configuration

 Initialize repository with a README

Allows you to immediately clone this project's repository. Skip this if you plan to push up an existing repository.

 Enable Static Application Security Testing (SAST)

Analyze your source code for known security vulnerabilities. Learn more.

Bash script :

stages:

- build

bash_execute:

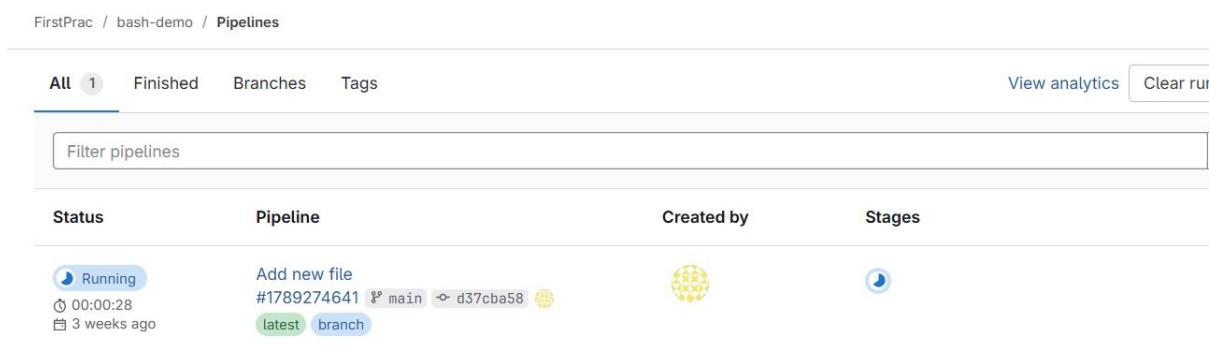
stage: build

script:

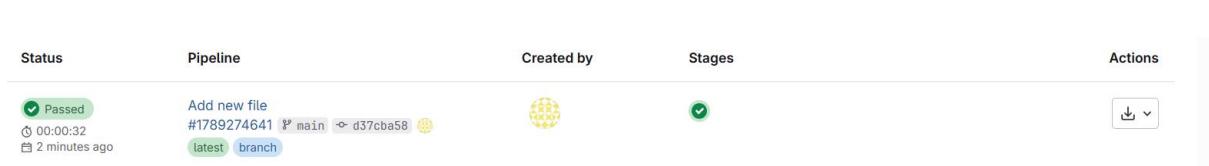
- bash ./basic.sh #Runs a bash script called basic.sh(which should be in the same directory as yml file)



```
#to run bash script
stages:
- build
bash_execute:
  stage: build
  script:
    - bash ./basic.sh #Runs a bash script called basic.sh(which should be in the same directory as yml file)
```



Status	Pipeline	Created by	Stages
Running ⌚ 00:00:28 ⌚ 3 weeks ago	Add new file #1789274641 ⌚ main ↗ d37cba58 🌐 latest branch		Running



Status	Pipeline	Created by	Actions
Passed ⌚ 00:00:32 ⌚ 2 minutes ago	Add new file #1789274641 ⌚ main ↗ d37cba58 🌐 latest branch		Download

```

1 Running with gitlab-runner 17.10.0~pre.41.g5c23fd8e (5c23fd8e)
2   on blue-1.saas-linux-small.runners-manager.gitlab.com/default j1aldqxs, system ID: s_ccdc2f364be8
3 Preparing the "docker+machine" executor
4 Using Docker executor with image ruby:3.1 ...
5 Pulling docker image ruby:3.1 ...
6 Using docker image sha256:9981df1d883b246c27c62f8ccb9b57d3e07d14cee8092299e102b4a69c35ea61 for ruby:3.1 with digest ruby@sha256:91627f55e8969006aab67d15c92fb930500ff73948803da1330b8a853fecebb5 ...
7 Preparing environment
8 Running on runner-j1aldqxs-project-69347299-concurrent-0 via runner-j1aldqxs-s-l-s-amd64-1747791324-b2bb80
ee...
9 Getting source from Git repository
10 Fetching changes with git depth set to 20...
11 Initialized empty Git repository in /builds/firstprac/bash-demo/.git/
12 Created fresh repository.
13 Checking out d37cba58 as detached HEAD (ref is main)...
14 Skipping Git submodules setup
15 $ git remote set-url origin "${CI_REPOSITORY_URL}" || echo 'Not a git repository; skipping'
16 Executing "step_script" stage of the job script
17 Using docker image sha256:9981df1d883b246c27c62f8ccb9b57d3e07d14cee8092299e102b4a69c35ea61 for ruby:3.1 with digest ruby@sha256:91627f55e8969006aab67d15c92fb930500ff73948803da1330b8a853fecebb5 ...
18 $ bash ./basic.sh
19 This is from bash script
20 this is end of script
21 Cleaning up project directory and file based variables
22 Job succeeded

```

2 Python Demo :

stages:

- test

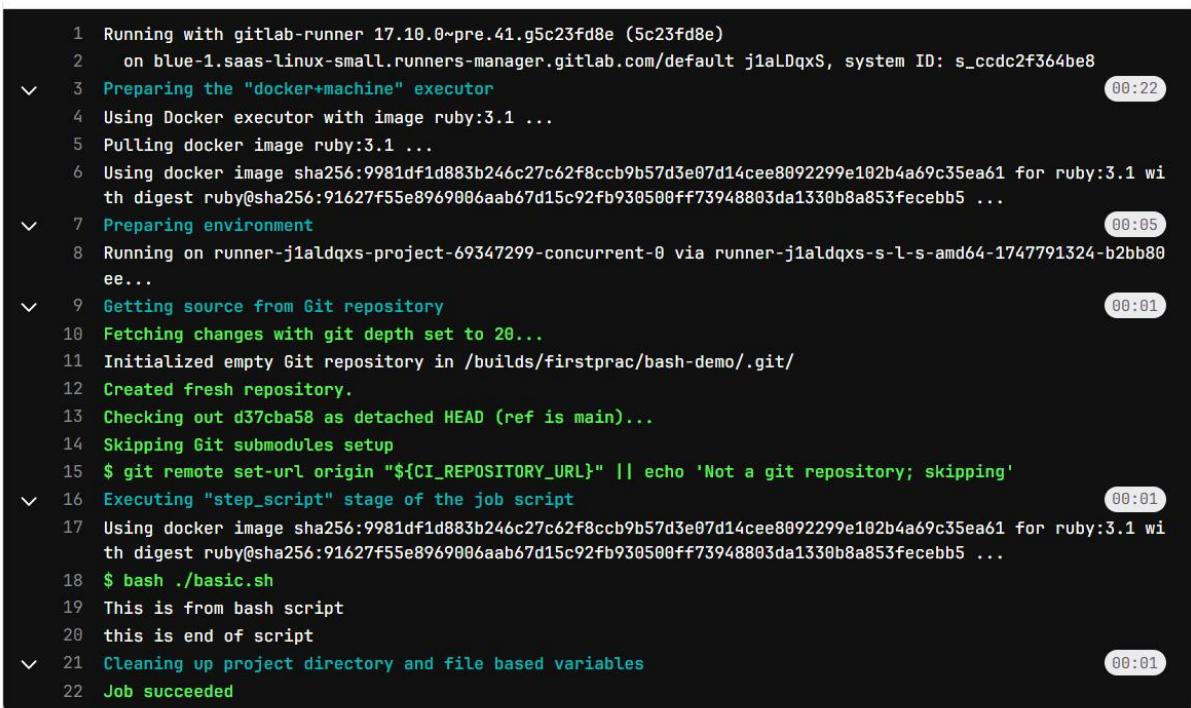
python_script:

- stage: test

image: python:3.10 #or any other version gitlab will pull a docker image that already has python 3.10 installed

script:

- python script.py



```

.gitlab-ci.yml 210 B
1 stages:
2   - test
3 python_script:
4   stage: test
5   image: python:3.10 #or any other version gitlab will pull a docker image that already has python 3.10 installed
6   script:
7     - python script.py

```



```

script.py 40 B
1 print("Hello from Python in Gitlab CI!")

```

Passed Jatin created pipeline for commit d34ac45a

For main

latest branch ⚡ 1 job ⏱ 0.5 ⏲ 29 seconds, queued for

Pipeline Jobs 1 Tests 0

test

python_script

Search visible log output

```
1 Running with gitlab-runner 17.10.0~pre.41.g5c23fd8e (5c23fd8e)
2 on blue-1.saas-linux-small.runners-manager.gitlab.com/default j1aLDqxs, system ID: s_ccdc2f364be8
3 Preparing the "docker+machine" executor 00:21
4 Using Docker executor with image python:3.10 ...
5 Pulling docker image python:3.10 ...
6 Using docker image sha256:5a340f1230968c8d05eeee3359540a4e7249f21c8bd689bb8c1cec63143840ad for python:3.10
with digest python@sha256:e2c7fb05741c735679b26eda7dd34575151079f8c615875fbefef401972b14d85 ...
7 Preparing environment 00:05
8 Running on runner-j1aldqxs-project-69347751-concurrent-0 via runner-j1aldqxs-s-l-s-amd64-1745815377-520390
e8...
9 Getting source from Git repository 00:01
10 Fetching changes with git depth set to 20...
11 Initialized empty Git repository in /builds/firstprac/python-demo/.git/
12 Created fresh repository.
13 Checking out d34ac45a as detached HEAD (ref is main)...
14 Skipping Git submodules setup
15 $ git remote set-url origin "${CI_REPOSITORY_URL}" || echo 'Not a git repository; skipping'
16 Executing "step_script" stage of the job script 00:00
17 Using docker image sha256:5a340f1230968c8d05eeee3359540a4e7249f21c8bd689bb8c1cec63143840ad for python:3.10
with digest python@sha256:e2c7fb05741c735679b26eda7dd34575151079f8c615875fbefef401972b14d85 ...
18 $ python script.py
19 Hello from Python in Gitlab CI!
20 Cleaning up project directory and file based variables 00:01
21 Job succeeded
```

3 java file :

The screenshot shows a GitLab repository interface. The repository is named "helloworld". It contains three files:

- .gitlab-ci.yml**: Last commit was "Add new file" 3 weeks ago.
- HelloWorld.java**: Last commit was "Add new file" 3 weeks ago.
- README.md**: Initial commit.

stages:

- build
- test

before_script:

- apt-get update && apt-get install -y openjdk-17-jdk

build:

- stage: build
- script:
 - javac HelloWorld.java
 - ls -ls

artifacts:

- paths:
 - HelloWorld.class

only:

- main

test:

stage: test

when: manual

script:

- ls -l
- java HelloWorld

only:

- main

 .gitlab-ci.yml 420 B

```
1 stages:
2   - build
3   - test
4
5 before_script:
6   - apt-get update && apt-get install -y openjdk-17-jdk
7
8 build:
9   stage: build
10  script:
11    - javac HelloWorld.java
12    - ls -ls
13  artifacts:
14    paths:
15      - HelloWorld.class
16  only:
17    - main
18
19 test:
20   stage: test
21   when: manual
22   script:
23     - ls -l
24     - java HelloWorld
25   only:
26     - main
```

 HelloWorld.java 176 B

```
1 class HelloWorld{
2     public static void main(String a[]){
3         System.out.println("Hello World");
4         System.out.println("Another Jatin line Hello World");
5     }
6 }
```

Status	Pipeline	Created by	Stages	Actions
Passed 00:01:49 3 weeks ago	Add new file #1789301198 main b4e38e33 latest branch		 	
<pre>806 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jhsdb to provide /usr/bin/jhsdb (jhsdb) in auto mode 807 Setting up openjdk-17-jre:amd64 (17.0.14+7-1~deb12u1) ... 808 Setting up openjdk-17-jdk:amd64 (17.0.14+7-1~deb12u1) ... 809 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jconsole to provide /usr/bin/jconsole (jconsole) in auto mode 810 \$ javac HelloWorld.java 811 \$ ls -ls 812 total 16 813 4 -rw-r--r-- 1 root root 473 Apr 28 05:16 HelloWorld.class 814 4 -rw-rw-rw- 1 root root 176 Apr 28 05:16 HelloWorld.java 815 8 -rw-rw-rw- 1 root root 6126 Apr 28 05:16 README.md ✓ 816 Uploading artifacts for successful job 00:01 817 Uploading artifacts... 818 HelloWorld.class: found 1 matching artifact files and directories 819 Uploading artifacts as "archive" to coordinator... 201 Created id=9845295442 responseStatus=201 Created token=eyJraWQiO ✓ 820 Cleaning up project directory and file based variables 00:01 821 Job succeeded</pre>				

```
t (jrunscript) in auto mode
804 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/
l) in auto mode
805 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/
k) in auto mode
806 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/
in auto mode
807 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/
d) in auto mode
808 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/
(serialver) in auto mode
809 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/
in auto mode
810 Setting up openjdk-17-jre:amd64 (17.0.14+7-1~deb12u1) ...
811 Setting up openjdk-17-jdk:amd64 (17.0.14+7-1~deb12u1) ...
812 update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/
console) in auto mode
813 $ ls -l
814 total 16
815 -rw-r--r-- 1 root root 473 Apr 28 05:16 HelloWorld.class
816 -rw-rw-rw- 1 root root 176 Apr 28 05:18 HelloWorld.java
817 -rw-rw-rw- 1 root root 6126 Apr 28 05:18 README.md
818 $ java HelloWorld
819 Hello World
820 Another Jatin line Hello World
▼ 821 Cleaning up project directory and file based variables
822 Job succeeded
```

4 HTML Demo :

The screenshot shows a GitLab repository interface for a project named 'HTML-demo'. The repository has one branch, 'main', which contains two files: 'public' and '.gitlab-ci.yml'. The '.gitlab-ci.yml' file was updated 3 weeks ago by Jatin, adding a new file named 'public'. The 'README.md' file is also present. The interface includes standard GitLab navigation and commit history controls.

Name	Last commit	Last update
public	Add new file	3 weeks ago
.gitlab-ci.yml	Update .gitlab-ci.yml file	3 weeks ago
README.md	Initial commit	3 weeks ago

Yml file

```
pages:  
  stage: deploy  
  script:  
    - cp public/index.html public/index1.html  
    - echo "Deploying to GitLab Pages"  
artifacts:  
  paths:  
    - public # Ensure the 'public' directory is included as part of the artifacts  
only:  
  - main # Deploy only from the 'main' branch
```

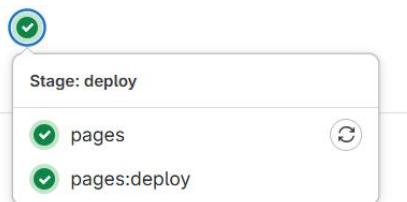
 .gitlab-ci.yml 296 B

```
1 pages:
2   stage: deploy
3   script:
4     - cp public/index.html public/index1.html
5     - echo "Deploying to GitLab Pages"
6   artifacts:
7     paths:
8       - public # Ensure the 'public' directory is included as part of the artifacts
9   only:
10    - main # Deploy only from the 'main' branch
11
12
```

Name	Last commit
..	
 .gitkeep	Add new directory
 index.html	Add new file

 index.html 137 B

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>Hello page is deployed</title>
5 </head>
6 <body>
7   <p>hi this is cool</p>
8 </body>
9 </html>
```



```
Passed 00:00:32 Update .gitlab-ci.yml file #1789358870 main ~ 7769f932
Initialized empty Git repository in /builds/firstprac/html-demo/.git/
Created fresh repository.
Checking out 7769f932 as detached HEAD (ref is main)...
Skipping Git submodules setup
$ git remote set-url origin "${CI_REPOSITORY_URL}" || echo 'Not a git repository; skipping'
Executing "step_script" stage of the job script 00:00
Using docker image sha256:9981df1d883b246c27c62f8ccb9b57d3e07d14cee8092299e102b4a69c35ea61 for ruby:3.1 with digest ruby@sha256:91627f55e8969006aab67d15c92fb930500ff73948803da1330b8a853fecebb5 ...
$ cp public/index.html public/index1.html
$ echo "Deploying to GitLab Pages"
Deploying to GitLab Pages
Uploading artifacts for successful job 00:04
Uploading artifacts...
public: found 4 matching artifact files and directories
Uploading artifacts as "archive" to coordinator... 201 Created id=9845592855 responseStatus=201 Created token=eyJraWQiO
Cleaning up project directory and file based variables 00:01
Job succeeded
```

index.html 163 B

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>Hello page is deployed</title>
5 </head>
6 <body>
7   <p>C24116 Jatin Talavdekar this is html demo</p>
8 </body>
9 </html>
```

Passed Jatin created pipeline for commit 2fcd55ab 3 m

For main

latest branch 2 jobs 0.52 31 seconds, queued for 0 s

Pipeline Jobs 2 Tests 0

deploy

✓ pages



✓ pages:deploy

Pipelines

Manage

Plan

Code

Build

Secure

Deploy

Operate

2 <html>
3 <head>

Releases

Feature flags

Package registry

Container registry

Model registry

Pages



:title>Hell

>

)>C24116 ..

/>

->

FirstPrac / HTML-demo / Pages

Pages

With GitLab Pages you can host your static website directly from your GitLab repository. How do I publish my site with Pages?

Deployments

✓ Active	https://html-demo-cb95a7.gitlab.io
↻ Deploy job: 10098758351	
📁 /public · 4 Files · 1019 B	
	Created 4 minutes ago · Last updated 4 minutes ago

Settings

Force HTTPS (requires valid certificates)

When enabled, all attempts to visit your website through HTTP are automatically redirected to HTTPS using a response domains. [Learn more](#).

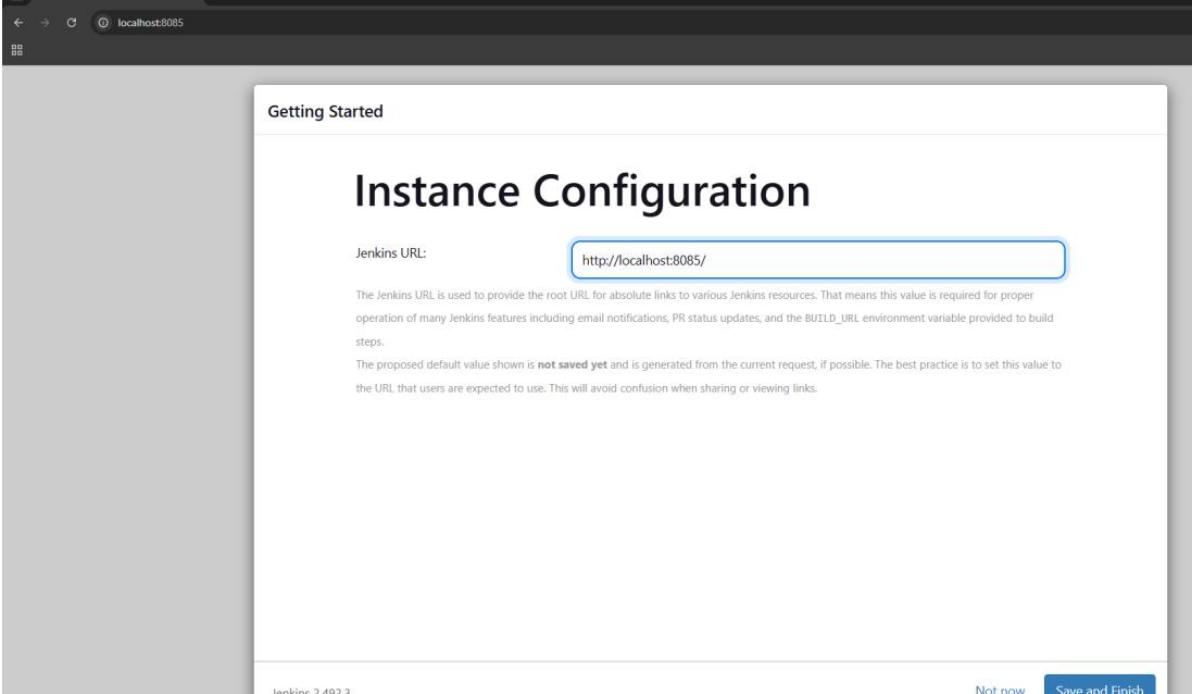
Use unique domain

When enabled, a unique domain is generated to access pages.

