

FINAL REPORT

SGA2 – Software Development Practices

Name: Ashfaaq Feroz Muhammad

ID: 2023EBCS005

Year: 2025

QUESTION 1 — GIT & GITHUB

2.1 (1a) Local Git Repository Setup

A simple static website was created with index.html, about.html, contact.html, and style.css.

Git was initialized using:

```
git init
```

2.2 (1b) Demonstration of Git Commands

Commands demonstrated:

```
git status
```

```
git add .
```

```
git commit -m "Initial commit"
```

```
git log --oneline -n 3
```

```
git branch feature/update-readme
```

```
git switch feature/update-readme
```

```
git switch main
```

2.3 (1c) GitHub Integration

The repository was created in GitHub and connected via:

```
git remote add origin <repo-url>
```

```
git push -u origin main
```

GitHub Repository Link:

<https://github.com/ashfaaqt/devops-assignment-starter>

QUESTION 2 — DOCKER

1.1 (2a) Custom Docker Image

A Python Flask application was created to print:

```
Hello, World! 🙌 (served from a Docker container)
```

Dockerfile used:

```
FROM python:3.12-slim
```

```
WORKDIR /app
```

```
RUN python -m pip install --upgrade pip && python -m pip install flask==3.0.3 --no-cache-dir
```

```
COPY app.py /app/app.py
```

```
EXPOSE 8080
```

```
CMD ["python", "app.py"]
```

1.2 (2b) Build the Docker Image

The Docker image was built using:

```
docker build --no-cache -t ashfaaqt/hello-app:1.0 .
```

1.3 (2c) Push the Image to Docker Hub

Commands:

```
docker login
```

```
docker tag ashfaaqt/hello-app:1.0 ashfaaqt/hello-app:latest
```

```
docker push ashfaaqt/hello-app:1.0
```

```
docker push ashfaaqt/hello-app:latest
```

Docker Hub Link:

<https://hub.docker.com/repository/docker/ashfaaqt/hello-app>

2.4 (2d) Run the Container Locally

Commands:

```
docker run -d -p 8080:8080 --name hello1 ashfaaqt/hello-app:1.0
```

```
docker ps
```

Application accessed at:

<http://localhost:8080>

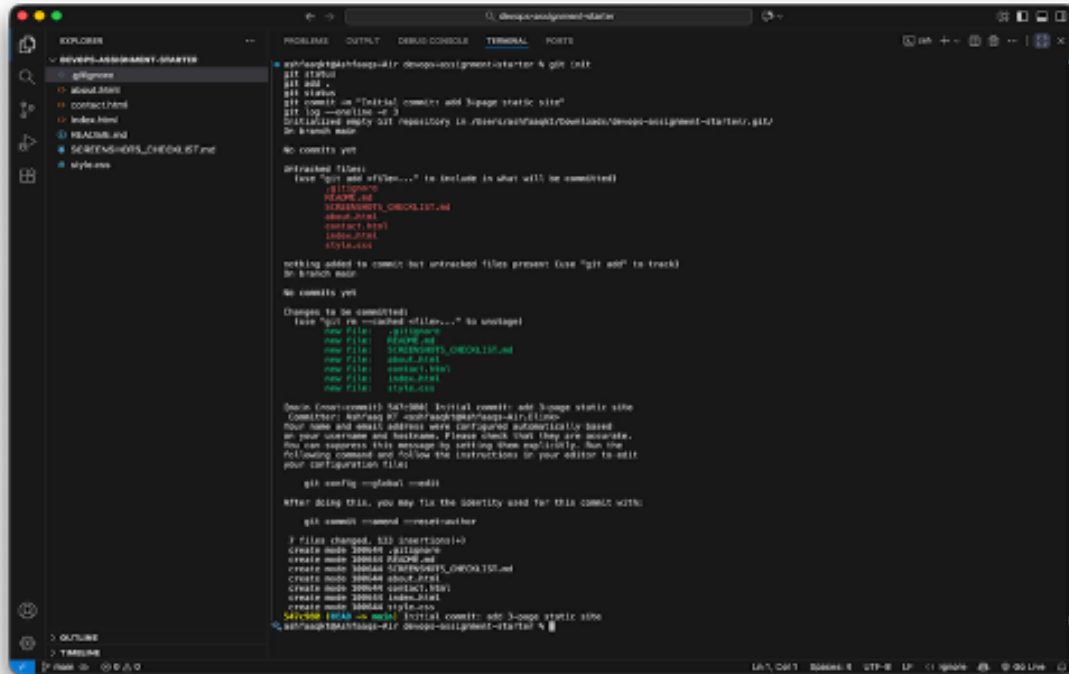
Conclusion

This assignment successfully demonstrates Git version control, GitHub integration, Docker image creation, containerization, and running a web application inside a Docker container. These are key DevOps principles used in modern CI/CD workflows.

