**Hands-On Activity: Installing Docker**

Docker on an Ubuntu system. By the end of this activity, students should be able to:

1. Understand the role of Docker in containerized application development.
2. Successfully install Docker and configure the Docker repository on Ubuntu.
3. Verify Docker installation by running a test container.
4. Set up Docker to run without **sudo** permissions (optional).
5. Enable Docker to start on boot (optional).

**Installing Docker in Linux**

**1. Update Your System**

* First, update your existing list of packages to ensure you have the latest versions available:

**Command:**

sudo apt update

**2. Install Required Packages**

* Install a few prerequisite packages which let apt use packages over HTTPS:

**Command:**

sudo apt install apt-transport-https ca-certificates curl software-properties-common

**3. Add Docker’s Official GPG Key**

* Docker uses a GPG key to ensure downloads are valid. Add it with the following command:

**Command:**

curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg

**4. Add the Docker Repository**

* Add Docker’s official APT repository to your sources list:

**Command:**

echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] https://download.docker.com/linux/ubuntu $(lsb\_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

**5. Update Your Package List Again**

* Now that the Docker repository is added, update the package list to include packages from the new repository:

sudo apt update

**6. Install Docker Engine**

* Install Docker and related packages:

sudo apt install docker-ce docker-ce-cli containerd.io

**7. Verify the Installation**

docker --version

**(Optional) Enable Docker to Start on Boot**

* If you want Docker to start automatically when the system boots, enable the Docker service:

sudo systemctl enable docker

**(Optional) Manage Docker as a Non-Root User**

* By default, Docker requires sudo privileges. To use Docker without sudo, add your user to the Docker group:

sudo usermod -aG docker ${USER}