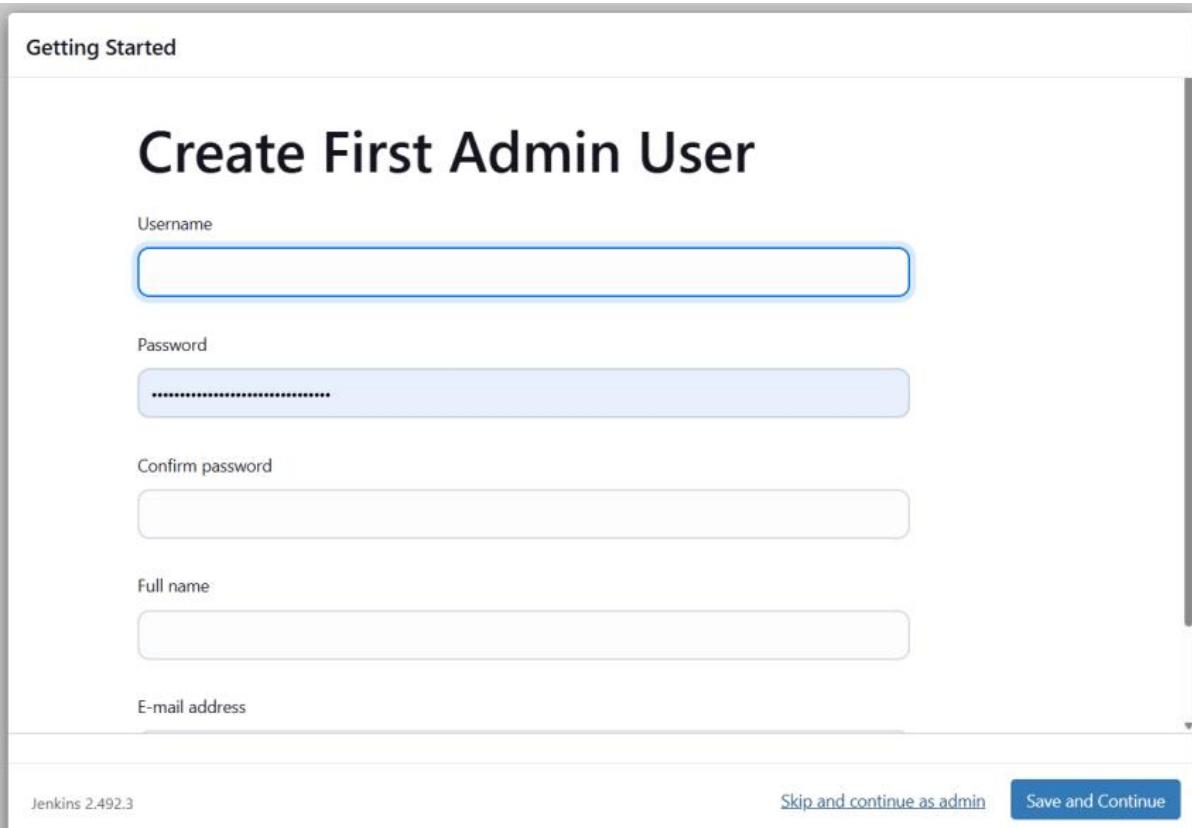
Save changes

C24116 Jatin Talavdekar this is html demo

Practical 7 : Demonstrate setting Jenkins CI/CD pipeline.



The screenshot shows the Jenkins 'Instance Configuration' page. At the top, it says 'Getting Started' and 'Instance Configuration'. The 'Jenkins URL' field contains 'http://localhost:8085/'. Below it, a note explains that the Jenkins URL is used for absolute links to various Jenkins resources. It also mentions that the proposed default value is 'not saved yet' and suggests setting it to the URL users expect. At the bottom, it shows 'Jenkins 2.492.3' and two buttons: 'Not now' and a blue 'Save and Finish' button.



The screenshot shows the Jenkins 'Create First Admin User' page. It has fields for 'Username' (empty), 'Password' (filled with dots), 'Confirm password' (empty), 'Full name' (empty), and 'E-mail address' (empty). At the bottom, it shows 'Jenkins 2.492.3' and two buttons: 'Skip and continue as admin' and a blue 'Save and Continue' button.

Getting Started

Create First Admin User

Username

Password

Confirm password

Full name

E-mail address

Jenkins 2.492.3

[Skip and continue as admin](#)[Save and Continue](#)**Getting Started**

Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

Install suggested plugins

Install plugins the Jenkins community finds most useful.

Select plugins to install

Select and install plugins most suitable for your needs.

Jenkins 2.492.3

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

C:\ProgramData\Jenkins\.jenkins\secrets\initialAdminPassword

Please copy the password from either location and paste it below.

Administrator password

Continue

Jenkins 2.492.3 Setup

Port Selection

Choose a port for the service.

Jenkins 

Please choose a port.

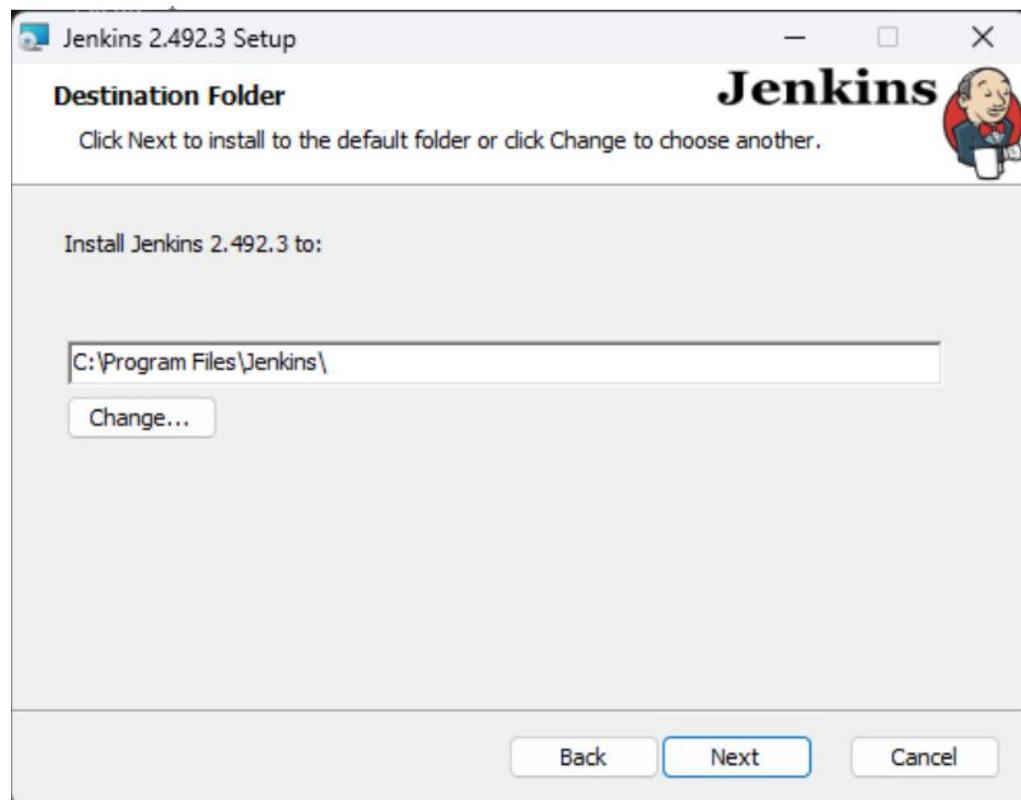
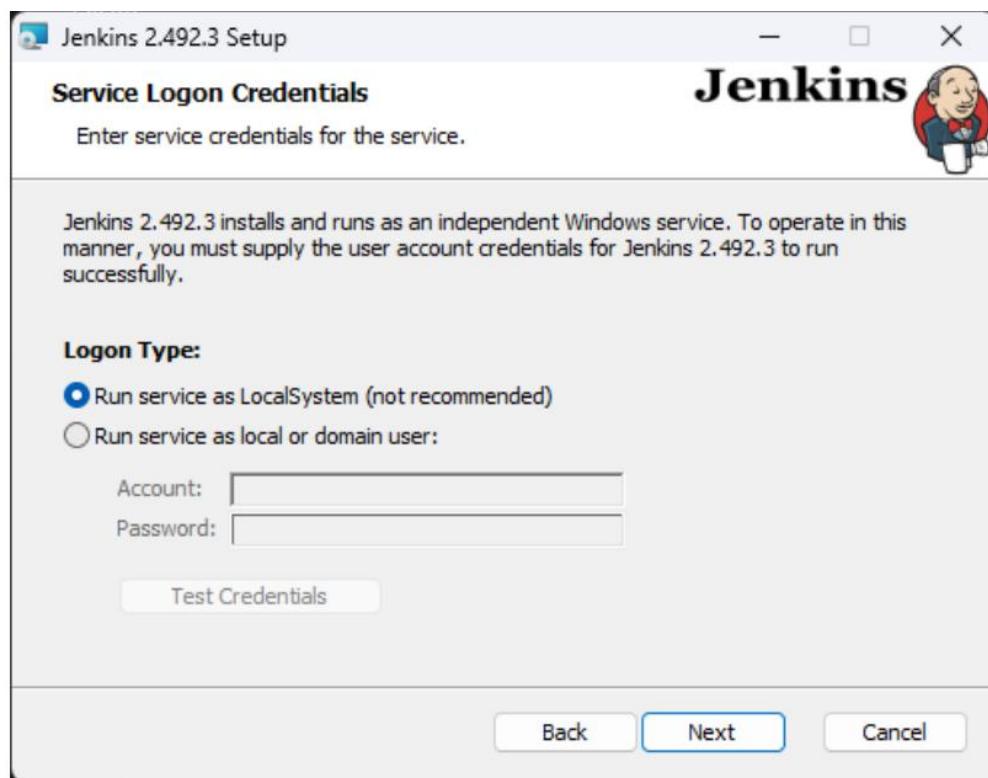
Port Number (1-65535):

8085

Test Port  Click 'Test Port' button to proceed

It is recommended that you accept the selected default port.

Back **Next** **Cancel**





Getting Started

Jenkins is ready!

You have skipped the **setup of an admin user**.

To log in, use the username: "admin" and the administrator password you used to access the setup wizard.

Your Jenkins setup is complete.

[Start using Jenkins](#)

Jenkins 2.492.3

Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

[Start building your software project](#)

[Create a job](#) +

[Set up a distributed build](#)

[Set up an agent](#)

[Configure a cloud](#)

[Learn more about distributed builds](#) ?

