

Configuring Docker Containers

Cloud Computing, Second Edition - Lab 03

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Time on Task:

28 hours, 35 minutes

Progress:

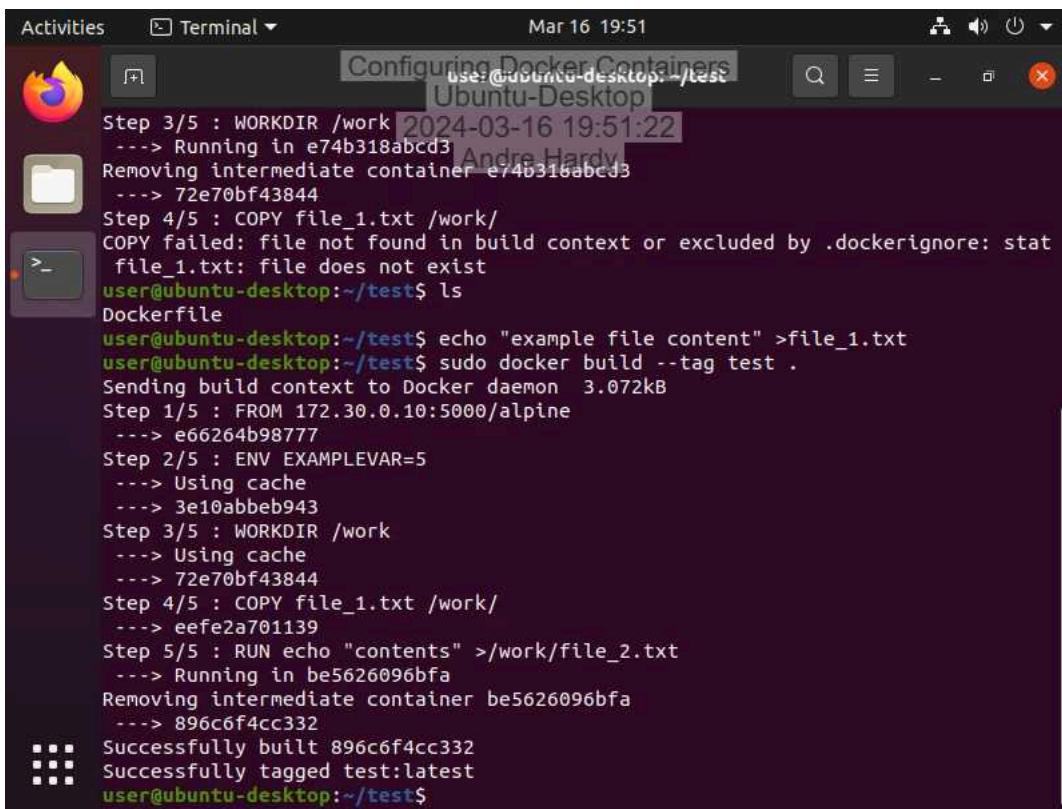
100%

Report Generated: Saturday, March 16, 2024 at 9:16 PM

Hands-On Demonstration

Part 1: Creating and Running a Docker Container

9. Make a screen capture showing the successful build of the test image.



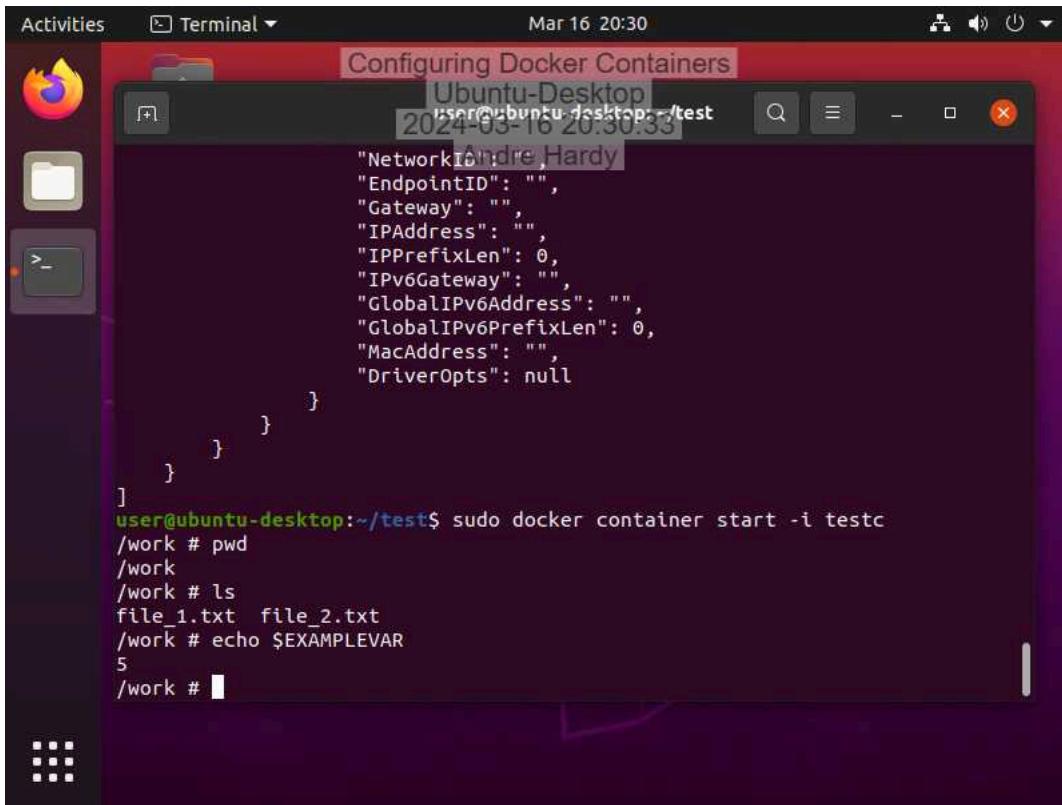
The screenshot shows a terminal window titled "Configuring Docker Containers" running on an Ubuntu desktop. The terminal output details the steps of a Docker build process:

```
Step 3/5 : WORKDIR /work|2024-03-16 19:51:22
--> Running in e74b318abcd3
Removing intermediate container e74b318abcd3
--> 72e70bf43844
Step 4/5 : COPY file_1.txt /work/
COPY failed: file not found in build context or excluded by .dockerignore: stat
file_1.txt: file does not exist
user@ubuntu-desktop:~/test$ ls
Dockerfile
user@ubuntu-desktop:~/test$ echo "example file content" >file_1.txt
user@ubuntu-desktop:~/test$ sudo docker build --tag test .
Sending build context to Docker daemon 3.072kB
Step 1/5 : FROM 172.30.0.10:5000/alpine
--> e66264b98777
Step 2/5 : ENV EXAMPLEVAR=5
--> Using cache
--> 3e10abbeb943
Step 3/5 : WORKDIR /work
--> Using cache
--> 72e70bf43844
Step 4/5 : COPY file_1.txt /work/
--> eefe2a701139
Step 5/5 : RUN echo "contents" >/work/file_2.txt
--> Running in be5626096bfa
Removing intermediate container be5626096bfa
--> 896c6f4cc332
Successfully built 896c6f4cc332
Successfully tagged test:latest
user@ubuntu-desktop:~/test$
```

