

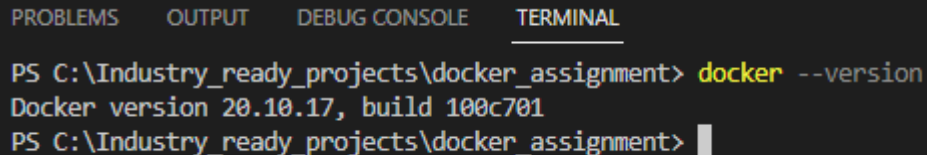
Docker & Docker Hub

Assignment 1:

Demonstrate minimum 15 basic docker command with explanation and screenshot.

1. Finding the version

How to find the installed docker version.

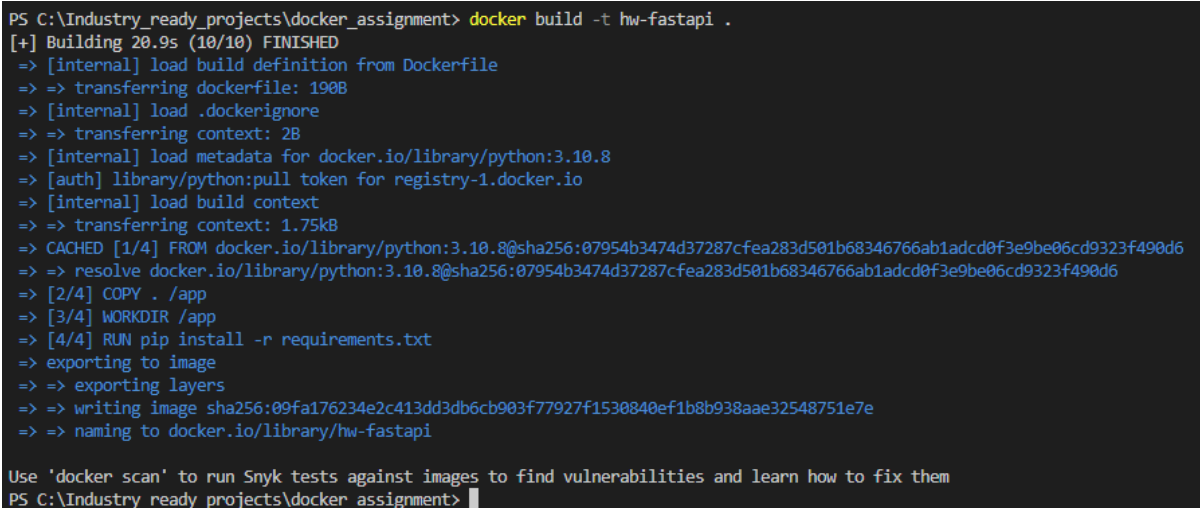


```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Industry_ready_projects\docker_assignment> docker --version
Docker version 20.10.17, build 100c701
PS C:\Industry_ready_projects\docker_assignment> |
```

2. Build docker image

Docker build command to create a Docker image from the definition contained in a Docker file.



```
PS C:\Industry_ready_projects\docker_assignment> docker build -t hw-fastapi .
[+] Building 20.9s (10/10) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 190B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/python:3.10.8
=> [auth] library/python:pull token for registry-1.docker.io
=> [internal] load build context
=> => transferring context: 1.75kB
=> CACHED [1/4] FROM docker.io/library/python:3.10.8@sha256:07954b3474d37287cfea283d501b68346766ab1adcd0f3e9be06cd9323f490d6
=> => resolve docker.io/library/python:3.10.8@sha256:07954b3474d37287cfea283d501b68346766ab1adcd0f3e9be06cd9323f490d6
=> [2/4] COPY . /app
=> [3/4] WORKDIR /app
=> [4/4] RUN pip install -r requirements.txt
=> exporting to image
=> => exporting layers
=> => writing image sha256:09fa176234e2c413dd3db6cb903f77927f1530840ef1b8b938aae32548751e7e
=> => naming to docker.io/library/hw-fastapi

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
PS C:\Industry_ready_projects\docker_assignment> |
```

