

# CASE STUDY - CONTAINERIZATION USING DOCKER I

## Problem Statement:

You work as a Devops Engineer in a leading Software Company. You have been asked to Dockerize the applications on the production server. The company uses custom software, therefore there is no pre-built container which can be used.

Assume the following things:

1. Assume the software to be installed is apache
2. Use an Ubuntu container

The company wants the following things:

1. Push a container to DockerHub with the above config
2. The Developers will not be working with Docker, hence from their side you will just get the code. Write a Dockerfile which could put the code in the custom image that you have built

## Solution:

We need to create a Dockerfile that installs Apache, copies the provided code into the container, and builds a Docker image. Then, push the Docker image to DockerHub.

### 1) Create a Dockerfile with the following content:

```
# Use the official Ubuntu image from the Docker Hub
FROM ubuntu:latest

# Install Apache2
RUN apt-get update && apt-get install -y apache2

# Copy application code to the Apache default directory
COPY . /var/www/html/

# Ensure Apache2 runs when the container starts
CMD ["apache2ctl", "-D", "FOREGROUND"]

# Expose port 80
EXPOSE 80
```

```
GNU nano 7.2 dockerfile *
FROM ubuntu:latest
RUN apt-get update && apt-get install -y apache2
COPY . /var/www/html/
CMD ["apache2ctl", "-D", "FOREGROUND"]
EXPOSE 80
```

^G Help    ^O Write Out    ^W Where Is    ^K Cut    ^T Execute    ^C Location    M-U  
^X Exit    ^R Read File    ^\ Replace    ^U Paste    ^J Justify    ^\_ Go To Line    M-E

```
ubuntu@ip-172-31-0-75:~/my-casestudy$ nano Dockerfile
ubuntu@ip-172-31-0-75:~/my-casestudy$ ll
total 12
drwxrwxr-x 2 ubuntu ubuntu 4096 Feb  9 18:12 ./
drwxr-x--- 6 ubuntu ubuntu 4096 Feb  9 18:12 ../
-rw-rw-r-- 1 ubuntu ubuntu  139 Feb  9 18:12 Dockerfile
ubuntu@ip-172-31-0-75:~/my-casestudy$
```

## 2) Build the Docker Image:

Navigate to the directory containing your Dockerfile and application code.

Build the Docker image: *docker build -t my-custom-apache .*

```
ubuntu@ip-172-31-0-75:~/my-casestudy$ docker build -t my-custom-apache .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
            Install the buildx component to build images with BuildKit:
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  2.048kB
Step 1/5 : FROM ubuntu:latest
latest: Pulling from library/ubuntu
5a7813e071bf: Pulling fs layer
```

```
Running hooks in /etc/ca-certificates/update.d...
done.
---> Removed intermediate container 848955d4afcb
---> 92905e4f6b84
Step 3/5 : COPY . /var/www/html/
---> 3b230ae95ee4
Step 4/5 : CMD ["apache2ctl", "-D", "FOREGROUND"]
---> Running in 5d393fd6a34c
---> Removed intermediate container 5d393fd6a34c
---> bd4b64805c07
Step 5/5 : EXPOSE 80
---> Running in 33391f15cb17
---> Removed intermediate container 33391f15cb17
---> 3c529027038a
Successfully built 3c529027038a
Successfully tagged my-custom-apache:latest
ubuntu@ip-172-31-0-75:~/my-casestudy$
```

### 3) Push the Docker Image to DockerHub : docker login

```
Successfully tagged my-custom-apache:latest
ubuntu@ip-172-31-0-75:~/my-casestudy$ docker login
Log in with your Docker ID or email address to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com/ to create one.
You can log in with your password or a Personal Access Token (PAT). Using a limited-scope PAT grants better security and is required for organizations using SSO. Learn more at https://docs.docker.com/go/access-tokens/
Username: poulomibhattacharjee
```

```
i.N11Q77A207f23280d (my-custom-apache)
```

```
ubuntu@ip-172-31-0-75:~/my-casestudy$ docker login
Log in with your Docker ID or email address to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com/ to create one.
You can log in with your password or a Personal Access Token (PAT). Using a limited-scope PAT grants better security and is required for organizations using SSO. Learn more at https://docs.docker.com/go/access-tokens/
Username: poulomibhattacharjee
Password:
WARNING! Your password will be stored unencrypted in /home/ubuntu/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
ubuntu@ip-172-31-0-75:~/my-casestudy$
```

