

Codeland
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The Whale, the Container, and the Ocean

A Docker Tale

Nick Palenchar
dev.to/nickpalenchar
[@palencharizard](https://twitter.com/palencharizard)
nickpalenchar.com

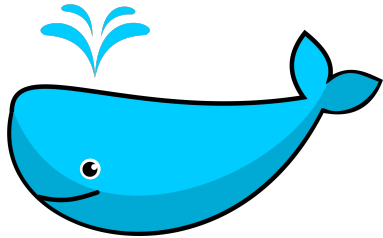


This is a Story about Docker

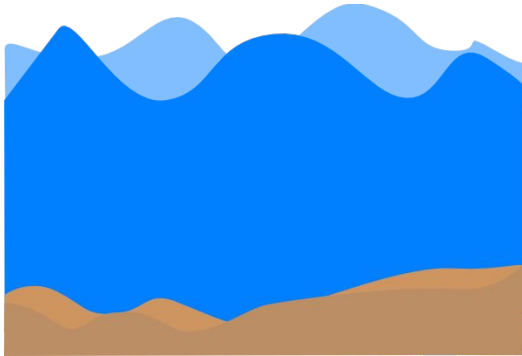
We are going to build from a Dockerfile on our local machine



Docker is more than a “container”



Docker Daemon

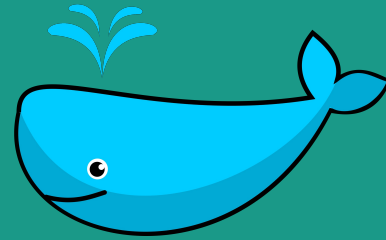
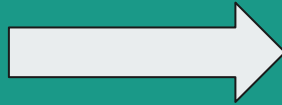


Computer

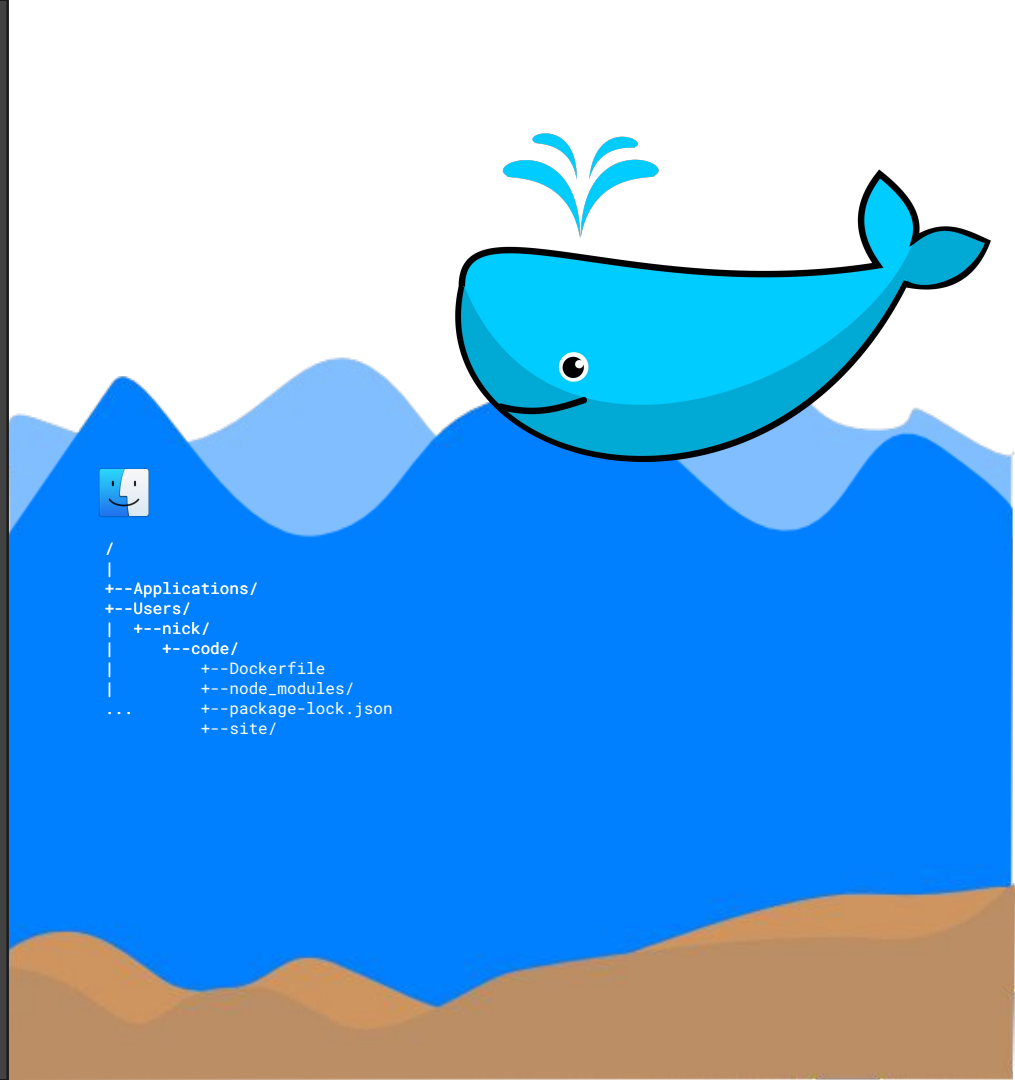


Container

From the computer to the Docker Daemon

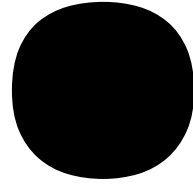


```
/Users/nick/code $ ls -l
Total 56
...      42 ... Dockerfile
d..    1888 ... node_modules
...    16435 ... package-lock.json
d..     128 ... site
/Users/nick/code $ docker build -t myapp .
Sending build context to Docker daemon 2.147MB
```