3. Downloading Image

To pull the docker image from docker repository.

```

PS C:\Industry_ready_projects\docker_assignment> docker pull chandrakanthm/helloworld-fastapiv
Using default tag: latest
latest: Pulling from chandrakanthm/helloworld-fastapiv
f606d8928ed3: Already exists
47db815c6a45: Already exists
bf4849400000: Already exists
a572f7a256d3: Already exists
8f7d05258955: Already exists
7110f04115ae: Already exists
967c89122295: Already exists
9f28dfdab382: Already exists
5e971b2ac572: Already exists
35180ffa4fe3: Pull complete
c8748f58e7f3: Pull complete
Digest: sha256:e44c0c4ff4878267c22346229f9f9de7bbb64b4beeb6c4b4f3ab3fcf55def19f
Status: Downloaded newer image for chandrakanthm/helloworld-fastapiv:latest
docker.io/chandrakanthm/helloworld-fastapiv:latest
PS C:\Industry_ready_projects\docker_assignment>

```

4. Push Docker Image

To push the docker image from local to personal docker repository.

```

PS C:\Industry_ready_projects\docker_assignment> docker push chandrakanthm/helloworld-fastapiv:latest
The push refers to repository [docker.io/chandrakanthm/helloworld-fastapiv]
e7709c44369c: Layer already exists
8502e5c3fd25: Layer already exists
dcc5479aae4e: Layer already exists
d91c7bf5ffb5: Layer already exists
57b220df0ae0: Layer already exists
0c7daf9a72c8: Layer already exists
75ba02937496: Layer already exists
288cf3a46e32: Layer already exists
186da837555d: Layer already exists
955c9335e041: Layer already exists
8e079fee2186: Layer already exists
latest: digest: sha256:e44c0c4ff4878267c22346229f9f9de7bbb64b4beeb6c4b4f3ab3fcf55def19f size: 2639

```

5. Images

List all the docker images pulled on the system with image details

```

PS C:\Industry_ready_projects\docker_assignment> docker images

```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
chandrakanthm/helloworld-fastapiv	latest	b15ae6020c2f	3 hours ago	991MB
chandrakanthm/helloworld-fastapi	latest	415ee4a9943b	3 hours ago	991MB
chandrakanthm/hello-world-fastapi	latest	17b63aa884d7	6 hours ago	991MB
docker/getting-started	latest	cb90f98fd791	6 months ago	28.8MB
hello-world	latest	feb5d9fea6a5	12 months ago	13.3kB

```

PS C:\Industry_ready_projects\docker_assignment>

```

6. Run

Docker run command is used to launch docker containers.

```

PS C:\Industry_ready_projects\docker_assignment> docker run -d -p 8080:8080 chandrakanthm/hello-world-fastapi
4151b97a77b4bb6748bea0dbe3c29ac195fa98a0df87df9944c0d13e09389e0c
PS C:\Industry_ready_projects\docker_assignment>

```

7. What's Running?

Lists all the docker containers are running with container details.

```
PS C:\Industry_ready_projects\docker_assignment> docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS
4151b97a77b4   chandrakanthm/hello-world-fastapi  "uvicorn welcome:app..." 30 seconds ago Up 26 seconds 0.0.0.0:8080->8080/tcp
optimistic_bhaskara
```

8. Stopping Docker

Stop a container with container id mentioned in the command.

```
PS C:\Industry_ready_projects\docker_assignment> docker stop 4151b97a77b4
4151b97a77b4
```

9. Removing Image

Remove the docker image with the docker image id mentioned in the command

```
PS C:\Industry_ready_projects\docker_assignment> docker rmi -f chandrakanthm/helloworld-fastapi
Untagged: chandrakanthm/helloworld-fastapi:latest
Deleted: sha256:415ee4a9943b5c5c899f30f1341907323fec7c65349244bc2bfca2070d964287
```

10.Restart Docker

Restart the docker container with container id mentioned in the command.

```
PS C:\Industry_ready_projects\docker_assignment> docker restart b4cabbfa148f
b4cabbfa148f
```

11.Starting Docker

This command in docker starts the docker container with container id mentioned in the command.

```
PS C:\Industry_ready_projects\docker_assignment> docker start b4cabbfa148f
b4cabbfa148f
```

12.Kill

Stop the docker container immediately. Docker stop command stops the container gracefully, that's the difference between a kill and stop commands.

```
PS C:\Industry_ready_projects\docker_assignment> docker kill b4cabbfa148f
b4cabbfa148f
```

13.Docker Network

The following command in docker lists the details of all the network in the cluster.

```
PS C:\Industry_ready_projects\docker_assignment> docker network ls
NETWORK ID      NAME      DRIVER      SCOPE
c5f75c91e054    bridge    bridge      local
307dca4041ac    host      host        local
5e1ce8aea4b8    none      null        local
```