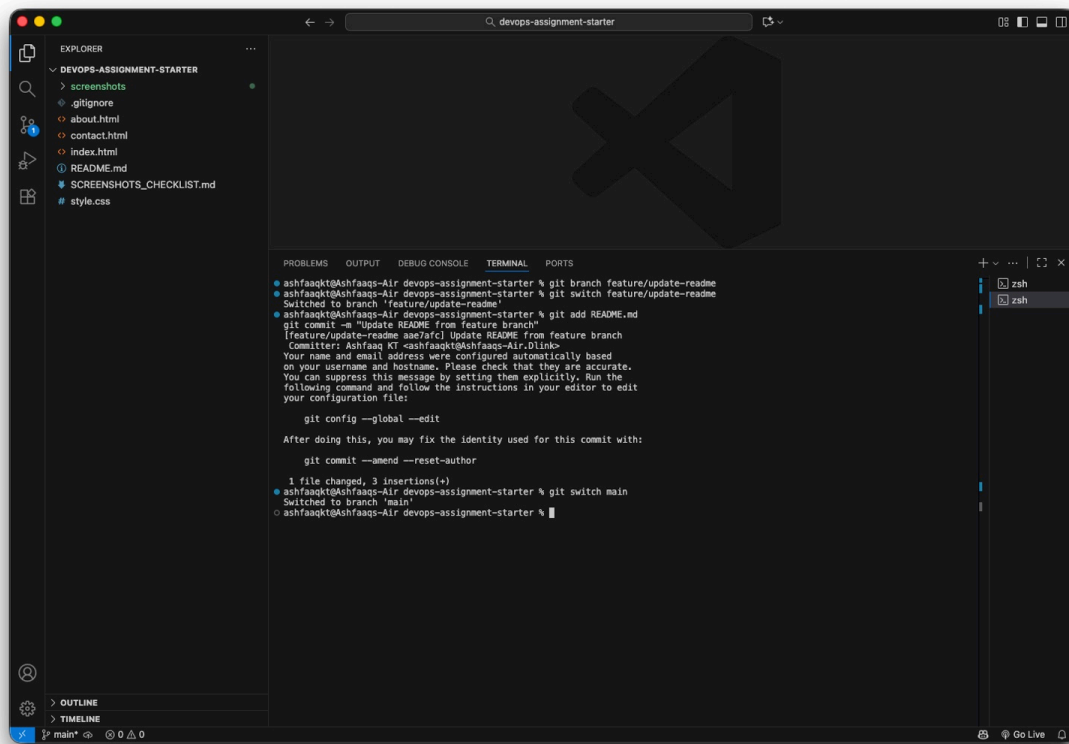
Screenshots

Screenshots is available in individual folder also for better view

Q1a – Git Init & Status



Q1b – Git Add & Commit



The screenshot shows a Visual Studio Code editor window with a dark theme. The Explorer sidebar on the left displays the file structure of a project named 'DEVOPS-ASSIGNMENT-STARTER', including files like 'screenshots', 'gitignore', 'about.html', 'contact.html', 'index.html', 'README.md', 'SCREENSHOTS_CHECKLIST.md', and 'style.css'. The main editor area is currently blank, showing a large, faint VS Code logo. At the bottom, the TERMINAL panel is active, displaying a series of Git commands and their output. The commands executed are: `git branch feature/update-readme`, `git switch feature/update-readme`, `git add README.md`, and `git commit -m "Update README from feature branch"`. The output shows the creation of the branch, the addition of the file, and the successful commit with a message from 'Ashfaq KT'. It also displays the commit hash 'a9e7afcl' and provides instructions for configuring git globally and switching back to the 'main' branch. The status bar at the bottom indicates the current branch is 'main'.

