

Practice Questions on GHCR

Dated : 20/2/2026

Q #1:

You are required to build a Docker image from a Dockerfile and publish it to GitHub Container Registry (GHCR), and then pull it on another system.

Task Requirements:

1. Create a simple Dockerfile for a Python Flask application.
2. Build the Docker image locally and tag it appropriately for GitHub Container Registry (ghcr.io).
3. Authenticate Docker with GitHub Container Registry using a Personal Access Token (PAT).
4. Push the Docker image to ghcr.io/<your-github-username>/<image-name>:v1.
5. Verify that the image is successfully uploaded in your GitHub Packages section.
6. On a different system (or after removing the local image):
 - Login again to GHCR.
 - Pull the same image.
 - Run the container and verify the application is working.

Cmd

```
mkdir ghcr-flask
```

```
cd ghcr-flask
```

notepad app.py(create python file)

notepad requirements.txt

notepad Dockerfile

docker build -t ghcr.io/harikrishnamahato777/ghcr-flask:v1 .

login your github username and generate token as password

docker push ghcr.io/harikrishnamahato777/ghcr-flask:v1

docker rmi ghcr.io/harikrishnamahato777/ghcr-flask:v1

docker pull ghcr.io/harikrishnamahato777/ghcr-flask:v1

docker run -d --name flask1 -p 5000:5000 ghcr.io/harikrishnamahato777/ghcr-flask:v1

