



AJIB SUSANTO

# Docker

- ▶ Docker adalah platform containerization yang memungkinkan pengembang untuk mengemas aplikasi dan dependensinya dalam sebuah container.
- ▶ Container ini bisa dijalankan di hampir semua sistem operasi yang mendukung Docker, memastikan konsistensi lingkungan aplikasi, tidak peduli di mana ia dijalankan.

# Mengapa Docker?

- ▶ **Konsistensi Lingkungan:** Docker mengurangi masalah "berjalan di komputer saya" dengan memberikan konsistensi lingkungan di seluruh proses pengembangan, pengujian, dan produksi.
- ▶ **Isolasi:** Docker memastikan bahwa aplikasi diisolasi dari sistem lain, meningkatkan keamanan.
- ▶ **Portabilitas:** Aplikasi yang dikemas dalam Docker container bisa dijalankan di mana saja, asalkan sistemnya mendukung Docker.
- ▶ **Efisiensi:** Docker memanfaatkan sumber daya secara lebih efisien daripada mesin virtual tradisional

# Instalasi Docker

- ▶ **Unduh Docker:** Kunjungi situs resmi Docker dan unduh Docker Desktop untuk sistem operasi Anda (tersedia untuk Windows, MacOS, dan Linux).
- ▶ **Instalasi:** Ikuti instruksi instalasi pada situs Docker.
- ▶ **Verifikasi Instalasi:** Buka terminal atau command prompt dan jalankan `docker --version` untuk memastikan Docker telah terinstal dengan benar

# Komponen Utama Docker

## ▶ **Docker Daemon (Server Docker):**

- ▶ Komponen ini bertanggung jawab untuk mengelola Docker images, container, network, dan storage volumes.
- ▶ Docker daemon menerima permintaan melalui API yang dibuat oleh Client Docker.

## ▶ **Client Docker:**

- ▶ Digunakan oleh pengguna untuk membuat, mengelola, dan menjalankan aplikasi dalam container. Melalui client Docker, kita dapat mengirimkan perintah seperti docker run , docker build , dan docker pull ke Docker daemon.

## ▶ **Docker Images:**

- ▶ Kumpulan file yang berisi informasi untuk membangun sebuah container.
- ▶ Blueprint untuk container. Kita bisa membuat image sendiri atau menggunakan yang sudah ada dari Docker Hub.
- ▶ Images ini berisi semua komponen yang diperlukan untuk menjalankan aplikasi, termasuk system tools, library, code, runtime, dan konfigurasi.

# Komponen Utama Docker

## ▶ **Docker Container:**

- ▶ *Instance* dari image yang dijalankan. Containers bisa di-start, di-stop, dihapus, dan di-manage.
- ▶ Container berisi semua komponen yang diperlukan untuk menjalankan aplikasi, seperti yang terdapat dalam Docker images.

## ▶ **Docker Registry:**

- ▶ Tempat penyimpanan untuk Docker images.
- ▶ Docker Hub adalah salah satu contoh registry yang populer.

## ▶ **Docker Compose:**

- ▶ Alat untuk mendefinisikan dan menjalankan aplikasi multi-container.
- ▶ Dengan Docker Compose, kita dapat mengatur konfigurasi dan dependensi antar container.

