

Basics of Images and Containers

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

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22 July 2024



Learning Objectives

In this tutorial, we will learn about



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In this tutorial, we will learn about

- Images and containers



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In this tutorial, we will learn about

- Images and containers
- Pulling an image from Docker Hub



Learning Objectives

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- Images and containers
- Pulling an image from Docker Hub
- Running an image



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- Accessing the running application



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In this tutorial, we will learn about

- Images and containers
- Pulling an image from Docker Hub
- Running an image
- Accessing the running application
- Viewing running containers
- Stopping and starting a container



System Requirements

To record this tutorial, I am using



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- **Ubuntu Linux OS 22.04**



System Requirements

To record this tutorial, I am using

- Ubuntu Linux OS 22.04
- Docker 27.0.2



Pre-requisites

To follow this tutorial,



Pre-requisites

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://www.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



Docker Images

- A Docker image is an executable package



Docker Images

- A Docker image is an executable package
- It contains all the files and configurations needed for running an application



Docker Images

- A Docker image is an executable package
- It contains all the files and configurations needed for running an application
- It allows developers to package applications with all their dependencies



Docker Containers

- A Docker container is a running instance of a Docker image



Docker Containers

- A Docker container is a running instance of a Docker image
- Each container runs as an independent entity



Docker Containers

- A Docker container is a running instance of a Docker image
- Each container runs as an independent entity
- There can be multiple instances of Docker containers for the same Docker image



Docker Containers

- Containers share the OS kernel with each other

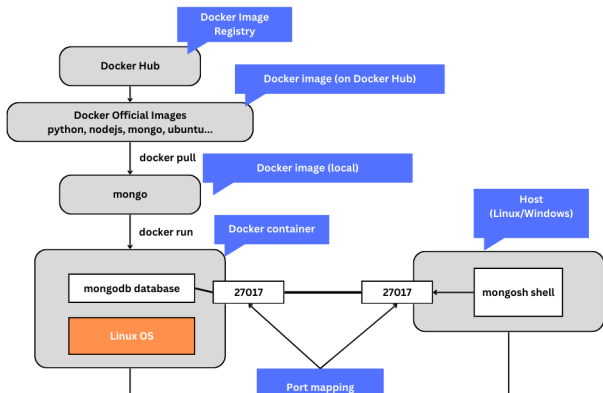


Docker Containers

- Containers share the OS kernel with each other
- On stopping a container all the changes made are lost



Flowchart



Run Command

- **sudo docker run [additional flags]
[image name]**



Run Command

- **sudo docker run [additional flags]
[image name]**
- **The run command creates a new container for the image specified**



Run Command

- **sudo docker run [additional flags]
[image name]**
- **The run command creates a new container for the image specified**
- **Additional flags can be provided to set parameters**



Run Command

- These parameters can be container name, ports, mode of operation etc



Run Command

- These parameters can be container name, ports, mode of operation etc
- If no name is specified, a random name is assigned



Summary

In this tutorial, we have learnt about

- **Images and containers**
- **Pulling an image from Docker Hub**
- **Running an image**
- **Accessing the running application**
- **Viewing running containers**
- **Stopping and starting a container**



Assignment

As an assignment, please do the following

- **Pull the official image of Python from Docker Hub**
- **Run the image with the -it flag to run in interactive mode**
- **Check the version of Python when the image is run**



Assignment

- Check the version of Python in your local machine using command `python3 --version`



Assignment - Observation

```
karthik@lenovo-ubuntu:~$ python3 --version
Python 3.10.12
karthik@lenovo-ubuntu:~$
```



Assignment - Observation

```
karthik@lenovo-ubuntu:~$ sudo docker run -it python
Python 3.12.3 (main, May 14 2024, 07:23:41) [GCC 12.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information
.>>> print("Hello World")
Hello World
>>> █
```



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 Karthik Chandrasekhar, a FOSSEE Semester Long Intern 2024, IIT Bombay