14.Docker Info

Get detailed information about docker installed on the system including the kernel version, number of containers and images, etc.

```
PS C:\Industry_ready_projects\docker_assignment> docker info
Client:
 Context:    default
 Debug Mode: false
 Plugins:
  buildx: Docker Buildx (Docker Inc., v0.9.1)
  compose: Docker Compose (Docker Inc., v2.10.2)
  extension: Manages Docker extensions (Docker Inc., v0.2.9)
  sbom: View the packaged-based Software Bill Of Materials (SBOM) for an image (Anchore Inc., 0.6.0)
  scan: Docker Scan (Docker Inc., v0.19.0)

Server:
 Containers: 30
  Running: 1
  Paused: 0
  Stopped: 29
 Images: 4
 Server Version: 20.10.17
 Storage Driver: overlay2
  Backing Filesystem: extfs
  Supports d_type: true
  Native Overlay Diff: true
  userxattr: false
 Logging Driver: json-file
 Cgroup Driver: cgroupfs
 Cgroup Version: 1
 Plugins:
  Volume: local
  Network: bridge host ipvlan macvlan null overlay
  Log: awslogs fluentd gcplogs gelf journald json-file local logentries splunk syslog
 Swarm: inactive
 Runtimes: io.containerd.runc.v2 io.containerd.runtime.v1.linux runc
 Default Runtime: runc
 Init Binary: docker-init
 containerd version: 9cd3357b7fd7218e4aec3eae239db1f68a5a6ec6
 runc version: v1.1.4-0-g5fd4c4d
 init version: de40ad0
```

```

init version: de40ad0
Security Options:
  seccomp
  Profile: default
Kernel Version: 5.10.16.3-microsoft-standard-WSL2
Operating System: Docker Desktop
OSType: linux
Architecture: x86_64
CPUs: 4
Total Memory: 3.031GiB
Name: docker-desktop
ID: RYX2:4WUQ:73TO:MNYU:2XLH:P4ML:BZ56:AXPB:GGYA:S02I:FR65:SFLD
Docker Root Dir: /var/lib/docker
Debug Mode: false
HTTP Proxy: http.docker.internal:3128
HTTPS Proxy: http.docker.internal:3128
No Proxy: hubproxy.docker.internal
Registry: https://index.docker.io/v1/
Labels:
Experimental: false
Insecure Registries:
  hubproxy.docker.internal:5000
  127.0.0.0/8
Live Restore Enabled: false

WARNING: No blkio throttle.read_bps_device support
WARNING: No blkio throttle.write_bps_device support
WARNING: No blkio throttle.read_iops_device support
WARNING: No blkio throttle.write_iops_device support

```

15. Checking History

Shows the history of a docker image with the image name mentioned in the command.

```

PS C:\Industry_ready_projects\docker_assignment> docker history chandrakanthm/hello-world-fastapi

```

IMAGE	CREATED	CREATED BY	SIZE	COMMENT
17b63aa884d7	7 hours ago	CMD ["uvicorn" "welcome:app" "--host" "0.0.0.0"]	0B	buildkit.dockerfile.v0
<missing>	7 hours ago	RUN /bin/sh -c pip install -r requirements.txt	69.7MB	buildkit.dockerfile.v0
<missing>	7 hours ago	WORKDIR /app	0B	buildkit.dockerfile.v0
<missing>	7 hours ago	COPY . /app # buildkit	823B	buildkit.dockerfile.v0
<missing>	40 hours ago	/bin/sh -c #(nop) CMD ["python3"]	0B	
<missing>	40 hours ago	/bin/sh -c set -eux; wget -O get-pip.py "\$@"	10.9MB	
<missing>	40 hours ago	/bin/sh -c #(nop) ENV PYTHON_GET_PIP_SHA256=...	0B	
<missing>	40 hours ago	/bin/sh -c #(nop) ENV PYTHON_GET_PIP_URL=ht...	0B	
<missing>	40 hours ago	/bin/sh -c #(nop) ENV PYTHON_SETUPTOOLS_VER...	0B	
<missing>	40 hours ago	/bin/sh -c #(nop) ENV PYTHON_PIP_VERSION=22...	0B	
<missing>	40 hours ago	/bin/sh -c set -eux; for src in idle3 pydoc...	32B	
<missing>	40 hours ago	/bin/sh -c set -eux; wget -O python.tar.xz...	57.1MB	
<missing>	40 hours ago	/bin/sh -c #(nop) ENV PYTHON_VERSION=3.10.8	0B	
<missing>	10 days ago	/bin/sh -c #(nop) ENV GPG_KEY=A035C8C19219B...	0B	
<missing>	10 days ago	/bin/sh -c set -eux; apt-get update; apt-g...	18.5MB	
<missing>	10 days ago	/bin/sh -c #(nop) ENV LANG=C.UTF-8	0B	
<missing>	10 days ago	/bin/sh -c #(nop) ENV PATH=/usr/local/bin:/...	0B	
<missing>	10 days ago	/bin/sh -c set -ex; apt-get update; apt-ge...	529MB	
<missing>	10 days ago	/bin/sh -c apt-get update && apt-get install...	152MB	
<missing>	10 days ago	/bin/sh -c set -ex; if ! command -v gpg > /...	19MB	
<missing>	10 days ago	/bin/sh -c set -eux; apt-get update; apt-g...	10.7MB	
<missing>	10 days ago	/bin/sh -c #(nop) CMD ["bash"]	0B	
<missing>	10 days ago	/bin/sh -c #(nop) ADD file:d1268789456d2cdac...	124MB	

```

PS C:\Industry_ready_projects\docker_assignment>