# Komponen Utama Docker

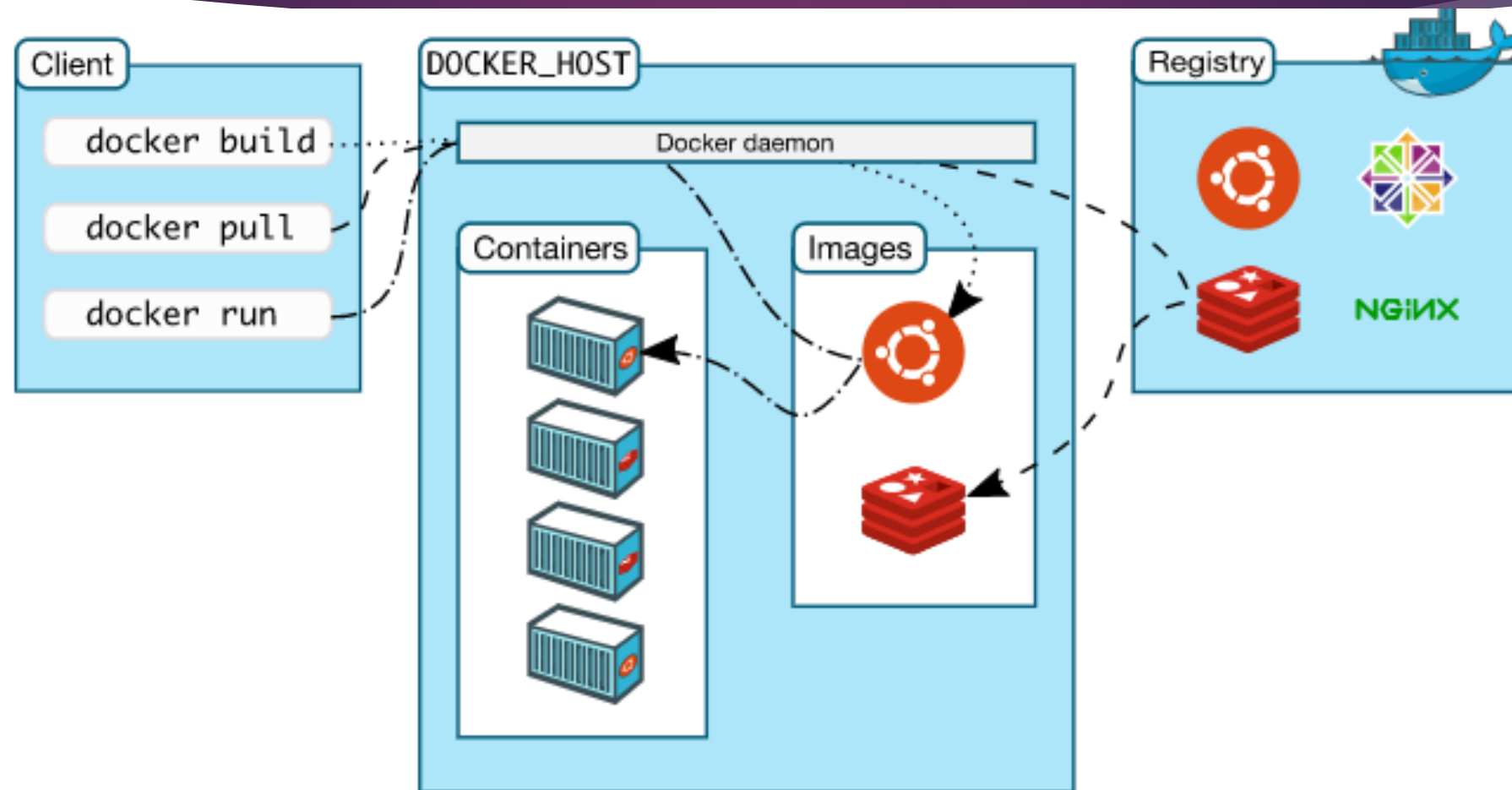
## ▶ **Docker Network:**

- ▶ Memungkinkan container untuk berkomunikasi satu sama lain.
- ▶ Kita dapat membuat jaringan khusus untuk container atau menggunakan jaringan default yang disediakan oleh Docker.

## ▶ **Docker Volumes:**

- ▶ Memungkinkan data persisten di dalam container.
- ▶ Volume dapat digunakan untuk menyimpan data yang ingin kita simpan di luar container