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19. Make a screen capture showing the **working directory**, **file listing**, and **environment variable value**.



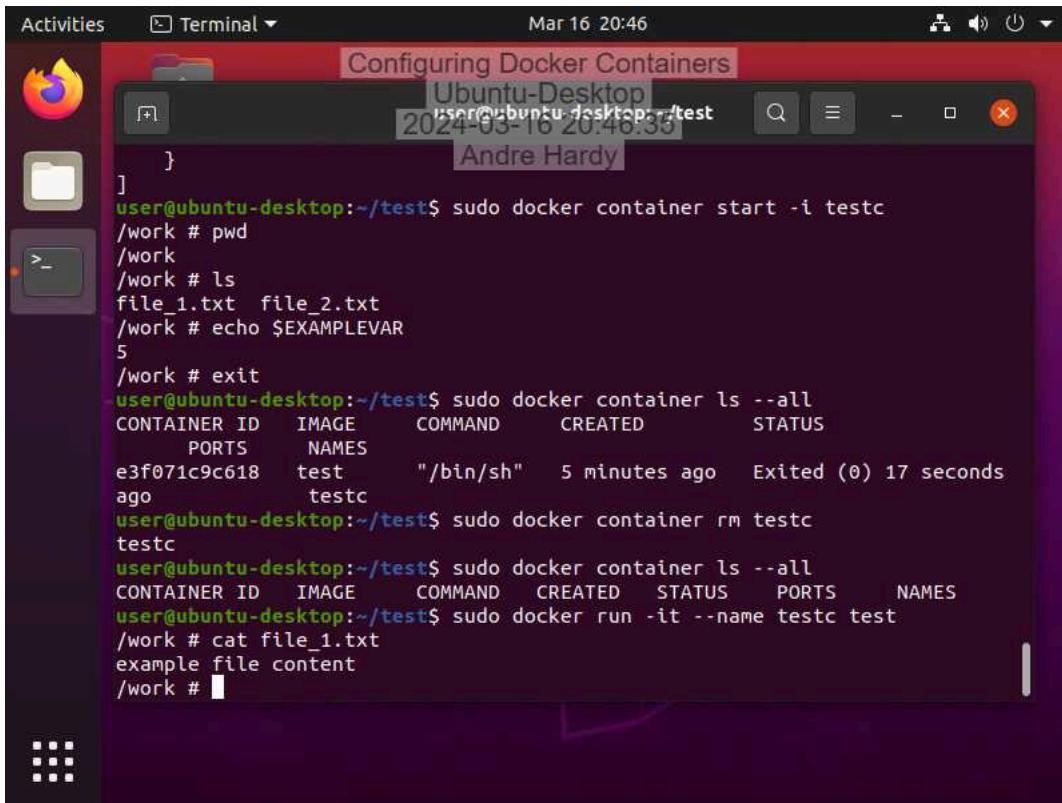
The screenshot shows a Linux desktop environment with a terminal window titled "Configuring Docker Containers". The terminal window is running on an "Ubuntu-Desktop" session at "user@ubuntu-desktop: ~/test" on "Mar 16 20:30". The terminal displays the following command and its output:

```
user@ubuntu-desktop:~/test$ sudo docker container start -i testc
/work # pwd
/work
/work # ls
file_1.txt file_2.txt
/work # echo $EXAMPLEVAR
5
/work #
```

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26. Make a screen capture showing both your docker run command and the contents of the file_1.txt.



