

## 1. Build a Docker container from a custom Docker-file

Step-1: Create a Dockerfile using **nano** in the pwd

—> **Dockerfile**

```
FROM python:3.9-slim
WORKDIR /app
COPY req.txt .
RUN pip install --no-cache-dir -r req.txt
COPY . .
ENV FLASK_APP=app.py
ENV FLASK_RUN_HOST=0.0.0.0
ENV FLASK_RUN_PORT=5000
EXPOSE 5000
CMD ["flask", "run"]
```

Step-2: Create a python file **app.py**

→**app.py**

```
from flask import Flask

app = Flask(__name__)

@app.route("/")
def hello():
    return "Hello, Dockerrr...!"

if __name__ == "__main__":
    app.run(host="0.0.0.0", port=5000)
```

Step-3: Create a requirements file **req.txt**

flask

```
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY: ~/DevOps/Program1

Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/

Invalid argument "Program1" for "-t, --tag" flag: invalid reference format: repository name (library/Program1) must be lowercase

Usage:  docker build [OPTIONS] PATH | URL | -

Run 'docker build --help' for more information
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker build -t program1 .
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  4.096kB
Step 1/10 : FROM python:3.9-slim
--> 725dd64d2f62
Step 2/10 : WORKDIR /app
--> Using cache
--> 9e6fc5a4d940
Step 3/10 : COPY requirements.txt .
--> Using cache
--> 821a0f78cec2
Step 4/10 : RUN pip install --no-cache-dir -r requirements.txt
--> Using cache
--> bdecfc33593
Step 5/10 : COPY . .
--> Using cache
--> 911cacc10a
Step 6/10 : ENV FLASK_APP=app.py
--> Using cache
--> eef6cd65966a
Step 7/10 : ENV FLASK_RUN_HOST=0.0.0
--> Using cache
--> 03926a0eb72c
Step 8/10 : ENV FLASK_RUN_PORT=5000
--> Using cache
--> ff8a51df5a7a
Step 9/10 : EXPOSE 5000
--> Using cache
--> d76ac7f6dcab
Step 10/10 : CMD ["flask", "run"]
--> Using cache
--> 666d9dd21a0f
Successfully built 666d9dd21a0f
Successfully tagged program1:latest
```

Step-4: Build the docker image using the below command

`docker build -t p1 .`

Step-5: Run the Docker Run command to create a container specifying the port number and name for the container

```
docker run -d -p 5000:5000 --name flask-app p1
```

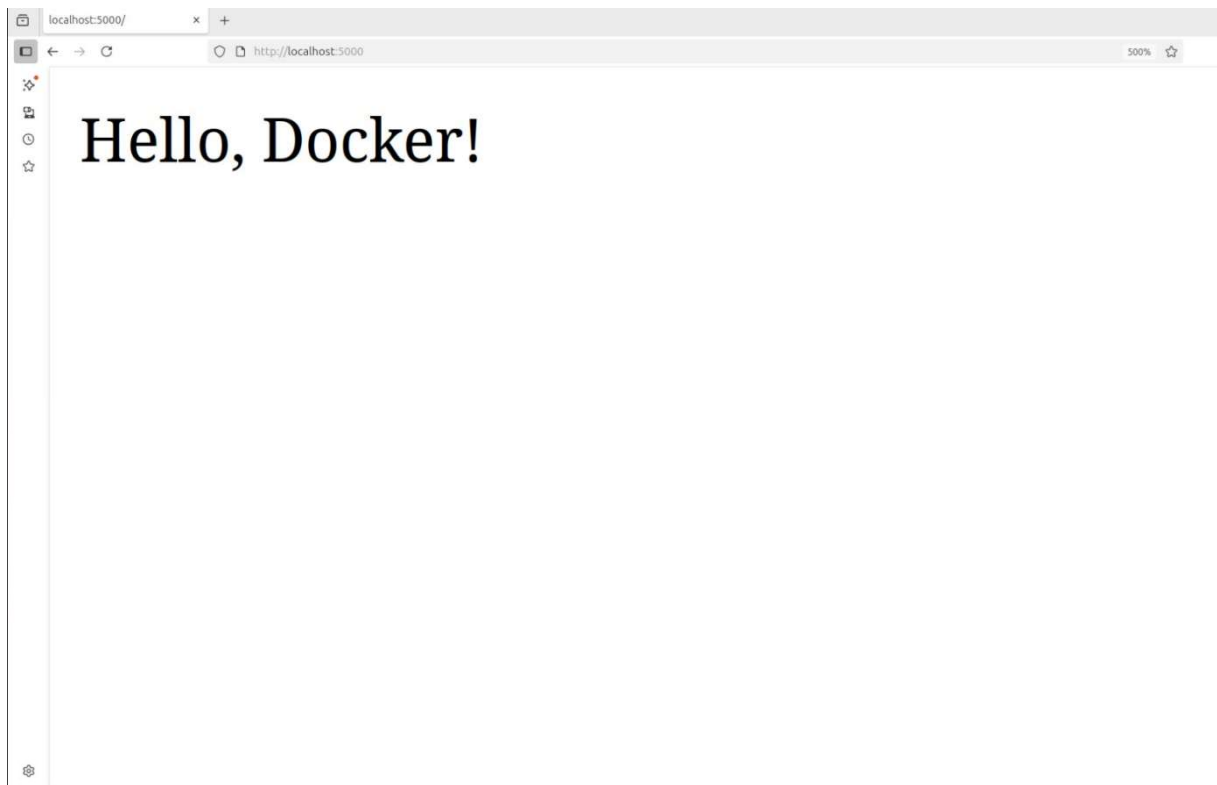
```
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY: ~/DevOps/Program1
---> Using cache
---> 03926a0eb72c
Step 8/10 : ENV FLASK_RUN_PORT=5000
---> Using cache
---> ff8a51df5a7a
Step 9/10 : EXPOSE 5000
---> Using cache
---> d76ac7f6dcab
Step 10/10 : CMD ["flask", "run"]
---> Using cache
---> 666d9dd21a0f
Successfully built 666d9dd21a0f
Successfully tagged program1:latest
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
nodeapp              latest             84f61331a844       32 hours ago       134MB
program-2            latest             84f61331a844       32 hours ago       134MB
<none>               <none>             41675e47cdde       32 hours ago       134MB
flask_app            latest             666d9dd21a0f       32 hours ago       132MB
program1             latest             666d9dd21a0f       32 hours ago       132MB
<none>               <none>             dd1ba8982e12       33 hours ago       132MB
<none>               <none>             3f72bd0ca1dc       5 days ago         143MB
<none>               <none>             4ea2f968622e       5 days ago         147MB
node                 20-alpine         2b56f2779663       2 weeks ago        134MB
python               3.9-slim          725dd64d2f62       3 weeks ago        122MB
alpine               latest            706db57fb206       3 weeks ago        8.32MB
ubuntu               latest            97bed23a3497       4 weeks ago        78.1MB
ubuntu               20.04             b7bab04fd9aa       6 months ago       72.8MB
mysql/mysql-server   5.6               8c587c89edee       4 years ago        238MB
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ docker run -d -p 5000:5000 -name flask-app program1
unknown shorthand flag: 'n' in -name

Usage:  docker run [OPTIONS] IMAGE [COMMAND] [ARG...]

Run 'docker run --help' for more information
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker run -d -p 5000:5000 --name flask-container Program1
docker: invalid reference format: repository name (library/Program1) must be lowercase

Run 'docker run --help' for more information
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker run -d -p 5000:5000 --name flask-container program1
6c0d00037eff91fa16082ce09a5ec7663bdd24f1eb249e464483f8335f13f41
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED              STATUS              PORTS                               NAMES
6c0d00037eff   program1  "flask run"              30 seconds ago      Up 29 seconds      0.0.0.0:5000->5000/tcp, [::]:5000->5000/tcp  flask-container
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$
```