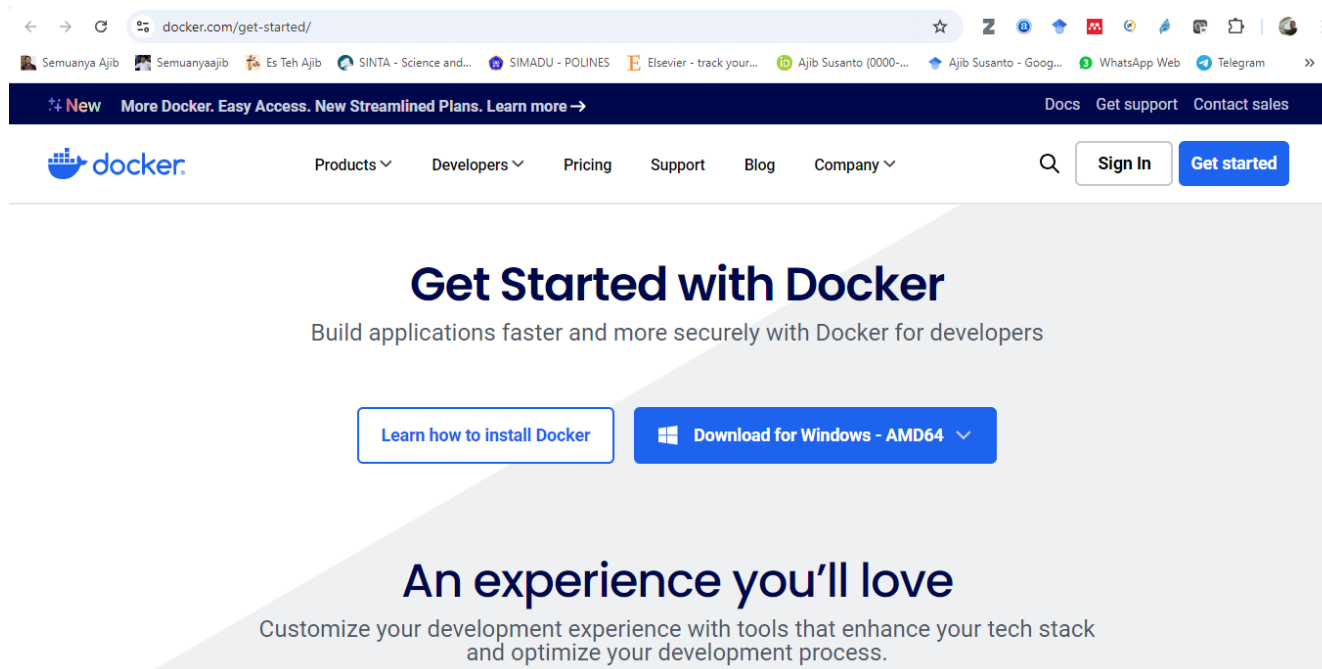
# Arsitektur Docker






# Install Docker Windows

- ▶ Download installer docker desktop
- ▶ Download Docker Desktop untuk Windows



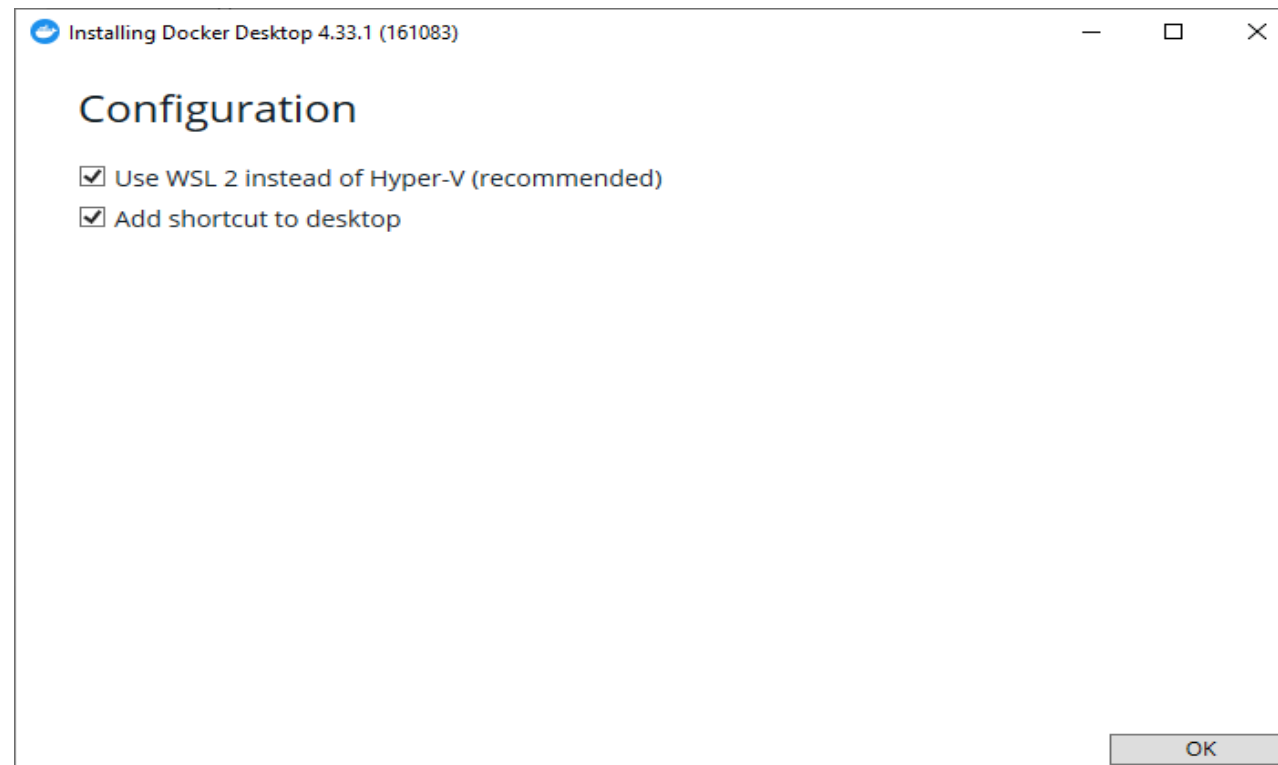
# Install Docker

- Mari kita mulai install, Klik 2x pada file **Docker Desktop Installer.exe**.

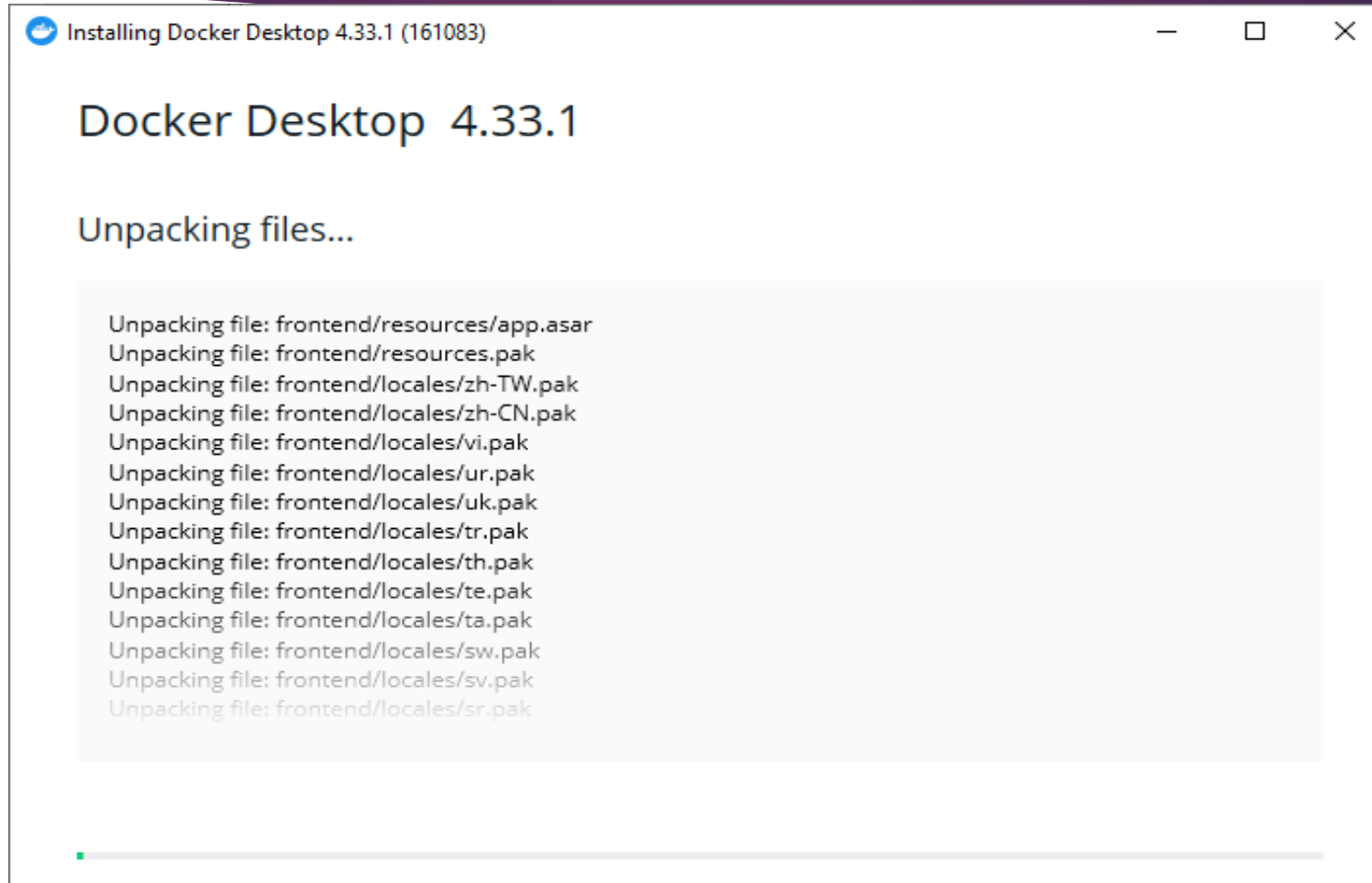
	 Docker Desktop Installer	18/09/2024 13:43	Application
---	--	------------------	-------------