### 4) Tag the Docker image: docker tag my-custom-apache poulomibhattacharjee/my-custom-apache

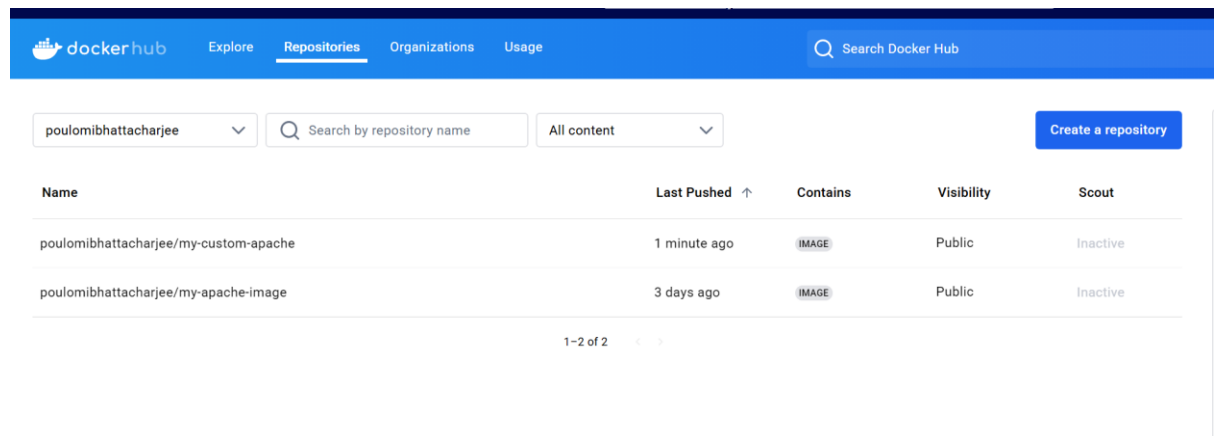
```
ubuntu@ip-172-31-0-75:~/my-casestudy$ docker tag my-custom-apache poulomibhattacharjee/my-custom-apache
ubuntu@ip-172-31-0-75:~/my-casestudy$
```

### 5) Push the Docker image: docker push poulomibhattacharjee/my-custom-apache

```
ubuntu@ip-172-31-0-75:~/my-casestudy$ docker push poulomibhattacharjee/my-custom-apache
Using default tag: latest
The push refers to repository [docker.io/poulomibhattacharjee/my-custom-apache]
2346e278161a: Pushing [=====>] 3.584kB
18d88dca6efa: Pushing [=====>] 33.06MB/159.8MB
4b7c01ed0534: Mounted from library/ubuntu
```

```
ubuntu@ip-172-31-0-75:~/my-casestudy$ docker push poulomibhattacharjee/my-custom-apache
Using default tag: latest
The push refers to repository [docker.io/poulomibhattacharjee/my-custom-apache]
2346e278161a: Pushed
18d88dca6efa: Pushed
4b7c01ed0534: Mounted from library/ubuntu
latest: digest: sha256:9abf317b0c7dab7e53843f9aa5add841c0b0d5541914baf468d09e02c74167ef size: 948
ubuntu@ip-172-31-0-75:~/my-casestudy$
```

6) We can check it from DockerHub whether the image is present.



The screenshot shows the Docker Hub interface for the user 'poulomibhattacharjee'. The 'Repositories' tab is selected, displaying a table of two repositories: 'my-custom-apache' (pushed 1 minute ago) and 'my-apache-image' (pushed 3 days ago). Both are public and inactive. The interface includes a search bar, a 'Create a repository' button, and pagination controls at the bottom.

Name	Last Pushed ↑	Contains	Visibility	Scout
poulomibhattacharjee/my-custom-apache	1 minute ago	IMAGE	Public	Inactive
poulomibhattacharjee/my-apache-image	3 days ago	IMAGE	Public	Inactive

1-2 of 2