**Exercise 1: Basic Docker CLI Commands**

**Objective:**

Practice basic Docker CLI commands and run your first Docker container.

**Instructions:**

1. Install Docker on your system (if not already installed).
2. Verify the Docker installation.
3. Run a simple Docker container (e.g., the **hello-world** container).
4. List all running containers.
5. List all containers (including stopped ones).

**Exercise 2: Understanding Docker Images**

**Objective:**

Understand the concept of Docker images, the difference between official and custom images, and how to pull images from Docker Hub.

**Instructions:**

1. Research and define what a Docker image is.
2. Explain the difference between official images and custom images.
3. Pull an official image from Docker Hub (e.g., the Ubuntu image).
4. List all Docker images on your system.

**Exercise 3: Creating a Dockerfile**

**Objective:**

Create a Dockerfile to define a custom Docker image.

**Instructions:**

1. Create a new directory for your Docker project.
2. Navigate into the directory.
3. Create a file named Dockerfile.
4. Write a Dockerfile to create a simple custom image (e.g., an image that installs a specific software package).
5. Build the Docker image using the Dockerfile.

**Exercise 4: Writing a Dockerfile**

**Objective:**

Write a Dockerfile, build the Docker image, tag it, and push it to Docker Hub.

**Instructions:**

1. Write a Dockerfile to create a custom image that installs and runs a simple application.
2. Build the Docker image using the Dockerfile.
3. Tag the Docker image with a version tag.
4. Log in to Docker Hub.
5. Push the tagged image to Docker Hub.

**Exercise 5: Starting and Stopping Containers**

**Objective:**

Start and stop containers, inspect running containers, manage container lifecycle, and execute commands inside a container.

**Instructions:**

1. Run a Docker container from the Ubuntu image.
2. Start the container (if not already running).
3. Stop the running container.
4. Inspect the running container to view its details.
5. Restart the stopped container.
6. Remove the container.
7. Execute a command inside a running container (e.g., open a shell in the container).