INSTALLATION OF DOCKER

There are 2 steps to be done:

1. **Docker installations based on your OS ubuntu , wsl or mac.**
2. **Create an Docker account by using your personal mails.**
3. **Open DockerHub website and login using your account which you created above.**

(Irrespective of OS , make sure you complete all the 3steps before Lab-3(Docker-Basics))

Docker Installation steps for Ubuntu 22.04 or later:

If you have previously installed docker ,your Linux distribution may provide unofficial Docker packages, which may conflict with the official packages provided by Docker. You must uninstall these packages before you install the official version of Docker Engine.

1. Install using the apt repository:

Add Docker's official GPG key:

```
$sudo apt update
$sudo apt install ca-certificates curl
$sudo install -m 0755 -d /etc/apt/keyrings
$sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o
/etc/apt/keyrings/docker.asc
$sudo chmod a+r /etc/apt/keyrings/docker.asc
```

Add the repository to Apt sources(paste below command at a time):

```
$sudo tee /etc/apt/sources.list.d/docker.sources <<EOF
Types: deb
URIs: https://download.docker.com/linux/ubuntu
Suites: $(. /etc/os-release && echo
"${UBUNTU_CODENAME:-$VERSION_CODENAME}")
Components: stable
Signed-By: /etc/apt/keyrings/docker.asc
EOF
```

Update

```
$sudo apt update
```

2. Install the Docker packages.

```
$ sudo apt install docker-ce docker-ce-cli containerd.io
docker-buildx-plugin docker-compose-plugin
```

The Docker service starts automatically after installation. To verify that Docker is running, use:

```
$sudo systemctl status docker
$sudo systemctl start docker
```

3. Verify the installation is successful By using hello-world image:

```
$ docker --version
$ sudo docker run hello-world
```

This command downloads a test image and runs it in a container. When the container runs, it prints a confirmation message and exits.

You have now successfully installed and started Docker Engine.

Reference Link: [Ubuntu | Docker Docs]

Docker Installation steps for WSL2:

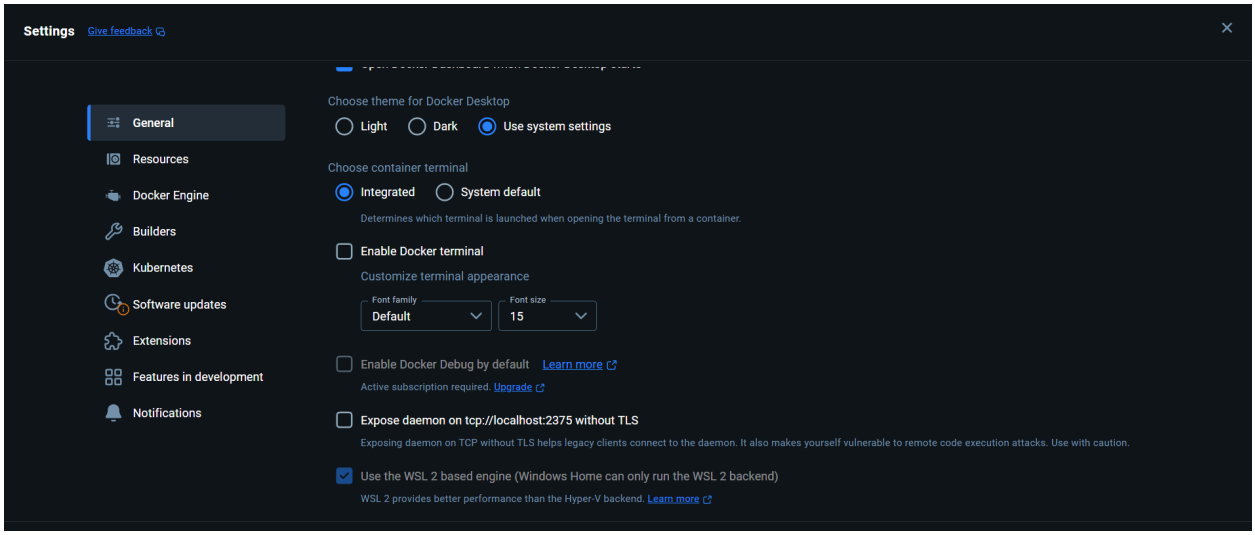
NOTE:

- Before you turn on the Docker Desktop WSL 2 feature, ensure you have a minimum WSL version 2.1.5, but ideally the latest version of WSL to avoid Docker Desktop not working as expected.
- To avoid any potential conflicts with using WSL 2 on Docker Desktop, you must uninstall any previous versions of Docker Engine and CLI installed directly through Linux distributions before installing Docker Desktop.

1. Download and install the latest version of Docker Desktop for Windows using Below Link:

   [Docker Desktop Installation Link]

2. Follow the usual installation instructions to install Docker Desktop. Depending on which version of Windows you are using, Docker Desktop may prompt you to turn on WSL 2 during installation. Read the information displayed on the screen and turn on the WSL 2 feature to continue.
3. Start Docker Desktop from the Windows Start menu.
4. Navigate to Settings.
5. From the General tab, select Use WSL 2 based engine..
6. If you have installed Docker Desktop on a system that supports WSL 2, this option is turned on by default.



7. Select Apply.

Enabling Docker support in WSL 2 distributions

1. Ensure the distribution runs in WSL 2 mode. WSL can run distributions in both v1 or v2 mode.

   To check the WSL mode, run:

```
$wsl.exe -l -v
```

To upgrade the Linux distribution to v2, run:

```
$wsl.exe --set-version (distribution name) 2
```

To set v2 as the default version for future installations, run:

```
$wsl.exe --set-default-version 2
```

2. Next step,
   - Open Docker Desktop
   - Go to Settings → General
   - Ensure Use WSL 2 based engine is enabled
   - Click Apply & Restart

   Then go to: Settings → Resources → WSL Integration

   Ensure integration is enabled for your Linux distribution (Ubuntu by default)

   If WSL integration is not visible, Docker may be running in Windows container mode,In that case:

   - Right-click Docker icon in system tray
   - Select Switch to Linux containers

3. Verify Docker in WSL Terminal:

```
$ docker --version
```

```
$ docker run hello-world
```

Reference Link: [WSL | Docker Docs]

Docker Installation for Mac:

Follow the steps in the below link for installation on mac:

Mac | Docker Docs

(Please check which is suitable for your Mac based on the instructions given there before installation)

(NOTE:During installation, Docker Desktop may display a subscription or license agreement.Docker Desktop is free for students, educational use, personal projects, and non-commercial purposes. Since this lab is part of academic coursework, students are eligible to use Docker Desktop without any paid subscription.)

Once you have installed , verify using following commands:

```
$ docker --version

$ docker run hello-world
```

2. Docker account creation: (Mandatory for Everyone)

- Open your web browser and go to the Docker sign-up page.

  Signup | Docker

- Enter a valid email address.
- Choose a **unique Docker ID** (this becomes your Docker Hub username).
  - Must be 4–30 characters
  - Lowercase letters and numbers only
- Set a password (minimum 9 characters).
- Click **Sign Up**. (Remember username and password as they are required in upcoming lab)

- Verify your email address using the link sent to your inbox.
    - Verification is required before pushing images to Docker Hub.

Once verified, students can log in to Docker Hub in the browser and also with:

```
$ docker login
```

(it asks for username and password , enter them and you will get output as login succeeded and you are good to go).

Steps to View Pushed Images on Docker Hub

1. Open browser and go to:
   👉 https://hub.docker.com

2. Click **Sign In** and login using your Docker Hub account(Use same email and password which u created earlier).

3. After login, click on your **profile icon (top-right corner)** and select:
   👉 **Repositories**

4. Inside the repository, you can see:
    - Available **tags** (e.g., v1)
    - Last pushed time
    - Image details

(As of now you may not see anything on Dockerhub because you have not pushed any images there , so Dont worry when you dont see anything there , this step is to make you comfortable with dockerhub website as you will be using it in the upcoming lab).