The screenshot shows a terminal window titled "Configuring Docker Containers" running on an Ubuntu Desktop environment. The terminal session is as follows:

```
user@ubuntu-desktop:~/test$ sudo docker container start -i testc
/work # pwd
/work
/work # ls
file_1.txt  file_2.txt
/work # echo $EXAMPLEVAR
5
/work # exit
user@ubuntu-desktop:~/test$ sudo docker container ls --all
CONTAINER ID  IMAGE      COMMAND     CREATED      STATUS
              PORTS      NAMES
e3f071c9c618  test       "/bin/sh"   5 minutes ago  Exited (0) 17 seconds ago
              testc
user@ubuntu-desktop:~/test$ sudo docker container rm testc
testc
user@ubuntu-desktop:~/test$ sudo docker container ls --all
CONTAINER ID  IMAGE      COMMAND     CREATED      STATUS      PORTS      NAMES
user@ubuntu-desktop:~/test$ sudo docker run -it --name testc test
/work # cat file_1.txt
example file content
/work #
```

Part 2: Configuring an Application with Multiple Containers

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7. Make a screen capture showing the running db container.

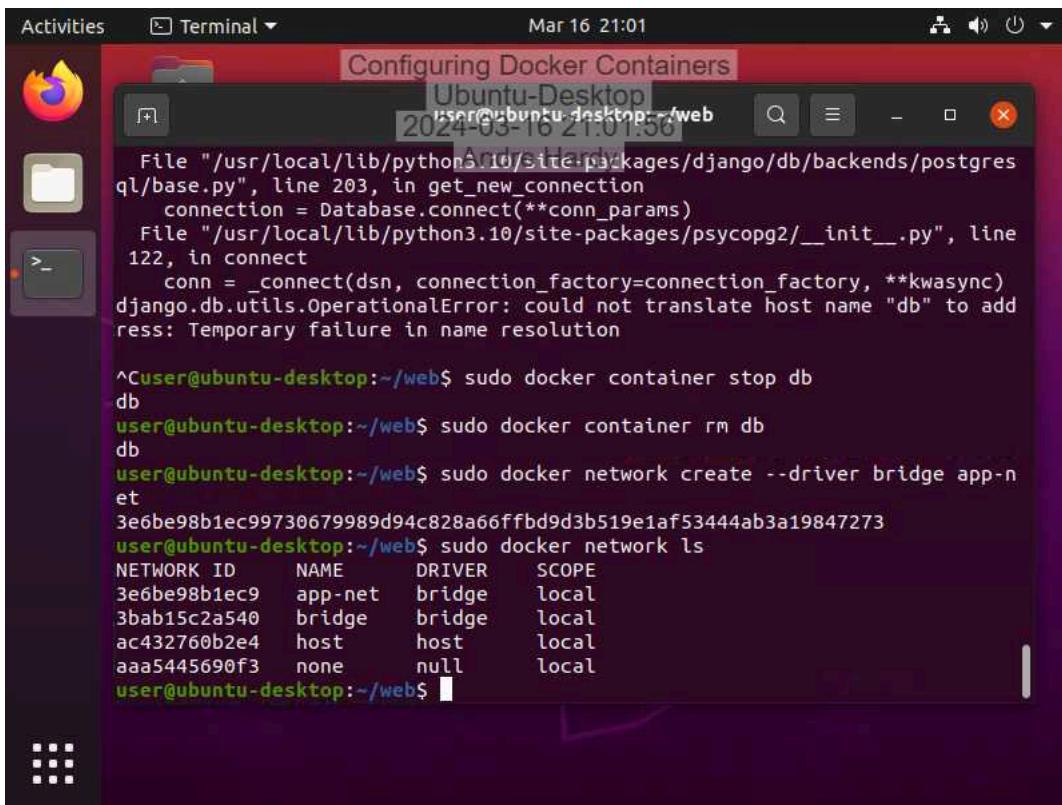
The screenshot shows a terminal window on an Ubuntu desktop environment. The title bar of the terminal window reads "Configuring Docker Containers". The terminal output is as follows:

```
Activities Terminal Mar 16 20:51
Configuring Docker Containers
Ubuntu-Desktop user@ubuntu-desktop:~/db$ [2024-03-16 20:51:20]
Removing intermediate container 351da17df10a
--> 351da17df10a
Successfully built 351da17df10a
Successfully tagged db:latest
user@ubuntu-desktop:~/db$ sudo docker run -d --name db -v $(pwd)/code:/code
web django-admin startproject example .
sudo: doker: command not found
user@ubuntu-desktop:~/db$ sudo docker run --rm -v $(pwd)/code:/code web django-admin startproject example .
Unable to find image 'web:latest' locally
docker: Error response from daemon: Get "https://registry-1.docker.io/v2/":
dial tcp: lookup registry-1.docker.io: Temporary failure in name resolution.
See 'docker run --help'.
user@ubuntu-desktop:~/db$ sudo docker run -d --name db -v $(pwd)/data:/var/
lib/postgresql/data db
166a6120de34bfe8a7aa25219de09460abf94d26ef42633c668339650022c04c
user@ubuntu-desktop:~/db$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS
PORTS NAMES
166a6120de34 db "docker-entrypoint.s..." 8 seconds ago Up 8 seco
nds 5432/tcp db
user@ubuntu-desktop:~/db$
```

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24. Make a screen capture showing the command creating the network and the resulting id.