[New Item](#)

[Build History](#)

[Manage Jenkins](#)

[My Views](#)

[Build Queue](#) No builds in the queue.

[Build Executor Status](#) 0/2

[Add description](#)

localhost:8085/view/all/newjob REST API Jenkins 2.492.3

New Item

Enter an item name

Select an item type

Freestyle project
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

Pipeline
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

Multi-configuration project
Suitable for projects that need a large number of different configurations, such as testing on multiple environments.

localhost:8085/view/all/newjob

Dashboard > Demopipeline > Stages

Build Demopipeline



Practical 8 : Demonstrate Setting up of a CI/CD pipeline to build and deploy a web application to a local HTTP server.

Index.html

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
<form action="Cookies.jsp" method="get">
Name:<input type="text" name="user">
<input type="submit" value="Submit">

</form>
</body>
</html>
```

Cookies.jsp

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
<%
String username=request.getParameter("user");
Cookie[] cookies=request.getCookies();
int visitCount=0;
boolean userExist=false;
if(cookies!=null){

    for(Cookie cookie:cookies){
        if(cookie.getName().equals("visitCount")){
            visitCount=Integer.parseInt(cookie.getValue());
        }
    }
}
```

```

if(cookie.getName().equals("username")){
    userExist=true;
}

}
visitCount++;
Cookie visitcookie=new Cookie("visitCount",String.valueOf(visitCount));
visitcookie.setMaxAge(60*60*24);
response.addCookie(visitcookie);
if(!userExist&&username!=null){

    Cookie usercookie=new Cookie("username",username);
    usercookie.setMaxAge(60*60*24);
    response.addCookie(usercookie);
}
%>

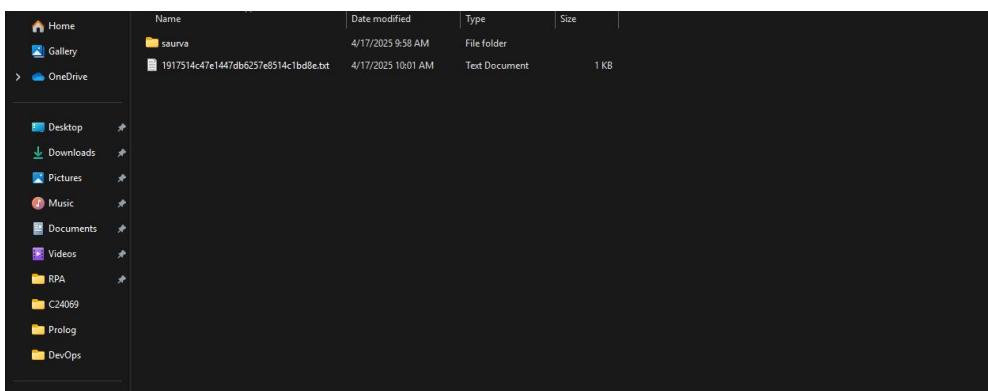
<p>Hello <%=username!=null? username:"Guest" %> You have hit the Page <%=visitCount %> times</p>
<a href="Cookies.jsp?user=<%= username %>">Hit Again</a>
</body>
</html>

```

```

1 <%@ page language="java" contentType="text/html; charset=UTF-8" %>
2 <!DOCTYPE html>
3 <html>
4     <head>
5         <meta charset="UTF-8">
6         <title>Insert title here</title>
7     </head>
8     <body>
9         <%
10            String username=request.getParameter("user");
11            Cookie[] cookies=request.getCookies();
12            int visitCount=0;
13            boolean userExist=false;
14            if(cookies==null){
15                userExist=false;
16            }
17            for(Cookie cookie:cookies){
18                if(cookie.getName().equals("visitCount")){
19                    visitCount=Integer.parseInt(cookie.getValue());
20                }
21            }
22            if(cookie.getName().equals("username")){
23                userExist=true;
24            }
25        %
26    }
27 }
28 visitCount++;
29 Cookie visitcookie=new Cookie("visitCount",String.valueOf(visitCount));
30 visitcookie.setMaxAge(60*60*24);
31 response.addCookie(visitcookie);
32 if(!userExist&&username!=null){
33     Cookie usercookie=new Cookie("username",username);
34     usercookie.setMaxAge(60*60*24);
35     response.addCookie(usercookie);
36 }
37 <br>
38 <br>
39 <%
40 <p>Hello <%=username!=null? username:"Guest" %> You have hit the Page <%=visitCount %> times</p>
41 <a href="Cookies.jsp?user=<%= username %>">Hit Again</a>
42 </a>
43 </p>
44 </html>

```



Create a pipeline:

localhost:8085/view/all/newJob

Jenkins

Dashboard > All > New Item

New Item

Enter an item name

Select an item type

-  **Freestyle project**
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.
-  **Pipeline**
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.
-  **Multi-configuration project**
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.
-  **Folder**
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.
-  **Multibranch Pipeline**
Creates a set of Pipeline projects according to detected branches in one SCM repository.
-  **Organization Folder**
Creates a set of multibranch project subfolders by scanning for repositories.

OK

```

def destPath="C:\\Program Files\\Apache Software Foundation\\Tomcat 10.1\\webapps\\NewFile"
if(fileExists(srcPath)){
    bat"xcopy /E /I \"${srcPath}\" \"${destPath}\""
}
else{
    error "Source directory ${srcPath} does not exists"
}

}

```

The screenshot shows the Jenkins Pipeline configuration page for a job named 'newjen1'. The 'Triggers' tab is selected. In the 'Pipeline' section, the 'Pipeline script' field contains the provided Groovy code. A 'Use Groovy Sandbox' checkbox is checked. At the bottom, there are 'Save' and 'Apply' buttons.

The screenshot shows the Jenkins dashboard. Under the 'All' tab, a table displays the status of a single pipeline job:

S	W	Name	Last Success	Last Failure	Last Duration
		Demopipeline	7 days 22 hr	N/A	1.6 sec

Practical 9: Demonstrate basic Docker commands

Microsoft Windows [Version 10.0.19045.5608]
(c) Microsoft Corporation. All rights reserved.

```
C:\Users\admin>cd..  
C:\Users>cd..  
C:\>cd admindocker
```

```
C:\admindocker>docker pull hello-world  
Using default tag: latest
```

```
C:\admindocker>docker login  
Authenticating with existing credentials...  
Stored credentials invalid or expired
```

USING WEB-BASED LOGIN
To sign in with credentials on the command line, use 'docker login -u <username>'
Your one-time device confirmation code is: XRHF-VQNV
Press ENTER to open your browser or submit your device code here: <https://login.docker.com/activate>
Waiting for authentication in the browser...

```
C:\admindocker>docker login -u admin106  
Password:  
Error: Password Required
```

```
C:\admindocker>docker login -u admin106  
Password:  
Login Succeeded
```

```
C:\admindocker>docker pull hello-world  
Using default tag: latest  
latest: Pulling from library/hello-world  
e6590344b1a5: Download complete  
Digest: sha256:c41088499908a59aae84b0a49c70e86f4731e588a737f1637e73c8c09d995654  
Status: Downloaded newer image for hello-world:latest  
docker.io/library/hello-world:latest
```

```
C:\admindocker>docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
```

```
C:\admindocker>docker ps -a  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
```

```
C:\admindocker>docker ps -a  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
```

```
C:\admindocker>docker run hello-world
```

Hello from Docker!
This message shows that your installation appears to be working correctly.
To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.

(amd64)

3. The Docker daemon created a new container from that image which runs the executable that produces the output you are currently reading.

4. The Docker daemon streamed that output to the Docker client, which sent it to your terminal.

To try something more ambitious, you can run an Ubuntu container with:

```
$ docker run -it ubuntu bash
```

Share images, automate workflows, and more with a free Docker ID:

```
https://hub.docker.com/
```

For more examples and ideas, visit:

```
https://docs.docker.com/get-started/
```

```
C:\admindocker>docker ps -a
```

CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES

```
14147919da9f hello-world "/hello" 5 seconds ago Exited (0) 4 seconds ago serene_easley
```

```
C:\admindocker>docker images
```

REPOSITORY TAG IMAGE ID CREATED SIZE

```
hello-world latest c41088499908 3 months ago 20.4kB
```

```
C:\admindocker>docker start serene_easley
```

```
serene_easley
```

```
C:\admindocker>docker start
```

```
14147919da9fd31e68379ed2c90ba60cc2f11368a18027ecbf94f21d1c7005c8
```

```
14147919da9fd31e68379ed2c90ba60cc2f11368a18027ecbf94f21d1c7005c8
```

```
C:\admindocker>docker container start
```

```
14147919da9fd31e68379ed2c90ba60cc2f11368a18027ecbf94f21d1c7005c8
```

```
14147919da9fd31e68379ed2c90ba60cc2f11368a18027ecbf94f21d1c7005c8
```

```
C:\admindocker>docker Container start serene_easley
```

```
docker: 'Container' is not a docker command.
```

```
See 'docker --help'
```

```
C:\admindocker>docker container start serene_easley
```

```
serene_easley
```

```
C:\admindocker>docker container start serene_easley
```

```
serene_easley
```

```
C:\admindocker>docker inspect ubuntu
```

```
[]
```

```
Error: No such object: ubuntu
```

```
C:\admindocker>docker inspect hello-world
```

```
[
```

```
{
```

```
"Id": "sha256:c41088499908a59aae84b0a49c70e86f4731e588a737f1637e73c8c09d995654",
```

```
"RepoTags": [
```

```
 "hello-world:latest"
```

```
],
```

```
"RepoDigests": [
```

```
 "hello
```

```
world@sha256:c41088499908a59aae84b0a49c70e86f4731e588a737f1637e73c8c09d995654"
```

```
],
```

```
"Parent": "",
```

```
"Comment": "buildkit.dockerfile.v0",
```

```
"Created": "2025-01-21T23:32:32Z",
```

```
"DockerVersion": "27.4.0",
```

```
"Author": "",
```

```
"Config": {
```

```
 "Hostname": "",
```

```
 "Domainname": "",
```

```

"User": "",
"AttachStdin": false,
"AttachStdout": false,
"AttachStderr": false,
"Tty": false,
"OpenStdin": false,
"StdinOnce": false,
"Env": [
  "PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin"
],
"Cmd": [
  "/hello"
],
"Image": "",
"Volumes": null,
"WorkingDir": "/",
"Entrypoint": null,
"OnBuild": null,
"Labels": null
},
"Architecture": "amd64",
"Os": "linux",
"Size": 16680,
"GraphDriver": {
  "Data": null,
  "Name": "overlayfs"
},
"RootFS": {
  "Type": "layers",
  "Layers": [
    "sha256:63a41026379f4391a306242eb0b9f26dc3550d863b7fdbb97d899f6eb89efe72"
  ]
},
"Metadata": {
  "LastTagTime": "2025-04-22T06:50:32.536703305Z"
}
}
]

```

C:\admin\docker>docker rmi

"docker rmi" requires at least 1 argument.

