Placement Empowerment Program

Cloud Computing and DevOps Centre

INSTALL DOCKER AND RUN YOUR FIRST CONTAINER

(Install Docker and run a basic container (e.g., Nginx). Test accessing the containerized application)

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INTRODUCTION:

Docker is a platform that allows you to develop, ship, and run applications inside lightweight, portable containers. Containers package up the code, runtime, libraries, and dependencies needed to run an application, making it easy to deploy across different environments.

In this guide, we will go through the step-by-step process of installing Docker on Windows, setting up a basic Nginx web server inside a container, and accessing it through a browser.
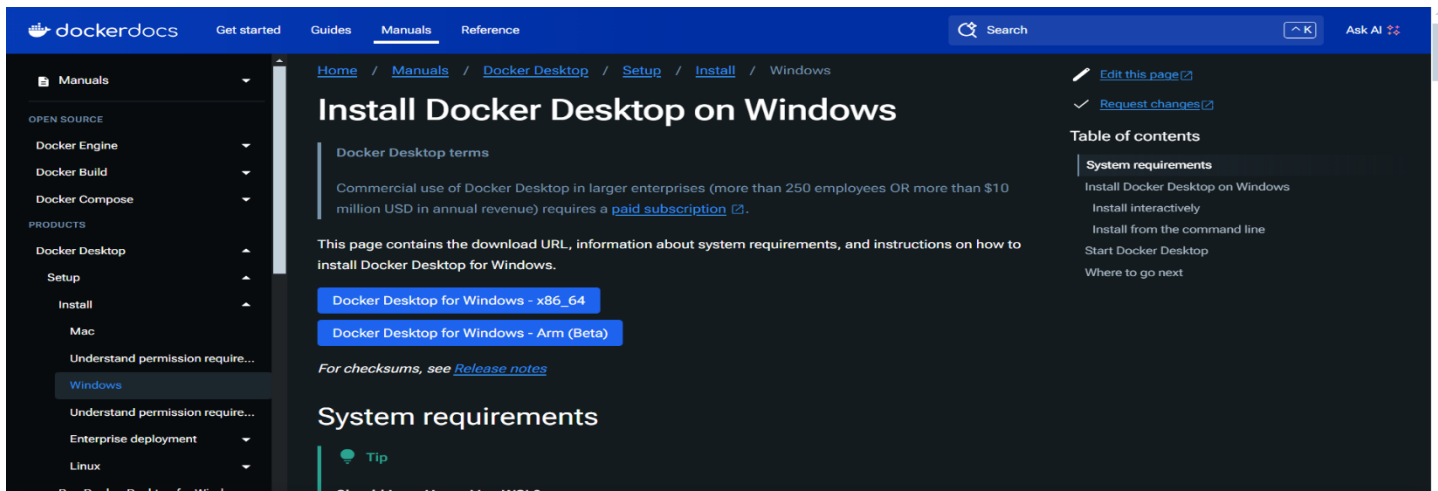
OBJECTIVE:

- To install Docker on Windows and verify its functionality.
- To learn how to pull and run a basic Nginx container.
- To understand how to access a containerized web application using a browser.
- To gain hands-on experience with containerization and Docker commands.

STEP BY STEP OVERVIEW:

Step 1: Install Docker Desktop.

- Download Docker Desktop for Windows from the official website: https://www.docker.com/products/docker-desktop/
- Run the installer and follow the on-screen instructions.
- Ensure WSL 2 is enabled (Docker requires this for Windows).
- Restart your PC and launch Docker Desktop.

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Install Docker Desktop on Windows

Docker Desktop terms

Commercial use of Docker Desktop in larger enterprises (more than 250 employees OR more than $10 million USD in annual revenue) requires a paid subscription ⧉.

This page contains the download URL, information about system requirements, and instructions on how to install Docker Desktop for Windows.

Docker Desktop for Windows - x86_64

Docker Desktop for Windows - Arm (Beta)

For checksums, see Release notes

System requirements

💡 Tip

Installing Docker Desktop 4.38.0 (181591)   —   □   ✕

Docker Desktop 4.38.0

Installation succeeded

You must restart Windows to complete installation.

Close and restart

Step 2: Verify Docker Installation

- Open PowerShell and check if Docker is installed by running the version command.

- Verify that Docker is running properly by checking its system information.