open in browser(<http://localhost:5000>)

```
PS D:\ghcr-flask> docker push ghcr.io/harikrishnamahato777/ghcr-flask:v1
The push refers to repository [ghcr.io/harikrishnamahato777/ghcr-flask]
c3db8fecb3ab: Pushed
9973539569dd: Pushed
8cbc47ff628d: Pushed
0c8d55a45c0d: Pushed
cfea4e4a12ea: Pushed
9e0530d89e21: Pushed
64faa99400e1: Pushed
5d9001ee7533: Pushed
d85099f0969e: Pushed
v1: digest: sha256:f8e5eba1acba7f1742ec42ef93e6a1b7430610e673cd44bec1e966f7cd24a7dd size: 856
PS D:\ghcr-flask>

e.
Run 'docker run --help' for more information
PS D:\ghcr-flask> docker flask1
docker: unknown command: docker flask1

Run 'docker --help' for more information
PS D:\ghcr-flask> docker stop flask1
flask1
PS D:\ghcr-flask> docker stop flask1
flask1
PS D:\ghcr-flask> docker run -d --name flask1 -p 5000:5000 ghcr.io/harikrishnamahato777/ghcr-flask:v1
docker: Error response from daemon: Conflict. The container name "/flask1" is already in use by container "c9206d55fc7a79b757b2736a680f1c9c9a247f995447d756de3d76303fef93a3". You have to remove (or rename) that container to be able to reuse that name.

Run 'docker run --help' for more information
PS D:\ghcr-flask> docker rm -f flask1
flask1
PS D:\ghcr-flask> docker run -d --name flask2 -p 5000:5000 ghcr.io/harikrishnamahato777/ghcr-flask:v1
c70d912256d67395d1a72572ed50ae0c5a0d995d1da8693dce35dd32c181f263
```

```
Directory: D:\

Mode                LastWriteTime         Length Name
----                -
d----             21-02-2026     01:35         ghcr-flask

PS D:\> cd ghcr-flask
PS D:\ghcr-flask> notepad app.py
PS D:\ghcr-flask> notepad requirements.txt
PS D:\ghcr-flask> notepad Dockerfile
PS D:\ghcr-flask> ren dockerfile.txt dockerfile
PS D:\ghcr-flask> docker build -t ghcr.io/harikrishnamahato777/ghcr-flask:v1 .
[+] Building 10.2s (11/11) FINISHED                                docker:desktop-linux
=> [internal] load build definition from dockerfile                0.0s
=> => transferring dockerfile: 205B                                0.0s
=> [internal] load metadata for docker.io/library/python:3.11-slim 2.3s
=> [auth] library/python:pull token for registry-1.docker.io      0.0s
=> [internal] load .dockerignore                                  0.0s
=> => transferring context: 2B                                       0.0s
=> [1/5] FROM docker.io/library/python:3.11-slim@sha256:0b23cfb7425d065008b778022a17b1551c82f8b4866ee5a7a200084b7e2e 0.0s
=> => resolve docker.io/library/python:3.11-slim@sha256:0b23cfb7425d065008b778022a17b1551c82f8b4866ee5a7a200084b7e2e 0.0s
=> [internal] load build context                                  0.0s
=> => transferring context: 279B                                       0.0s
=> CACHED [2/5] WORKDIR /app                                       0.0s
=> [3/5] COPY requirements.txt .                                    0.0s
=> [4/5] RUN pip install --no-cache-dir -r requirements.txt        7.1s
=> [5/5] COPY app.py .                                             0.1s
=> exporting to image                                              1.0s
=> => exporting layers                                              0.6s
=> => exporting manifest sha256:692f70761ad785d764b8edb43ff1f14069e864158550a2e3ea799ef80e887fcc 0.0s
=> => exporting config sha256:d45627d1b415b445ec4f8983dd394e0d33e7d3426f2bb7a431d9688f5d578553 0.0s
=> => exporting attestation manifest sha256:06c89ddb08f9f24ee4c2c69821244dbc4645d1d550fba796c7136eee4fb81f1a 0.0s
=> => exporting manifest list sha256:f8e5eba1acba7f1742ec42ef93e6a1b7430610e673cd44bec1e966f7cd24a7dd 0.0s
=> => unpacking to ghcr.io/harikrishnamahato777/ghcr-flask:v1    0.2s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/iqlb522k4a17dic1nlun0t9gz
PS D:\ghcr-flask> docker login ghcr.io
Authenticating with existing credentials... [Username: harikrishnamahato777]

rikrishnamahato777/ghcr-flask:v1
Untagged: ghcr.io/harikrishnamahato777/ghcr-flask:v1
Deleted: sha256:f8e5eba1acba7f1742ec42ef93e6a1b7430610e673cd44bec1e966f7cd24a7dd
PS D:\ghcr-flask> docker pull ghcr.io/harikrishnamahato777/ghcr-flask:v1
v1: Pulling from harikrishnamahato777/ghcr-flask
9973539569dd: Pull complete
5d9001ee7533: Pull complete
9e0530d89e21: Pull complete
c3db8fecb3ab: Download complete
Digest: sha256:f8e5eba1acba7f1742ec42ef93e6a1b7430610e673cd44bec1e966f7cd24a7dd
Status: Downloaded newer image for ghcr.io/harikrishnamahato777/ghcr-flask:v1
ghcr.io/harikrishnamahato777/ghcr-flask:v1
PS D:\ghcr-flask> docker run -d --name flask1 -p 5000:5000 ghcr.io/harikrishnamahato777/ghcr-flask:v1
docker: Error response from daemon: Conflict. The container name "/flask1" is already in use by container "c9206d55fc7a79b757b2736a680f1c9c9a247f995447d756de3d76303fef93a3". You have to remove (or rename) that container to be able to reuse that name.

Run 'docker run --help' for more information
PS D:\ghcr-flask> docker flask1
docker: unknown command: docker flask1

Run 'docker --help' for more information
PS D:\ghcr-flask> docker stop flask1
flask1
PS D:\ghcr-flask> docker stop flask1
flask1
PS D:\ghcr-flask> docker run -d --name flask1 -p 5000:5000 ghcr.io/harikrishnamahato777/ghcr-flask:v1
docker: Error response from daemon: Conflict. The container name "/flask1" is already in use by container "c9206d55fc7a79b757b2736a680f1c9c9a247f995447d756de3d76303fef93a3". You have to remove (or rename) that container to be able to reuse that name.
```

Pacakge

The screenshot shows a web browser with three tabs: 'harikrishnamahato777 (Hari K...', 'GHCR Image Creation Guide', and 'localhost:5000'. The address bar shows 'github.com/harikrishnamahato777?tab=packages'. The page displays the GitHub profile for 'harikrishnamahato777' with a blue and white cross logo. The 'Packages' tab is selected, showing a list of two private packages: 'ghcr-demo' (published 1 hour ago) and 'ghcr-flask' (published 16 minutes ago). The browser's footer shows '© 2026 GitHub, Inc.' and various links like Terms, Privacy, Security, Status, Community, Docs, Contact, Manage cookies, and Do not share my personal information.

Hello from Flask on GHCR!

Q#2: You are required to create a customized MySQL Docker image with a preloaded database and publish it to GitHub Container Registry (GHCR), then pull and verify it on another system.