See 'docker rmi --help'.

Usage: docker rmi [OPTIONS] IMAGE [IMAGE...]

Remove one or more images

C:\admin\docker>docker rmi hello-world

Error response from daemon: conflict: unable to delete hello-world:latest (must be forced) - container
14147919da9f is using its referenced image c41088499908

C:\admin\docker>docker ps -a

COUNTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
---------------	-------	---------	---------	--------	-------	-------

```
14147919da9f hello-world "/hello" 18 minutes ago Exited (0) 12 minutes ago serene_easley
```

```
C:\admindocker>docker rm serene_easley
serene_easley
```

```
C:\admindocker>docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
C:\admindocker>docker rmi hello-world
Untagged: hello-world:latest
Deleted:
sha256:c41088499908a59aae84b0a49c70e86f4731e588a737f1637e73c8c09d995654
C:\admindocker>docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
e6590344b1a5: Download complete
Digest: sha256:c41088499908a59aae84b0a49c70e86f4731e588a737f1637e73c8c09d995654

Status: Downloaded newer image for hello-world:latest
```

Hello from Docker!

This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:

1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
(amd64)
3. The Docker daemon created a new container from that image which runs the executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it to your terminal.

To try something more ambitious, you can run an Ubuntu container with:

```
$ docker run -it ubuntu bash
```

Share images, automate workflows, and more with a free Docker ID:

<https://hub.docker.com/>

For more examples and ideas, visit:

<https://docs.docker.com/get-started/>

```
C:\admindocker>docker pull hello-world
Using default tag: latest
latest: Pulling from library/hello-world
Digest: sha256:c41088499908a59aae84b0a49c70e86f4731e588a737f1637e73c8c09d995654
Status: Image is up to date for hello-world:latest
docker.io/library/hello-world:latest
```

```
C:\admindocker>docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
```

```
C:\admindocker>docker run hello-world
```

Hello from Docker!

This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:

1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
(amd64)
3. The Docker daemon created a new container from that image which runs the executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it to your terminal.

To try something more ambitious, you can run an Ubuntu container with:

```
$ docker run -it ubuntu bash
```

Share images, automate workflows, and more with a free Docker ID:

<https://hub.docker.com/>

For more examples and ideas, visit:

<https://docs.docker.com/get-started/>

```
C:\admindocker>docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
f8144197f39f	hello-world	"/hello"	3 seconds ago	Exited (0)	2 seconds ago	heuristic_ellis
293b9357103e	hello-world	"/hello"	25 seconds ago	Exited (0)	23 seconds ago	affectionate_sinoussi

```
C:\admindocker>docker stop hello-world
```

Error response from daemon: No such container: hello-world

```
C:\admindocker>docker run --name myspace -it ubuntu
```

Unable to find image 'ubuntu:latest' locally

latest: Pulling from library/ubuntu

2726e237d1a3: Download complete

Digest: sha256:1e622c5f073b4f6bfad6632f2616c7f59ef256e96fe78bf6a595d1dc4376ac02

Status: Downloaded newer image for ubuntu:latest

root@d91ef8ef3a7d:/# ls

bin boot dev etc home lib lib64 media mnt opt proc root run sbin srv sys tmp usr var

root@d91ef8ef3a7d:/# ^C

root@d91ef8ef3a7d:/# ^C

root@d91ef8ef3a7d:/# exit

exit

```
C:\admindocker>docker pull nginx
```

Using default tag: latest

latest: Pulling from library/nginx

32ef64864ec3: Download complete

8a628cdd7ccc: Download complete

e6557c42ebea: Download complete

ec74683520b9: Download complete

6c95adab80c5: Download complete

b0c073cda91f: Download complete

ad8a0171f43e: Download complete

Digest: sha256:5ed8fcc66f4ed123c1b2560ed708dc148755b6e4cbd8b943fab094f2c6bfa91e

Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest

```
C:\admin\docker>docker run -d --name my-serv nginx  
63274ad788eb9f4295d2fd979b7371c848abac31c02484804a765349fc373620
```

```
C:\admin\docker>dcoker ps -a  
'dcoker' is not recognized as an internal or external command,  
operable program or batch file.
```

```
C:\admin\docker>docker ps -a  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
63274ad788eb nginx "/docker-entrypoint...." 30 seconds ago Up 29 seconds 80/tcp  
my-serv  
d91ef8ef3a7d ubuntu "/bin/bash" 7 minutes ago Exited (130) 5 minutes ago  
myspace  
f8144197f39f hello-world "/hello" 11 minutes ago Exited (0) 11 minutes ago  
heuristic_ellis  
293b9357103e hello-world "/hello" 11 minutes ago Exited (0) 11 minutes ago  
affectionate_sinoussi
```

```
C:\admin\docker>docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
63274ad788eb nginx "/docker-entrypoint...." 43 seconds ago Up 43 seconds 80/tcp my-serv
```

```
C:\admin\docker>docker run -d -p 8083:80 nginx  
56f63fd5dad6d6607f44ab387c0641392b39298cf2591d33e0606ffe65ceab7f
```

```
C:\admin\docker>docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
56f63fd5dad6 nginx "/docker-entrypoint...." 17 seconds ago Up 15 seconds 0.0.0.0:8083->80/tcp  
keen_shamir  
63274ad788eb nginx "/docker-entrypoint...." 3 minutes ago Up 2 minutes 80/tcp my  
serv
```

```
C:\admin\docker>
```

```
C:\admin\docker>docker run -d --name my_server1 -p 8085:80 nginx  
721aa9053f5ebf92a62c6684e1f0580cc0015c0c3e36af3039cc345564c4ef34
```

```
C:\admin\docker>docker container stop my_server1  
my_server1
```

Docker Desktop interface showing the Containers tab. The sidebar includes options for Containers, Images, Volumes, Builds, Docker Hub, Docker Scout, and Extensions. The main area displays container statistics and a list of 7 running containers.

Container CPU usage: 0.00% / 400% (4 CPUs available)

Container memory usage: 13.48MB / 3.7GB

Showing 7 items

	Name	Container ID	Image	Port(s)	CPU (%)	Last stat	Actions
<input type="checkbox"/>	my-serv	63274ad78eb	nginx		0%	6 minutes	[Stop] [More] [Delete]
<input type="checkbox"/>	keen_shamir	56f63fd5dad6	nginx	8083:80	0%	3 minutes	[Stop] [More] [Delete]
<input type="checkbox"/>	my_server	cfa5feb02fb1	nginx	8083:80	0%		[Start] [More] [Delete]
<input type="checkbox"/>	my_server1	721aa9053f5e	nginx	8085:80	0%	28 seconds	[Stop] [More] [Delete]

Docker Desktop interface showing the Containers tab. The sidebar includes options for Containers, Images, Volumes, Builds, Docker Hub, Docker Scout, and Extensions. The main area displays container statistics and a list of 5 running containers.

Container CPU usage: 0.00% / 400% (4 CPUs available)

Container memory usage: 8.99MB / 3.7GB

Showing 5 items

	Name	Container ID	Image	Port(s)	CPU (%)	Last stat	Actions
<input type="checkbox"/>	heuristic_ellis	f8144197f39f	hello-world		0%	15 minutes	[Start] [More] [Delete]
<input type="checkbox"/>	myspace	d91ef8ef3a7d	ubuntu		0%	11 minutes	[Start] [More] [Delete]
<input type="checkbox"/>	my-serv	63274ad78eb	nginx		0%	4 minutes	[Stop] [More] [Delete]
<input type="checkbox"/>	keen_shamir	56f63fd5dad6	nginx	8083:80	0%	2 minutes	[Stop] [More] [Delete]

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Images [Give feedback ↗](#)

View and manage your local and Docker Hub images. [Learn more ↗](#)

Local **Hub repositories**

294.53 MB / 0 Bytes in use 3 images Last refresh: 1 hour ago [↻](#)

<input type="checkbox"/>	Name	Tag	Image ID	Created	Size	Actions
<input type="checkbox"/>	hello-world	latest	c41088499908	3 months ago	20.4 KB	▶ ⋮ trash
<input type="checkbox"/>	ubuntu	latest	1e622c5f073b	14 days ago	117.28 MB	▶ ⋮ trash
<input type="checkbox"/>	nginx	latest	5ed8fcc66f4e	6 days ago	279.35 MB	▶ ⋮ trash

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Containers [Give feedback ↗](#)

View all your running containers and applications. [Learn more ↗](#)

Container CPU usage ⓘ Container memory usage ⓘ Show charts

0.00% / 400% (4 CPUs available) 8.99MB / 3.7GB

Search [Filter](#) Only show running containers

<input type="checkbox"/>	Name	Container ID	Image	Port(s)	CPU (%)	Last stat	Actions
<input type="checkbox"/>	my-serv	63274ad788eb	nginx		0%	7 minutes	▶ ⋮ trash
<input type="checkbox"/>	keen_shamir	56f63fd5dad6	nginx	8083:80 ⟳	0%	4 minutes	▶ ⋮ trash
<input type="checkbox"/>	my_server	cfa5feb02fb1	nginx	8083:80	0%		▶ ⋮ trash
<input type="checkbox"/>	my_server1	721aa9053f5e	nginx	8085:80	0%	2 minutes	▶ ⋮ trash

Practical 10: Develop a simple containerized application using Docker

Microsoft Windows [Version 10.0.26100.3775]
(c) Microsoft Corporation. All rights reserved.