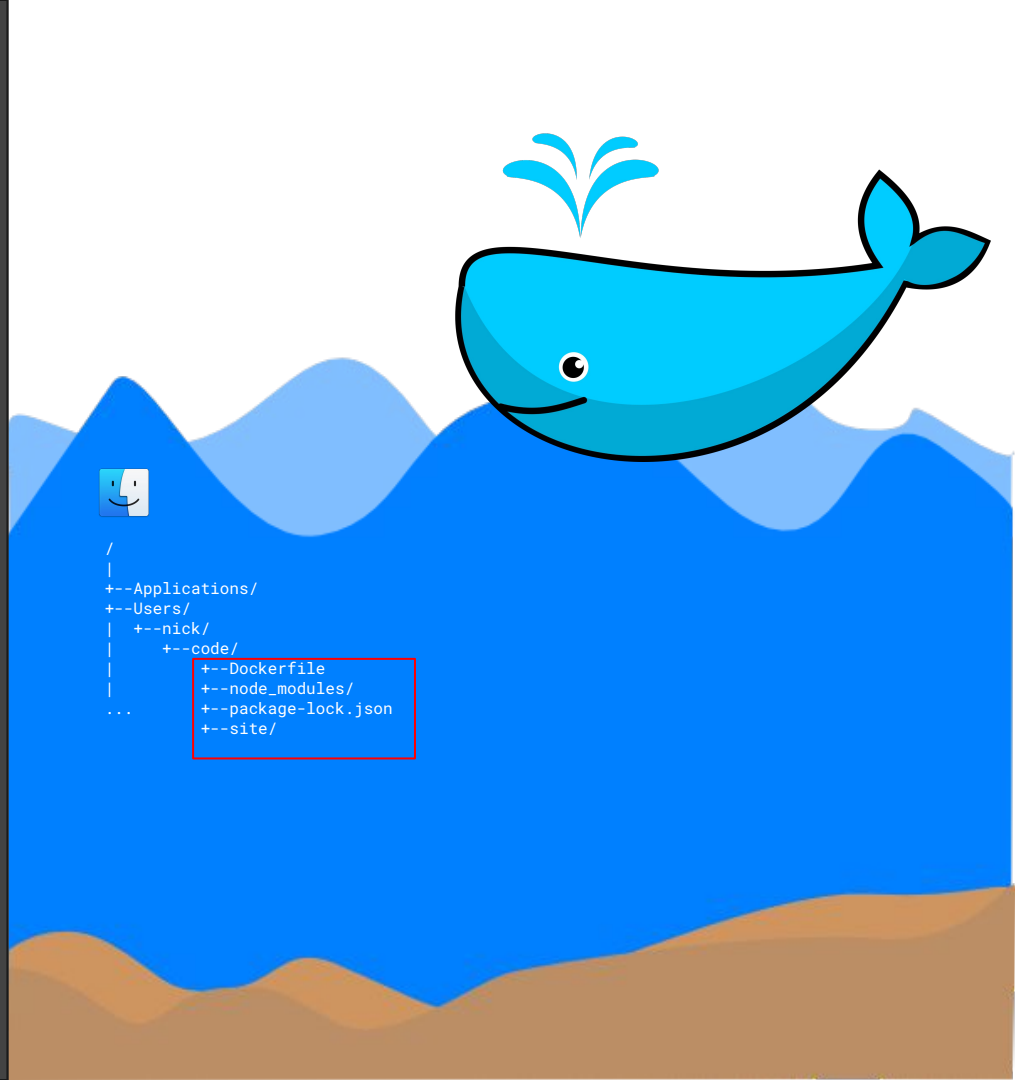


```
/
|--Applications/
+--Users/
|  |--nick/
|     |--code/
|         |--Dockerfile
|         |--node_modules/
|         |--package-lock.json
|         |--site/
...

```



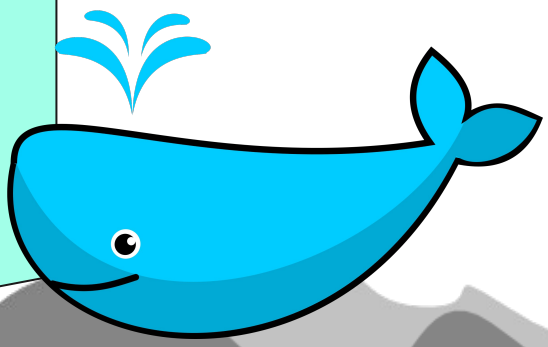
```
/Users/nick/code $ ls -l
Total 56
...      42 ... Dockerfile
d..    1888 ... node_modules
...    16435 ... package-lock.json
d..     128 ... site
/Users/nick/code $ docker build -t myapp .
Sending build context to Docker daemon 2.147MB
```



```
/
|
+--Applications/
+--Users/
|  +--nick/
|     +--code/
|         +--Dockerfile
|         +--node_modules/
|         +--package-lock.json
|         +--site/
|
+--...
|
+--...
```

```
/Users/nick/code $ ls -l
Total 56
...      42 ... Dockerfile
d..    1888 ... node_modules
...   16435 ... package-lock.json
d..     128 ... site
/Users/nick/code $ docker build -t myapp .
Sending build context to Docker daemon 2.147MB
```

```
/
+--Dockerfile
+--node_modules/
+--package-lock.json
+--site/
```