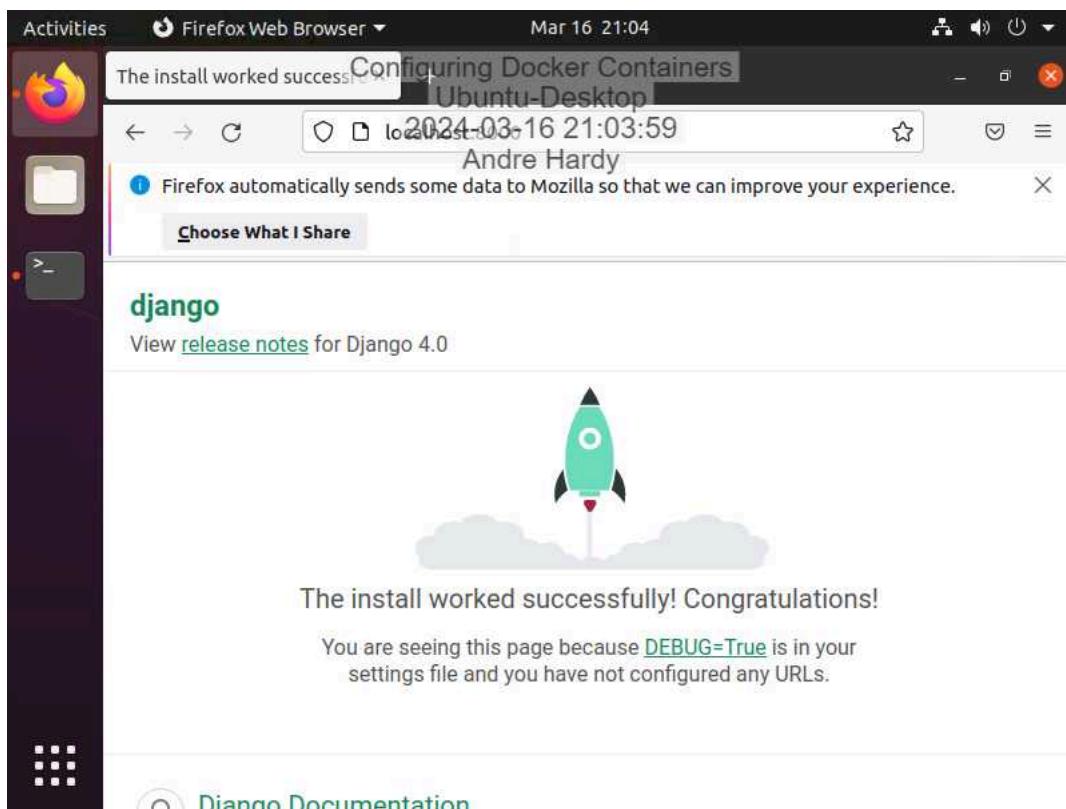


The screenshot shows a terminal window titled "Configuring Docker Containers" running on an Ubuntu desktop. The terminal output is as follows:

```
File "/usr/local/lib/python3.10/site-packages/django/db/backends/postgresql/base.py", line 203, in get_new_connection
    connection = Database.connect(**conn_params)
File "/usr/local/lib/python3.10/site-packages/psycopg2/__init__.py", line 122, in connect
    conn = _connect(dsn, connection_factory=connection_factory, **kwasync)
django.db.utils.OperationalError: could not translate host name "db" to address: Temporary failure in name resolution

^Cuser@ubuntu-desktop:~/web$ sudo docker container stop db
db
user@ubuntu-desktop:~/web$ sudo docker container rm db
db
user@ubuntu-desktop:~/web$ sudo docker network create --driver bridge app-net
3e6be98b1ec99730679989d94c828a66ffbd9d3b519e1af53444ab3a19847273
user@ubuntu-desktop:~/web$ sudo docker network ls
NETWORK ID     NAME      DRIVER      SCOPE
3e6be98b1ec9   app-net    bridge      local
3bab15c2a540   bridge     bridge      local
ac432760b2e4   host       host       local
aaa5445690f3   none      null      local
user@ubuntu-desktop:~/web$
```