```
ashfaqkt@Ashfaqs-Air devops-assignment-starter % git branch feature/update-readme
ashfaqkt@Ashfaqs-Air devops-assignment-starter % git switch feature/update-readme
Switched to branch 'feature/update-readme'
ashfaqkt@Ashfaqs-Air devops-assignment-starter % git add README.md
git commit -m "Update README from feature branch"
[feature/update-readme a9e7afcl] Update README from feature branch
Committer: Ashfaq KT <ashfaqkt@ashfaqs-air.dlink>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

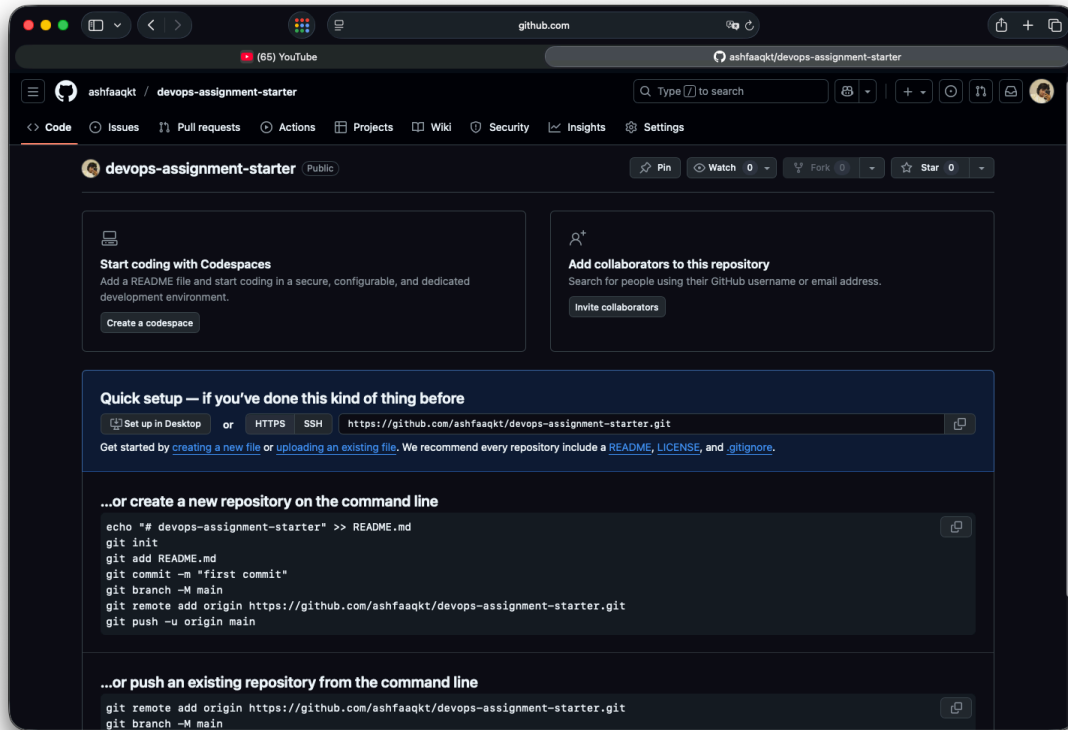
    git config --global --edit

After doing this, you may fix the identity used for this commit with:

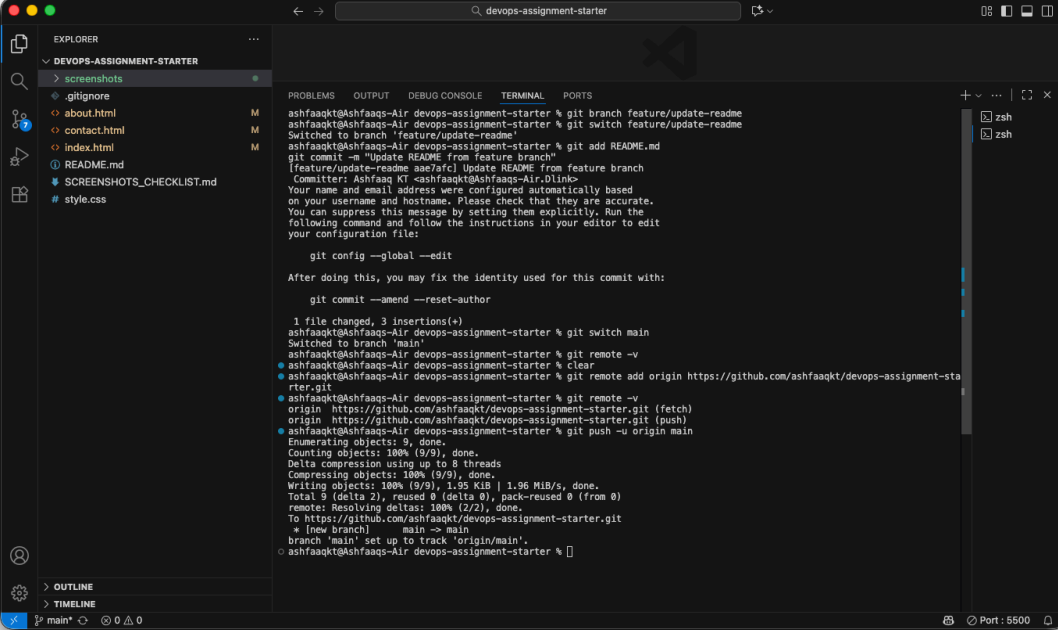
    git commit --amend --reset-author

1 file changed, 3 insertions(+)
ashfaqkt@Ashfaqs-Air devops-assignment-starter % git switch main
Switched to branch 'main'
ashfaqkt@Ashfaqs-Air devops-assignment-starter %
```