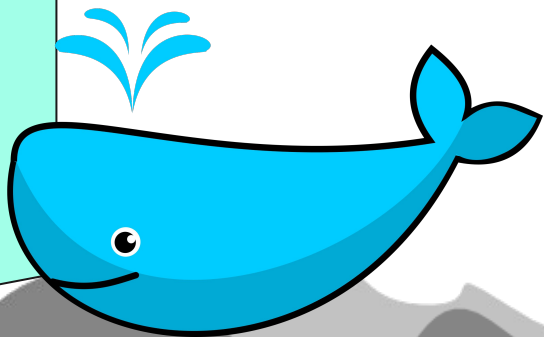
```
/
|
+--Applications/
+--Users/
|  +--nick/
|     +--code/
|         +--Dockerfile
|         +--node_modules/
|         +--package-lock.json
|         +--site/
...

```



```
/Users/nick/code $ ls -l
Total 56
...      42 ... Dockerfile
d..    1888 ... node_modules
...    16435 ... package-lock.json
d..     128 ... site
/Users/nick/code $ docker build -t myapp .
Sending build context to Docker daemon 2.147MB
Step 1/2 : FROM alpine
----> a24bb4013296
Step 2/2 : COPY ../test.md /tmp/test.md
COPY failed: Forbidden path outside the build
context: ..
```

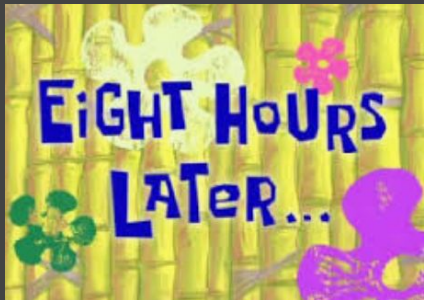
```
/
+--Dockerfile
+--node_modules/
+--package-lock.json
+--site/
```



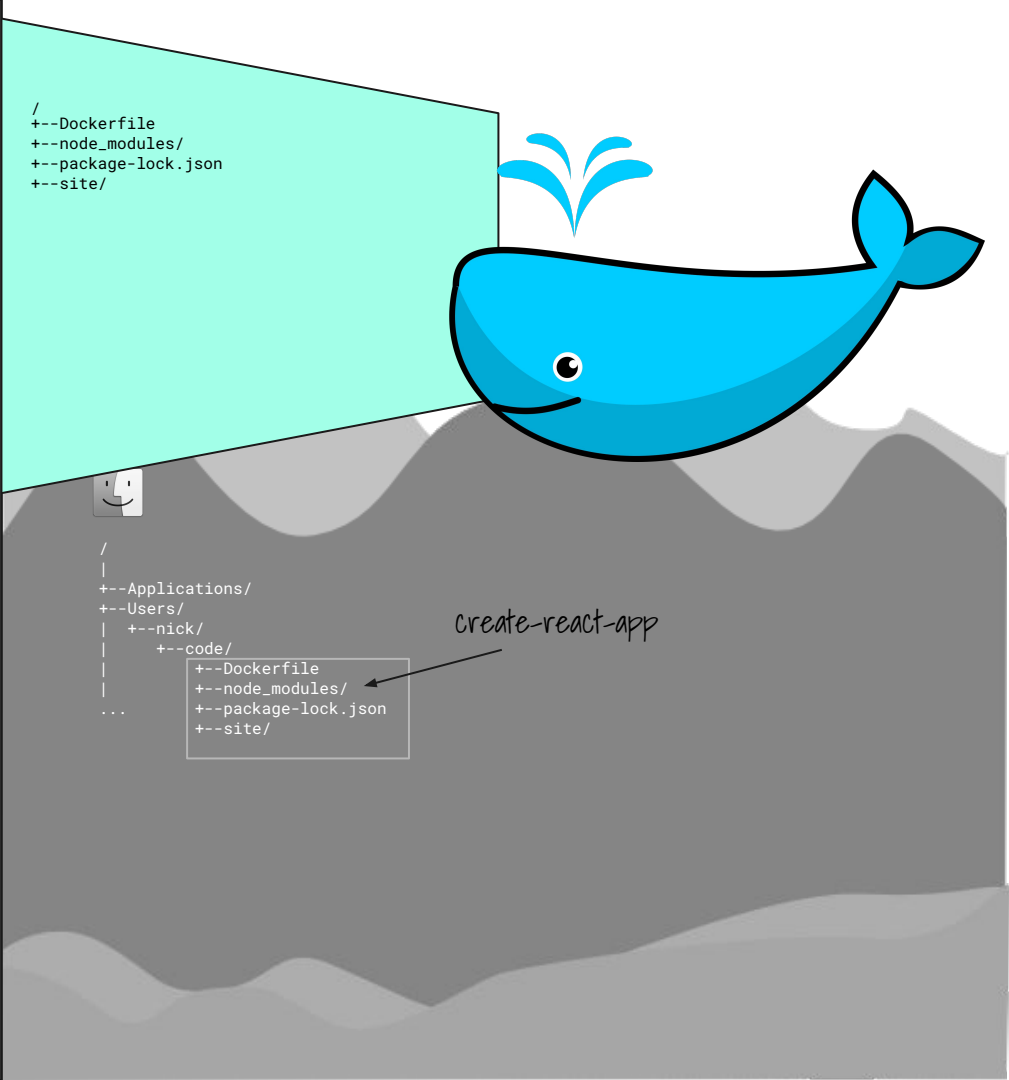
```
/
|
+--Applications/
+--Users/
|   +--nick/
|       +--code/
|           +--Dockerfile
|           +--node_modules/
|           +--package-lock.json
|           +--site/
|
...

