

Part 1: Creating a Container from a Pulled Image

Pulled the nginx image and run the nginx container

```
einfochips@AHMLPT1707: ~  
e?fromImage=nginx&tag=latest": dial unix /var/run/docker.sock: connect: permission denied  
einfochips@AHMLPT1707:~$ docker run --name my-nginx -d -p 8080:80 nginx  
docker: permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/create?name=my-nginx": dial unix /var/run/docker.sock: connect: permission denied.  
See 'docker run --help'.  
einfochips@AHMLPT1707:~$ sudo docker pull nginx  
Using default tag: latest  
latest: Pulling from library/nginx  
f11c1adaa26e: Pull complete  
c6b156574604: Pull complete  
ea5d7144c337: Pull complete  
1bbcb9df2c93: Pull complete  
537a6cfe3404: Pull complete  
767bff2cc03e: Pull complete  
adc73cb74f25: Pull complete  
Digest: sha256:67682bda769fae1ccf5183192b8daf37b64cae99c6c3302650f6f8bf5f0f95df  
Status: Downloaded newer image for nginx:latest  
docker.io/library/nginx:latest  
einfochips@AHMLPT1707:~$ sudo docker run --name my-nginx -d -p 8080:80 nginx  
bdc9e20432b6de310bccf980d9a0d09e06dac6b990ff489adff502f4ef4ea4cd  
einfochips@AHMLPT1707:~$
```

Verified the docker is running.

```
einfochips@AHMLPT1707: ~  
Using default tag: latest  
latest: Pulling from library/nginx  
f11c1adaa26e: Pull complete  
c6b156574604: Pull complete  
ea5d7144c337: Pull complete  
1bbcb9df2c93: Pull complete  
537a6cfe3404: Pull complete  
767bff2cc03e: Pull complete  
adc73cb74f25: Pull complete  
Digest: sha256:67682bda769fae1ccf5183192b8daf37b64cae99c6c3302650f6f8bf5f0f95df  
Status: Downloaded newer image for nginx:latest  
docker.io/library/nginx:latest  
einfochips@AHMLPT1707:~$ sudo docker run --name my-nginx -d -p 8080:80 nginx  
bdc9e20432b6de310bccf980d9a0d09e06dac6b990ff489adff502f4ef4ea4cd  
einfochips@AHMLPT1707:~$ docker ps  
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/json": dial unix /var/run/docker.sock: connect: permission denied  
einfochips@AHMLPT1707:~$ sudo docker ps  
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS  
PORTS          NAMES  
bdc9e20432b6   nginx     "/docker-entrypoint...." 2 minutes ago  Up 2 minutes  
0.0.0.0:8080->80/tcp, :::8080->80/tcp  my-nginx  
einfochips@AHMLPT1707:~$
```

Part 2: Modifying the Container and Creating a New Image

Access the running container

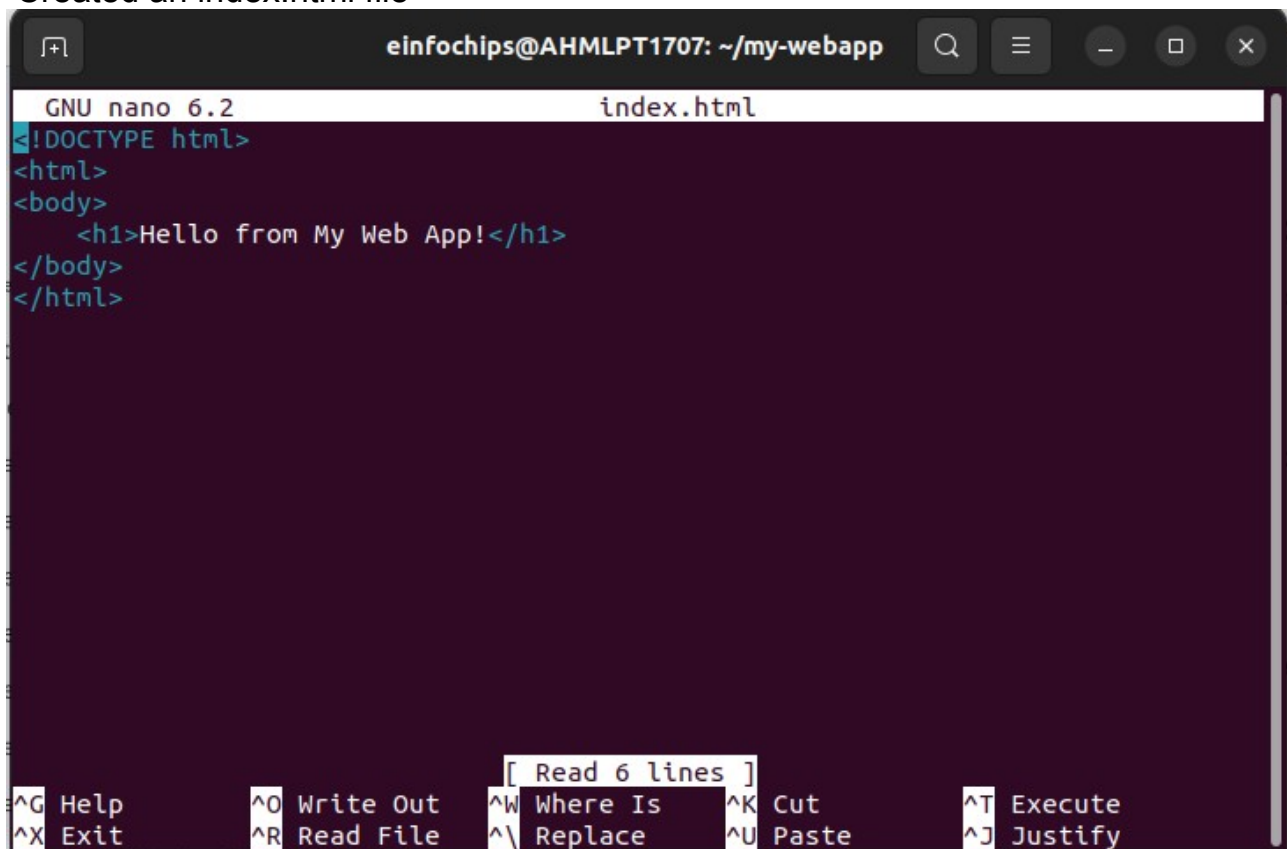
```
einfochips@AHMLPT1707: ~  
json": dial unix /var/run/docker.sock: connect: permission denied  
einfochips@AHMLPT1707:~$ sudo docker ps  
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS  
PORTS          NAMES  
bdc9e20432b6   nginx     "/docker-entrypoint...." 2 minutes ago  Up 2 minutes  
0.0.0.0:8080->80/tcp, :::8080->80/tcp  my-nginx  
einfochips@AHMLPT1707:~$ sudo docker exec -it my-nginx /bin/bash  
root@bdc9e20432b6:/#  
root@bdc9e20432b6:/# cd usr/share/nginx/html  
root@bdc9e20432b6:/usr/share/nginx/html# nano custom.html  
bash: nano: command not found  
root@bdc9e20432b6:/usr/share/nginx/html# vi custom.html  
bash: vi: command not found  
root@bdc9e20432b6:/usr/share/nginx/html# echo "<html><body><h1>Hello from Docker!</h1></body></html>" > /usr/share/nginx/html/custom.html  
root@bdc9e20432b6:/usr/share/nginx/html# echo "<html><body><h1>Hello from Docker</h1></body></html>" > /usr/share/nginx/html/custom.html  
root@bdc9e20432b6:/usr/share/nginx/html# exit  
exit  
einfochips@AHMLPT1707:~$  
  
/h1></body></html>" > /usr/share/nginx/html/custom.
```