- If there are any errors, ensure Docker Desktop is open and running in the background.

```
C:\Users\Aruldhas>docker version
Client:
 Version:           27.5.1
 API version:       1.47
 Go version:        go1.22.11
 Git commit:        9f9e405
 Built:             Wed Jan 22 13:41:44 2025
 OS/Arch:           windows/amd64
 Context:           desktop-linux

Server: Docker Desktop 4.38.0 (181591)
 Engine:
  Version:          27.5.1
  API version:      1.47 (minimum version 1.24)
  Go version:       go1.22.11
  Git commit:       4c9b3b0
  Built:            Wed Jan 22 13:41:17 2025
  OS/Arch:          linux/amd64
  Experimental:     true
 containerd:
  Version:          1.7.25
  GitCommit:        bcc810d6b9066471b0b6fa75f557a15a1cbf31bb
 runc:
  Version:          1.1.12
  GitCommit:        v1.1.12-0-g51d5e946
 docker-init:
  Version:          0.19.0
  GitCommit:        de40ad0
```

Step 3: Pull the Nginx Docker Image

- Use the Docker pull command to download the latest Nginx image from Docker Hub.
- Once the image is downloaded, verify it by listing all available images in Docker.

```
C:\Users\Aruldhas>docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
103f50cb3e9f: Download complete
bf9acace214a: Download complete
d014f92d532d: Download complete
943ea0f0c2e4: Download complete
513c3649bb14: Download complete
9dd21ad5a4a6: Download complete
7cf63256a31a: Download complete
Digest: sha256:9d6b58feebd2dbd3c56ab5853333d627cc6e281011cfd6050fa4bcf2072c9496
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
```

Step 4: Run the Nginx Container

- Start the Nginx container by running it in detached mode and mapping it to port 8080.
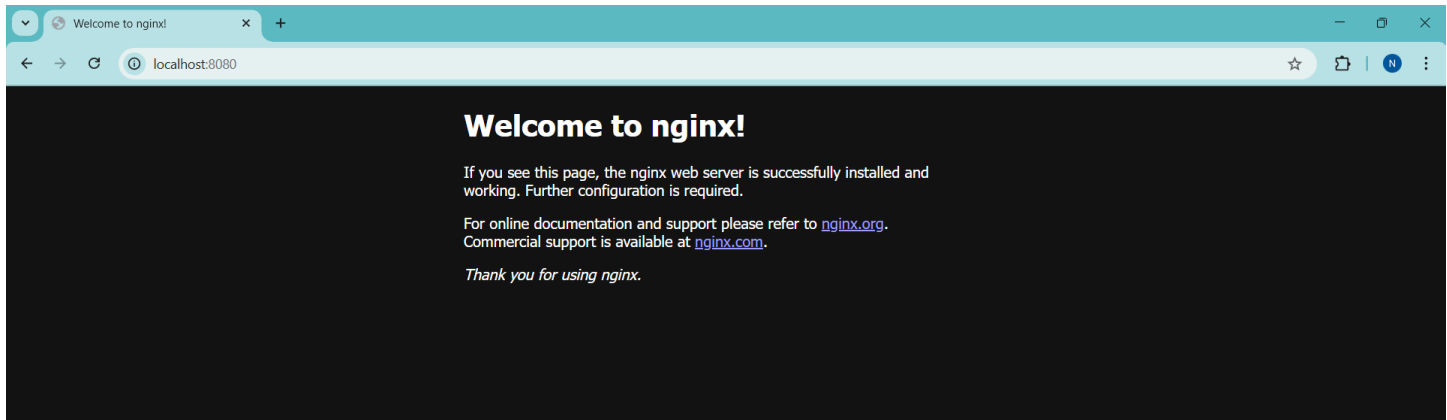- Verify that the container is running by listing all active containers.

```
C:\Users\Aruldhas>docker run -d -p 8080:80 --name my-nginx nginx
44717127df92e2fa70703db0f27d595803e63b80821a15f4d2d4f33b45f0e68a
```

Step 5: Access the Nginx Web Page

- Open a web browser and go to http://localhost:8080.
- If everything is set up correctly, the default Nginx welcome page should appear.

```
C:\Users\Aruldhas>docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED              STATUS              PORTS                    NAMES
44717127df92   nginx     "/docker-entrypoint.…"   About a minute ago   Up About a minute   0.0.0.0:8080->80/tcp     my-nginx
```


Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

EXPECTED OUTCOME

From this POC, we have learnt:

- Successful installation of Docker Desktop on Windows.

- Verification that Docker is running correctly through PowerShell commands.

- Pulling and running an Nginx container without errors.

- Accessing the Nginx default welcome page in a web browser at http://localhost:8080.

- Understanding basic Docker commands like pull, run, stop, and remove.