Q1c – GitHub Repo Page



Q1c – Remote Verification



The screenshot shows a VS Code editor window with a terminal open. The Explorer sidebar on the left shows the file structure of a project named 'DEVOPS-ASSIGNMENT-STARTER', including files like .gitignore, about.html, contact.html, index.html, README.md, SCREENSHOTS_CHECKLIST.md, and style.css. The terminal window displays the following commands and output:

```
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % git branch feature/update-readme
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % git switch feature/update-readme
Switched to branch 'feature/update-readme'
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % git add README.md
git commit -m "Update README from feature branch"
(feature/update-readme aae7a5fc) Update README from feature branch
Committer: Ashfaaq KT <ashfaaqt@Ashfaaqs-Air.Dlink>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

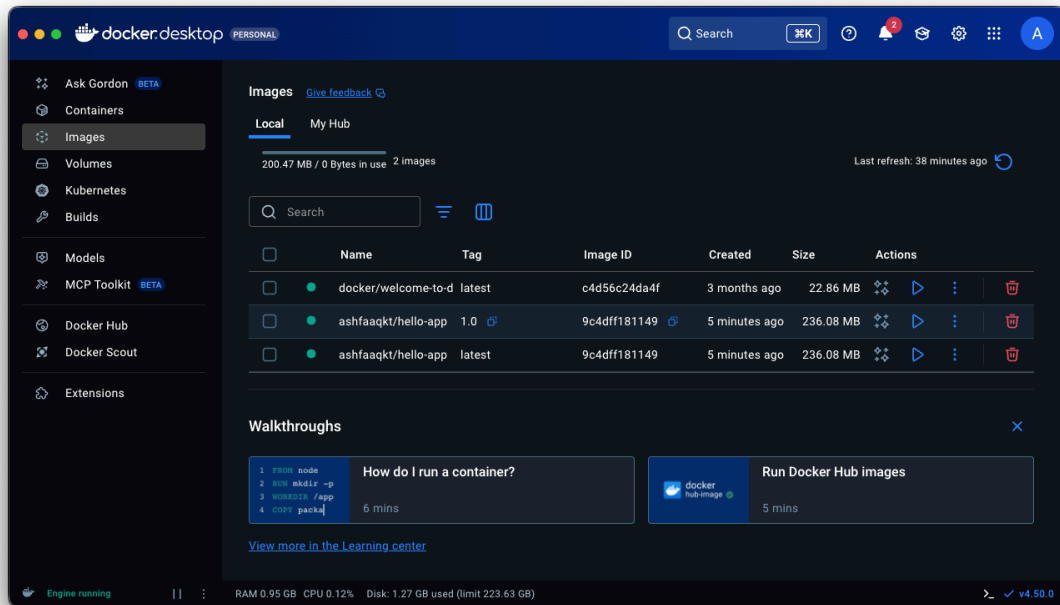
    git config --global --edit

After doing this, you may fix the identity used for this commit with:

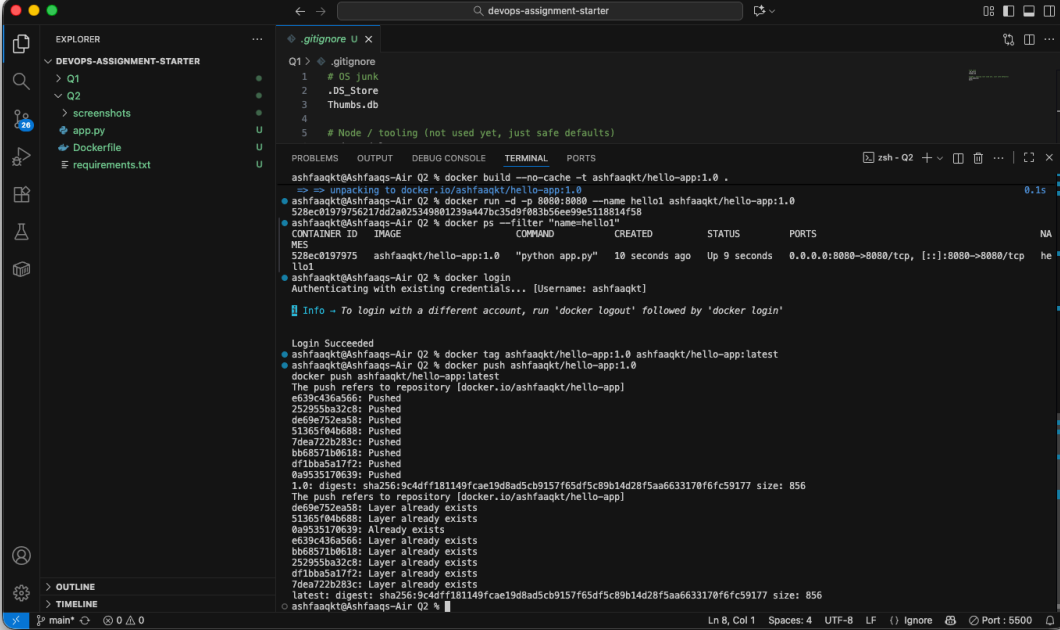
    git commit --amend --reset-author

1 file changed, 3 insertions(+)
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % git switch main
Switched to branch 'main'
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % git remote -v
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % clear
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % git remote add origin https://github.com/ashfaaqt/devops-assignment-starter.git
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % git remote -v
origin https://github.com/ashfaaqt/devops-assignment-starter.git (fetch)
origin https://github.com/ashfaaqt/devops-assignment-starter.git (push)
ashfaaqt@Ashfaaqs-Air devops-assignment-starter % git push -u origin main
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 8 threads
Compressing objects: 100% (9/9), done.
Writing objects: 100% (9/9), 1.95 KiB | 1.96 MiB/s, done.
Total 9 (delta 2), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (2/2), done.
To https://github.com/ashfaaqt/devops-assignment-starter.git
 * [new branch]    main -> main
branch 'main' set up to track 'origin/main'.
ashfaaqt@Ashfaaqs-Air devops-assignment-starter %
```

Docker Hub Repository



Docker Login Confirmation



The screenshot shows a VS Code editor window titled "devops-assignment-starter". The Explorer sidebar on the left shows a project structure with folders "Q1" and "Q2", and files "screenshots", "app.py", "Dockerfile", and "requirements.txt". The active editor shows a file named ".gitignore" with the following content:

```
.gitignore
1 # .DS_Store
2 .DS_Store
3 Thumbs.db
4
5 # Node / tooling (not used yet, just safe defaults)
```