30. Make a screen capture showing the Django page.

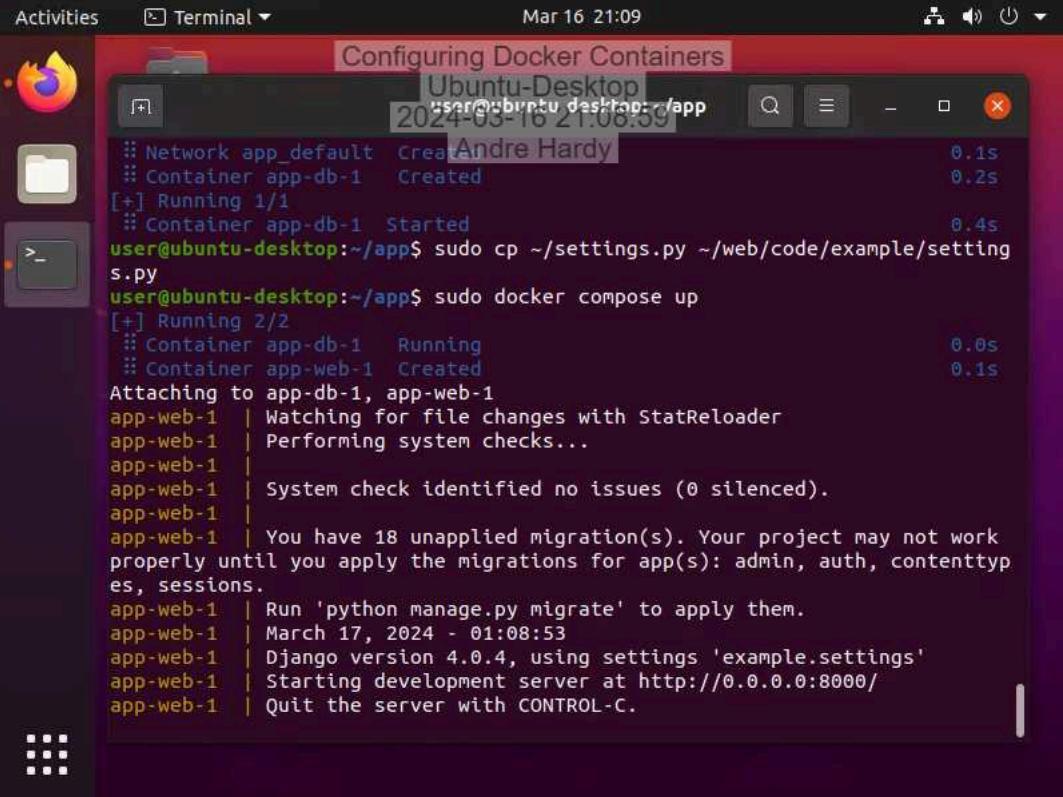


Part 3: Using Docker Compose

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11. Make a screen capture showing output from the compose up command.



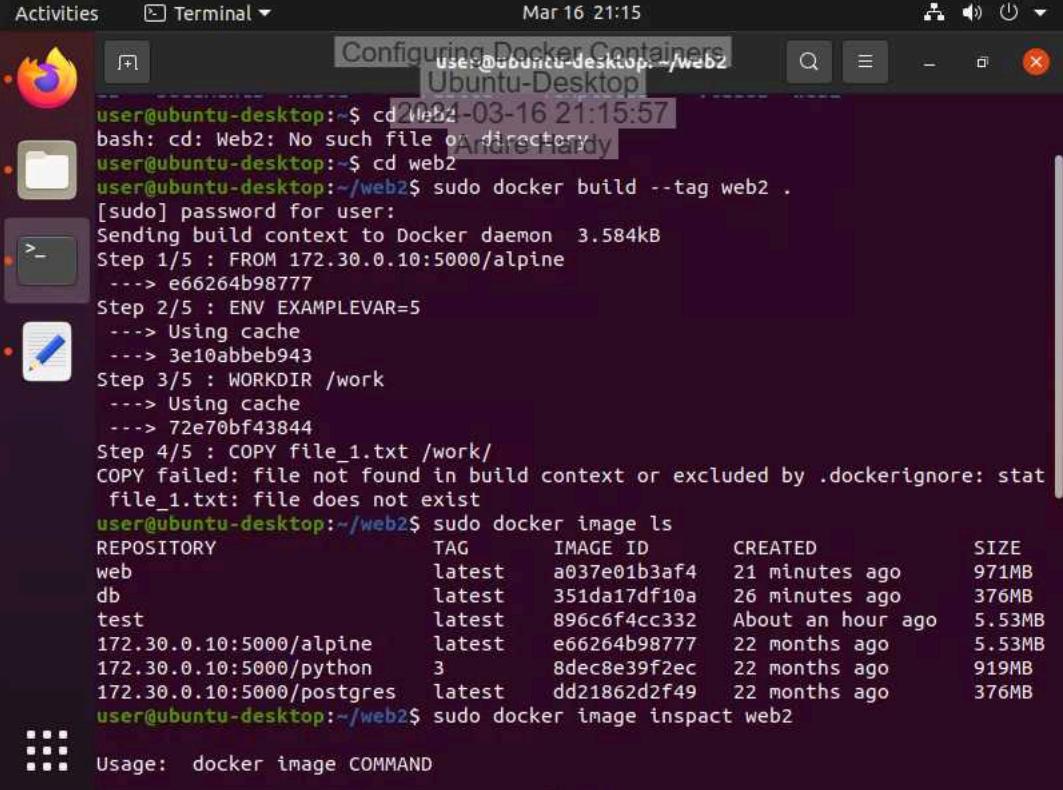
The screenshot shows a terminal window titled "Configuring Docker Containers" running on an Ubuntu desktop. The terminal output is as follows:

```
user@ubuntu-desktop:~/app$ sudo cp ~/settings.py ~/web/code/example/settings.py
user@ubuntu-desktop:~/app$ sudo docker compose up
[+] Running 2/2
  :: Container app-db-1  Running
  :: Container app-web-1  Created
Attaching to app-db-1, app-web-1
app-web-1 | Watching for file changes with StatReloader
app-web-1 | Performing system checks...
app-web-1 | System check identified no issues (0 silenced).
app-web-1 | You have 18 unapplied migration(s). Your project may not work
properly until you apply the migrations for app(s): admin, auth, contenttyp
es, sessions.
app-web-1 | Run 'python manage.py migrate' to apply them.
app-web-1 | March 17, 2024 - 01:08:53
app-web-1 | Django version 4.0.4, using settings 'example.settings'
app-web-1 | Starting development server at http://0.0.0.0:8000/
app-web-1 | Quit the server with CONTROL-C.
```

Challenge and Analysis

Part 1: Create an Image to Serve a Static File

Make a screen capture showing the successful build of the web2 image.