Task Requirements:

1. Create a custom Dockerfile based on the official MySQL image.
2. Configure the Dockerfile to:
 - Set root password using environment variables.
 - Create a new database (e.g., college_db).
 - Import a sample SQL file (init.sql) containing:

- One table (e.g., students)

- At least 3 records.

3. Build the Docker image locally.

4. Tag the image properly for GitHub Container Registry:

Evaluation Rubrics:

- Correct use of MySQL base image

- Proper database initialization

- Correct GHCR tagging format

- Successful push and pull

- Verification of database and table after pulling

Cmd

```
mkdir ghcr-mysql
```

```
cd ghcr-mysql
```

```
notepad init.sql
```

```
notepad Dockerfile
```

```
docker build -t ghcr.io/harikrishnamahato777/ghcr-mysql:v1 .
```

```
docker run -d --name mysql1 -e MYSQL_ROOT_PASSWORD=Root@123 -e  
MYSQL_DATABASE=college_db -p 3306:3306 ghcr.io/harikrishnamahato777/ghcr-  
mysql:v1
```

```
docker exec -it mysql1 mysql -uroot -pRoot@123 -e "SHOW DATABASES;"
```

```
docker exec -it mysql1 mysql -uroot -pRoot@123 -e "USE college_db; SHOW TABLES;"
```

```
docker exec -it mysql1 mysql -uroot -pRoot@123 -e "USE college_db; SELECT * FROM  
students;"
```

```
docker login ghcr.io -u harikrishnamahato777
```

```
docker push ghcr.io/harikrishnamahato777/ghcr-mysql:v1
```

```
docker rm -f mysql1
```

```
docker rmi ghcr.io/harikrishnamahato777/ghcr-mysql:v1
```

```
docker pull ghcr.io/harikrishnamahato777/ghcr-mysql:v1
```

```
docker run -d --name mysql2 -e MYSQL_ROOT_PASSWORD=Root@123 -e  
MYSQL_DATABASE=college_db -p 3306:3306 ghcr.io/harikrishnamahato777/ghcr-  
mysql:v1
```

```
docker exec -it mysql2 mysql -uroot -pRoot@123 -e "USE college_db; SELECT * FROM  
students;"
```

```
▼ TERMINAL
PS D:\> mkdir ghcr-mysql

Directory: D:\

Mode                LastWriteTime         Len
----                -
d-----             21-02-2026         01:59

PS D:\> cd ghcr-mysql
PS D:\ghcr-mysql> notepad init.sql
PS D:\ghcr-mysql> notepad init.sql
PS D:\ghcr-mysql> notepad Dockerfile
PS D:\ghcr-mysql> ren dockerfile.txt dockerfile
PS D:\ghcr-mysql> docker build -t ghcr.io/harikrishnamahato777/ghcr-mysql:v1 .

[+] Building 23.6s (8/8) FINISHED
=> [internal] load build definition from dockerfile                                0.1s
=> => transferring dockerfile: 958                                                0.1s
=> [internal] load metadata for docker.io/library/mysql:8.0                      3.6s
=> [auth] library/mysql:pull token for registry-1.docker.io                    0.0s
=> [internal] load .dockerignore                                                  0.0s
=> => transferring context: 28                                                    0.0s
=> [internal] load build context                                                  0.1s
=> => transferring context: 4508                                                  0.0s
=> [1/2] FROM docker.io/library/mysql:8.0@sha256:a3dff78d876222746a0bacc36dd7e4bf9e673c85fb7ee0d12ed25bd32c43c19b 18.4s
=> => resolve docker.io/library/mysql:8.0@sha256:a3dff78d876222746a0bacc36dd7e4bf9e673c85fb7ee0d12ed25bd32c43c19b 0.0s
=> => sha256:25e72585209f459a999b3a7f73317cc541ffa8721adf4a0b06f9ad33545489e0 315B / 315B 0.6s
