

A) Push a base image to Docker Hub (Pull → Tag → Login → Push)

1) Pull any base image on host

Cmd= docker pull alpine:latest

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

● PS C:\Users\harik> docker pull alpine:latest
latest: Pulling from library/alpine
589002ba0eae: Pull complete
9e595aac14e0: Download complete
caa817ad3aea: Download complete
Digest: sha256:25109184c71bdad752c8312a8623239686a9a2071e8825f20acb8f2198c3f659
Status: Downloaded newer image for alpine:latest
docker.io/library/alpine:latest
○ PS C:\Users\harik>
```

B). Tag that image with your Docker Hub username and login

Cmd= docker tag alpine:latest harikrishna777/ap1:v1.1

Docker login

```
● PS C:\Users\harik> docker tag alpine:latest harikrishna777/ap1:v1.1
● PS C:\Users\harik> docker login
Authenticating with existing credentials... [Username: harikrishna777]

Info → To Login with a different account, run 'docker Logout' followed by 'docker Login'

Login Succeeded
○ PS C:\Users\harik>
```

4) Push to Docker Hub

Cmd= docker push harikrishna777/ap1:v1.1

```
● PS C:\Users\harik> docker push harikrishna777/ap1:v1.1
The push refers to repository [docker.io/harikrishna777/ap1]
589002ba0eae: Mounted from library/alpine
v1.1: digest: sha256:59855d3dceb3ae53991193bd03301e082b2a7faa56a514b03527ae0ec2ce3a95 size: 1022

Info → Not all multiplatform-content is present and only the available single-platform image was pushed
sha256:25109184c71bdad752c8312a8623239686a9a2071e8825f20acb8f2198c3f659 -> sha256:59855d3dceb3ae53991193bd03301e082b2a7faa56a514b03527ae0ec2ce3a95
○ PS C:\Users\harik>
```

B) Update image by making changes inside a container, then push (Run → Change → Commit → Tag → Push)

1) Run container from base/tagged image and interact

Cmd= docker run -it --name a1 harikrishna777/ap1:v1.1 sh

/ # apk update

v3.23.3-129-g1486cfbe03 [https://dl-cdn.alpinelinux.org/alpine/v3.23/main]

v3.23.3-131-g88c6aa978ea [https://dl-cdn.alpinelinux.org/alpine/v3.23/community]

OK: 27572 distinct packages available

/ # apk add php

(1/9) Installing php84-common (8.4.17-r0)

(2/9) Installing argon2-libs (20190702-r5)

(3/9) Installing ncurses-terminfo-base (6.5_p20251123-r0)

(4/9) Installing libncursesw (6.5_p20251123-r0)

(5/9) Installing libedit (20251016.3.1-r0)

(6/9) Installing pcre2 (10.47-r0)

(7/9) Installing xz-libs (5.8.2-r0)

(8/9) Installing libxml2 (2.13.9-r0)

(9/9) Installing php84 (8.4.17-r0)

Executing busybox-1.37.0-r30.trigger

OK: 18.7 MiB in 25 packages

/ # php -v

PHP 8.4.17 (cli) (built: Jan 20 2026 19:04:32) (NTS)

Copyright (c) The PHP Group

Built by Alpine Linux aports

Zend Engine v4.4.17, Copyright (c) Zend Technologies

```

/ # exit
PS C:\Users\harik> docker run -it --name a1 harikrishna777/ap1:v1.1 sh
/ # apk update
v3.23.3-129-g1486cfbe03 [https://dl-cdn.alpinelinux.org/alpine/v3.23/main]
v3.23.3-131-g88c6aa978ea [https://dl-cdn.alpinelinux.org/alpine/v3.23/community]
OK: 27572 distinct packages available
/ # apk add php
(1/9) Installing php84-common (8.4.17-r0)
(2/9) Installing argon2-libs (20190702-r5)
(3/9) Installing ncurses-terminfo-base (6.5_p20251123-r0)
(4/9) Installing libncursesw (6.5_p20251123-r0)
(5/9) Installing libedit (20251016.3.1-r0)
(6/9) Installing pcre2 (10.47-r0)
(7/9) Installing xz-libs (5.8.2-r0)
(8/9) Installing libxml2 (2.13.9-r0)
(9/9) Installing php84 (8.4.17-r0)
Executing busybox-1.37.0-r30.trigger
OK: 18.7 MiB in 25 packages
/ # php -v
PHP 8.4.17 (cli) (built: Jan 20 2026 19:04:32) (NTS)
Copyright (c) The PHP Group
Built by Alpine Linux aports
Zend Engine v4.4.17, Copyright (c) Zend Technologies
/ # exit

```

2) Commit container changes into a new image

Cmd= docker commit a1 harikrishna777/ap1:v1.2