```

```
/Users/nick/code $ ls -l
Total 56
...      42 ... Dockerfile
d..    1888 ... node_modules
...    16435 ... package-lock.json
d..     128 ... site
/Users/nick/code $ docker build -t myapp .
```



Sending build context to Docker daemon 171.5MB



```
/
+--Dockerfile
+--node_modules/
+--package-lock.json
+--site/
```



```
/
|--Applications/
|--Users/
| |--nick/
| | |--code/
| | | |--Dockerfile
| | | |--node_modules/
| | | |--package-lock.json
| | | |--site/
| | | ...
| | |
```

create-react-app

 +  =
.dockerignore

```
1 node_modules
```

```
~
```

```
~
```

```
~
```

```
~
```

```
~
```

```
~
```

```
~
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```
~
```

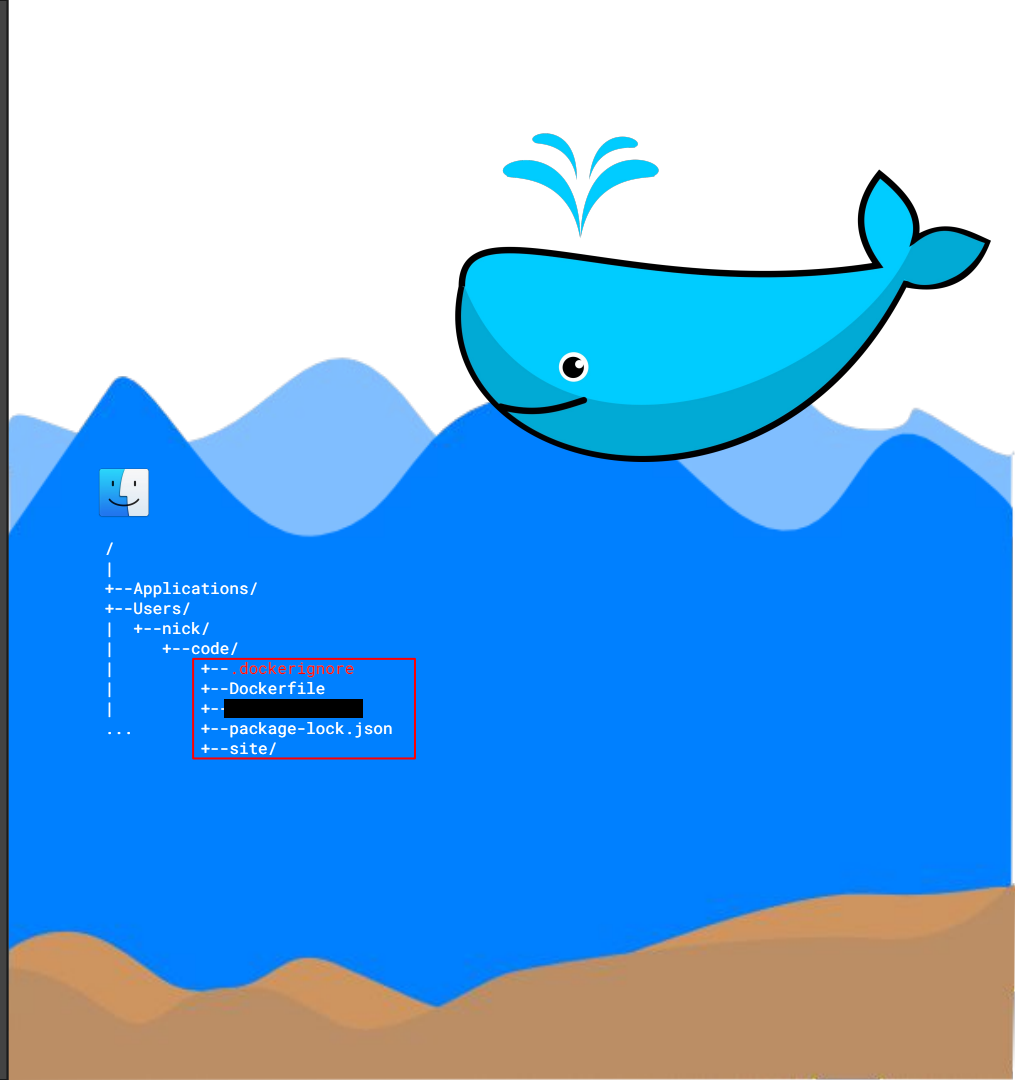
```
~
```

```
~
```

```
~
```

```
".dockerignore" 1L, 13C
```