The Output panel at the bottom displays the results of Docker commands:

```
ashfaaqt@Ashfaaq-Air Q2 % docker build --no-cache -t ashfaaqt/hello-app:1.0 .
=> unpacking to docker.io/ashfaaqt/hello-app:1.0
ashfaaqt@Ashfaaq-Air Q2 % docker run -d -p 8080:8080 --name hello1 ashfaaqt/hello-app:1.0
528ec01979756217dd2a025349801239a447bc35d9f083b56ee99e5118814f58
ashfaaqt@Ashfaaq-Air Q2 % docker ps --filter "name=hello1"
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
528ec0197975       ashfaaqt/hello-app:1.0   "python app.py"     10 seconds ago      Up 9 seconds        0.0.0.0:8080->8080/tcp, [::]:8080->8080/tcp   hello1

ashfaaqt@Ashfaaq-Air Q2 % docker login
Authenticating with existing credentials... [Username: ashfaaqt]

Info - To login with a different account, run 'docker logout' followed by 'docker login'

Login Succeeded
ashfaaqt@Ashfaaq-Air Q2 % docker tag ashfaaqt/hello-app:1.0 ashfaaqt/hello-app:latest
ashfaaqt@Ashfaaq-Air Q2 % docker push ashfaaqt/hello-app:1.0
docker push ashfaaqt/hello-app:latest
The push refers to repository [docker.io/ashfaaqt/hello-app]
ec39c436a566: Pushed
252955ba32c8: Pushed
de69e752ea58: Pushed
51365f04b888: Pushed
7de9722b283c: Pushed
bb68571b0618: Pushed
df1bba5a17f2: Pushed
0a9535170639: Pushed
1.0: digest: sha256:9c4dfff181149fcae19d8ad5cb9157f65df5c89b14d28f5aa6633170f6fc59177 size: 856
The push refers to repository [docker.io/ashfaaqt/hello-app]
de69e752ea58: Layer already exists
51365f04b888: Layer already exists
0a9535170639: Layer already exists
ec39c436a566: Layer already exists
bb68571b0618: Layer already exists
252955ba32c8: Layer already exists
df1bba5a17f2: Layer already exists
7de9722b283c: Layer already exists
latest: digest: sha256:9c4dfff181149fcae19d8ad5cb9157f65df5c89b14d28f5aa6633170f6fc59177 size: 856
ashfaaqt@Ashfaaq-Air Q2 %
```

The status bar at the bottom indicates the current cursor position: "Ln 8, Col 1", "Spaces: 4", "UTF-8", "LF", and "Port: 5500".

Docker Images List

The screenshot shows the Docker Desktop interface with the 'Images' tab selected. The left sidebar contains navigation options: Ask Gordon (BETA), Containers, Images (selected), Volumes, Kubernetes, Builds, Models, MCP Toolkit (BETA), Docker Hub, Docker Scout, and Extensions. The main panel displays the 'Images' section with a search bar and a table of local images. The table has columns for Name, Tag, Image ID, Created, Size, and Actions. Two images are listed: 'docker/welcome-to-d' (latest tag, 3 months ago, 22.86 MB) and 'ashfaaqt/hello-app' (1.0 tag, 1 minute ago, 236.08 MB). Below the table, there are 'Walkthroughs' for 'How do I run a container?' (6 mins) and 'Run Docker Hub images' (5 mins). The bottom status bar shows 'Engine running', RAM usage (0.96 GB), CPU usage (0.25%), and disk usage (1.27 GB used of 223.63 GB limit).

Images [Give feedback](#)

Local My Hub

200.47 MB / 0 Bytes in use 2 images Last refresh: 34 minutes ago

Search

	Name	Tag	Image ID	Created	Size	Actions
<input type="checkbox"/>	docker/welcome-to-d	latest	c4d56c24da4f	3 months ago	22.86 MB	
<input type="checkbox"/>	ashfaaqt/hello-app	1.0	9c4dff181149	1 minute ago	236.08 MB	

Walkthroughs

- FROM node
- RUN mkdir -p
- WORKDIR /app
- COPY package

How do I run a container?