```

● PS C:\Users\harik> docker commit a1 harikrishna777/ap1:v1.2
sha256:5148f16df1a162f04dda57bc2a814e3e73f5d74f25a03f4a51773de8165f78c5
○ PS C:\Users\harik> []

```

```

PS C:\Users\harik> docker commit a1 harikrishna777/ap1:v1.2
sha256:5148f16df1a162f04dda57bc2a814e3e73f5d74f25a03f4a51773de81
65f78c5
PS C:\Users\harik> docker push harikrishna777/ap1:v1.2
The push refers to repository [docker.io/harikrishna777/ap1]
6d6297d1ade0: Pushed
589002ba0eae: Layer already exists
PS C:\Users\harik> docker run -it --name a2 harikrishna777/ap1:v1.2 sh
>>
/ # php -v
PHP 8.4.17 (cli) (built: Jan 20 2026 19:04:32) (NTS)
Copyright (c) The PHP Group
Built by Alpine Linux aports
Zend Engine v4.4.17, Copyright (c) Zend Technologies
/ # exit
PS C:\Users\harik>
PS C:\Users\harik> docker images harikrishna777/ap1

```

i Info →

U In Use

IMAGE	ID	DISK USAGE	CONTENT SIZE	EXTRA
-------	----	------------	--------------	-------

```
harikrishna777/ap1:v1.1 25109184c71b 13.1MB 3.95MB U
harikrishna777/ap1:v1.2 5148f16df1a1 33.6MB 10.1MB U
```

```
PS C:\Users\harik>
```

```
/ # exit
● PS C:\Users\harik> docker images harikrishna777/ap1
```

IMAGE	ID	DISK USAGE	CONTENT SIZE	EXTRA
harikrishna777/ap1:v1.1	25109184c71b	13.1MB	3.95MB	U
harikrishna777/ap1:v1.2	5148f16df1a1	33.6MB	10.1MB	U

Ex#2(Practice Question):

1.Update the ubuntu container, install apache and php, then push updated on to docker hub.

```
Cmd= PS C:\Users\harik> docker run -it --name u1 ubuntu:latest bash
root@a66a28628c8a:/# apt update
apt install -y apache2 php
apache2 -v
php -v
docker commit u1 harikrishna777/ubuntu-apache-php:v1.0
docker login
docker push harikrishna777/ubuntu-apache-php:v1.0
```

```
exit
```

```
● PS C:\Users\harik> docker run -it --name u1 ubuntu:latest bash
root@a66a28628c8a:/# apt update
apt install -y apache2 php
apache2 -v
php -v
exit
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1843 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [19.3 MB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1205 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [34.8 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [3157 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [331 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble/restricted amd64 Packages [117 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [2223 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [2015 kB]
Get:15 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [38.1 kB]
Get:16 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [3330 kB]
Get:17 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [34.6 kB]
Get:18 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Packages [49.5 kB]
Fetched 35.1 MB in 18s (2020 kB/s)
```

2) Compare size of base image vs updated image (after commit)

Show base Ubuntu size

Cmd= docker images ubuntu

docker images harikrishna777/ubuntu-apache-php

```
docker images | findstr "ubuntu harikrishna777/ubuntu-apache-php"
```

```

PS C:\Users\harik> docker images ubuntu
>>
IMAGE           ID          DISK USAGE   CONTENT SIZE   EXTRA
ubuntu:latest  cd1dba651b30  119MB       31.7MB      U
PS C:\Users\harik> docker images harikrishna777/ubuntu-apache-php
>>
IMAGE           ID          DISK USAGE   CONTENT SIZE   EXTRA
harikrishna777/ubuntu-apache-php:v1.0  4561a557e6fe  412MB       115MB      U
PS C:\Users\harik> docker images | findstr "ubuntu harikrishna777/ubuntu-apache-php"
>>
WARNING: This output is designed for human readability. For machine-readable output, please use --format.
harikrishna777/ubuntu-apache-php:v1.0  4561a557e6fe  412MB       115MB      U
ubuntu:latest            cd1dba651b30  119MB       31.7MB      U
PS C:\Users\harik> docker rm -f u1 u2
>>
u1
u2
PS C:\Users\harik>

```

To Create Docker Image by Docker file