```

Assignment 2:

[Hello World Docker Image](#) Run Hello World Docker Image Locally.

```
PS C:\Industry_ready_projects\docker_assignment> docker pull hello-world
Using default tag: latest
latest: Pulling from library/hello-world
2db29710123e: Already exists
Digest: sha256:18a657d0cc1c7d0678a3f8ea8b7eb4918bba25968d3e1b0adebfa71caddbc346
Status: Downloaded newer image for hello-world:latest
docker.io/library/hello-world:latest
PS C:\Industry_ready_projects\docker_assignment> █
```

```
PS C:\Industry_ready_projects\docker_assignment> 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/
```

```
PS C:\Industry_ready_projects\docker_assignment> docker images hello-world
REPOSITORY      TAG         IMAGE ID      CREATED        SIZE
hello-world     latest     feb5d9fea6a5  12 months ago  13.3kB
PS C:\Industry_ready_projects\docker_assignment> █
```

Assignment 3:

Create a hello world fastapi application. Create a Dockerfile for your fastapi hello world application. Build Docker image using Docker file. Run docker image build in previous step. Push your Docker image to Docker Hub.

```
EXPLORER
DOCKER_ASSIGNMENT
  > __pycache__
  ~$cker_assignment.docx
  ~WRL2184.tmp
  ! abcyml
  docker_assignment.docx
  Dockerfile
  requirements.txt
  welcome.py

Dockerfile
1 FROM python:3.10.8
2 COPY . /app
3 WORKDIR /app
4 RUN pip install -r requirements.txt
5 CMD ["uvicorn", "welcome:app", "--host", "0.0.0.0", "--port", "80"]
```

```
Explorer (Ctrl+Shift+E)
DOCKER_ASSIGNMENT
  > __pycache__
  ~$cker_assignment.docx
  ~WRL2184.tmp
  ! abcyml
  docker_assignment.docx
  Dockerfile
  requirements.txt
  welcome.py

welcome.py
1 from fastapi import FastAPI
2 import uvicorn
3
4 app = FastAPI()
5
6 @app.get("/")
7 async def root():
8     return {"message": "Hello World"}
9
10 # if __name__ == "__main__":
11 #     uvicorn.run(host="0.0.0.0",port=80)
```

```
PS C:\Industry_ready_projects\docker_assignment> docker rmi -f chandrakanthm/hello-world-fastapi
Untagged: chandrakanthm/hello-world-fastapi:latest
Untagged: chandrakanthm/hello-world-fastapi@sha256:ab7c950e8c018dac6acdcd5cb95a8cdc25a2e0bf49962d02cd318afe72ce3623
Deleted: sha256:17b63aa884d72e5b8ff98f7e1be47d94fe31ba518cabb60c2ce77d983fc189e
PS C:\Industry_ready_projects\docker_assignment> docker build -t hello-world-fastapi .
[+] Building 24.7s (10/10) FINISHED
=> [internal] load build definition from Dockerfile 0.1s
=> => transferring dockerfile: 32B 0.0s
=> [internal] load .dockerignore 0.1s
=> => transferring context: 2B 0.0s
=> [internal] load metadata for docker.io/library/python:3.10.8 3.1s
=> [auth] library/python:pull token for registry-1.docker.io 0.0s
=> [internal] load build context 0.1s
=> => transferring context: 502.11kB 0.1s
=> CACHED [1/4] FROM docker.io/library/python:3.10.8@sha256:07954b3474d37287cfea283d501b68346766ab1adcd0f3e9be06cd9323f490d6 0.0s
=> => resolve docker.io/library/python:3.10.8@sha256:07954b3474d37287cfea283d501b68346766ab1adcd0f3e9be06cd9323f490d6 0.0s
=> [2/4] COPY . /app 0.1s
=> [3/4] WORKDIR /app 0.1s
=> [4/4] RUN pip install -r requirements.txt 19.7s
=> exporting to image 1.2s
=> => exporting layers 1.2s
=> => writing image sha256:2622ebf6bb128adf21618a2b504a0e6874b1c85fa418e833b2029edb791562af 0.0s
=> => naming to docker.io/library/hello-world-fastapi 0.0s
```