# Konfigurasi

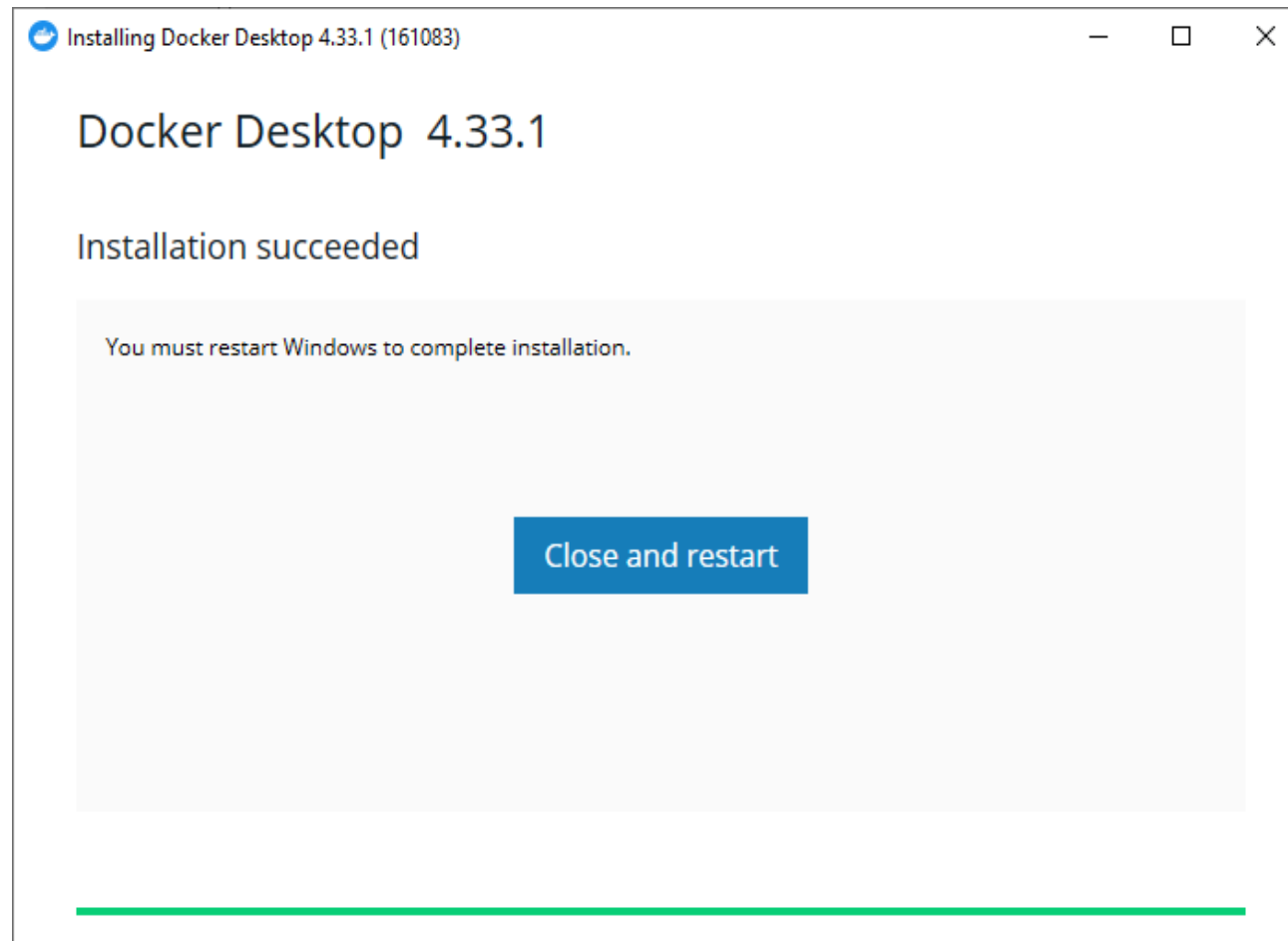
- Docker menggunakan WSL 2



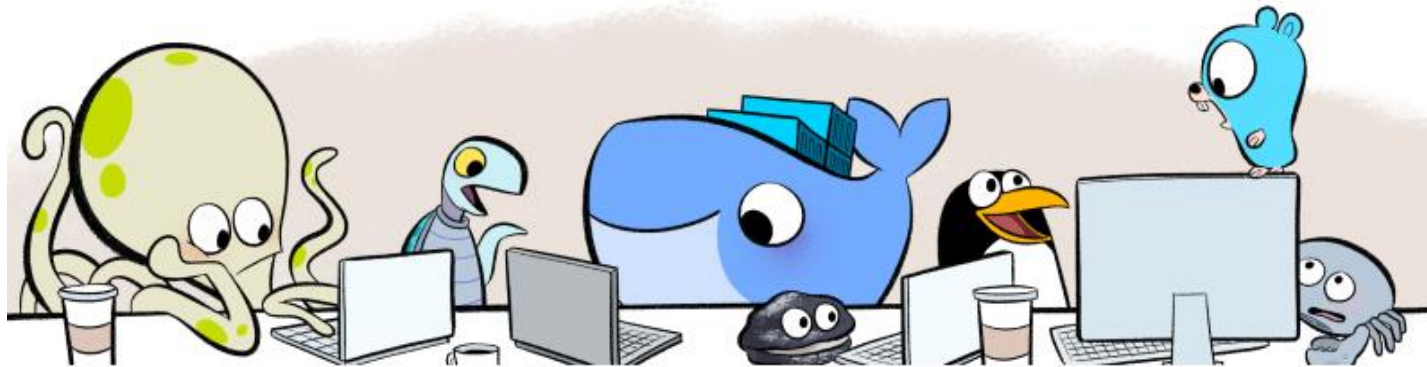
# Proses Instalasi Docker



# Install Selesai



# Terima Agreement



## Docker Subscription Service Agreement

By selecting **accept**, you agree to the [Subscription Service Agreement](#), the [Docker Data Processing Agreement](#), and the [Data Privacy Policy](#).