```
PS C:\Users\harik> mkdir ubuntu-docker
```

Directory: C:\Users\harik

Mode	LastWriteTime	Length	Name
----	-----	-----	
d---	18-02-2026 00:25		ubuntu-docker

```
PS C:\Users\harik> cd ubuntu-docker
```

```
PS C:\Users\harik\ubuntu-docker> New-Item Dockerfile
```

Directory: C:\Users\harik\ubuntu-docker

Mode	LastWriteTime	Length	Name
----	-----	-----	
-a---	18-02-2026 00:26	0	Dockerfile

```
PS C:\Users\harik\ubuntu-docker> docker build -t harikrishna777/ubuntu-php:v1.0 .
```

```
[+] Building 0.4s (1/1) FINISHED
docker:desktop-linux
=> [internal] load build definition from Dockerfile
0.2s
=> => transferring dockerfile: 31B
0.0s
ERROR: failed to build: failed to solve: the Dockerfile cannot be empty
```

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/sf788bpqf56uhso1bqi7w0l0o

```
PS C:\Users\harik\ubuntu-docker> code Dockerfile
PS C:\Users\harik\ubuntu-docker> code Dockerfile
PS C:\Users\harik\ubuntu-docker> FROM ubuntu:latest
```

```
>>
>> LABEL maintainer="harikrishna777"
>>
>> RUN apt update && \
>>   apt install -y php && \
>>   apt clean
>>
>> CMD ["echo", "Hello Students"]
>>
```

ParserError:

```
Line |  
1 | FROM ubuntu:latest
```

```
| ~~~~  
| The 'from' keyword is not supported in this version of the language.
```

```
PS C:\Users\harik\ubuntu-docker> rm Dockerfile
```

```
PS C:\Users\harik\ubuntu-docker> notepad dockerfile
```

```
PS C:\Users\harik\ubuntu-docker> ren dockerfile.txt dockerfile
```

```
PS C:\Users\harik\ubuntu-docker> docker build -t harikrishna777/ubuntu-php:v1.0 .
```

Docker file#3 for Python application

Cmd= mkdir dockerfile_python

```
cd dockerfile_python
```

notepad dockerfile

```
ren dockerfile.txt dockerfile
```

dir

notepad requirements.txt

notepad app.py

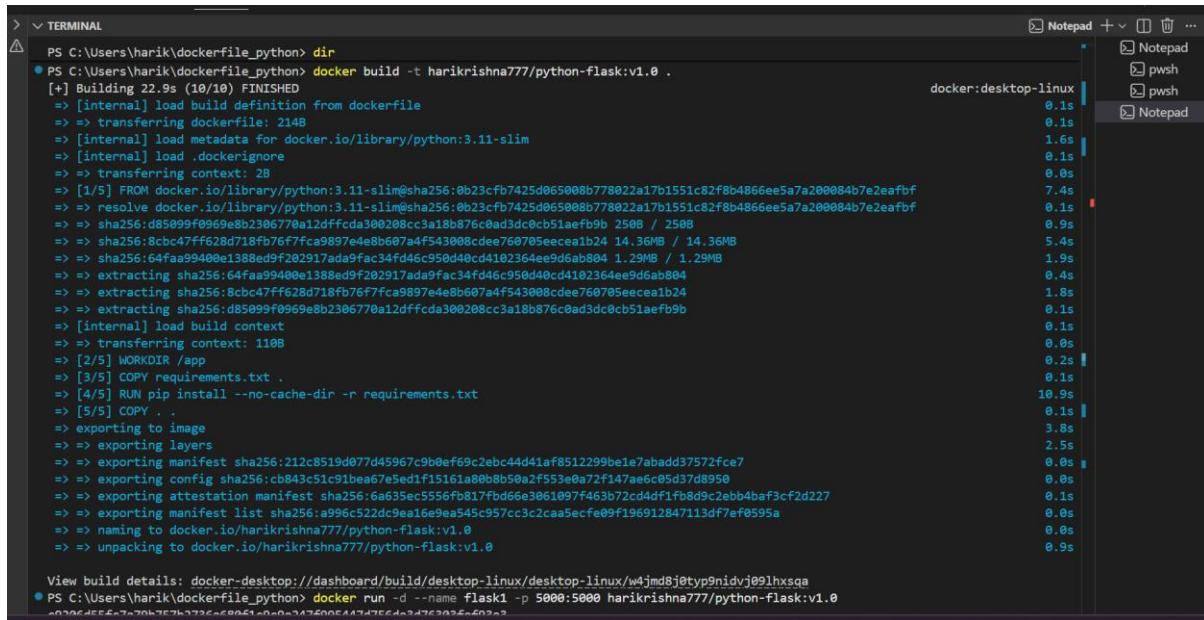
dir

docker build -t harikrishna777/python-flask:v1.0 .

docker run -d --name flask1 -p 5000:5000 harikrishna777/python-flask:v1.0

docker login

docker push harikrishna777/python-flask:v1.0



