

Building Docker Images

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

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11 October 2024



Learning Objectives

In this tutorial, we will learn about



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- Building Docker images



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In this tutorial, we will learn about

- Building Docker images
- Pushing images to Docker Hub
- Image layers and size optimization



System Requirements

To record this tutorial, I am using



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- **Ubuntu Linux 22.04**



System Requirements

To record this tutorial, I am using

- Ubuntu Linux 22.04
- Docker 27.0.2



Pre-requisites

To follow this tutorial,



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To follow this tutorial,

- You must have basic knowledge of using Linux terminal



Pre-requisites

To follow this tutorial,

- You must have basic knowledge of using Linux terminal
- For pre-requisite Linux tutorials, please visit <https://spoken-tutorial.org/>



Code files

- The files used in this tutorial are provided in the Code files link



Code files

- The files used in this tutorial are provided in the Code files link
- Please download and extract the files



Code files

- The files used in this tutorial are provided in the Code files link
- Please download and extract the files
- Make a copy and then use them while practicing



Building Docker Images

- Write a Dockerfile and required code files



Building Docker Images

- Write a Dockerfile and required code files
- Build the Docker image



Building Docker Images

- Write a Dockerfile and required code files
- Build the Docker image
- Run the Docker image



Building Docker Images

- Write a Dockerfile and required code files
- Build the Docker image
- Run the Docker image
- Push to Docker Hub

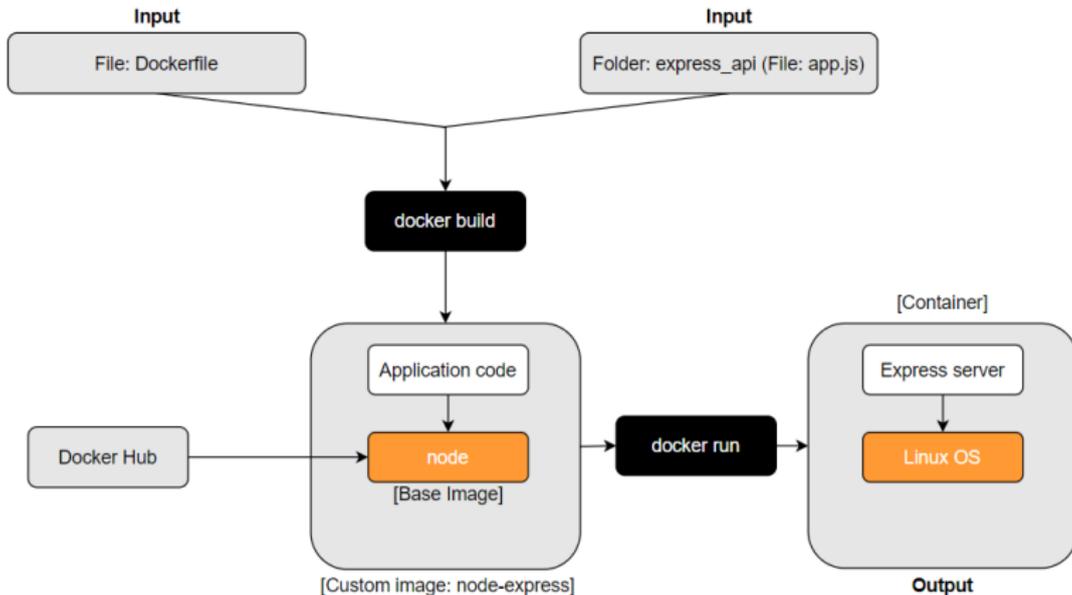


Building Docker Images

- Write a Dockerfile and required code files
- Build the Docker image
- Run the Docker image
- Push to Docker Hub
- Pull and run the image on the target machine



Flowchart



Pushing Images to Docker Hub

- To push a Docker image to Docker Hub, we use the `push` command



Pushing Images to Docker Hub

- To push a Docker image to Docker Hub, we use the `push` command
- Before pushing, we need to tag the image



Pushing Images to Docker Hub

- To push a Docker image to Docker Hub, we use the `push` command
- Before pushing, we need to tag the image
- It needs be done with our Docker Hub username and the repository name



Image Layers and Size Optimization

- Docker images are built in layers



Image Layers and Size Optimization

- Docker images are built in layers
- Each Dockerfile instruction that changes the filesystem, represents a layer



Image Layers and Size Optimization

- Docker images are built in layers
- Each Dockerfile instruction that changes the filesystem, represents a layer
- To optimize image size, the number of layers are reduced



Summary

In this tutorial, we have learnt about

- Building Docker images
- Pushing images to Docker Hub
- Image layers and size optimization



Assignment

As an assignment, please do the following

- **Modify the image size by using alpine variant base image**
- **Compare the sizes before and after modifying the base image**



Assignment Observation

```
pranjal@pranjal-VirtualBox: ~/Downloads
pranjal@pranjal-VirtualBox:~/Downloads$ sudo docker images | grep node-express
node-express          v1          cf7cc8a7b829  2 minutes ago  160MB
pranjal@pranjal-VirtualBox:~/Downloads$
```



About the Spoken Tutorial Project

- Watch the video available at http://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- It summarises the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it



Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to contact@spoken-tutorial.org



Answers for THIS spoken tutorial

- Questions in THIS Spoken Tutorial
- Please Visit <https://forums.spoken-tutorial.org>
- Choose the minute and second where you have the question
- Explain your question briefly
- The Spoken Tutorial project will ensure an answer
- You will have to register to ask questions



FOSSEE Forum

- For any general or technical questions on Docker, visit the FOSSEE forum and post your question
<https://forums.fossee.in/>



Acknowledgement

- **Spoken Tutorial Project was established by the Ministry of Education, Government of India**



Thank you

- This is Pranjal Mahajan, a FOSSEE Semester Long Intern 2024, IIT Bombay