```
C:\Users\admin>cd..
```

```
C:\Users>mkdir admin
Access is denied.
```

```
C:\Users>cd..
```

```
C:\>mkdir admin
A subdirectory or file admin already exists.
```

```
C:\>mkdir admin1
```

```
C:\>cd admin1
```

```
C:\admin1>docker login -u admin107
i Info → A Personal Access Token (PAT) can be used instead.
To create a PAT, visit https://app.docker.com/settings
Password:
Login Succeeded
```

```
C:\admin1>docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
2726e237d1a3: Pull complete
Digest: sha256:1e622c5f073b4f6bfad6632f2616c7f59ef256e96fe78bf6a595d1dc4376ac02
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
```

```
C:\admin1>docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
ubuntu latest 602eb6fb314b 2 weeks ago 78.1MB
```

```
C:\admin1>docker network ls
NETWORK ID NAME DRIVER SCOPE
fd10b312b719 bridge bridge local
2394d9964967 host host local
c82d5e7af1eb none null local
```

```
C:\admin1>docker run -itd --name mylinux ubuntu
5f2bb51b0f0e2326dc5bfe8cbbe36ae71ef4cd35f7bfa32de337131cf8777883
C:\admin1>docker exec -it mylinux /bin/bash
root@5f2bb51b0f0e:/# ls
bin boot dev etc home lib lib64 media mnt opt proc root run sbin srv sys tmp usr var
```

```
root@5f2bb51b0f0e:/# echo "some data" > data/file.txt
```

```
bash: data/file.txt: No such file or directory
```

```
root@5f2bb51b0f0e:/# mkdir data
root@5f2bb51b0f0e:/# echo "some data" > data/file.txt
root@5f2bb51b0f0e:/# ls
bin boot data dev etc home lib lib64 media mnt opt proc root run sbin srv sys tmp usr var
root@5f2bb51b0f0e:/# cd data
root@5f2bb51b0f0e:/data# ls
```

```
file.txt
root@5f2bb51b0f0e:/data# cat file.txt
some data
root@5f2bb51b0f0e:/data# cd..
bash: cd..: command not found
root@5f2bb51b0f0e:/data# cd.
bash: cd.: command not found
root@5f2bb51b0f0e:/data# cd ..
root@5f2bb51b0f0e:/# ^C
root@5f2bb51b0f0e:/#
```

```
C:\admin1>docker volume ls
DRIVER VOLUME NAME
```

```
C:\admin1>docker create volume data
Unable to find image 'volume:latest' locally
Error response from daemon: pull access denied for volume, repository does not exist or may
require
'docker login': denied: requested access to the resource is denied
```

```
C:\admin1>docker volume create volume1
volume1
```

```
C:\admin1>docker volume ls
DRIVER VOLUME NAME
local volume1
```

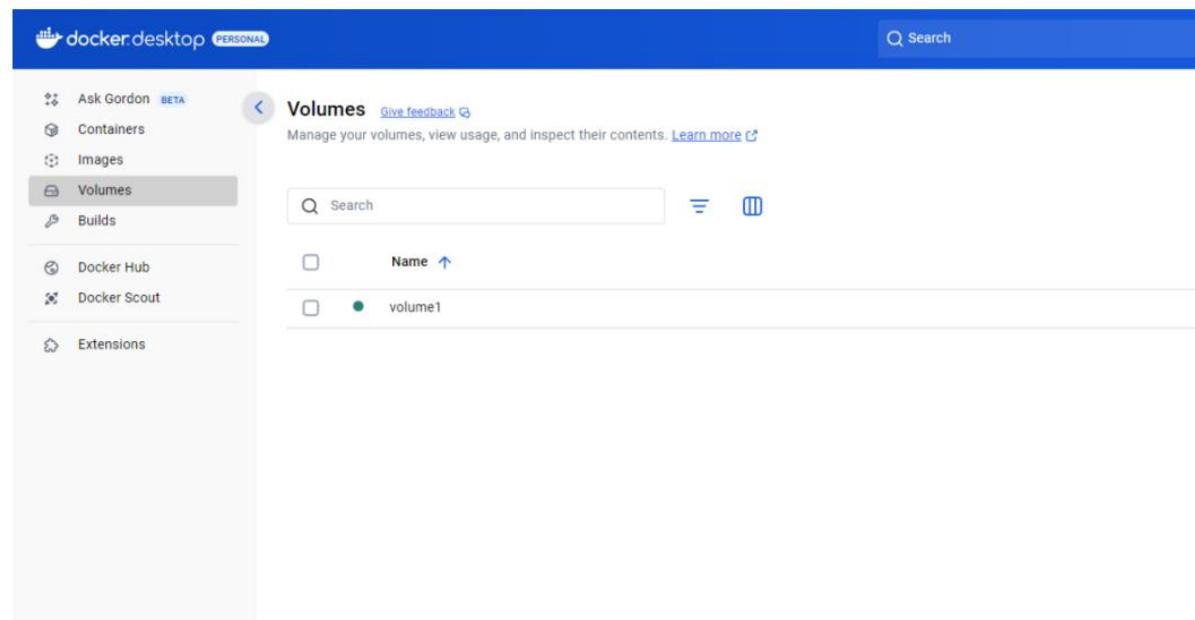
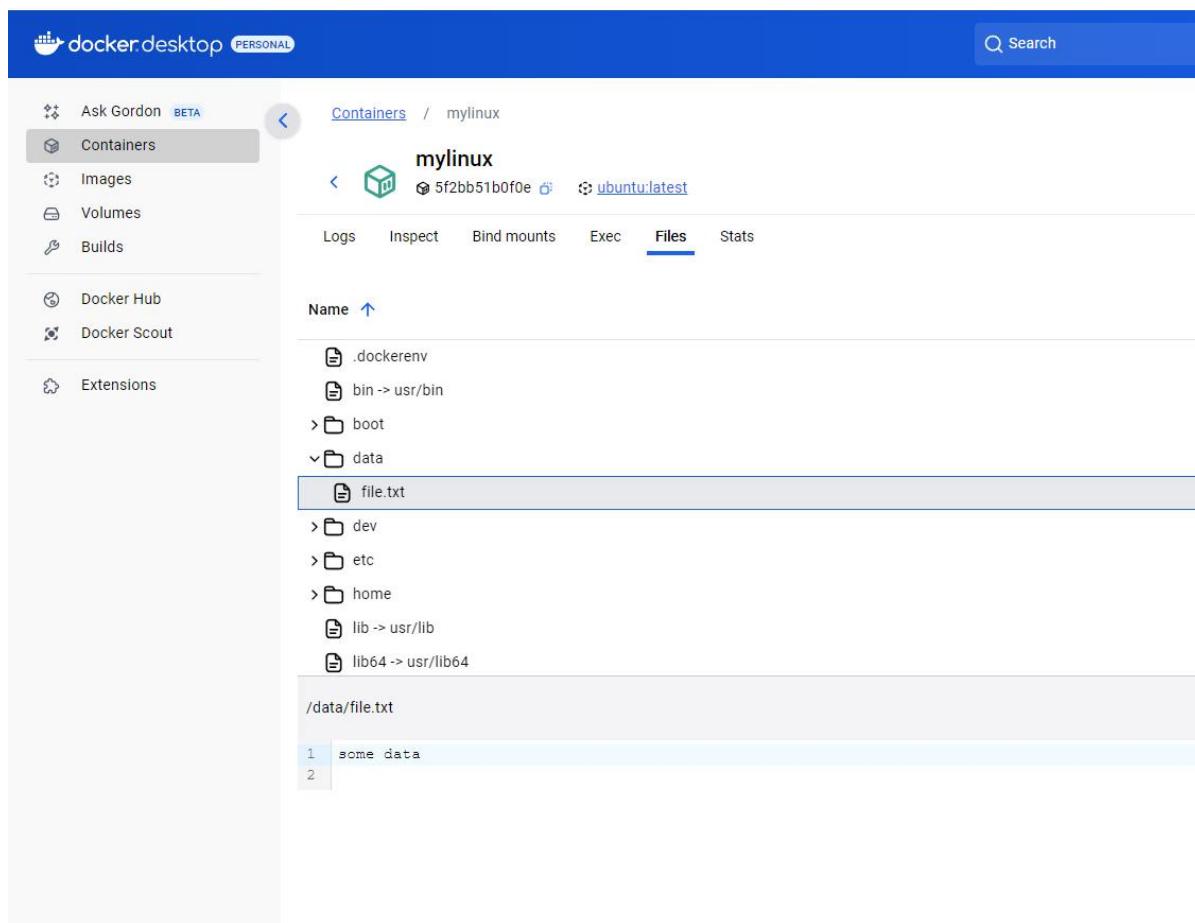
```
C:\admin1>docker run -it -v volume1:/data ubuntu
root@8214e1d0333d:/# ls
bin boot data dev etc home lib lib64 media mnt opt proc root run sbin srv sys tmp usr var
root@8214e1d0333d:/# echo "entering text again" >data/file.txt
root@8214e1d0333d:/# cd data
root@8214e1d0333d:/data# ls
file.txt
root@8214e1d0333d:/data# cat file.txt
entering text again
root@8214e1d0333d:/data#
```

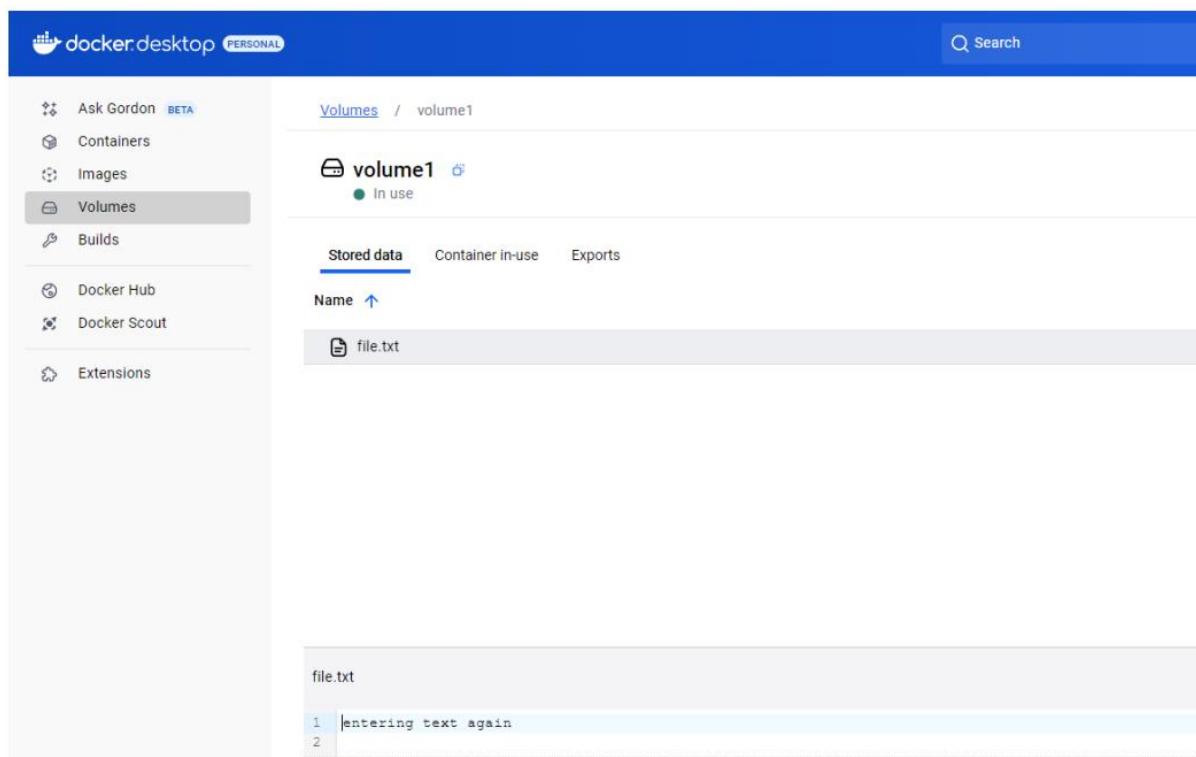
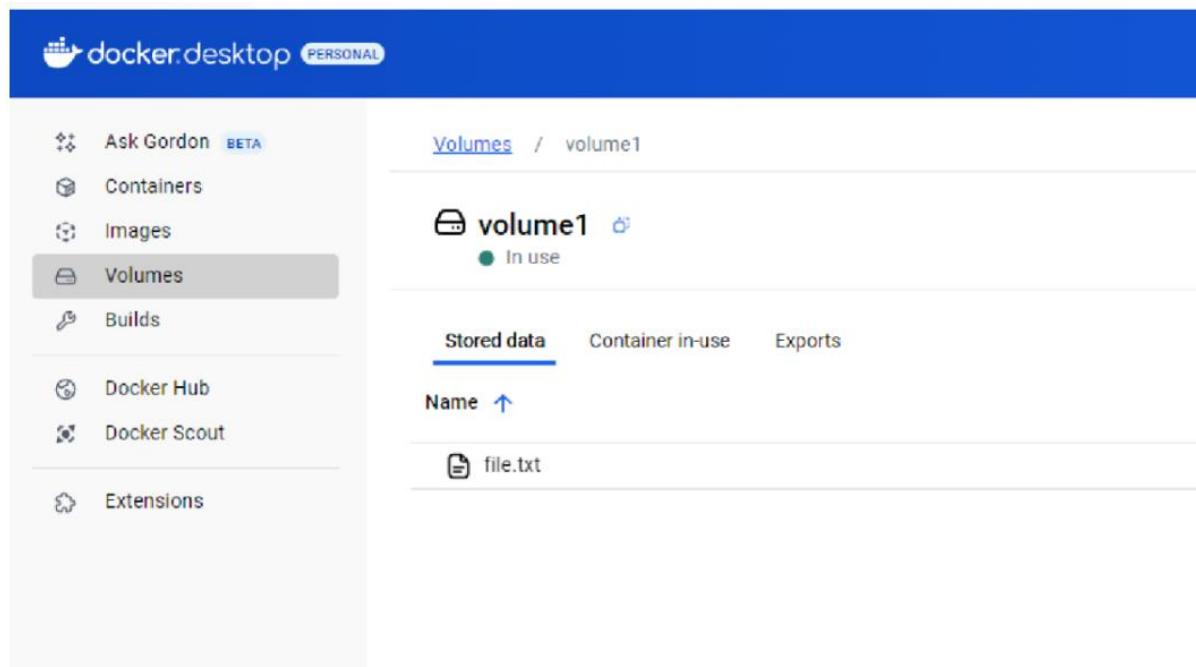
The screenshot shows the Docker Desktop interface. On the left, a sidebar has 'Containers' selected. In the main area, a container named 'mylinux' is selected, showing its logs. The logs tab is active. The log output shows two entries:

Name	ID	Type
mylinux	5f2bb51b0f0e	ubuntu
practical_driscoll	8214e1d0333d	ubuntu

The screenshot shows the Docker Desktop interface. On the left, 'Containers' is selected in the sidebar. In the main area, the 'mylinux' container is selected. The 'Files' tab is active. The file tree shows the contents of the container's root directory:

- .. (Parent Directory)
- .dockerenv
- bin -> usr/bin
- boot
- data
 - file.txt
- dev
- etc
- home
- lib -> usr/lib





Practical 11: Demonstrate add-on ansible commands

Create 2 nodes in play with docker.

Follow these steps:

3. 🔐 Step 1: Install Ansible on the Controller Node