Commercial use of Docker Desktop at a company of more than 250 employees OR more than \$10 million in annual revenue requires a paid subscription (Pro, Team, or Business). [See subscription details](#)

[View Full Terms](#)



**Accept**

Close

# Selesai Instalasi

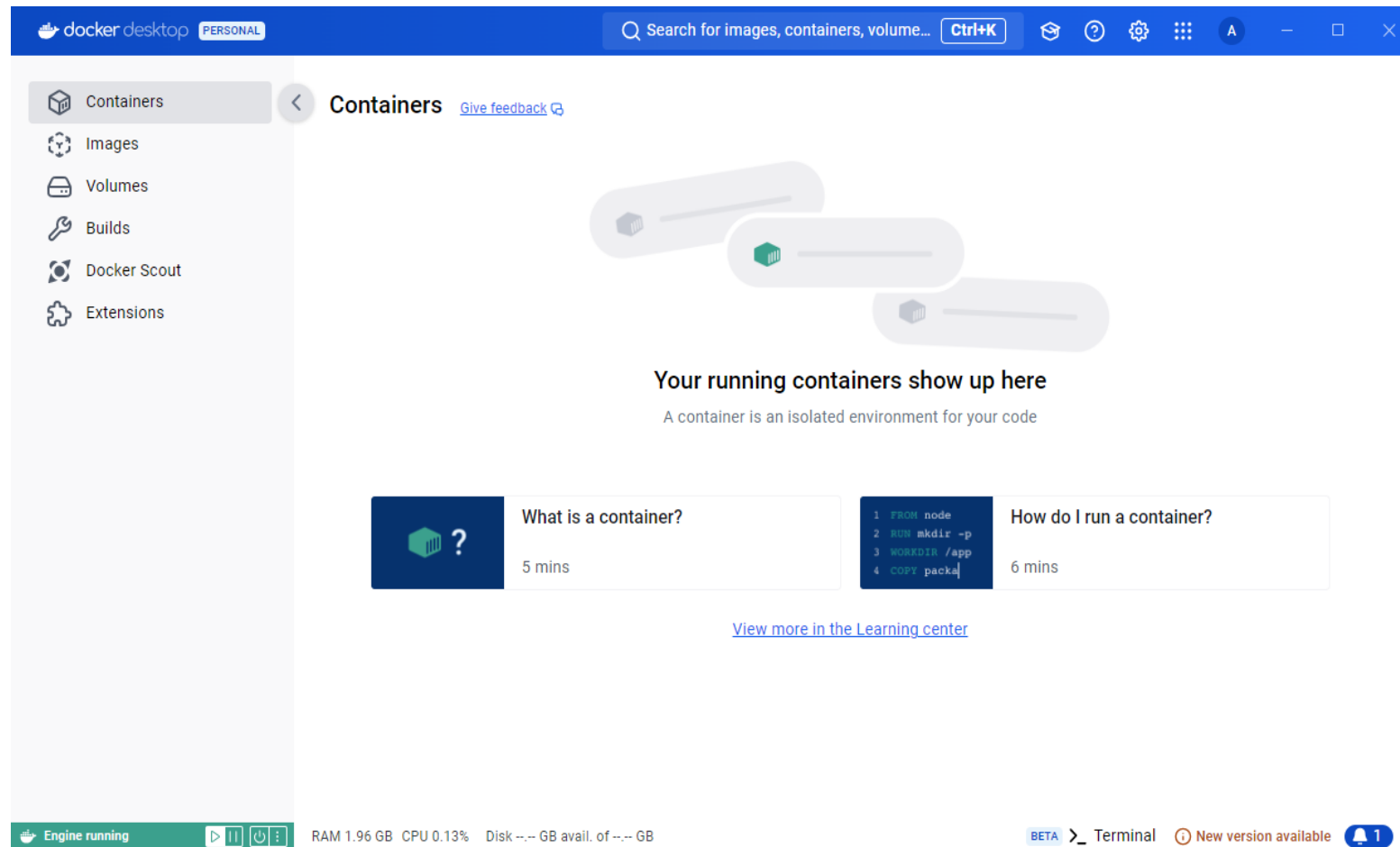


Complete the installation of Docker Desktop.

- ☒ Use recommended settings (requires administrator password)  
Docker Desktop automatically sets the necessary configurations that work for most developers.
- ☐ Use advanced settings  
You manually set your preferred configurations.

Finish

# Dashboard Docker Desktop





# Versi Docker

## ► Cek Versi

```
Command Prompt

C:\Users\asm>docker --version
Docker version 27.1.1, build 6312585

C:\Users\asm>
```

The screenshot shows the Docker Desktop application window. The top bar is blue with the Docker logo and 'docker desktop PERSONAL'. A search bar is present with the text 'Search for images, containers, volume...' and a 'Ctrl+K' shortcut. On the left is a sidebar with icons for Containers, Images, Volumes, Builds, Docker Scout, and Extensions. The main area is titled 'Containers' and shows a summary of container CPU and memory usage. Below this is a table of running and exited containers. At the bottom is a terminal window showing the output of the 'docker --version' command.

**Containers** [Give feedback](#)

Container CPU usage 0.00% / 800% (8 CPUs available) Container memory usage 34.52MB / 7.52GB [Show charts](#)

Search Only show running containers

	Name	Image	Status	Port(s)	CPU (%)	Last started	Actions
<input type="checkbox"/>	<a href="#">docker</a> 9b5a5f82e5	<a href="#">docker/weicomm</a> <a href="#">to-docker:latest</a>	Running	<a href="#">8088:80</a>	0%	2 hours ago	<input type="checkbox"/> ⋮
<input type="checkbox"/>	<a href="#">thirsty.m</a> aa2c7e2ca7	<a href="#">nginx:latest</a>	Exited		0%	2 hours ago	<input type="checkbox"/> ⋮
<input type="checkbox"/>	<a href="#">peaceful</a> 37b0bea8a1	<a href="#">nginx:latest</a>	Exited		0%	2 hours ago	<input type="checkbox"/> ⋮

**Terminal**

```
33e0cbbb4673: Pull complete
4f7e34c2de10: Pull complete
Digest: sha256:d79336f4812b6547a53e735480dde67f8f8f7071b414fbd9297609ffb989abc1
Status: Downloaded newer image for docker/getting-started:latest
389d61663d76a9ab22bf80716e65ca88cd811a7c0ae70a6d53ca75e185766fce
PS D:\Dr Master Data\data\kuliah\docker\belajardocker> docker --version
Docker version 27.1.1, build 6312585
PS D:\Dr Master Data\data\kuliah\docker\belajardocker>
```