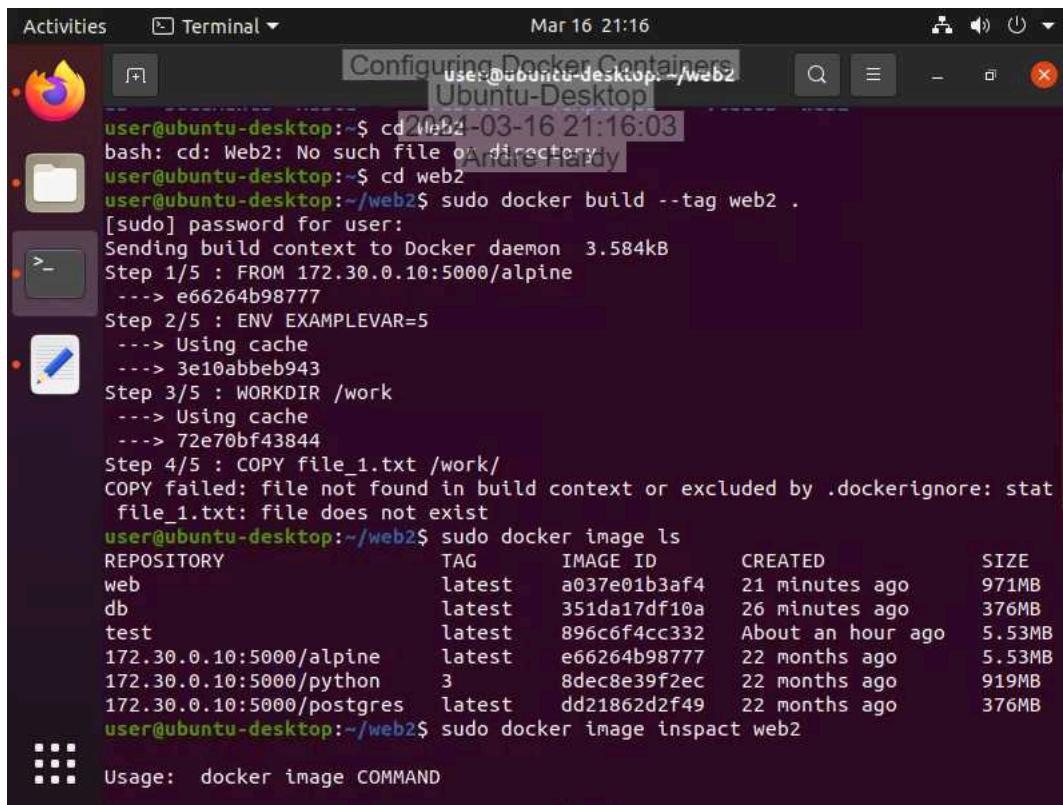
The screenshot shows a terminal window on an Ubuntu desktop environment. The title bar indicates the session is titled "Configuring Docker Containers" and the host is "Ubuntu-Desktop". The terminal output shows the user attempting to change directory to "Web2" (which does not exist), then successfully building a Docker image named "web2" from the current directory. The build process uses Alpine as the base image and copies a file named "file_1.txt" to the image's "/work" directory. Finally, the user lists all Docker images and inspects the "web2" image.

```
user@ubuntu-desktop:~$ cd Web2
bash: cd: Web2: No such file or directory
user@ubuntu-desktop:~$ cd web2
user@ubuntu-desktop:~/web2$ sudo docker build --tag web2 .
[sudo] password for user:
Sending build context to Docker daemon  3.584kB
Step 1/5 : FROM 172.30.0.10:5000/alpine
--> e66264b98777
Step 2/5 : ENV EXAMPLEVAR=5
--> Using cache
--> 3e10abbeb943
Step 3/5 : WORKDIR /work
--> Using cache
--> 72e70bf43844
Step 4/5 : COPY file_1.txt /work/
COPY failed: file not found in build context or excluded by .dockerignore: stat
  file_1.txt: file does not exist
user@ubuntu-desktop:~/web2$ sudo docker image ls
REPOSITORY          TAG      IMAGE ID      CREATED       SIZE
web                  latest   a037e01b3af4  21 minutes ago  971MB
db                  latest   351da17df10a  26 minutes ago  376MB
test                latest   896c6f4cc332  About an hour ago  5.53MB
172.30.0.10:5000/alpine    latest   e66264b98777  22 months ago  5.53MB
172.30.0.10:5000/python    3       8dec8e39f2ec  22 months ago  919MB
172.30.0.10:5000/postgres  latest   dd21862d2f49  22 months ago  376MB
user@ubuntu-desktop:~/web2$ sudo docker image inspect web2
Usage: docker image COMMAND
```

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Make a screen capture showing the directory listing served on port 8001.