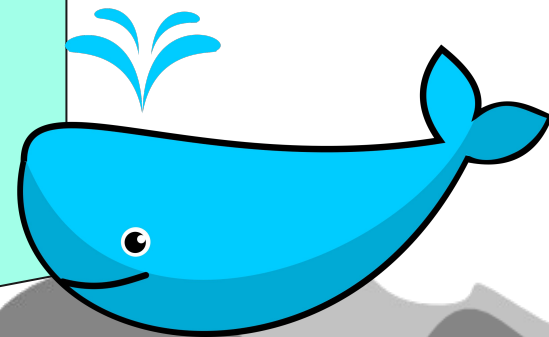
```
/Users/nick/code $ ls -l
Total 56
...      42 ... Dockerfile
d..    1888 ... node_modules
...      13 ... .dockerignore
...   16435 ... package-lock.json
d..     128 ... site
/Users/nick/code $ docker build -t myapp .
```



```
/Users/nick/code $ ls -l
Total 56
...      42 ... Dockerfile
d..    1888 ... node_modules
...      13 ... .dockerignore
...    16435 ... package-lock.json
d..     128 ... site
/Users/nick/code $ docker build -t myapp .
Sending build context to Docker daemon  820.2kB
```

Sending build context to Docker daemon 171.5MB

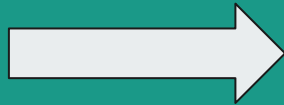
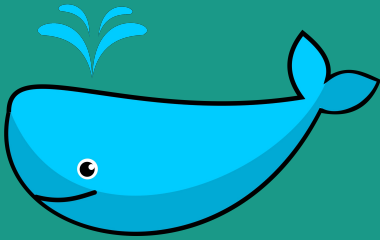
```
/
+-- .dockerignore
+-- Dockerfile
+-- package-lock.json
+-- site/
```



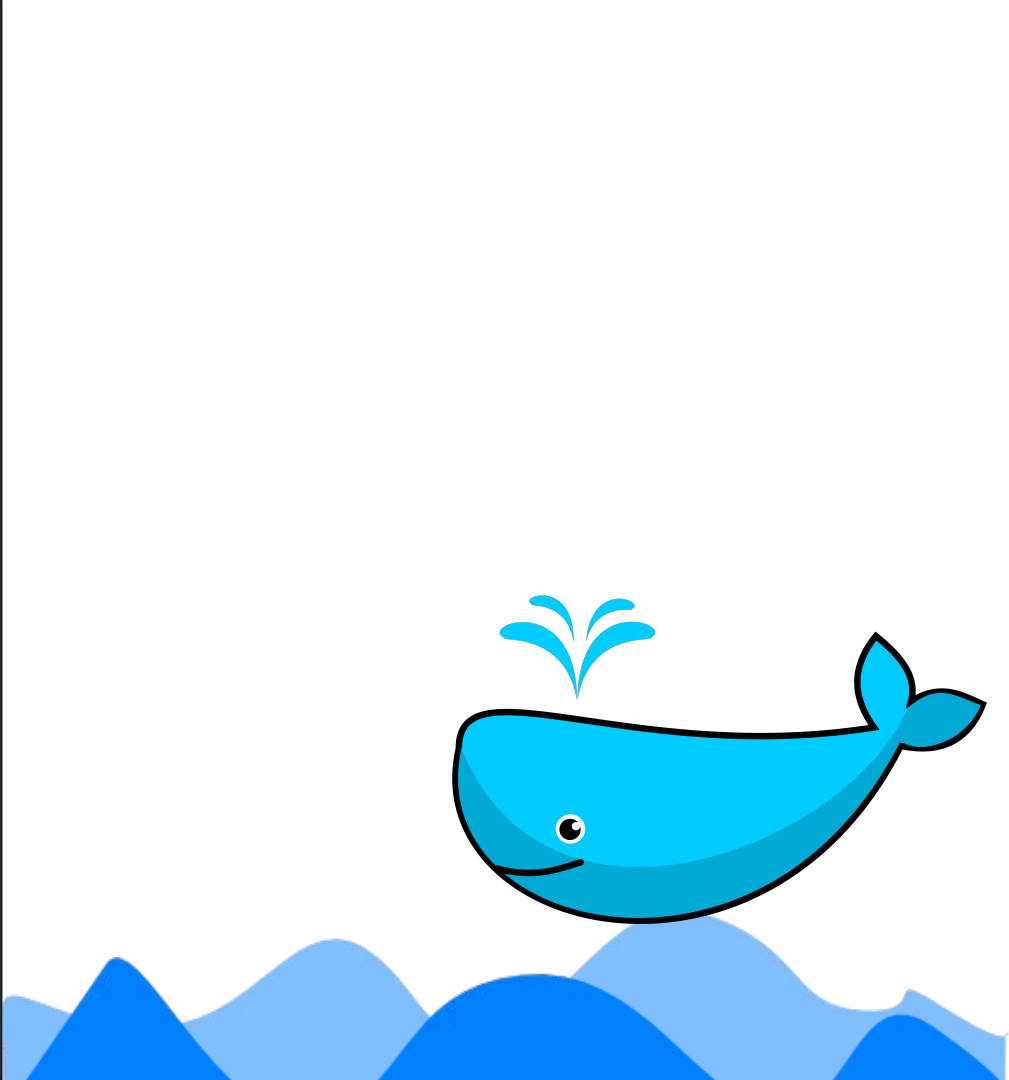
```
/
|
+-- Applications/
+-- Users/
|   +-- nick/
|       +-- code/
|           +-- dockerignore
|           +-- Dockerfile
|           +-- [REDACTED]
|           +-- package-lock.json
|           +-- site/
...