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

```
PS C:\Industry_ready_projects\docker_assignment> docker run -d -p 80:80 chandrakanthm/helloworld-fastapiv
8da8d7ae2a4c7e97626336c4d5d6591b945cd52dd4b0b5861cc1fba87aaf52bc
```

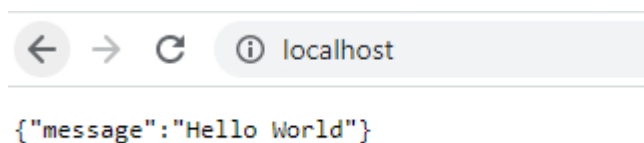
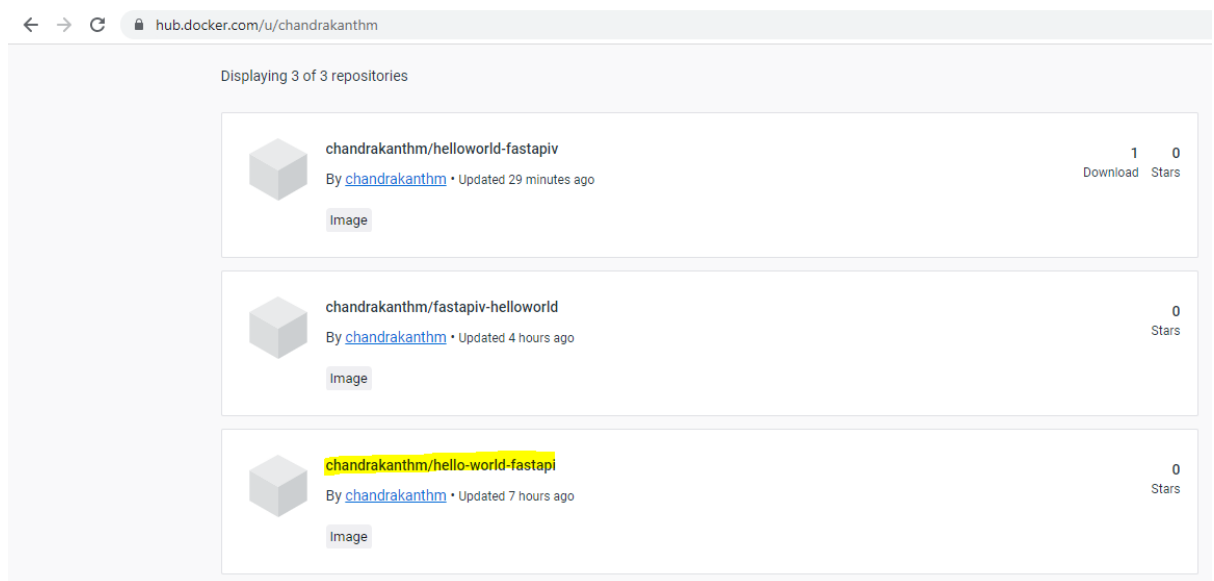
```
PS C:\Industry_ready_projects\docker_assignment> docker images
REPOSITORY          TAG         IMAGE ID      CREATED        SIZE
hw-fastapi          latest     09fa176234e2  32 minutes ago 991MB
chandrakanthm/helloworld-fastapiv  latest     9cde3c01c045  4 hours ago   991MB
chandrakanthm/hello-world-fastapi  latest     17b63aa884d7  7 hours ago   991MB
docker/getting-started  latest     cb90f98fd791  6 months ago  28.8MB
hello-world         latest     feb5d9fea6a5  12 months ago 13.3kB
PS C:\Industry_ready_projects\docker_assignment>
```



```

PS C:\Industry_ready_projects\docker_assignment> docker push chandrakanthm/helloworld-fastapiv
Using default tag: latest
The push refers to repository [docker.io/chandrakanthm/helloworld-fastapiv]
e7709c44369c: Layer already exists
8502e5c3fd25: Layer already exists
dcc5479aae4e: Layer already exists
d91c7bf5ffb5: Layer already exists
57b220df0ae0: Layer already exists
0c7daf9a72c8: Layer already exists
75ba02937496: Layer already exists
288cf3a46e32: Layer already exists
186da837555d: Layer already exists
955c9335e041: Layer already exists
8e079fee2186: Layer already exists
latest: digest: sha256:e44c0c4ff4878267c22346229f9f9de7bbb64b4beeb6c4b4f3ab3fcf55def19f size: 2639