The screenshot shows a terminal window on an Ubuntu desktop environment. The terminal title is "Configuring Docker Containers" and the current working directory is "/web2". The user runs several commands to build a Docker image and inspect it:

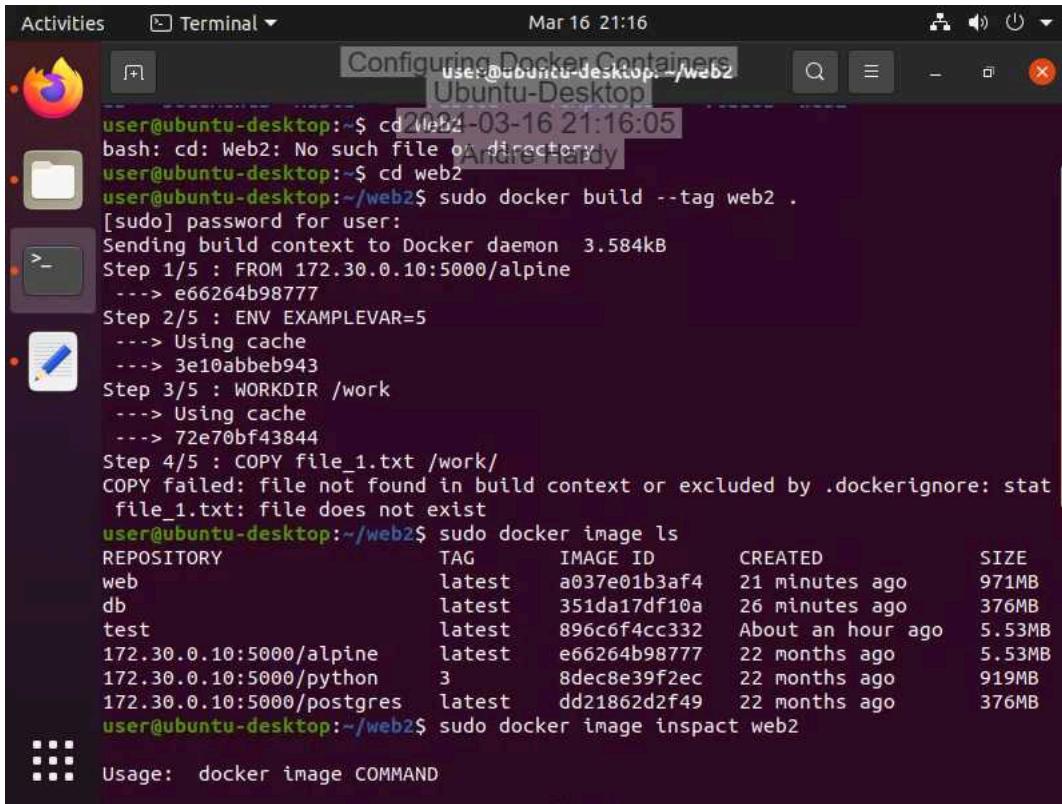
```
user@ubuntu-desktop:~/web2$ cd web2
bash: cd: Web2: No such file or directory
user@ubuntu-desktop:~/web2$ sudo docker build --tag web2 .
[sudo] password for user:
Sending build context to Docker daemon  3.584kB
Step 1/5 : FROM 172.30.0.10:5000/alpine
--> e66264b98777
Step 2/5 : ENV EXAMPLEVAR=5
--> Using cache
--> 3e10abbeb943
Step 3/5 : WORKDIR /work
--> Using cache
--> 72e70bf43844
Step 4/5 : COPY file_1.txt /work/
COPY failed: file not found in build context or excluded by .dockerignore: stat
  file_1.txt: file does not exist
user@ubuntu-desktop:~/web2$ sudo docker image ls
REPOSITORY          TAG      IMAGE ID      CREATED        SIZE
web                  latest   a037e01b3af4  21 minutes ago  971MB
db                  latest   351da17df10a  26 minutes ago  376MB
test                latest   896c6f4cc332  About an hour ago  5.53MB
172.30.0.10:5000/alpine    latest   e66264b98777  22 months ago  5.53MB
172.30.0.10:5000/python    3       8dec8e39f2ec  22 months ago  919MB
172.30.0.10:5000/postgres  latest   dd21862d2f49  22 months ago  376MB
user@ubuntu-desktop:~/web2$ sudo docker image inspect web2
Usage: docker image COMMAND
```

Part 2: Add the Static Service to the Docker Compose File

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Make a screen capture showing the **creation of the web, web2, and db containers** in the docker compose output.