```

From the Docker Daemon to the Container



FROM alpine

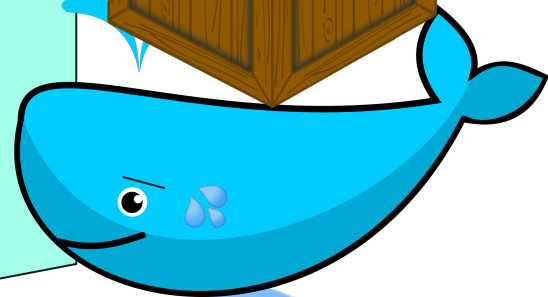


FROM alpine

```
/
+--.dockerignore
+--Dockerfile
+--package.json
+--package-lock.json
+--site/
```

```
/
+--bin/
+--dev/
+--etc/
+--home/
+--lib/
+--media/
+--mnt/
+--opt/
+--proc/
```

FRAGILE



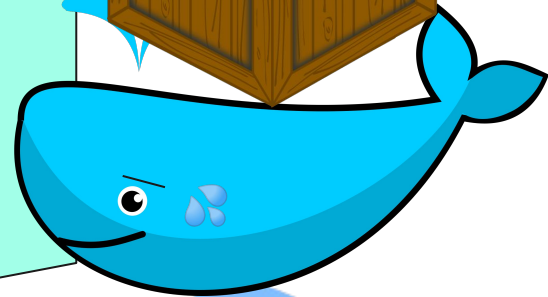
```
FROM alpine
```

```
WORKDIR /code
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



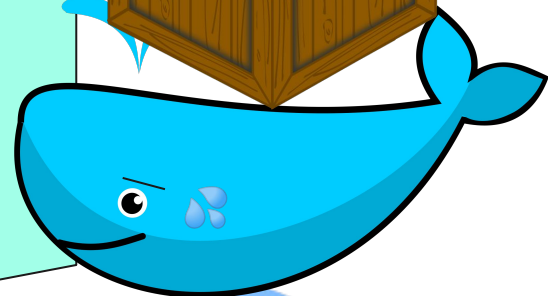
```
FROM alpine
```

```
WORKDIR /code
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

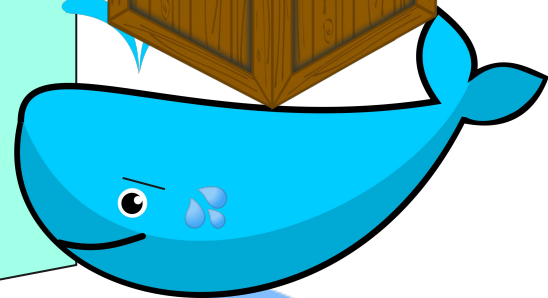
```
WORKDIR /code
```

```
COPY site ./site
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

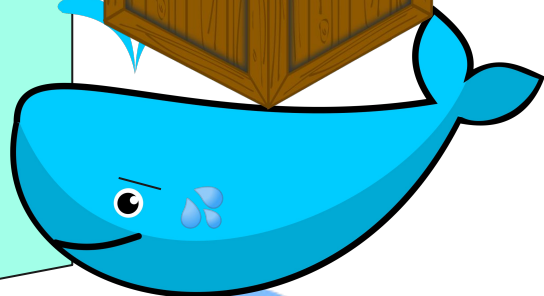
```
WORKDIR /code
```

```
COPY site ./site
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
+--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

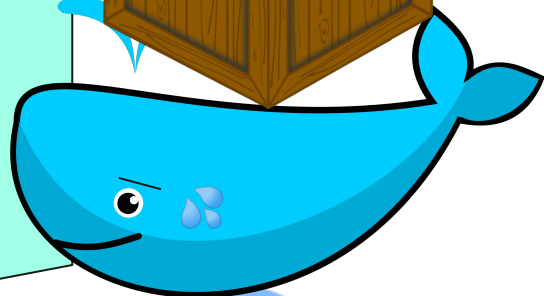
```
COPY site ./site
```

```
COPY config.json ./site
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

```
COPY site ./site
```

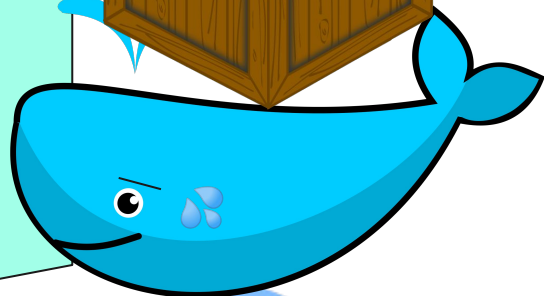
```
COPY config.json ./site
```

```
COPY failed: stat  
/var/.../tmp/docker-builder4820/config.json: no  
such file or directory
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE




```
FROM alpine
```

```
WORKDIR /code
```