Engine running RAM 1.06 GB CPU --- % Disk --- GB avail. of --- GB BETA Terminal New version available 3

# NGINX (engine-ex)

- ▶ Web Server
- ▶ Reverse proxy server, sebuah server yang berfungsi untuk menerima permintaan (request) dari klien (browser) dan meneruskannya ke server lain, seperti web server atau aplikasi backend
- ▶ Tarik nginx images ke local
  - ▶ *Docker pull nginx*

```
C:\Users\asm>Docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
302e3ee49805: Downloading [=====>] 13.57MB/29.13MB
cd986b3703ae: Downloading [=====>] 8.097MB/41.88MB
34a52cbc3961: Download complete
d1875670ac8a: Download complete
af17adb1bdcc: Download complete
97182578e5ec: Download complete
67b9310357e1: Download complete
```

# NGINX (engine-ex)

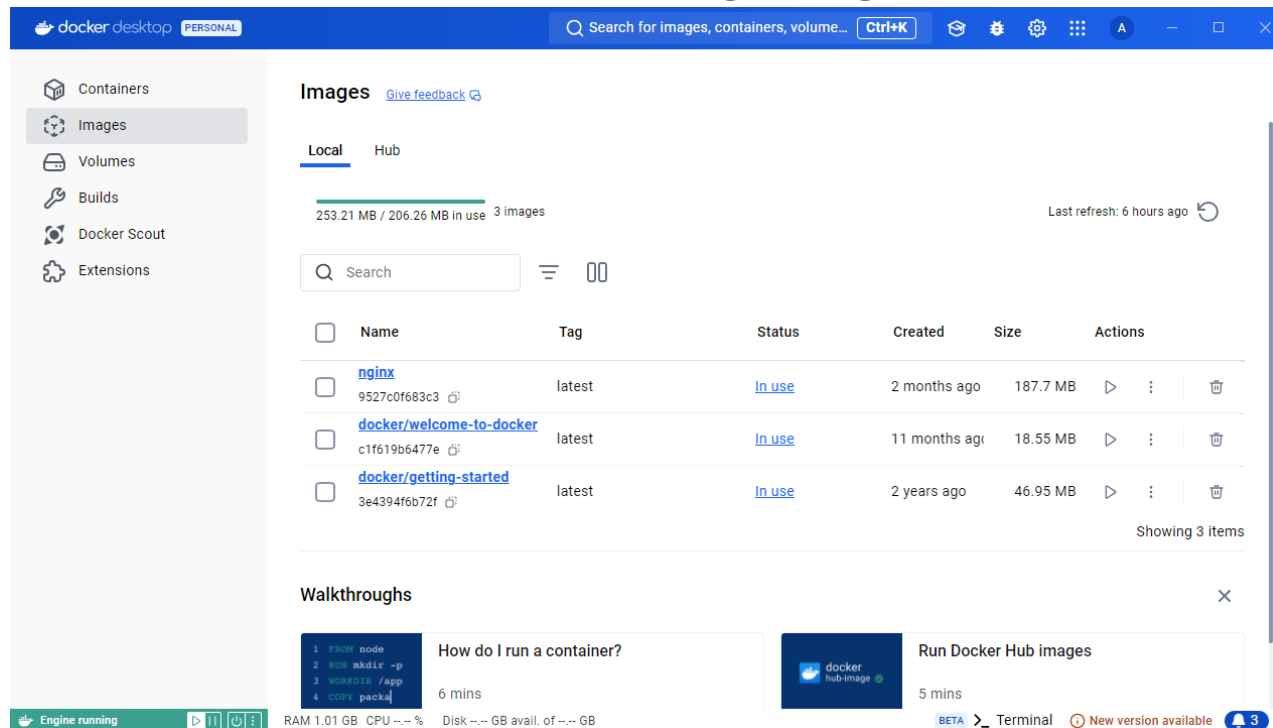
The screenshot shows the Docker Desktop application window. The top bar is blue with the Docker logo, 'docker desktop PERSONAL', a search bar, and system icons. The left sidebar contains navigation links: Containers, Images (selected), Volumes, Builds, Docker Scout, and Extensions. The main area is titled 'Images' with a 'Local' tab selected. It shows a progress bar for '18.55 MB / 0 Bytes in use' and '2 images'. Below is a table of local images:

Name	Tag	Status	Created	Size	Actions
<a href="#">nginx</a> 9527c0f683c3	latest	Unused	2 months ago	187.7 MB	▶ ⋮ 🗑️
<a href="#">docker/welcome-to-docker</a> c1f619b6477e	latest	In use	11 months ago	18.55 MB	▶ ⋮ 🗑️

