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Deploy an App with Docker

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The screenshot shows the Docker Desktop application window. The left sidebar has a 'Containers' tab selected, which is highlighted in grey. Other tabs include 'Ask Gordon' (BETA), 'Images', 'Volumes', 'Builds', 'Docker Hub', 'Docker Scout', and 'Extensions'. The main area is titled 'Containers' and contains the sub-instruction 'View all your running containers and applications.' Below this is a placeholder image with three containers and the text 'Your running containers show up here'. A descriptive subtitle reads 'A container is an isolated environment for your code'. At the bottom of the main area are two cards: 'What is a container?' (5 mins) and 'How do I run a container?' (6 mins). A link 'View more in the Learning center' is located between them. The bottom status bar shows 'Engine running', system resources (RAM 2.01 GB, CPU 0.00%, Disk 2.21 GB used / limit 1006.85 GB), and a terminal icon.



Introducing Today's Project!

What is Docker?

Docker helped create, manage, and deploy these containers efficiently. I built a custom Docker image, that packages up your index.html file, and uploaded my custom Docker image to AWS Elastic Beanstalk, which served your application in the cloud

One thing I didn't expect...

I didn't expect how quickly it was to deploy an application using Elastic Beanstalk.

This project took me...

This project took me about 2 hours to complete



Understanding Containers and Docker

Containers

Containers package up your application and everything it needs to run (i.e. dependencies) in one file. Containers also let you run other developers' applications and software much faster, since a container comes with everything you need ASAP.

A container image is a blueprint or template for containers. It gives Docker instructions on what to include in a container, such as application code, libraries, dependencies, and necessary files.

Docker

Docker helps you create, manage, and deploy these containers efficiently. Docker Desktop lets you manage everything about your containers. You can create new containers, adjust their settings, or monitor how they run.

Docker daemon is a background process that manages the Docker containers on your pc. It takes commands from the Docker client (i.e. commands you type into the terminal and does the heavy lifting of building, running, and distributing your containers



Running an Nginx Image

Nginx (pronounced as "engine-x") is a web server, which means it's a program that serves web pages to people on the internet. Engineers use Nginx because it can handle lots of web traffic smoothly and efficiently.

The command I ran to start a new container was docker run. I also set the flags -d -p 80:80 nginx, which means we are running the container in the background(-d), and were matching port 80 in our host computer to the container's port 80(-p 80:80)

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org. Commercial support is available at nginx.com.

Thank you for using nginx.

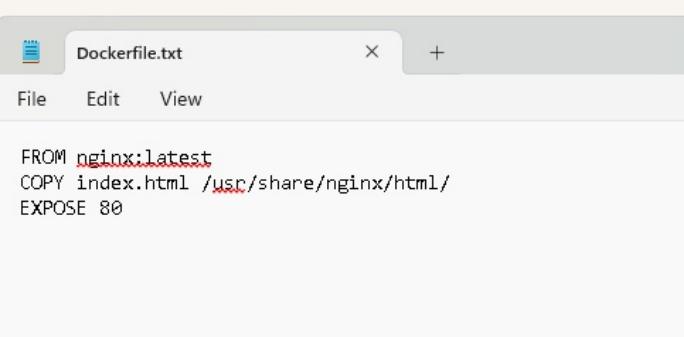


Creating a Custom Image

The Dockerfile is A Dockerfile is a document with all the instructions for building your Docker image. Docker would read a Dockerfile to understand how to set up your application's environment and which software packages it should install.

My Dockerfile tells Docker 1 FROM nginx:latest, starts as a copy of the latest Nginx image 2COPY index.html /usr/share/nginx/html/ replaces the default HTML file with custom 3 EXPOSE 80 you want the container to receive web traffic through port 80

The command I used to build a custom image with my Dockerfile was docker build -t my-web-app . The '.' at the end of the command means tells Docker to find the Dockerfile in the current directory i.e. the Compute folder.



```
FROM nginx:latest
COPY index.html /usr/share/nginx/html/
EXPOSE 80
```



Running My Custom Image

There was an error when I ran my custom image because there's already a container using port 80, so the new container I am creating can't access it. I went to Docker Desktop and closed it, reran the command and it worked

In this example, the container image is showing the contents of our index.html file. The container image is the blueprint that tells Docker the application code, dependencies, libraries etc that should go into a container.





Elastic Beanstalk

AWS Elastic Beanstalk is a service to deploy cloud applications without worrying about the underlying infrastructure. You upload your code and Elastic Beanstalk handles everything needed to get it running, like setting up servers and managing scaling.

Deploying my custom image with Elastic Beanstalk took me about an hour.





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