Commit change to create a new image:

```
einfochips@AHMLPT1707: ~  
einfochips@AHMLPT1707:~$ sudo docker ps  
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS  
PORTS          NAMES  
bdc9e20432b6   nginx     "/docker-entrypoint...." 2 minutes ago  Up 2 minutes  
0.0.0.0:8080->80/tcp, :::8080->80/tcp  my-nginx  
einfochips@AHMLPT1707:~$ sudo docker exec -it my-nginx /bin/bash  
root@bdc9e20432b6:/#  
root@bdc9e20432b6:/# cd usr/share/nginx/html  
root@bdc9e20432b6:/usr/share/nginx/html# nano custom.html  
bash: nano: command not found  
root@bdc9e20432b6:/usr/share/nginx/html# vi custom.html  
bash: vi: command not found  
root@bdc9e20432b6:/usr/share/nginx/html# echo "<html><body><h1>Hello from Docker!</h1></body></html>" > /usr/share/nginx/html/custom.html  
root@bdc9e20432b6:/usr/share/nginx/html# echo "<html><body><h1>Hello from Docker</h1></body></html>" > /usr/share/nginx/html/custom.html  
root@bdc9e20432b6:/usr/share/nginx/html# exit  
exit  
einfochips@AHMLPT1707:~$ sudo docker commit my-nginx custom-nginx  
sha256:0a1d5b22388ade7e8ab3d9c30136ef396d031a39911e07d4d2d200c4a72b3b9e  
einfochips@AHMLPT1707:~$ sudo docker run --name my-custom-nginx -d -p 8081:80 custom-nginx  
1cfd458f195fafd165c019e9a4662d768088b505ba95ce522404d7e6875259ed  
einfochips@AHMLPT1707:~$
```