Step-6: Test the container by verifying whether its showing some results on `http://localhost:5000` stating **“hello Dockerr!”**



You can also check the status of the container by using below command

```
docker ps // displays current running containers
Docker ps -a // displays all present containers
```

Step-7: Stop the container, remove the container using container number

```
sudo docker container ls -a    or    docker ps -a
sudo docker container stop <container-id>
sudo docker container rm <container-id>
sudo docker image rm <image-id>    or    docker rmi <image-id>
```

```
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY: ~/DevOps/Program1

<none>          <none>          3f72bd0ca1dc    5 days ago     143MB
<none>          <none>          4ea2f968622e    5 days ago     147MB
node            20-alpine       2b56f2779663    2 weeks ago    134MB
python          3.9-slim        725dd64d2f62    3 weeks ago    122MB
alpine           latest          706db57fb206    3 weeks ago    8.32MB
ubuntu          latest          97bed23a3497    4 weeks ago    78.1MB
ubuntu          20.04           b7bab04fd9aa    6 months ago   72.8MB
mysql/mysql-server 5.6            8c587c89edee    4 years ago    238MB
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ docker run -d -p 5000:5000 -name flask-app program1
unknown shorthand flag: 'n' in -name

Usage:  docker run [OPTIONS] IMAGE [COMMAND] [ARG...]

Run 'docker run --help' for more information
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker run -d -p 5000:5000 --name flask-container Program1
docker: invalid reference format: repository name (library/Program1) must be lowercase

Run 'docker run --help' for more information
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker run -d -p 5000:5000 --name flask-container program1
6c0d00037eff891fa16082ce09a5ec7663bdd24f1eb249e464483f8335f13f41
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
6c0d00037eff   program1       "flask run"             30 seconds ago Up 29 seconds  0.0.0.0:5000->5000/tcp, [::]:5000->5000/tcp   flask-container
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker bbb
docker: unknown command: docker bbb

Run 'docker --help' for more information
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker rmi program1
Untagged: program1:latest
1RV24MC029_CHINMAYAKAGOLLI@CHINMAY:~/DevOps/Program1$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
nodeapp        latest    84f61331a844   32 hours ago   134MB
program-2      latest    84f61331a844   32 hours ago   134MB
<none>         <none>    41675e47cdde   32 hours ago   134MB
flask_app      latest    666d9dd21a0f   33 hours ago   132MB
<none>         <none>    dd1ba8982e12   33 hours ago   132MB
<none>         <none>    3f72bd0ca1dc   5 days ago     143MB
<none>         <none>    4ea2f968622e   5 days ago     147MB
node           20-alpine 2b56f2779663   2 weeks ago    134MB
python         3.9-slim  725dd64d2f62   3 weeks ago    122MB
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```