```
apk update
apk add --no-cache ansible openssh
```

5. ⚡ Lab 1: Ad-Hoc Commands

5.1. ◆ 1.1 Test Connection Using Ping Module

```
ansible -i hosts web -m ping
```

5.2. ◆ 1.2 Check Uptime

```
ansible -i hosts web -m shell -a "uptime"
```

5.3. ◆ 1.3 Check Disk Usage

```
ansible -i hosts web -m shell -a "df -h"
```

5.4. ◆ 1.4 Create a File Remotely

```
ansible -i hosts web -m file -a "path=/tmp/mca.txt state=touch"
```

6. 📄 Lab 2: Writing and Running a Playbook

6.1. ◆ 2.1 Create the Playbook File

Create a file named `mca_demo.yml`:

```
- name: MCA Ansible Playbook Demo
hosts: web
tasks:
  - name: Create a welcome file
    copy:
      content: "Welcome MCA Students to Ansible Lab!\n"
      dest: /tmp/welcome.txt

  - name: Ensure a directory exists
    file:
      path: /opt/mca-lab
      state: directory

  - name: Install tree (optional)
    package:
      name: tree
      state: present
```

6.2. ◆ 2.2 Run the Playbook

```
ansible-playbook -i hosts mca_demo.yml
```



6.3. ◆ 2.3 Verify the Changes

Log in to any managed node and run:

```
cat /tmp/welcome.txt
ls -l /opt/mca-lab
tree /opt
```



Node2:

```
[node2] (local) root@192.168.0.22 ~
$ apk update
apk add --no-cache ansible openssh
fetch https://dl-cdn.alpinelinux.org/alpine/v3.20/main/x86_64/APKINDEX.tar.gz
fetch https://dl-cdn.alpinelinux.org/alpine/v3.20/community/x86_64/APKINDEX.tar.gz
v3.20.6-167-g69dc4bfb959 [https://dl-cdn.alpinelinux.org/alpine/v3.20/main]
v3.20.6-162-gd9bcb37d821 [https://dl-cdn.alpinelinux.org/alpine/v3.20/community]
OK: 24215 distinct packages available
fetch https://dl-cdn.alpinelinux.org/alpine/v3.20/main/x86_64/APKINDEX.tar.gz
fetch https://dl-cdn.alpinelinux.org/alpine/v3.20/community/x86_64/APKINDEX.tar.gz
(1/25) Installing py3-cparser (2.22-r1)
(2/25) Installing py3-cparser-pyc (2.22-r1)
(3/25) Installing py3-cffi (1.16.0-r1)
(4/25) Installing py3-cffi-pyc (1.16.0-r1)
(5/25) Installing py3-cryptography (42.0.7-r0)
(6/25) Installing py3-cryptography-pyc (42.0.7-r0)
(7/25) Installing py3-markupsafe (2.1.5-r1)
(8/25) Installing py3-markupsafe-pyc (2.1.5-r1)
(9/25) Installing py3-jinja2 (3.1.6-r0)
(10/25) Installing py3-jinja2-pyc (3.1.6-r0)
(11/25) Installing py3-bcrypt (4.1.3-r0)
(12/25) Installing py3-bcrypt-pyc (4.1.3-r0)
(13/25) Installing py3-pynacl (1.5.0-r5)
(14/25) Installing py3-pynacl-pyc (1.5.0-r5)
(15/25) Installing py3-paramiko (3.4.0-r1)
(16/25) Installing py3-paramiko-pyc (3.4.0-r1)
(17/25) Installing py3-resolverlib (1.0.1-r1)
(18/25) Installing py3-resolverlib-pyc (1.0.1-r1)
(19/25) Installing yaml (0.2.5-r2)
(20/25) Installing py3-yaml (6.0.1-r3)
(21/25) Installing py3-yaml-pyc (6.0.1-r3)
(22/25) Installing ansible-core (2.17.0-r0)
(23/25) Installing ansible-core-pyc (2.17.0-r0)
(24/25) Installing ansible-pyc (9.5.1-r0)
(25/25) Installing ansible (9.5.1-r0)
Executing busybox-1.36.1-r29.trigger
OK: 909 MiB in 198 packages
[node2] (local) root@192.168.0.22 ~
$ echo "[web]" > hosts
echo "192.168.0.21 ansible_user=root" >> hosts
[node2] (local) root@192.168.0.22 ~
```