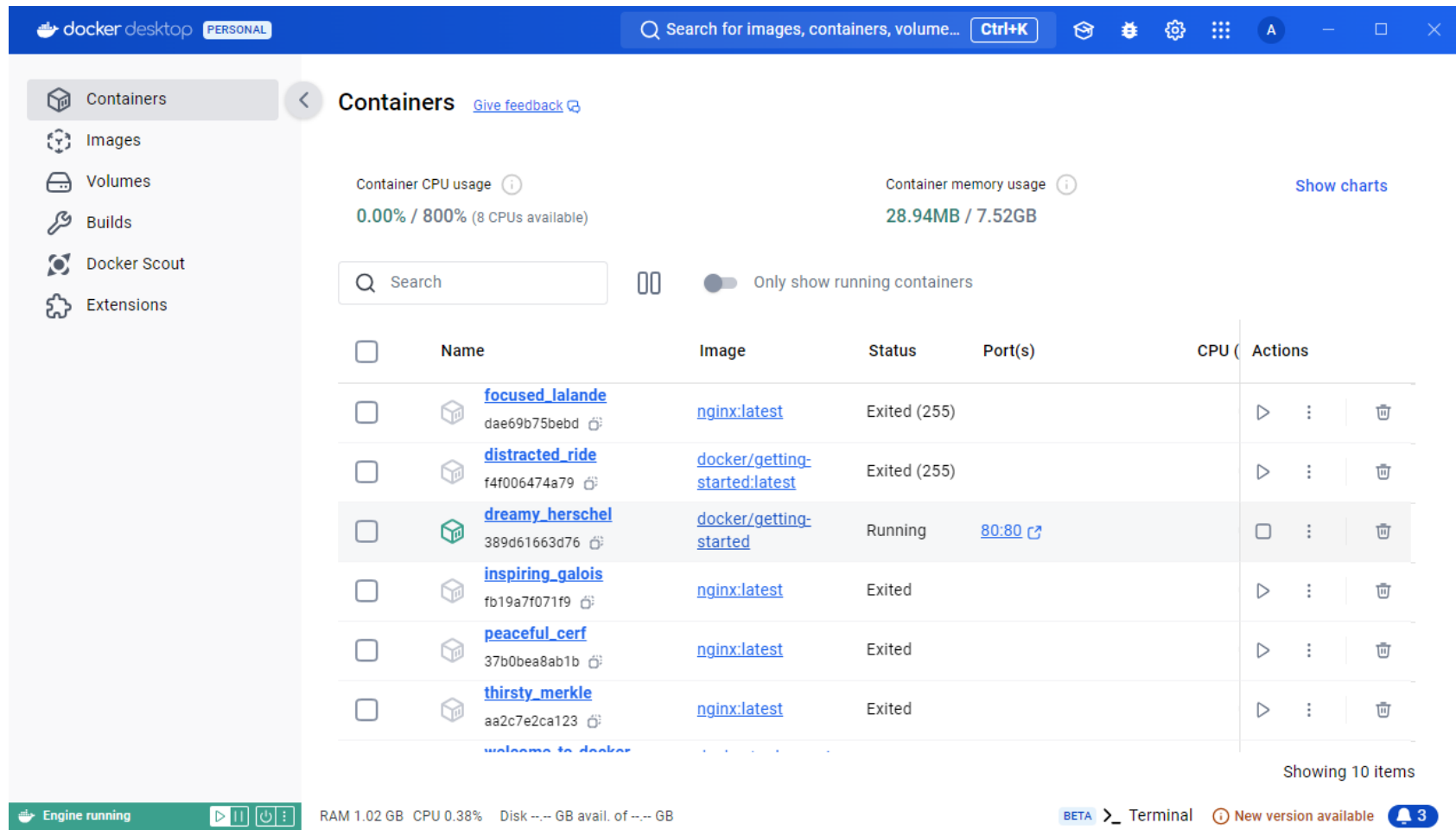
Below the table, it says 'Showing 2 items'. At the bottom, there are 'Walkthroughs' for 'How do I run a container?' (6 mins) and 'Run Docker Hub images' (5 mins). The bottom status bar shows 'Engine running', system resources (RAM 1.12 GB, CPU, Disk), and a 'New version available' notification.

# Contoh : getting-started

- ▶ Jalankan di command line
- ▶ `docker run -d -p 80:80 docker/getting-started`



# Contoh : getting-started



The screenshot shows the Docker Desktop application window. The top bar is blue with the Docker logo, 'docker desktop PERSONAL', a search bar, and window controls. The left sidebar contains navigation icons for Containers, Images, Volumes, Builds, Docker Scout, and Extensions. The main area is titled 'Containers' and shows system usage statistics: 'Container CPU usage 0.00% / 800% (8 CPUs available)' and 'Container memory usage 28.94MB / 7.52GB'. Below these are a search bar and a toggle for 'Only show running containers'. A table lists containers with columns for Name, Image, Status, Port(s), CPU, and Actions. The 'dreamy\_herschel' container is highlighted as 'Running'. The bottom status bar shows 'Engine running', system resources (RAM 1.02 GB, CPU 0.38%, Disk), and notifications for 'BETA', 'Terminal', and 'New version available'.

docker desktop PERSONAL

Search for images, containers, volume... **Ctrl+K**

Containers [Give feedback](#)

Container CPU usage ⓘ  
0.00% / 800% (8 CPUs available)

Container memory usage ⓘ  
28.94MB / 7.52GB [Show charts](#)

