Docker: How to easily run an entire software stack locally and ease software distribution

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Outline

- What is Docker?
- Docker Terminology.
- IDE integration.
- Demonstration.
- Tips and Tricks.

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  - Orchestration is handled by other software such as Kubernetes.

- Image

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- Docker compose file
  - Filename: `docker-compose.yml`
  - Format: YAML
  - Description: Information necessary for setting up an environment composed of one or more containers.

IDEs with Docker support

- Visual Studio ().

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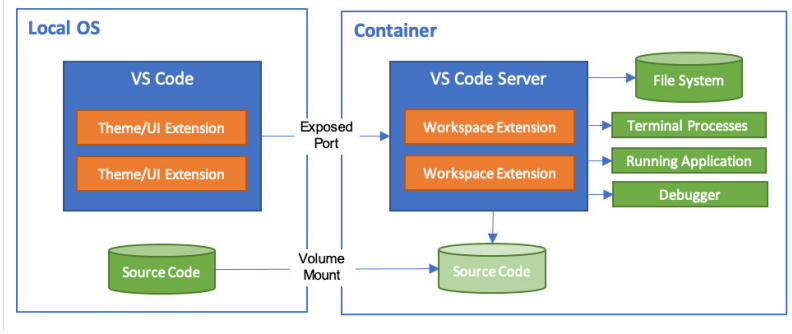
IDEs with Docker support

- Visual Studio (Windows).
- JetBrains (Windows, macOS, Linux).
- Visual Studio Code (Windows, macOS, Linux) — **Recommended**
  - Free and mostly open-source.
  - Lighter than of all the above.
  - Easiest to set up for use with Docker and WSL.
  - Stores configuration in a `JSON` file for easier setup sharing as we shall see in the demo.



How Visual Studio Code works when developing on a container[1].

The Remote Containers extension is required.

[1] https://code.visualstudio.com/docs/remote/containers

Useful Commands

- `docker ps` — Check the containers currently running.
- `docker images` — Get a list of images currently on your system.
- `docker container ls` — List of containers.
- `docker network ls` — List of networks.
- `docker volume ls` — List of volumes.

- Demo 1 — Setup of two docker containers on the same network.
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  - Create and setup `docker-compose` files.
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- Demo 2 — Development of a C++ application.
  - Integration with the Visual Studio Code IDE.
  - Setting up of IntelliSense autocomplete.
  - Debugging capability.

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- Linux
  - Docker is officially supported on Fedora 34+.

Thank you

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