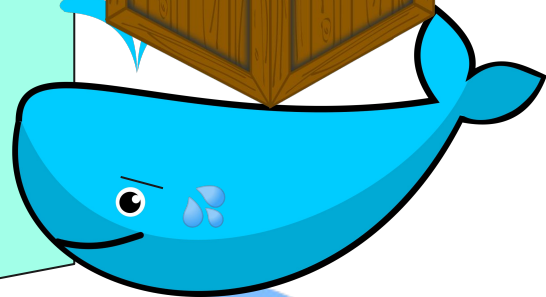
```
COPY site ./site
```

```
COPY config.json ./site
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

```
COPY site ./site
```

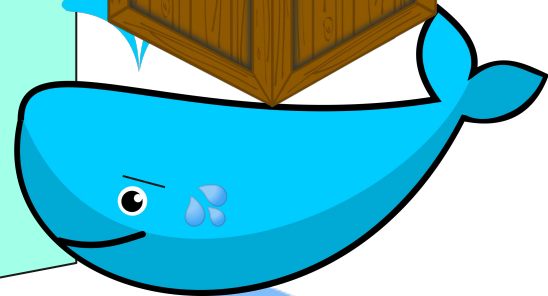
```
COPY config.json ./site
```

```
RUN npm install
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

```
COPY site ./site
```

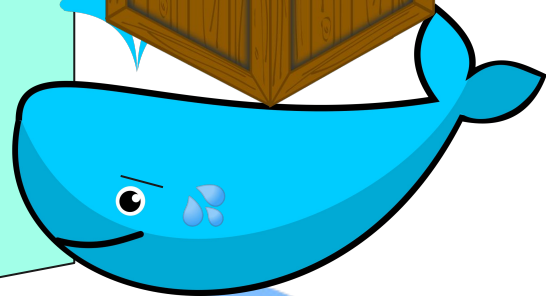
```
COPY config.json ./site
```

```
RUN npm install
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

```
COPY site ./site
```

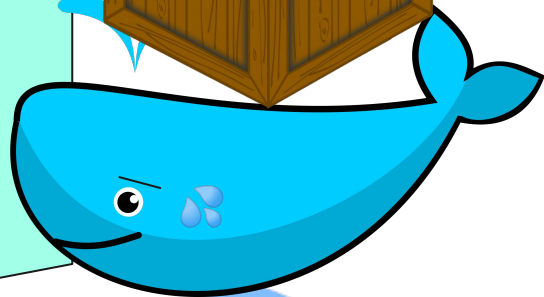
```
COPY config.json ./site
```

```
RUN npm install
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

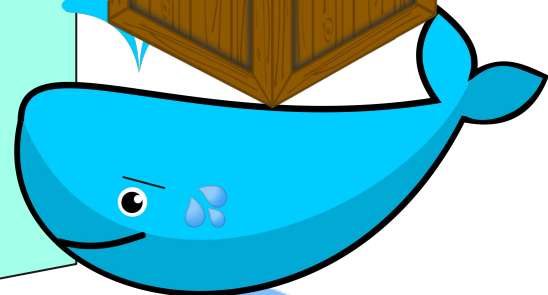
```
COPY site ./site
```

```
COPY config.json ./site
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

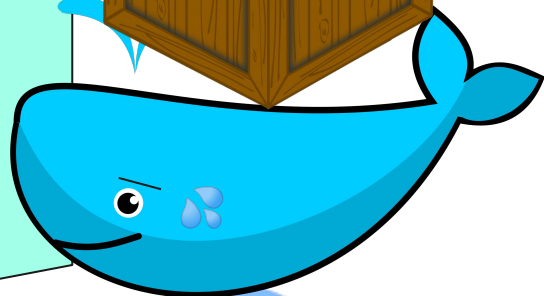
```
COPY site ./site
```

```
COPY package.json .
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

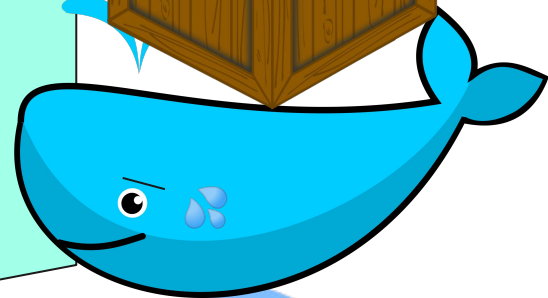
```
COPY site ./site
```

```
COPY package.json .
```

```
/
+--.dockerignore
+--Dockerfile
+--package.json
+--package-lock.json
+--site/
```

```
/
+--bin/
+--code/
  +--package.json
  +--site/
+--dev/
+--etc/
+--home/
+--lib/
+--media/
+--mnt/
+--opt/
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

```
COPY site ./site
```

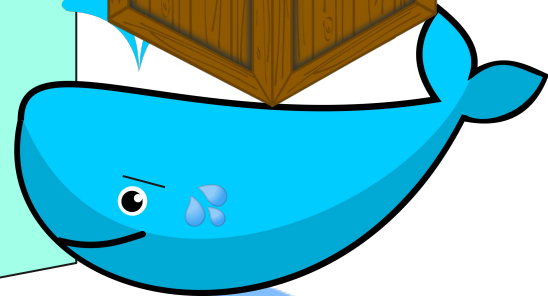
```
COPY package.json .
```

```
RUN npm install
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--package.json  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE




```
FROM alpine
```

```
WORKDIR /code
```

```
COPY site ./site
```