Part 3: Creating a dockerfile to build and deploy a web app

Created an index.html file

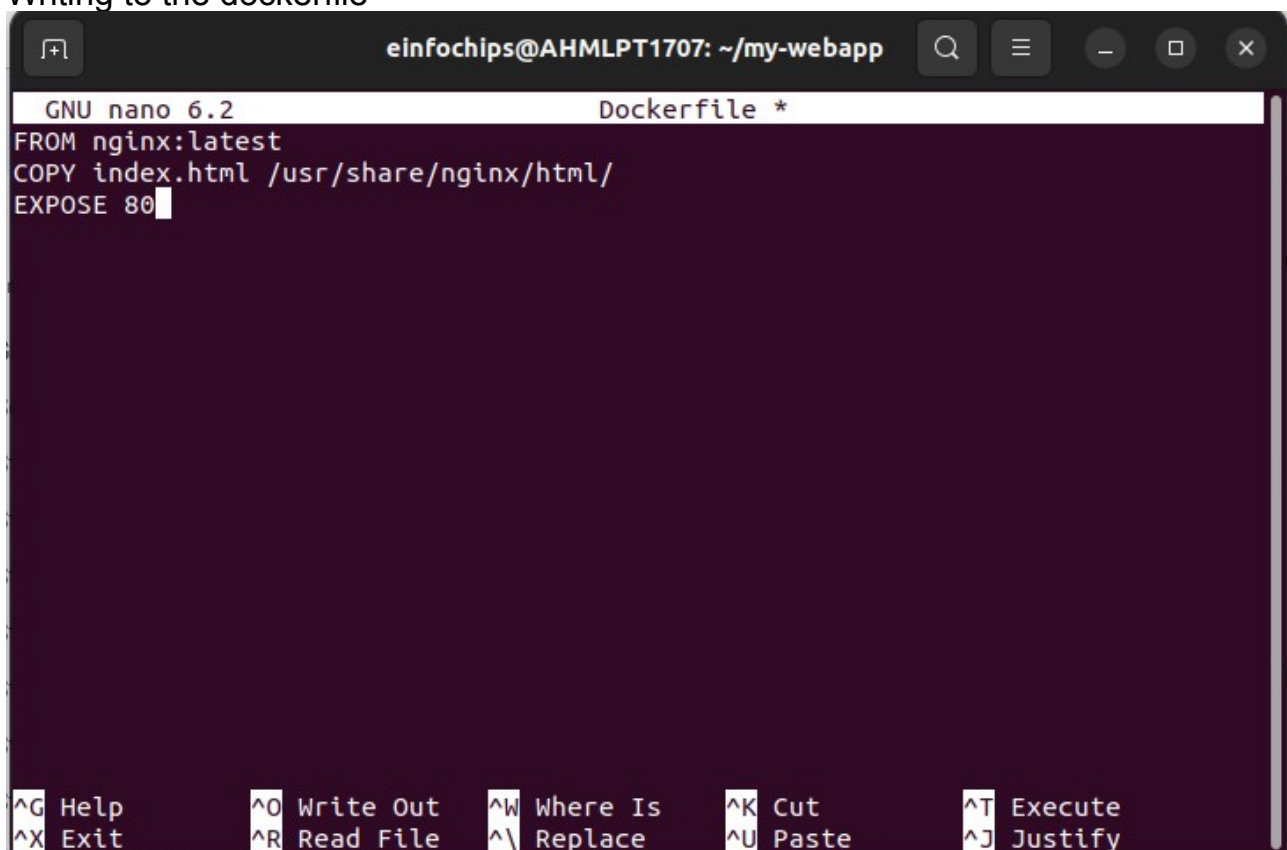


```
GNU nano 6.2 index.html
<!DOCTYPE html>
<html>
<body>
  <h1>Hello from My Web App!</h1>
</body>
</html>
```

[Read 6 lines]

^G Help	^O Write Out	^W Where Is	^K Cut	^T Execute
^X Exit	^R Read File	^_ Replace	^U Paste	^J Justify

Writing to the dockerfile



```
GNU nano 6.2 Dockerfile *
FROM nginx:latest
COPY index.html /usr/share/nginx/html/
EXPOSE 80
```

^G Help	^O Write Out	^W Where Is	^K Cut	^T Execute
^X Exit	^R Read File	^_ Replace	^U Paste	^J Justify

Build the docker image

```
einfochips@AHMLPT1707: ~/my-webapp
einfochips@AHMLPT1707:~/my-webapp$ nano index.html
einfochips@AHMLPT1707:~/my-webapp$ FROM nginx:latest
FROM: command not found
einfochips@AHMLPT1707:~/my-webapp$ nano Dockerfile
einfochips@AHMLPT1707:~/my-webapp$ docker build -t my-webapp-image
ERROR: "docker buildx build" requires exactly 1 argument.
See 'docker buildx build --help'.

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

Start a build
einfochips@AHMLPT1707:~/my-webapp$ sudo docker build -t my-webapp-image
DEPRECATED: The legacy builder is deprecated and will be removed in a future re
lease.

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

"docker build" requires exactly 1 argument.
See 'docker build --help'.

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

Build an image from a Dockerfile
einfochips@AHMLPT1707:~/my-webapp$
```

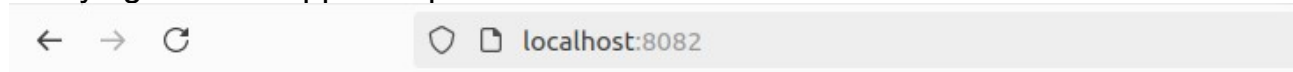
Running the container

```
einfochips@AHMLPT1707: ~/my-webapp
ERROR: permission denied while trying to connect to the Docker daemon socket at
unix:///var/run/docker.sock: Get "http://%2Fvar%2Frun%2Fdocker.sock/_ping": di
al unix /var/run/docker.sock: connect: permission denied
einfochips@AHMLPT1707:~/my-webapp$ sudo docker build -t my-webapp-image .
DEPRECATED: The legacy builder is deprecated and will be removed in a future re
lease.

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

Sending build context to Docker daemon  3.072kB
Step 1/3 : FROM nginx:latest
--> fffffc90d343
Step 2/3 : COPY index.html /usr/share/nginx/html/
--> 99f2eb7ac39c
Step 3/3 : EXPOSE 80
--> Running in 879e822cda5c
Removing intermediate container 879e822cda5c
--> ca46ed47cbd0
Successfully built ca46ed47cbd0
Successfully tagged my-webapp-image:latest
einfochips@AHMLPT1707:~/my-webapp$ sudo docker run --name my-webapp-container -
d -p 8082:80 my-webapp-image
b6cd09b8e4ea1c860aebec7869d03ebec48589d5809d1b41676474f1a1e7fc04
einfochips@AHMLPT1707:~/my-webapp$
```


Verifying the web app at <http://localhost:8082>



Hello from My Web App!