Search

☐ Only show running containers

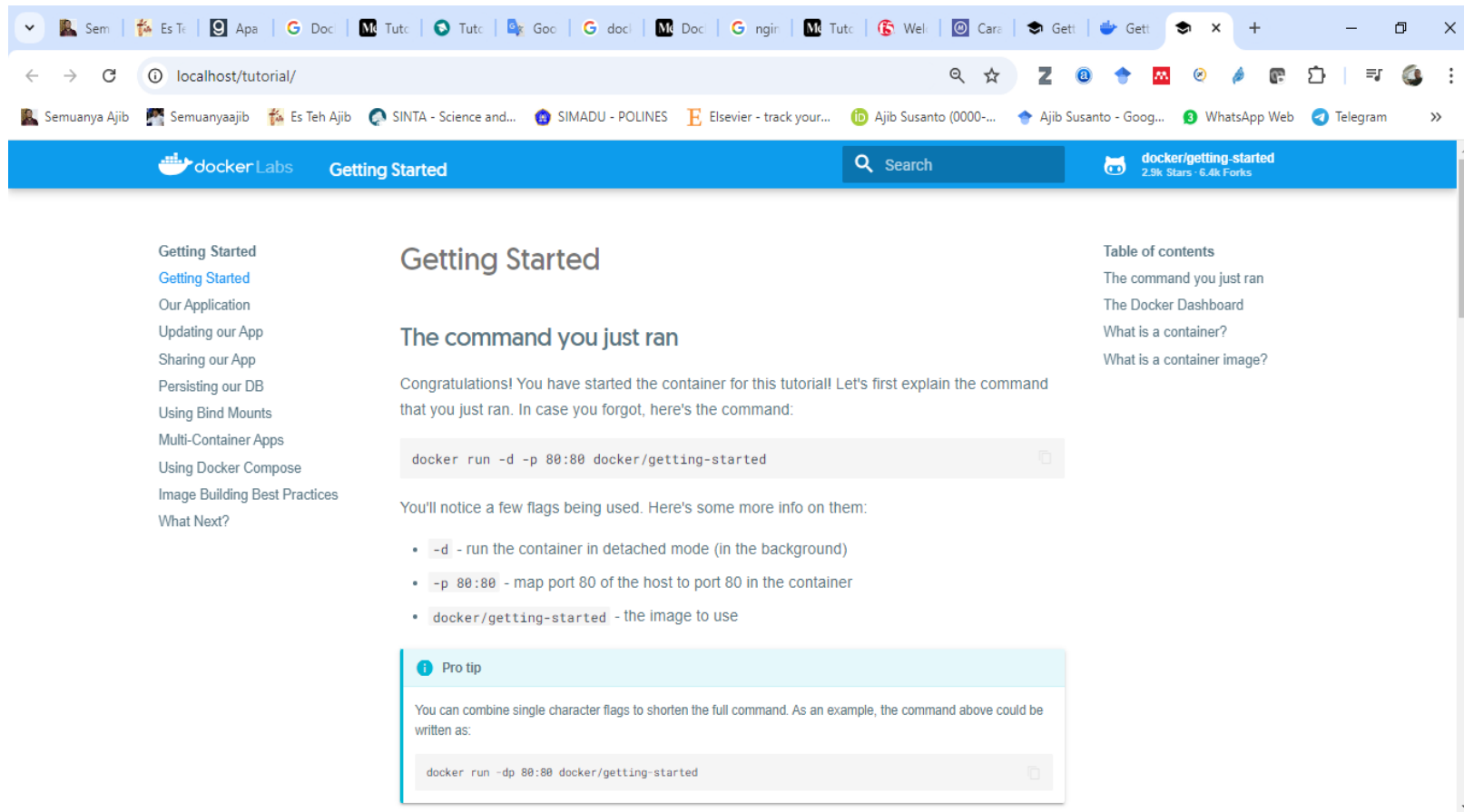
<input type="checkbox"/>	Name	Image	Status	Port(s)	CPU	Actions
<input type="checkbox"/>	<a href="#">focused_lalande</a> dae69b75bebd	<a href="#">nginx:latest</a>	Exited (255)			<input type="checkbox"/> ⋮ 🗑
<input type="checkbox"/>	<a href="#">distracted_ride</a> f4f006474a79	<a href="#">docker/getting-started:latest</a>	Exited (255)			<input type="checkbox"/> ⋮ 🗑
<input type="checkbox"/>	<a href="#">dreamy_herschel</a> 389d61663d76	<a href="#">docker/getting-started</a>	Running	<a href="#">80:80</a>		<input type="checkbox"/> ⋮ 🗑
<input type="checkbox"/>	<a href="#">inspiring_galois</a> fb19a7f071f9	<a href="#">nginx:latest</a>	Exited			<input type="checkbox"/> ⋮ 🗑
<input type="checkbox"/>	<a href="#">peaceful_cerf</a> 37b0bea8ab1b	<a href="#">nginx:latest</a>	Exited			<input type="checkbox"/> ⋮ 🗑
<input type="checkbox"/>	<a href="#">thirsty_merkle</a> aa2c7e2ca123	<a href="#">nginx:latest</a>	Exited			<input type="checkbox"/> ⋮ 🗑

Showing 10 items

Engine running ☐ ☐ ☐ RAM 1.02 GB CPU 0.38% Disk --- GB avail. of --- GB

BETA > Terminal 🔔 New version available 3

# Hasil : getting-started



Browser tabs: Sem, Es Te, Apa, Doc, Tut, Tut, Goc, doc, Doc, ngin, Tut, Wel, Cara, Get, Get, x, +, -, , X

Address bar: localhost/tutorial/

Browser bookmarks: Semuanya Ajib, Semuanyaajib, Es Teh Ajib, SINTA - Science and..., SIMADU - POLINES, Elsevier - track your..., Ajib Susanto (0000-..., Ajib Susanto - Goog..., WhatsApp Web, Telegram

Header: docker Labs Getting Started Search docker/getting-started 2.9k Stars · 6.4k Forks

Table of contents:

- Getting Started
- Getting Started
- Our Application
- Updating our App
- Sharing our App
- Persisting our DB
- Using Bind Mounts
- Multi-Container Apps
- Using Docker Compose
- Image Building Best Practices
- What Next?

## Getting Started

### The command you just ran

Congratulations! You have started the container for this tutorial! Let's first explain the command that you just ran. In case you forgot, here's the command:

```
docker run -d -p 80:80 docker/getting-started
```

You'll notice a few flags being used. Here's some more info on them:

- d - run the container in detached mode (in the background)
- p 80:80 - map port 80 of the host to port 80 in the container
- docker/getting-started - the image to use

**Pro tip**

You can combine single character flags to shorten the full command. As an example, the command above could be written as:

```
docker run -dp 80:80 docker/getting-started
```

# Hasil : welcome

**docker desktop** PERSONAL Search for images, containers, volume... **Ctrl+K**

Containers [Give feedback](#)

Images  
Volumes  
Builds  
Docker Scout  
Extensions

Containers [Give feedback](#)

Container CPU usage ⓘ  
0.00% / 800% (8 CPUs available)

Container memory usage ⓘ  
28.95MB / 7.52GB [Show charts](#)

Q welcom x Only show running containers

<input type="checkbox"/>	Name	Image	Status	Port(s)	CPU (%)	Actions
<input type="checkbox"/>	<a href="#">welcome-to-docker</a> 9b5a5f82e580	<a href="#">docker/welcome-to-docker:latest</a>	Running	8088:80	0	<input type="checkbox"/> ⋮ 🗑
<input type="checkbox"/>	<a href="#">naughty_chatelet</a> 0adaa6971534	<a href="#">docker/welcome-to-docker:latest</a>	Running		0	<input type="checkbox"/> ⋮ 🗑

Showing 2 items

Engine running RAM 1.02 GB CPU 0% Disk 0 GB avail. of 0 GB

BETA Terminal New version available 3

localhost:8088

Semuanya Ajib SINTA - Science and... SIMADU - POLINES Elsevier - track your... Ajib Susanto (0000-... Ajib Susanto - Goog... WhatsApp Web Telegram

**Congratulations!!!**  
You ran your first container.

X in

# Praktek

- ▶ Instalasi Docker





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