6 mins

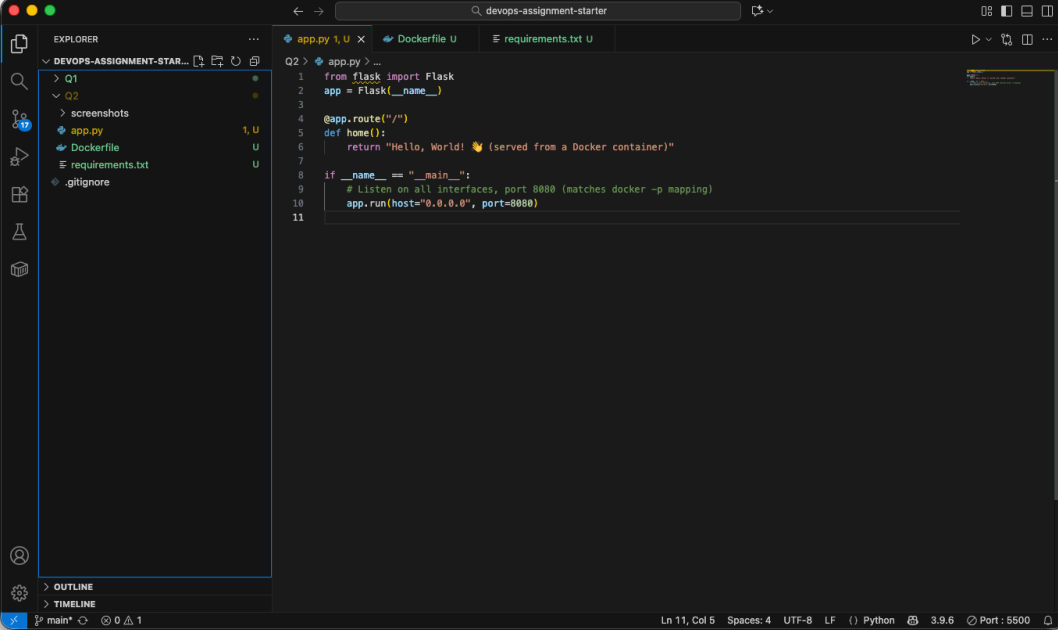
Run Docker Hub images

5 mins

[View more in the Learning center](#)

Engine running RAM 0.96 GB CPU 0.25% Disk: 1.27 GB used (limit 223.63 GB) v4.50.0

Q2a – Flask App Code

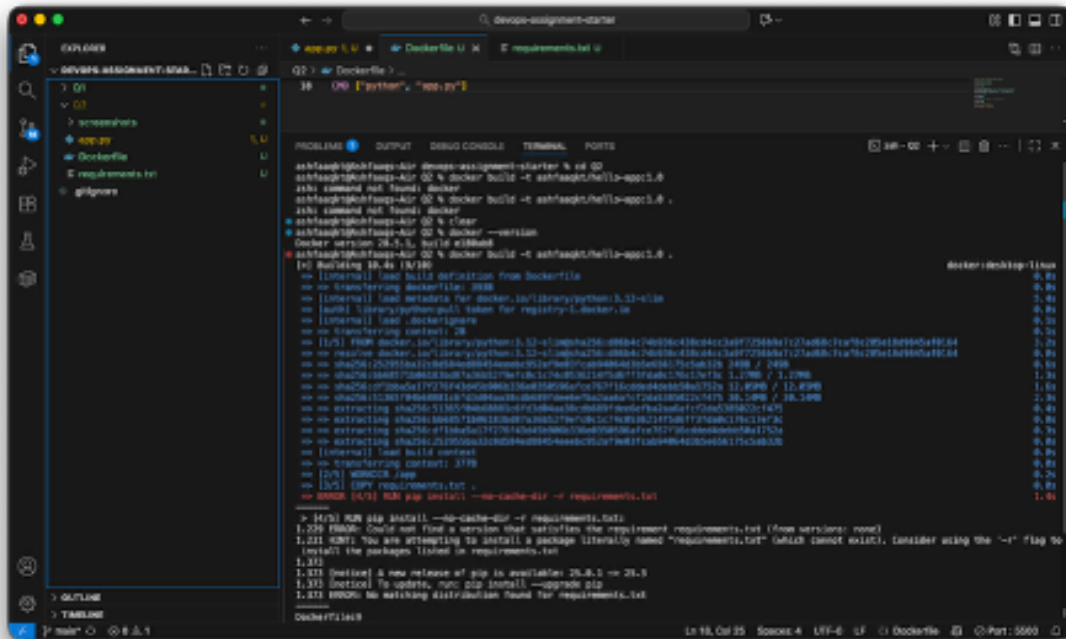


The screenshot shows a Visual Studio Code editor window with the following details:

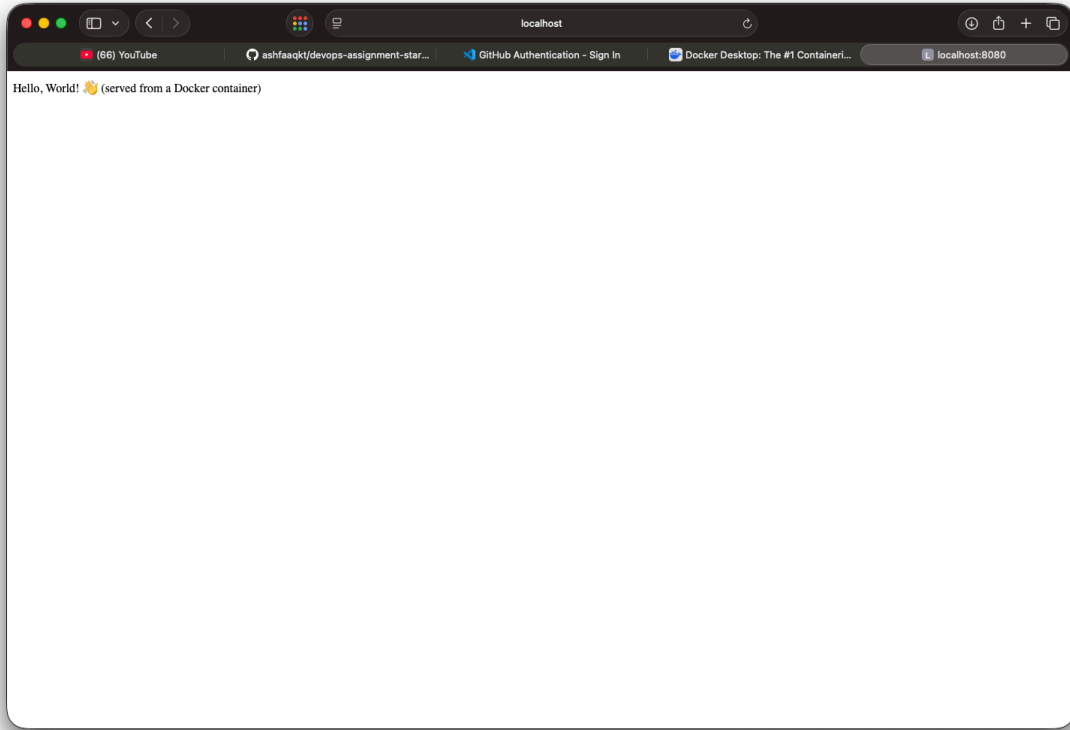
- Explorer Panel:** Displays the file structure of a project named "DEVOPS-ASSIGNMENT-STAR...". The files listed are:
 - Q1
 - Q2
 - screenshots
 - app.py (1, U)
 - Dockerfile (U)
 - requirements.txt (U)
 - .gitignore
- Main Editor:** Shows the code for `app.py`. The code is as follows:

```
1 from flask import Flask
2 app = Flask(__name__)
3
4 @app.route("/")
5 def home():
6     return "Hello, World! 🌟 (served from a Docker container)"
7
8 if __name__ == "__main__":
9     # Listen on all interfaces, port 8080 (matches docker -p mapping)
10    app.run(host="0.0.0.0", port=8080)
11
```
- Bottom Status Bar:** Shows the current cursor position as "Ln 11, Col 5", the file encoding as "UTF-8", the line ending as "LF", the language as "Python", the Python version as "3.9.6", and the port as "Port: 5500".

Q2b – Dockerfile Build



Application Running in Browser



The END