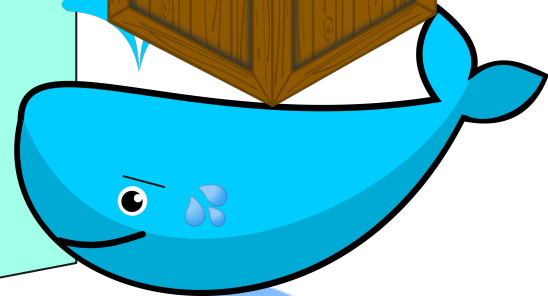
```
COPY package.json .
```

```
RUN npm install
```

```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--node_modules/  
  +--package.json  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
FROM alpine
```

```
WORKDIR /code
```

```
COPY site ./site
```

```
COPY package.json .
```

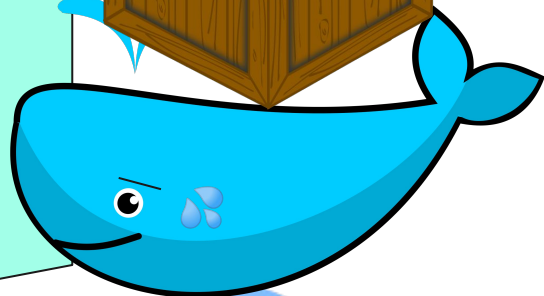
```
RUN npm install
```

```
CMD ["npm", "start"]
```

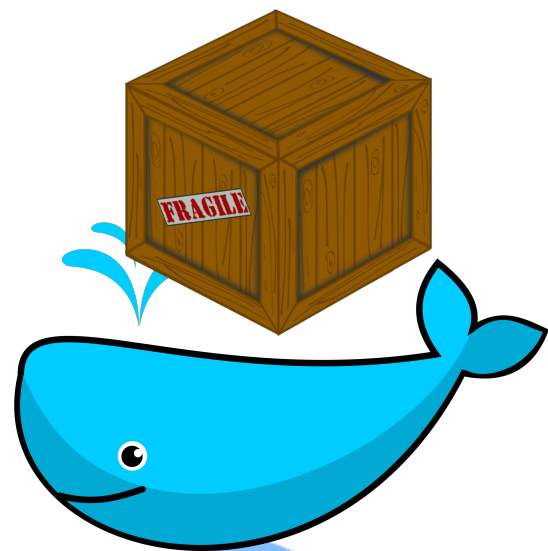
```
/  
+--.dockerignore  
+--Dockerfile  
+--package.json  
+--package-lock.json  
+--site/
```

```
/  
+--bin/  
+--code/  
  +--package.json  
  +--site/  
+--dev/  
+--etc/  
+--home/  
+--lib/  
+--media/  
+--mnt/  
+--opt/  
+--proc/
```

FRAGILE



```
$ docker build -t myapp .  
Sending build context to Docker daemon 826.9kB  
Step 1/6 : FROM node  
----> dcda6cd5e439  
Step 2/6 : WORKDIR /code  
----> Using cache  
----> 2c1b3d0ce106  
Step 3/6 : COPY site ./site  
----> becc22e9ec89  
Step 4/6 : COPY package.json .  
----> ffbf063519a0  
Step 5/6 : RUN npm install  
----> Running in 0c75f4e1cdf5  
Step 6/6 : CMD ["npm", "start"]  
----> Running in ec176fa46b30  
Removing intermediate container ec176fa46b30  
----> 5cf606b8e7c3  
Successfully built 5cf606b8e7c3  
Successfully tagged myapp:latest  
/Users/nick/code
```



```
$ docker build -t myapp .  
Sending build context to Docker daemon 826.9kB  
Step 1/6 : FROM node  
----> dcda6cd5e439  
Step 2/6 : WORKDIR /code  
----> Using cache  
----> 2c1b3d0ce106  
Step 3/6 : COPY site ./site  
----> becc22e9ec89  
Step 4/6 : COPY package.json .  
----> ffbf063519a0  
Step 5/6 : RUN npm install  
----> Running in 0c75f4e1cdf5  
Step 6/6 : CMD ["npm", "start"]  
----> Running in ec176fa46b30  
Removing intermediate container ec176fa46b30  
----> 5cf606b8e7c3  
Successfully built 5cf606b8e7c3  
Successfully tagged myapp:latest  
/Users/nick/code $
```



```
$ docker build -t myapp .  
Sending build context to Docker daemon 826.9kB  
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Successfully tagged myapp:latest  
/Users/nick/code $ docker run 5cf
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/Users/nick/code $ docker run myapp
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```
/
+--bin/
+--code/
+--dev/
+--etc/
+--home/
+--lib/
+--media/
+--mnt/
+--opt/
+--proc/
```

```
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```
/
+--bin/
+--code/
+--dev/
+--etc/
+--home/
+--lib/
+--media/
+--mnt/
+--opt/
+--proc/
+--node_modules/
+--package.json
+--site/
```



WORKDIR /code



COPY site ./site



COPY package.json .



RUN npm install



Important takeaways

- Selecting the right amount of "context" can speed up build time, but be sure it encompasses all files you need.
- Files generated from build processes or installs (npm) should happen in the container (rather than your computer) to ensure consistency.
- Errors around files not found (common) is because the file wasn't copied or copied to the wrong place. Identify where in the container the process is starting from, and try to connect it to where the file may be.
- Take advantage of layering by running a shell at different points in the container's build process



Thank you!

@palencharizard
nickpalenchar.com