```
$ ansible -i hosts web -m ping
The authenticity of host '192.168.0.21 (192.168.0.21)' can't be established.
ED25519 key fingerprint is SHA256:1zFux1EgS8o8KQFDxITmlJlcNQ1+9Lte6/ik72mG360.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
[WARNING]: Platform linux on host 192.168.0.21 is using the discovered Python interpreter at
/usr/bin/python3.12, but future
installation of another Python interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.17/reference\_appendices/interpreter\_discovery.html for more information.
192.168.0.21 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": false,
    "ping": "pong"
}
[node2] (local) root@192.168.0.22 ~
$ ansible -i hosts web -m shell -a "uptime"
[WARNING]: Platform linux on host 192.168.0.21 is using the discovered Python interpreter at
/usr/bin/python3.12, but future
installation of another Python interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.17/reference\_appendices/interpreter\_discovery.html for more information.
192.168.0.21 | CHANGED | rc=0 >>
10:50:08 up 10 days, 13:21, 0 users, load average: 8.17, 7.22, 6.53
[node2] (local) root@192.168.0.22 ~
$ ansible -i hosts web -m shell -a "df -h"
[WARNING]: Platform linux on host 192.168.0.21 is using the discovered Python interpreter at
/usr/bin/python3.12, but future
installation of another Python interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.17/reference\_appendices/interpreter\_discovery.html for more information.
192.168.0.21 | CHANGED | rc=0 >>
Filesystem      Size  Used Available Use% Mounted on
overlay         10.0G  448.0K  10.0G  0% /
tmpfs           64.0M   0    64.0M  0% /dev
tmpfs           15.7G   0    15.7G  0% /sys/fs/cgroup
/dev/sdb         64.0G  31.8G  32.2G  50% /etc/resolv.conf
/dev/sdb         64.0G  31.8G  32.2G  50% /etc/hostname
/dev/sdb         64.0G  31.8G  32.2G  50% /etc/hosts
shm              64.0M   0    64.0M  0% /dev/shm
/dev/sdb         4.7G  192.0K   4.7G  0% /var/lib/docker
[node2] (local) root@192.168.0.22 ~
$ ansible -i hosts web -m file -a "path=/tmp/mca.txt state=touch"
[WARNING]: Platform linux on host 192.168.0.21 is using the discovered Python interpreter at
/usr/bin/python3.12, but future
installation of another Python interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.17/reference\_appendices/interpreter\_discovery.html for more information.
192.168.0.21 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": true,
    "dest": "/tmp/mca.txt",
    "gid": 0,
```

```

"group": "root",
"mode": "0644",
"owner": "root",
"size": 0,
"state": "file",
"uid": 0
}
[node2] (local) root@192.168.0.22 ~
$ touch mca_demo.yml
[node2] (local) root@192.168.0.22 ~
$ vi mca_demo.yml
[node2] (local) root@192.168.0.22 ~
$ ansible-playbook -i hosts mca_demo.yml

PLAY [MCA Ansible Playbook Demo]
*****
***** TASK [Gathering Facts]
*****
***** [WARNING]: Platform linux on host 192.168.0.21 is using the discovered Python interpreter at
/usr/bin/python3.12, but future
installation of another Python interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.17/reference\_appendices/interpreter\_discovery.html for more information.
ok: [192.168.0.21]

TASK [Create a welcome file]
*****
***** changed: [192.168.0.21]

TASK [Ensure a directory exists]
*****
***** changed: [192.168.0.21]

TASK [Install tree (optional)]
*****
***** ok: [192.168.0.21]

PLAY RECAP
*****
192.168.0.21      : ok=4  changed=2  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

[node2] (local) root@192.168.0.22 ~
$
```

Node 1:

```
#####
```

```

#           WARNING!!!!      #
# This is a sandbox environment. Using personal credentials #
# is HIGHLY! discouraged. Any consequences of doing so are #
# completely the user's responsibilities.          #
#           #
# The PWD team.          #
#####
[node1] (local) root@192.168.0.21 ~
$ cat /tmp/welcome.txt
ls -l /opt/mca-lab
tree /opt
Welcome MCA Students to Ansible Lab!
total 0
/opt
├── containerd
│   ├── bin
│   └── lib
└── mca-lab

5 directories, 0 files
[node1] (local) root@192.168.0.21 ~

```

Code:

```

apk update
apk add --no-cache ansible openssh
echo "[web]" > hosts
echo "192.168.0.21 ansible_user=root" >> hosts
ansible -i hosts web -m ping
ansible -i hosts web -m shell -a "uptime"

ansible -i hosts web -m shell -a "df -h"
ansible -i hosts web -m file -a "path=/tmp/mca.txt state=touch"

touch mca_demo.yml
vi mca_demo.yml
- name: MCA Ansible Playbook Demo
  hosts: web
  tasks:
    - name: Create a welcome file
      copy:
        content: "Welcome MCA Students to Ansible Lab!\n"
        dest: /tmp/welcome.txt

    - name: Ensure a directory exists
      file:
        path: /opt/mca-lab
        state: directory

    - name: Install tree (optional)
      package:
        name: tree
        state: present

esc => :wq=> enter

```

```
ansible-playbook -i hosts mca_demo.yml
```

On Node 1

```
cat /tmp/welcome.txt  
ls -l /opt/mca-lab  
tree /opt
```

```
[node2] (local) root@192.168.0.22 ~  
$ ansible-playbook -i hosts mca_demo.yml  
  
PLAY [MCA Ansible Playbook Demo] *****  
  
TASK [Gathering Facts] *****  
[WARNING]: Platform linux on host 192.168.0.21 is using the discovered Python interpreter at /usr/bin/python3.12, but future  
installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-  
core/2.17/reference_appendices/interpreter_discovery.html for more information.  
ok: [192.168.0.21]  
  
TASK [Create a welcome file] *****  
changed: [192.168.0.21]  
  
TASK [Ensure a directory exists] *****  
changed: [192.168.0.21]  
  
TASK [Install tree (optional)] *****  
ok: [192.168.0.21]  
  
PLAY RECAP *****  
192.168.0.21 : ok=4    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Practical 12: Demonstrate Ansible Playbooks

4. 🛠 Step 2: Install Required Tools (on Control Node)

```
apk update
apk add git openjdk17 maven curl wget unzip bash ansible
```

5. 🌈 Step 3: Prepare PetClinic App

```
git clone https://github.com/spring-projects/spring-petclinic.git
cd spring-petclinic
mvn clean package -DskipTests
```

6. 📁 Step 4: Create Dockerfile

```
cat <<EOF > Dockerfile
FROM openjdk:17
COPY spring-petclinic-3.4.0-SNAPSHOT.jar app.jar
EXPOSE 8080
CMD ["java", "-jar", "app.jar"]
EOF
```

SSH IP 172.16.0.11 - domain: 192.168.0.11 msg009@renee0@directrads.pr []

DELETE **EDITOR**

```
[INFO] Collected git.commit.user.email with value antoine.rey@free.fr
[INFO] Collected git.commit.message.full with value Remove unused findAll method from OwnerRepository and related test setup
Signed-off-by: Antoine Rey <antoine.rey@free.fr>
[INFO] Collected git.commit.message.short with value Remove unused findAll method from OwnerRepository and related test setup
[INFO] Collected git.commit.time with value 2025-05-14T08:20:26Z
[INFO] Collected git.commit.author.time with value 2025-05-08T14:52:06Z
[INFO] Collected git.commit.committer.time with value 2025-05-14T08:20:26Z
[INFO] Collected git.remote.origin.url with value https://github.com/spring-projects/spring-petclinic.git
[INFO] Collected git.tags with value
[INFO] Collected git.tag with value
[INFO] Collected git.closest.tag.name with value
[INFO] Collected git.closest.tag.commit.count with value
[INFO] Collected git.total.commit.count with value 972
[INFO] Collected git.local.branch.head with value 0
[INFO] Collected git.local.branch.behind with value 0
[INFO] Collected git.build.time with value 2024-11-28T14:37:52Z
[INFO] Collected git.build.version with value 3.4.0-SNAPSHOT
[INFO] Collected git.build.host with value node3
[INFO] including property 'git.tags' in results
[INFO] including property 'git.build.version' in results
[INFO] including property 'git.branch' in results
[INFO] including property 'git.build.host' in results
[INFO] including property 'git.commit.id' in results
[INFO] including property 'git.commit.user.email' in results
[INFO] including property 'git.local.branch.behind' in results
[INFO] including property 'git.commit.author.time' in results
```

7. 🚒 Step 5: Create Ansible Inventory File

```
echo '[web]
192.168.0.12 ansible_user=root ansible_ssh_common_args="-o StrictHostKeyChecking=no" > inventory
```

Replace `192.168.0.12` with your second node's IP address.

Use:

```
touch deploy_petclinic.yml
```

```
vi deploy_petclinic.yml
```

```
1 name: Deploy PetClinic on Node 2 using Docker
2 hosts: web
3 become: true
4 tasks:
5   - name: Ensure destination directory exists
6     ansible.builtin.file:
7       path: /root/petclinic
8       state: directory
9
10  - name: Copy JAR file
11    ansible.builtin.copy:
12      src: /root/spring-petclinic/target/spring-petclinic-3.4.0-SNAPSHOT.jar
13      dest: /root/petclinic/spring-petclinic-3.4.0-SNAPSHOT.jar
14
15  - name: Copy Dockerfile
16    ansible.builtin.copy:
17      src: /root/spring-petclinic/Dockerfile
18      dest: /root/petclinic/Dockerfile
19
20  - name: Build Docker image
21    ansible.builtin.shell:
22      cmd: docker build -t petclinic-app .
23      chdir: /root/petclinic
24
25  - name: Run Docker container
26    ansible.builtin.shell:
27      cmd: docker run -d -p 8080:8080 --name petclinic petclinic-app
```

9. 🎉 Step 7: Run the Playbook

```
ansible-playbook -i inventory deploy_petclinic.yml
```



```

1 - name: Deploy PetClinic on Node 2 using Docker
2 hosts: web
3 become: true
4 tasks:
5   - name: Ensure destination directory exists
6     ansible.builtin.file:
7       path: /root/petclinic
8       state: directory
9
10  - name: Copy JAR file
11    ansible.builtin.copy:
12      src: /root/spring-petclinic/target/spring-petclinic-3.4.0-SNAPSHOT.jar
13      dest: /root/petclinic/spring-petclinic-3.4.0-SNAPSHOT.jar
14
15  - name: Copy Dockerfile
16    ansible.builtin.copy:
17      src: /root/spring-petclinic/Dockerfile
18      dest: /root/petclinic/Dockerfile
19
20  - name: Build Docker image
21    ansible.builtin.shell:
22      cmd: docker build -t petclinic-app .
23      chdir: /root/petclinic
24
25  - name: Run Docker container
26    ansible.builtin.shell:
:wg

```

In Node 2 we will get:

The screenshot shows a Docker container named "petclinic :: a Spring Framework". The container's IP is 192.168.0.12, and port 8080 is open. The memory usage is 26.99% (1.054GiB / 3.906GiB), and the CPU usage is 0.28%. An SSH connection is established from the host to the container at ip172-18-0-23-d0m4n1a91nsg009afee0@direct.labs.pl. There are "DELETE" and "EDITOR" buttons at the bottom.

IP	OPEN PORT	
192.168.0.12	8080	
Memory	26.99% (1.054GiB / 3.906GiB)	CPU
SSH	ssh ip172-18-0-23-d0m4n1a91nsg009afee0@direct.labs.pl	
DELETE	EDITOR	