Cleaning up, stopped and removed all the containers.

```
einfochips@AHMLPT1707: ~/my-webapp
my-nginx
my-custom-nginx
my-webapp-container
einfochips@AHMLPT1707:~/my-webapp$ sudo docker rmi nginx custom-nginx my-webapp-i
mage
Untagged: nginx:latest
Untagged: nginx@sha256:67682bda769fae1ccf5183192b8daf37b64cae99c6c3302650f6f8bf5f
0f95df
Untagged: custom-nginx:latest
Deleted: sha256:0a1d5b22388ade7e8ab3d9c30136ef396d031a39911e07d4d2d200c4a72b3b9e
Deleted: sha256:7a6b82a51a6c7d14afd5df24fa09b5799a1c90036c7788a97c105a52d1a09e72
Untagged: my-webapp-image:latest
Deleted: sha256:ca46ed47cbd06ff67194ae1b8d844214a18d440839a893a1ec82b94c4b25ea3b
Deleted: sha256:99f2eb7ac39c0819bf4de60ef852d667410a58abdc4f3076bba68d32188cee4b
Deleted: sha256:eaaf74d11895a4883181dc92bfedb2d6ab60051f8a6c165954404d5a7c30899d
Deleted: sha256:fffffc90d343cbcb01a5032edac86db5998c536cd0a366514121a45c6723765c
Deleted: sha256:9f4b5d44149fd139616539e0ef5311a14338a970f25733ba95b4ae6d3becdf0d
Deleted: sha256:8e6e10fbcca1bb180c5cfc805a37240945a6ba703cb1f985d4d3b8a1c954fc5b
Deleted: sha256:dcec89b921d64a1d2f748c450832a4c5624219bbb1b696e1a606bff78b7afa60
Deleted: sha256:4994a8d5939af297abf594b7ab714dfb72e57217b94bf0a250a62903cbdb6d84
Deleted: sha256:8b2bc37f672b15bea06a204790da9f384ef7b06feccade3fd3b1945b63df5aef
Deleted: sha256:a4197512070a01764db77b424100c1f81f0ed696380b19bc26b6e72fafef0709
Deleted: sha256:32148f9f6c5aada167ee7b146b9703c59307049d68b090c19db019fd15c5406
einfochips@AHMLPT1707:~/my-webapp$
```

Project 02:

Part 1: Setting project structure

Created subdirectories for each services and created a shared network

```
einfochips@AHMLPT1707: ~/fullstack-docker-app
einfochips@AHMLPT1707:~$ mkdir fullstack-docker-app
einfochips@AHMLPT1707:~$ cd fullstack-docker-app
einfochips@AHMLPT1707:~/fullstack-docker-app$ mkdir frontend backend database
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker network create fullstack-network
[sudo] password for einfochips:
0580bb937699c1356ce2852916d87ab1b3a91b5811c4f7ec7fefef6a814c433d
einfochips@AHMLPT1707:~/fullstack-docker-app$
```

Part 2: Setting Up the database

Created a Dockerfile for PostgreSQL

```
einfochips@AHMLPT1707: ~/fullstack-docker-app/database
GNU nano 6.2 Dockerfile *
FROM postgres:latest
ENV POSTGRES_USER=user
ENV POSTGRES_PASSWORD=password
ENV POSTGRES_DB=mydatabase

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

Build the postgresQL Image:

```
einfochips@AHMLPT1707: ~/fullstack-docker-app/database
ck-network
[sudo] password for einfochips:
0580bb937699c1356ce2852916d87ab1b3a91b5811c4f7ec7fefef6a814c433d
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker volume create pgdata
pgdata
einfochips@AHMLPT1707:~/fullstack-docker-app$ cd database
einfochips@AHMLPT1707:~/fullstack-docker-app/database$ touch Dockerfile
einfochips@AHMLPT1707:~/fullstack-docker-app/database$ nano Dockerfile
einfochips@AHMLPT1707:~/fullstack-docker-app/database$ cd database
bash: cd: database: No such file or directory
einfochips@AHMLPT1707:~/fullstack-docker-app/database$ sudo docker build -t my-postgres-db
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/

"docker build" requires exactly 1 argument.
See 'docker build --help'.

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

Build an image from a Dockerfile
einfochips@AHMLPT1707:~/fullstack-docker-app/database$
```

Running the PostgreSQL Container:

```
einfochips@AHMLPT1707: ~/fullstack-docker-app
Removing intermediate container a3b8574da0e1
---> 06e1fc7176c5
Step 4/4 : ENV POSTGRES_DB=mydatabase
---> Running in b34937862320
Removing intermediate container b34937862320
---> 8d6c4ee05e69
Successfully built 8d6c4ee05e69
Successfully tagged my-postgres-db:latest
einfochips@AHMLPT1707:~/fullstack-docker-app/database$ cd..
cd..: command not found
einfochips@AHMLPT1707:~/fullstack-docker-app/database$ cd ..
einfochips@AHMLPT1707:~/fullstack-docker-app$ docker run --name postgres-container --network fullstack-network -v pgdata:/var/lib/postgresql/data -d my-postgres-db
docker: permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/create?name=postgres-container": dial unix /var/run/docker.sock: connect: permission denied.
See 'docker run --help'.
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker run --name postgres-container --network fullstack-network -v pgdata:/var/lib/postgresql/data -d my-postgres-db
c40869cce9ae1f3e8cbf4e6d369aa4bb3a7db1e92694549b649ced38b36737e9
einfochips@AHMLPT1707:~/fullstack-docker-app$
```

Part 3: Setting up backend (node.js with express)

Initialize the Node.js Application and Install Express and pg (PostgreSQL client for Node.js)