=> => sha256:1b381ad27e95d68690db72792d0fce61f952ad2dc7e2cc86607ada9de63e97c2 122B / 122B 0.9s
=> => sha256:85b08b5b90553f7dea17f1fff6a39bf88a13e0e266afcb7af388de5a526ab2cb 5.33kB / 5.33kB 1.3s
=> => sha256:2b38f497959225271d3c779fd8a21adbb2c05020b27816d98872b41cf5c42d9 128.10MB / 128.10MB 9.7s
=> => sha256:d6b535e661c2b536f703dbb410389514e949c4b68a4a74c7b1c1804c1bbe6502 49.92MB / 49.92MB 6.3s
=> => sha256:3ca1b3148b2fad8250bce5821f4575dd76393968e0aac18bccbea74175707d4 335B / 335B 9.7s
=> => sha256:7aee539d1d907fe1d21a43ed53f8daee7ee52f5fbfca20e9725fc21bca2d361b 2.61kB / 2.61kB 0.7s
=> => sha256:bfb2a1b215567315cfd7dcea1347592fc81e54aac13227186b35d5cd12b5f6a 6.17MB / 6.17MB 6.5s
=> => sha256:0644bff8d1583288ae12fe4c4761b7fc6e1d148d9d4b2b7fcc2d2984dc85696a 783.56kB / 783.56kB 1.4s
```

```
▼ TERMINAL
PS D:\ghcr-mysql> docker build -t ghcr.io/harikrishnamahato777/ghcr-mysql:v1 .

=> => sha256:25e72585209f459a999b3a7f73317cc541ffa8721adf4a0b06f9ad33545489e0 315B / 315B
=> => sha256:1b381ad27e95d68690db72792d0fce61f952ad2dc7e2cc86607ada9de63e97c2 122B / 122B
=> => sha256:85b08b5b90553f7dea17f1fff6a39bf88a13e0e266afcb7af388de5a526ab2cb 5.33kB / 5.33kB
=> => sha256:2b38f497959225271d3c779fd8a21adbb2c05020b27816d98872b41cf5c42d9 128.10MB / 128.10MB
=> => sha256:d6b535e661c2b536f703dbb410389514e949c4b68a4a74c7b1c1804c1bbe6502 49.92MB / 49.92MB
=> => sha256:3ca1b3148b2fad8250bce5821f4575dd76393968e0aac18bccbea74175707d4 335B / 335B
=> => sha256:7aee539d1d907fe1d21a43ed53f8daee7ee52f5fbfca20e9725fc21bca2d361b 2.61kB / 2.61kB
=> => sha256:bfb2a1b215567315cfd7dcea1347592fc81e54aac13227186b35d5cd12b5f6a 6.17MB / 6.17MB
=> => sha256:0644bff8d1583288ae12fe4c4761b7fc6e1d148d9d4b2b7fcc2d2984dc85696a 783.56kB / 783.56kB
=> => sha256:74a8e4bbd9fe8a9fb7d9f028398fc37d20efc1cde6bf66eeabef7755e5f5fe 47.31MB / 47.31MB
=> => sha256:8814198b348b66d583fd7eab3c27ed9fd2edf3fe5844c12a56c94230e59510fd 885B / 885B
=> => extracting sha256:74a8e4bbd9fe8a9fb7d9f028398fc37d20efc1cde6bf66eeabef7755e5f5fe 1
=> => extracting sha256:8814198b348b66d583fd7eab3c27ed9fd2edf3fe5844c12a56c94230e59510fd 0
=> => extracting sha256:0644bff8d1583288ae12fe4c4761b7fc6e1d148d9d4b2b7fcc2d2984dc85696a 0
=> => extracting sha256:bfb2a1b215567315cfd7dcea1347592fc81e54aac13227186b35d5cd12b5f6a 0
=> => extracting sha256:7aee539d1d907fe1d21a43ed53f8daee7ee52f5fbfca20e9725fc21bca2d361b 0
=> => extracting sha256:3ca1b3148b2fad8250bce5821f4575dd76393968e0aac18bccbea74175707d4 0
=> => extracting sha256:d6b535e661c2b536f703dbb410389514e949c4b68a4a74c7b1c1804c1bbe6502 0
=> => extracting sha256:25e72585209f459a999b3a7f73317cc541ffa8721adf4a0b06f9ad33545489e0 0
=> => extracting sha256:2b38f497959225271d3c779fd8a21adbb2c05020b27816d98872b41cf5c42d9 3
=> => extracting sha256:85b08b5b90553f7dea17f1fff6a39bf88a13e0e266afcb7af388de5a526ab2cb 0
=> => extracting sha256:1b381ad27e95d68690db72792d0fce61f952ad2dc7e2cc86607ada9de63e97c2 0
=> [2/2] COPY init.sql /docker-entrypoint-initdb.d/
=> exporting to image
=> => exporting layers
=> => exporting manifest sha256:6ad6f92d40fa17a3f894aaa432a0fa16049d93bc80ce5d954fffe14a3c12a31c
=> => exporting config sha256:8cd53c06d3e94c6bd9978131c0d70c2613bfd5f6d910d3d15ddf75fb91871ddd