```



Assignment 4:


Automate Assignment below task using github action.

1. Build Docker Image
2. Push Docker Image to Docker hub.


 ChandrakanthMamilla / docker_assignment Public

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 main docker_assignment / .github / workflows /

 ChandrakanthMamilla Update docker-image.yml




..

 docker-image.yml Update docker-image.yml

 main docker_assignment / .github / workflows / docker-image.yml View runs Go to file ...

 ChandrakanthMamilla Update docker-image.yml ✓ Latest commit f605b49 17 hours ago History

1 contributor

20 lines (15 sloc) | 502 Bytes Raw Blame   

```
1 name: Docker Image CI
2
3 on:
4   push:
5     branches: [ "main" ]
6   pull_request:
7     branches: [ "main" ]
8
9 jobs:
10
11   build:
12
13     runs-on: ubuntu-latest
14
15     steps:
16     - uses: actions/checkout@v3
17     - name: Build the Docker image
18       run: docker build . --file Dockerfile --tag chandrakanthm/fastapiv-helloworld:latest
19     - name: Push the Docker image
20       run: docker login -u ${ secrets.DOCKERHUB_USERNAME } -p ${ secrets.DOCKERHUB_TOKEN } && docker push chandrakanthm/fastapiv-helloworld:latest
```

 ChandrakanthMamilla / docker_assignment Public

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Actions New workflow

All workflows

Docker Image CI

All workflows

Showing runs from all workflows

10 workflow runs

	Event	Status	Branch	Actor
✓ Update docker-image.yml Docker Image CI #10: Commit f605b49 pushed by ChandrakanthMamilla	main	yesterday 50s	...	
✓ Update docker-image.yml Docker Image CI #9: Commit f7d10f7 pushed by ChandrakanthMamilla	main	yesterday 31s	...	
✓ Update docker-image.yml Docker Image CI #8: Commit 245ec0c pushed by ChandrakanthMamilla	main	yesterday 28s	...	
✓ Update docker-image.yml Docker Image CI #7: Commit ce4dfcc pushed by ChandrakanthMamilla	main	yesterday 50s	...	

github.com/ChandranthMamilla/docker_assignment/actions/runs/3255493527/jobs/5344865000

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Docker Image CI

Update docker-image.yml Docker I... #10

Re-run all jobs

Summary

Jobs

Run details

Usage

Workflow file

build

succeeded yesterday in 41s

Search logs

Set up job

Run actions/checkout@v3

Build the Docker image

Push the Docker image

Post Run actions/checkout@v3

Complete job

15s

15s

38s

9s

6s

6s

chandrakanthm

Repositories

fastapiv-helloworld

Using 0 of 1 private repositories. [Get more](#)

General

Tags

Builds

Collaborators

Webhooks

Settings

Add a short description for this repository

The short description is used to index your content on Docker Hub and in search engines. It's visible to users in search results.

[Update](#)

chandrakanthm / fastapiv-helloworld

Description

This repository does not have a description

Last pushed: a day ago

Docker commands

Public View

To push a new tag to this repository,

`docker push chandrakanthm/fastapiv-helloworld:tagname`

Tags and scans

VULNERABILITY SCANNING - DISABLED

[Enable](#)

This repository contains 1 tag(s).

Tag	OS	Pulled	Pushed
latest		---	a day ago

Automated Builds

Manually pushing images to Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

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