Docker Official Getting Started — Reference Guide

Installation

Download Docker Desktop from docker.com or install Docker Engine on Linux:

```
sudo apt-get update
sudo apt-get install docker-ce docker-ce-cli containerd.io
sudo usermod -aG docker $USER
```

Your First Container

```
# Pull and run the hello-world image
docker run hello-world

# Run an interactive Ubuntu container
docker run -it ubuntu bash
```

Networking

```
# Create a custom network
docker network create mynet

# Run containers on the same network
docker run -d --network mynet --name db postgres:15
docker run -d --network mynet --name web myapp
# "web" can reach "db" by hostname: postgresql://db:5432/mydb
```

Volumes (Persistent Data)

```
# Named volume
docker volume create mydata
docker run -v mydata:/app/data myapp

# Bind mount (development)
docker run -v $(pwd)/src:/app/src myapp
```

Multi-Stage Builds

```
# Stage 1: Build
FROM node:18 AS builder
WORKDIR /app
COPY package*.json .
RUN npm ci
COPY . .
RUN npm run build

# Stage 2: Production (much smaller)
FROM nginx:alpine
COPY --from=builder /app/dist /usr/share/nginx/html
```

Key Takeaways

1. Use named volumes for database data, bind mounts for development.
2. Custom networks allow containers to communicate by name.
3. Multi-stage builds drastically reduce final image size.
4. Always clean up unused images/containers: `docker system prune`.

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