```
PS C:\Users\harik\dockerfile_python> dir
PS C:\Users\harik\dockerfile_python> docker build -t harikrishna777/python-flask:v1.0 .
[+] Building 22.9s (10/10) FINISHED
  => [internal] load build definition from dockerfile
  => [internal] load dockerfile: 214B
  => [internal] load metadata for docker.io/library/python:3.11-slim
  => [internal] load .dockerignore
  => [internal] transfer context: 28
  => [1/5] FROM docker.io/library/python:3.11-slim@sha256:0b23cfb7425d0e65008b778022a17b1551c82f8b4866ee5a7a200084b7e2eafbf
  => resolve docker.io/library/python:3.11-slim@sha256:0b23cfb7425d0e65008b778022a17b1551c82f8b4866ee5a7a200084b7e2eafbf
  => sha256:d85099f0969e8b2306770a12dffcd300208c3a18b876c0ad3dc0cb51aeffb9 2508 / 2508
  => sha256:8cbc47ff628d718fb76f7fcfa9897e4e8b607a4f543008cdde760705eacea1b24 14.36MB / 14.36MB
  => sha256:64faa99400e1388ed9f202917ada9fa34fd46c950d40cd4102364ee9d6ab084 1.29MB / 1.29MB
  => extract sha256:64faa99400e1388ed9f202917ada9fa34fd46c950d40cd4102364ee9d6ab084
  => extract sha256:8cbc47ff628d718fb76f7fcfa9897e4e8b607a4f543008cdde760705eacea1b24
  => extract sha256:d85099f0969e8b2306770a12dffcd300208c3a18b876c0ad3dc0cb51aeffb9 0.1s
  => [internal] load build context
  => transfer context: 1108
  => [2/5] WORKDIR /app
  => [3/5] COPY requirements.txt .
  => [4/5] RUN pip install --no-cache-dir -r requirements.txt
  => [5/5] COPY .
  => exporting to image
  => exporting layers
  => exporting manifest sha256:212c8519d077d45967c9b0ef69c2ebc44d41af8512299be1e7abadd37572fce7
  => exporting config sha256:cb843c51c91bea67e5ed1f15161a88bb50a2f553a0a72f147ae6c85d37d9598
  => exporting attestation manifest sha256:6a635ec5556fb817fb66e3061097f463b72cd4df1fb8d9c2ebba4baef3cf2d227
  => exporting manifest list sha256:a996c522dc9ea16e9ea545c957cc3c2aa5ecfe09f196912847113df7ef0595a
  => naming to docker.io/harikrishna777/python-flask:v1.0
  => unpacking to docker.io/harikrishna777/python-flask:v1.0

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/w4jmd8j0typ9nidvj091hxsqa
PS C:\Users\harik\dockerfile_python> docker run -d --name flask1 -p 5000:5000 harikrishna777/python-flask:v1.0
```

docker push harikrishna777/python-flask:v1.0

The push refers to repository [docker.io/harikrishna777/python-flask]

64faa99400e1: Pushed

d85099f0969e: Pushed

8cbc47ff628d: Pushed

cfea4e4a12ea: Pushed

ed12dcb6ddad: Pushed

6cc5a6ea135c: Pushed

8260c0595952: Pushed

0c8d55a45c0d: Mounted from library/httpd

08e4a24d769d: Pushed

v1.0: digest:

sha256:a996c522dc9ea16e9ea545c957cc3c2caa5ecfe09f196912847113df7ef0595a
size: 856

PS C:\Users\harik\dockerfile_python>

```
PS C:\Users\harik\dockerfile_python> docker push harikrishna777/python-flask:v1.0
The push refers to repository [docker.io/harikrishna777/python-flask]
64faa99400e1: Pushed
d85099f0969e: Pushed
8cbc47ff628d: Pushed
cfea4e4a12ea: Pushed
ed12dcbb6ddad: Pushed
6cc5a6ea135c: Pushed
8260c0595952: Pushed
0c8d55a45c0d: Mounted from library/httpd
08e4a24d769d: Pushed
v1.0: digest: sha256:a996c522dc9ea16e9ea545c957cc3c2caa5ecfe09f196912847113df7ef0595a size: 856
```