What is Docker?

Software platform that simplifies development and deployment by providing a standardized and portable way to package and run applications

- **Open platform** for development, shipping, and running
- **Separation applications from infrastructure ->** deliver software quickly
- **Reduced development cycle:** Docker's methodologies for shipping, testing, and deploying code significantly speed up the process of getting your code from development to production.

Images & Containers

Images:

- **Docker images** ~ blueprints for containers
    - Runtime environment (e.g. node version)
    - Application code
    - Any dependencies
    - Extra configuration (e.g. env variables)
    - commands
- Have its own file system which is independent of the rest of the computer.
- Read only: cannot be changed when created. Want to change -> create a brand new one.

Linux Namespaces

- Linux namespaces provide a mechanism for isolating system resources
    - Processes within a namespace have their own view of the system, such as process IDs, network interfaces, and file systems.
- **Docker uses namespaces to create isolated containers**, each with its own set of resources.
  ➔ **Ensure application seperation & security**
- **Cgroup:** a Linux kernel feature that enable the management and partitioning of system resources by controlling the resources for a collection of processes.
    - Administrators can use cgroups to allocate resources, set limits, and prioritize processes.
    - Docker utilizes cgroups to control and limit the resources available to containers.
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