=> => exporting attestation manifest sha256:9dafb726552e7d00912150f1999a9447066feb17ff8b0e69295ce60526cda3af
=> => exporting manifest list sha256:2a306eaf17881fdf4d01b83690b5128da18c554219864a498fd4eabb141b34a5
=> => naming to ghcr.io/harikrishnamahato777/ghcr-mysql:v1
=> => unpacking to ghcr.io/harikrishnamahato777/ghcr-mysql:v1

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/z0n4wpiiru2eii283zt1i66un
```

```
mysql1
PS D:\ghcr-mysql> docker run -d --name mysql1 -e MYSQL_ROOT_PASSWORD=Root@123 -e MYSQL_DATABASE=college_db -p 3306:3306 ghcr
.io/harikrishnamahato777/ghcr-mysql:v1
b9ee95ba8ae8db23ac9c8bdb6d28deb74e243be097c51d0969d7226bf5cd02c
PS D:\ghcr-mysql> docker exec -it mysql1 mysql -uroot -pRoot@123 -e "USE college_db; SHOW TABLES;"
mysql: [Warning] Using a password on the command line interface can be insecure.
+-----+
| Tables_in_college_db |
+-----+
| students             |
+-----+
PS D:\ghcr-mysql> docker exec -it mysql1 mysql -uroot -pRoot@123 -e "USE college_db; SHOW TABLES;"
mysql: [Warning] Using a password on the command line interface can be insecure.
+-----+
| Tables_in_college_db |
+-----+
| students             |
+-----+
PS D:\ghcr-mysql> docker exec -it mysql1 mysql -uroot -pRoot@123 -e "SHOW DATABASES;"
mysql: [Warning] Using a password on the command line interface can be insecure.
+-----+
| Database              |
+-----+
| college_db            |
| information_schema    |
| mysql                 |
| performance_schema   |
| sys                   |
+-----+
PS D:\ghcr-mysql> docker exec -it mysql1 mysql -uroot -pRoot@123 -e "USE college_db; SELECT * FROM students;"
mysql: [Warning] Using a password on the command line interface can be insecure.
```

```
error: password is required
PS D:\ghcr-mysql> docker login ghcr.io
Authenticating with existing credentials... [Username: harikrishnamahato777]

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

Login Succeeded
PS D:\ghcr-mysql> docker push ghcr.io/harikrishnamahato777/ghcr-mysql:v1
The push refers to repository [ghcr.io/harikrishnamahato777/ghcr-mysql]
85b08b5b9055: Pushed
d531371eabe7: Pushed
74a8e4bbd9fe: Pushed
3ca1b3148b2f: Pushed
2b38f4979592: Pushed
bfb2a1b21556: Pushed
d6b535e661c2: Pushed
25e72585209f: Pushed
1b381ad27e95: Pushed
bc681885ccd4: Pushed
0644bff8d158: Pushed
8814198b348b: Pushed
7aee539d1d90: Pushed
v1: digest: sha256:2a306eaf17881fdf4d01b83690b5128da18c554219864a498fd4eabb141b34a5 size: 856
PS D:\ghcr-mysql>
```

```
PS D:\ghcr-mysql> docker exec -it mysql1 mysql -uroot -pRoot@123 -e "USE college_db; SHOW TABLES;"
mysql: [Warning] Using a password on the command line interface can be insecure.
+-----+
| Database              |
+-----+
| college_db            |
| information_schema    |
| mysql                 |
| performance_schema   |
| sys                   |
+-----+
PS D:\ghcr-mysql> docker exec -it mysql1 mysql -uroot -pRoot@123 -e "USE college_db; SELECT * FROM students;"
mysql: [Warning] Using a password on the command line interface can be insecure.
+-----+
| id | name   | roll | section | group_name |
+-----+
| 1  | Har    | 10   | INT332  | G1          |
| 2  | Krishna| 10   | INT332  | G1          |
| 3  | Abishek| 8    | INT332  | G2          |
| 4  | Aaryan | 9    | INT332  | G2          |
+-----+
```