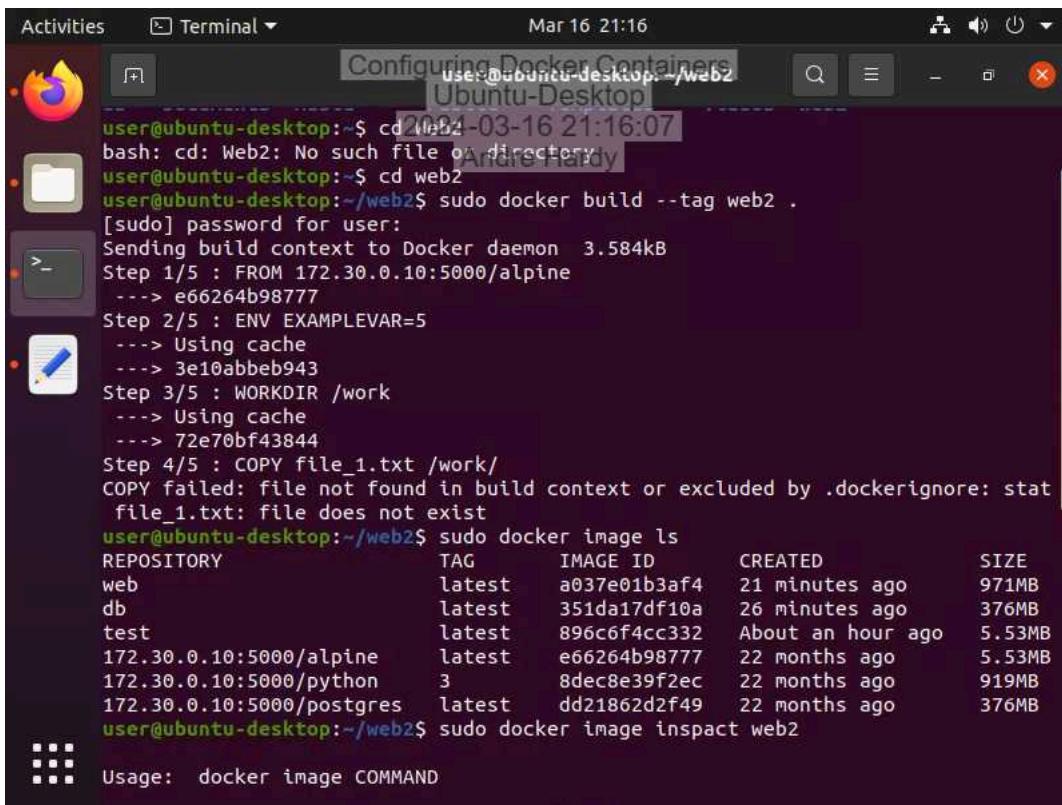
The screenshot shows a terminal window on an Ubuntu desktop. The terminal title is "Configuring Docker Containers" and the subtitle is "Ubuntu-Desktop". The terminal content shows the following steps:

```
user@ubuntu-desktop:~$ cd /web2
bash: cd: Web2: No such file or directory
user@ubuntu-desktop:~$ cd web2
user@ubuntu-desktop:~/web2$ sudo docker build --tag web2 .
[sudo] password for user:
Sending build context to Docker daemon 3.584kB
Step 1/5 : FROM 172.30.0.10:5000/alpine
--> e66264b98777
Step 2/5 : ENV EXAMPLEVAR=5
--> Using cache
--> 3e10abbeb943
Step 3/5 : WORKDIR /work
--> Using cache
--> 72e70bf43844
Step 4/5 : COPY file_1.txt /work/
COPY failed: file not found in build context or excluded by .dockerignore: stat
  file_1.txt: file does not exist
user@ubuntu-desktop:~/web2$ sudo docker image ls
REPOSITORY          TAG      IMAGE ID      CREATED        SIZE
web                  latest   a037e01b3af4  21 minutes ago  971MB
db                  latest   351da17df10a  26 minutes ago  376MB
test                 latest   896c6f4cc332  About an hour ago  5.53MB
172.30.0.10:5000/alpine    latest   e66264b98777  22 months ago  5.53MB
172.30.0.10:5000/python     3       8dec8e39f2ec  22 months ago  919MB
172.30.0.10:5000/postgres   latest   dd21862d2f49  22 months ago  376MB
user@ubuntu-desktop:~/web2$ sudo docker image inspect web2
Usage: docker image COMMAND
```

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Make a screen capture showing the directory listing served on port 8080.



The screenshot shows a terminal window on an Ubuntu desktop. The title bar reads "Configuring Docker Containers" and "User@ubuntu-desktop:~/web2". The terminal content is as follows:

```
user@ubuntu-desktop:~$ cd 2082-03-16 21:16:07
bash: cd: Web2: No such file or directory
user@ubuntu-desktop:~$ cd web2
user@ubuntu-desktop:~/web2$ sudo docker build --tag web2 .
[sudo] password for user:
Sending build context to Docker daemon 3.584kB
Step 1/5 : FROM 172.30.0.10:5000/alpine
--> e66264b98777
Step 2/5 : ENV EXAMPLEVAR=5
--> Using cache
--> 3e10abbeb943
Step 3/5 : WORKDIR /work
--> Using cache
--> 72e70bf43844
Step 4/5 : COPY file_1.txt /work/
COPY failed: file not found in build context or excluded by .dockerignore: stat
file_1.txt: file does not exist
user@ubuntu-desktop:~/web2$ sudo docker image ls
REPOSITORY          TAG      IMAGE ID      CREATED        SIZE
web                  latest   a037e01b3af4  21 minutes ago  971MB
db                  latest   351da17df10a  26 minutes ago  376MB
test                latest   896c6f4cc332  About an hour ago  5.53MB
172.30.0.10:5000/alpine    latest   e66264b98777  22 months ago  5.53MB
172.30.0.10:5000/python    3       8dec8e39f2ec  22 months ago  919MB
172.30.0.10:5000/postgres  latest   dd21862d2f49  22 months ago  376MB
user@ubuntu-desktop:~/web2$ sudo docker image inspect web2
Usage: docker image COMMAND
```