```
einfochips@AHMLPT1707: ~/fullstack-docker-app/backend
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...
einfochips@AHMLPT1707:~/fullstack-docker-app/backend$ npm init -y
Wrote to /home/einfochips/fullstack-docker-app/backend/package.json:

{
  "name": "backend",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}

einfochips@AHMLPT1707:~/fullstack-docker-app/backend$ npm install express pg

added 78 packages, and audited 79 packages in 7s

12 packages are looking for funding
  run `npm fund` for details
```

Creating the application code

```
einfochips@AHMLPT1707: ~/fullstack-docker-app/backend
GNU nano 6.2 index.js *
const express = require('express');
const { Pool } = require('pg');
const app = express();
const port = 3000;

const pool = new Pool({
  user: 'user',
  host: 'postgres-container',
  database: 'mydatabase',
  password: 'password',
  port: 5432,
});

app.get('/', (req, res) => {
  res.send('Hello from Node.js and Docker!');
});

app.get('/data', async (req, res) => {
  const client = await pool.connect();
  const result = await client.query('SELECT NOW()');
  client.release();
});

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```


Creating a docker file for backend:

```
einfochips@AHMLPT1707: ~/fullstack-docker-app/backend
GNU nano 6.2 Dockerfile *
FROM node:latest

WORKDIR /usr/src/app

COPY package*.json ./
RUN npm install

COPY . .

EXPOSE 3000
CMD ["node", "index.js"]

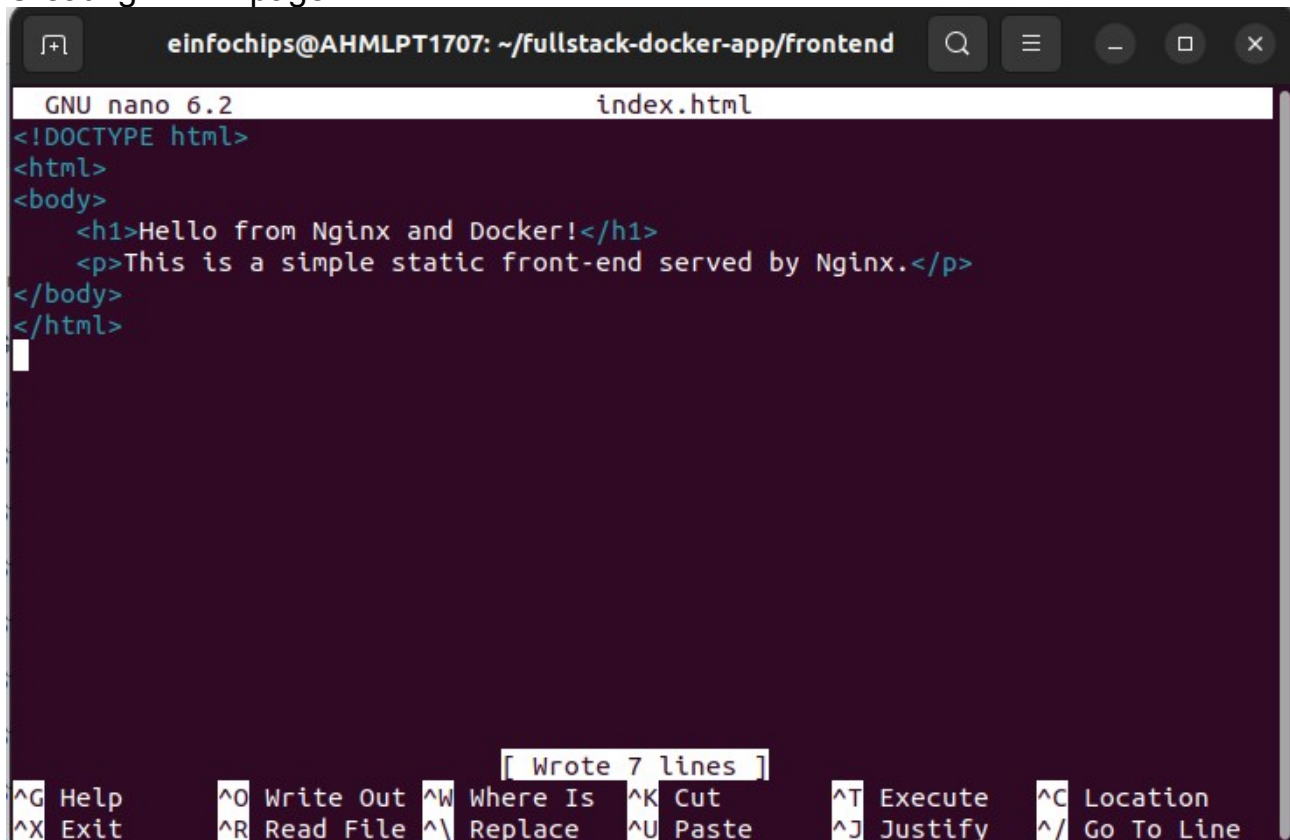
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

Running the backend container:

```
einfochips@AHMLPT1707: ~/fullstack-docker-app
npm notice New patch version of npm available! 10.8.1 -> 10.8.2
npm notice Changelog: https://github.com/npm/cli/releases/tag/v10.8.2
npm notice To update run: npm install -g npm@10.8.2
npm notice
Removing intermediate container e92077884521
---> 42c838388fde
Step 5/7 : COPY . .
---> 36ac64d18277
Step 6/7 : EXPOSE 3000
---> Running in e1044b625f17
Removing intermediate container e1044b625f17
---> 6cc0650dc839
Step 7/7 : CMD ["node", "index.js"]
---> Running in 8f87ba60e727
Removing intermediate container 8f87ba60e727
---> 9d9875200ae4
Successfully built 9d9875200ae4
Successfully tagged my-node-app:latest
einfochips@AHMLPT1707:~/fullstack-docker-app/backend$ cd ..
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker run --name backend-con
tainer --network fullstack-network -d my-node-app
[sudo] password for einfochips:
19e7e7d0795b8f2f5c30816ccc8d7692e7dffb644f168bd2488a77e3cb01d645
einfochips@AHMLPT1707:~/fullstack-docker-app$
```

Part 4: Setting up Nginx

Creating HTML page

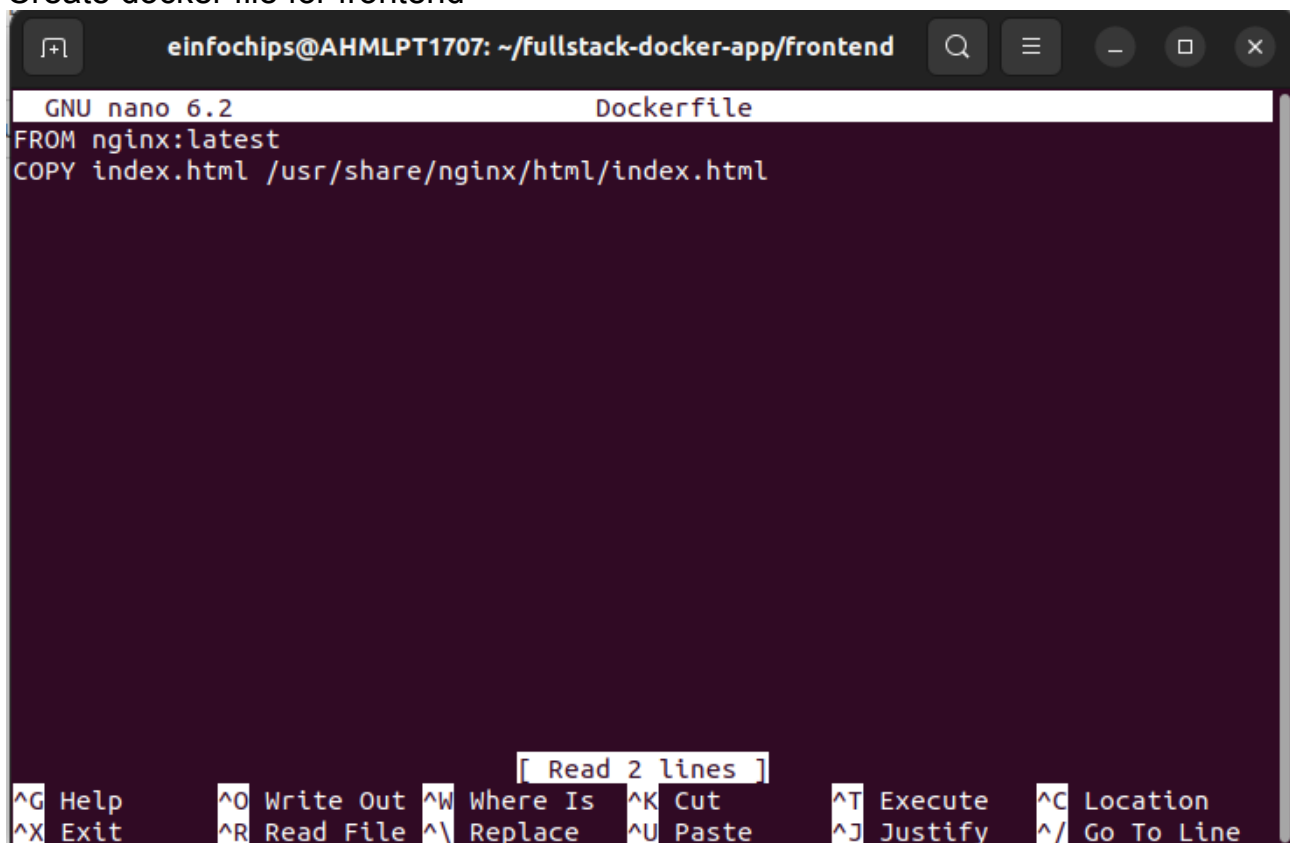


The screenshot shows a terminal window with the title bar "einfochips@AHMLPT1707: ~/fullstack-docker-app/frontend". The terminal is running the GNU nano 6.2 editor, editing a file named "index.html". The content of the file is as follows:

```
<!DOCTYPE html>
<html>
<body>
  <h1>Hello from Nginx and Docker!</h1>
  <p>This is a simple static front-end served by Nginx.</p>
</body>
</html>
```

The status bar at the bottom of the nano editor shows "Wrote 7 lines" and a list of keyboard shortcuts: ^G Help, ^O Write Out, ^W Where Is, ^K Cut, ^T Execute, ^C Location, ^X Exit, ^R Read File, ^_ Replace, ^U Paste, ^J Justify, and ^_ Go To Line.

Create docker file for frontend



The screenshot shows a terminal window with the title bar "einfochips@AHMLPT1707: ~/fullstack-docker-app/frontend". The terminal is running the GNU nano 6.2 editor, editing a file named "Dockerfile". The content of the file is as follows:

```
FROM nginx:latest
COPY index.html /usr/share/nginx/html/index.html
```

The status bar at the bottom of the nano editor shows "Read 2 lines" and a list of keyboard shortcuts: ^G Help, ^O Write Out, ^W Where Is, ^K Cut, ^T Execute, ^C Location, ^X Exit, ^R Read File, ^_ Replace, ^U Paste, ^J Justify, and ^_ Go To Line.

Building the frontend container

```
einfochips@AHMLPT1707: ~/fullstack-docker-app/frontend
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ cd frontend
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ touch Dockerfile
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ nano Dockerfile
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ nano index.html
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ nano Dockerfile
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ nano Dockerfile
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ sudo docker build -t my-nginx-app .
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  3.072kB
Step 1/2 : FROM nginx:latest
latest: Pulling from library/nginx
f11c1adaa26e: Already exists
c6b156574604: Downloading   9.8MB/41.83MB
ea5d7144c337: Download complete
1bbcb9df2c93: Download complete
537a6cfe3404: Download complete
767bff2cc03e: Download complete
adc73cb74f25: Download complete
```

Running the frontend container

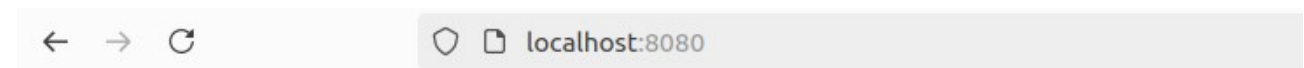
```
einfochips@AHMLPT1707: ~/fullstack-docker-app
https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  3.072kB
Step 1/2 : FROM nginx:latest
latest: Pulling from library/nginx
f11c1adaa26e: Already exists
c6b156574604: Pull complete
ea5d7144c337: Pull complete
1bbcb9df2c93: Pull complete
537a6cfe3404: Pull complete
767bff2cc03e: Pull complete
adc73cb74f25: Pull complete
Digest: sha256:67682bda769fae1ccf5183192b8daf37b64cae99c6c3302650f6f8bf5f0f95df
Status: Downloaded newer image for nginx:latest
---> fffffc90d343
Step 2/2 : COPY index.html /usr/share/nginx/html/index.html
---> c796fcea35a1
Successfully built c796fcea35a1
Successfully tagged my-nginx-app:latest
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ cd ..
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker run --name frontend-container --network fullstack-network -p 8080:80 -d my-nginx-app
26d61ab0e12767003e979f2a2c8198e12a51f2030d8f04e432f2d7f3adb0673d
einfochips@AHMLPT1707:~/fullstack-docker-app$
```

Part 5: Connecting the Backend and Database

```
einfochips@AHMLPT1707: ~/fullstack-docker-app
cod150574004: Pull complete
ea5d7144c337: Pull complete
1bbcb9df2c93: Pull complete
537a6cfe3404: Pull complete
767bff2cc03e: Pull complete
adc73cb74f25: Pull complete
Digest: sha256:67682bda769fae1ccf5183192b8daf37b64cae99c6c3302650f6f8bf5f0f95df
Status: Downloaded newer image for nginx:latest
---> fffffc90d343
Step 2/2 : COPY index.html /usr/share/nginx/html/index.html
---> c796fcea35a1
Successfully built c796fcea35a1
Successfully tagged my-nginx-app:latest
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ cd ..
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker run --name frontend-container --network fullstack-network -p 8080:80 -d my-nginx-app
26d61ab0e12767003e979f2a2c8198e12a51f2030d8f04e432f2d7f3adb0673d
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker exec -it backend-container /bin/bash
[sudo] password for einfochips:
root@19e7e7d0795b:/usr/src/app# apt-get update && apt-get install -y postgresql-client
Get:1 http://deb.debian.org/debian bookworm InRelease [151 kB]
Get:2 http://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Get:3 http://deb.debian.org/debian-security bookworm-security InRelease [51.6 kB]
```

Part 6: Final Integration and Testing



Hello from Nginx and Docker!

This is a simple static front-end served by Nginx.

Rebuild and run the updated frontend container:

```
einfochips@AHMLPT1707: ~/fullstack-docker-app
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  3.072kB
Step 1/2 : FROM nginx:latest
--> fffffc90d343
Step 2/2 : COPY index.html /usr/share/nginx/html/index.html
--> Using cache
--> c796fcea35a1
Successfully built c796fcea35a1
Successfully tagged my-nginx-app:latest
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ sudo docker stop frontend-container
frontend-container
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ sudo docker rm frontend-container
frontend-container
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ sudo docker run --name frontend-container --network fullstack-network -p 8080:80 -d my-nginx-app
0e6a1599525b85619d9939ab474f271100d549da3fead9ff00b43fa405fa83e5
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ cd ..
einfochips@AHMLPT1707:~/fullstack-docker-app$
```

Part 7 cleaning up:

```
einfochips@AHMLPT1707: ~/fullstack-docker-app
--> c796fcea35a1
Successfully built c796fcea35a1
Successfully tagged my-nginx-app:latest
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ sudo docker stop frontend-container
frontend-container
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ sudo docker rm frontend-container
frontend-container
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ sudo docker run --name frontend-container --network fullstack-network -p 8080:80 -d my-nginx-app
0e6a1599525b85619d9939ab474f271100d549da3fead9ff00b43fa405fa83e5
einfochips@AHMLPT1707:~/fullstack-docker-app/frontend$ cd ..
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker stop frontend-container backend-container postgres-container
frontend-container
backend-container
postgres-container
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker rm frontend-container backend-container postgres-container
frontend-container
backend-container
postgres-container
einfochips@AHMLPT1707:~/fullstack-docker-app$
```

Removing the images:

```
einfochips@AHMLPT1707: ~/fullstack-docker-app
frontend-container
backend-container
postgres-container
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker rmi my-nginx-app my-node-app my-postgres-db
Untagged: my-nginx-app:latest
Deleted: sha256:c796fcea35a1a144277c6b90200614fb9db95e67e0d7fb4de88d60bd93e6ee08
Deleted: sha256:f81e741812b7dd53d3b1bd553d7f75f9f794c4f75d658a5d4ae808d48dcea625
Untagged: my-node-app:latest
Deleted: sha256:9d9875200ae43edbe0f9add66bb302e8bb1abe95c95b75b35f078eb58faca1c1
Deleted: sha256:6cc0650dc839234374c89754a554975807f349ee084c64f2d672edfe36dbb954
Deleted: sha256:36ac64d18277501280b11b26b7693f6f0bd8912858cbddc6d2a1e89b09fc0ac8
Deleted: sha256:e011707955fc98e475e6ade114996f5e82c3a1ab9f13ea3b2311a9ad6f063917
Deleted: sha256:42c838388fdecf6b62c04d2731612a114876ab56d4980178d6ca5c13fcb726f5
Deleted: sha256:862d7f0667103ac36d2161b969fd10a9d35dd653aa486255d47f608e24ca82ae
Deleted: sha256:0689e41dabf0fa52d4640f4abf266f5b5f2e02ff14cffa47df4c95d462456b7e
Deleted: sha256:60eaf1d9f1733ceacbf7fd88926359dff2f12fd9dc1a39464e2242aaf16736d0
Deleted: sha256:cfb5256a28778ac6ea5d727282babe15cf53fe50ca7c091ac311da32d8d3fead
Deleted: sha256:9dd6ea154b278a596a6a16ce5d661d4a25ad5960267fa8823faff6c18099fa4e
Untagged: my-postgres-db:latest
Deleted: sha256:8d6c4ee05e69167038e767695f15b298cbdb8f46c3a94e9a12a0cbb68ce9b800
Deleted: sha256:06e1fc7176c5939d07d6723057f75a022b2c33ed5f222768047853c21e5150b3
Deleted: sha256:7ceee2f1db4359b1dafd584f6c40de7d6bffb87e18aad2c24846301c122807b3
einfochips@AHMLPT1707:~/fullstack-docker-app$
```

Remove the network and volume

```
einfochips@AHMLPT1707: ~/fullstack-docker-app
Untagged: my-nginx-app:latest
Deleted: sha256:c796fcea35a1a144277c6b90200614fb9db95e67e0d7fb4de88d60bd93e6ee08
Deleted: sha256:f81e741812b7dd53d3b1bd553d7f75f9f794c4f75d658a5d4ae808d48dcea625
Untagged: my-node-app:latest
Deleted: sha256:9d9875200ae43edbe0f9add66bb302e8bb1abe95c95b75b35f078eb58faca1c1
Deleted: sha256:6cc0650dc839234374c89754a554975807f349ee084c64f2d672edfe36dbb954
Deleted: sha256:36ac64d18277501280b11b26b7693f6f0bd8912858cbddc6d2a1e89b09fc0ac8
Deleted: sha256:e011707955fc98e475e6ade114996f5e82c3a1ab9f13ea3b2311a9ad6f063917
Deleted: sha256:42c838388fdecf6b62c04d2731612a114876ab56d4980178d6ca5c13fcb726f5
Deleted: sha256:862d7f0667103ac36d2161b969fd10a9d35dd653aa486255d47f608e24ca82ae
Deleted: sha256:0689e41dabf0fa52d4640f4abf266f5b5f2e02ff14cffa47df4c95d462456b7e
Deleted: sha256:60eaf1d9f1733ceacbf7fd88926359dff2f12fd9dc1a39464e2242aaf16736d0
Deleted: sha256:cfb5256a28778ac6ea5d727282babe15cf53fe50ca7c091ac311da32d8d3fead
Deleted: sha256:9dd6ea154b278a596a6a16ce5d661d4a25ad5960267fa8823faff6c18099fa4e
Untagged: my-postgres-db:latest
Deleted: sha256:8d6c4ee05e69167038e767695f15b298cbdb8f46c3a94e9a12a0cbb68ce9b800
Deleted: sha256:06e1fc7176c5939d07d6723057f75a022b2c33ed5f222768047853c21e5150b3
Deleted: sha256:7ceee2f1db4359b1dafd584f6c40de7d6bffb87e18aad2c24846301c122807b3
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker network rm fullstack-network
fullstack-network
einfochips@AHMLPT1707:~/fullstack-docker-app$ sudo docker volume rm pgdata
pgdata
einfochips@AHMLPT1707:~/fullstack-docker-app$
```