

# National Textile University, Faisalabad

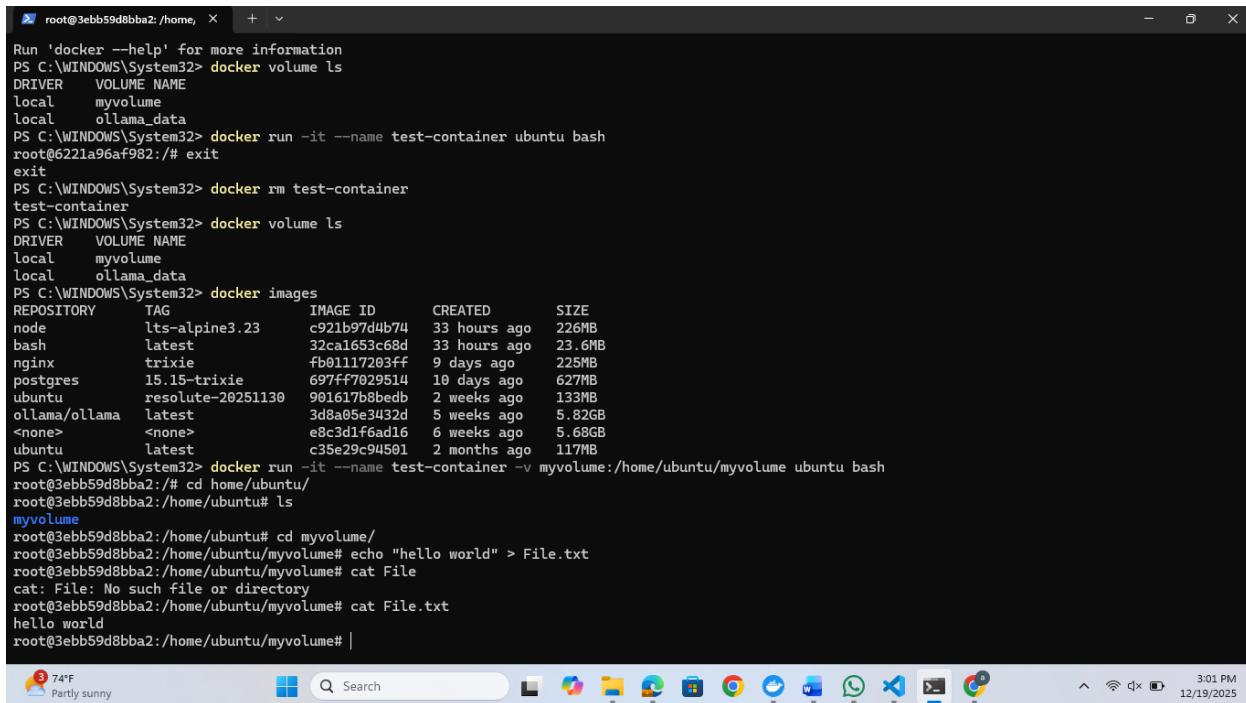


## Department of Computer Science

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<b>Assignment:</b>	Lab 12
<b>Course Name:</b>	Operating Systems
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## Docker Lab 02: Data Persistence, Custom Images, Networking & Docker Compose

### Volume commands:



```
PS root@3ebb59d8bba2:/home/ ... + - X
Run 'docker --help' for more information
PS C:\WINDOWS\System32> docker volume ls
DRIVER      VOLUME NAME
local        myvolume
local        ollama_data
PS C:\WINDOWS\System32> docker run -it --name test-container ubuntu bash
root@6221a96af982:# exit
exit
PS C:\WINDOWS\System32> docker rm test-container
test-container
PS C:\WINDOWS\System32> docker volume ls
DRIVER      VOLUME NAME
local        myvolume
local        ollama_data
PS C:\WINDOWS\System32> docker images
REPOSITORY    TAG      IMAGE ID      CREATED      SIZE
node          lts-alpine3.23  c921b97d4b74  33 hours ago  226MB
bash          latest    32ca1653c68d  33 hours ago  23.6MB
nginx         trixie   fb01117203ff  9 days ago   225MB
postgres      15.15-trixie 697ff7029514  10 days ago  627MB
ubuntu        resolute-20251130 901617b8bedb  2 weeks ago   133MB
ollama/ollama  latest    3d8a05e3432d  5 weeks ago   5.82GB
<none>        <none>    e8c3d1f6ad16  6 weeks ago   5.68GB
ubuntu        latest    c35e29c94501  2 months ago  117MB
PS C:\WINDOWS\System32> docker run -it --name test-container -v myvolume:/home/ubuntu/myvolume ubuntu bash
root@3ebb59d8bba2:# cd home/ubuntu/
root@3ebb59d8bba2:/home/ubuntu# ls
myvolume
root@3ebb59d8bba2:/home/ubuntu# cd myvolume/
root@3ebb59d8bba2:/home/ubuntu/myvolume# echo "hello world" > File.txt
root@3ebb59d8bba2:/home/ubuntu/myvolume# cat File.txt
cat: File: No such file or directory
root@3ebb59d8bba2:/home/ubuntu/myvolume# cat File.txt
hello world
root@3ebb59d8bba2:/home/ubuntu/myvolume# |
```

The screenshot shows a Windows terminal window with a dark theme. The command history includes creating a local volume named 'myvolume', running a container named 'test-container' that mounts this volume at /home/ubuntu/myvolume, and then writing the string 'hello world' to a file named 'File.txt' in that directory. The terminal also shows a weather icon indicating '74°F Party sunny' and a system tray with various icons.

```
|> Windows PowerShell <| + ->
PS C:\WINDOWS\System32> ls /home/ubuntu/myvolume
ls : Cannot find path 'C:\home\ubuntu\myvolume' because it does not exist.
At line:1 char:1
+ ls /home/ubuntu/myvolume
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (C:\home\ubuntu\myvolume:String) [Get-ChildItem], ItemNotFoundException
+ FullyQualifiedErrorId : PathNotFound,Microsoft.PowerShell.Commands.GetChildItemCommand

PS C:\WINDOWS\System32> docker ls
docker: unknown command: docker ls

Run 'docker --help' for more information
PS C:\WINDOWS\System32> docker run -it --name test-container -v my-volume:/home/ubuntu/my-new-volume ubuntu:resolute-20251130 bash
docker: Error response from daemon: Conflict. The container name "/test-container" is already in use by container "3400bbc24c03ab56091705138e7f7f150 dcf608cdf888a3419306efd9d4a55ea". You have to remove (or rename) that container to be able to reuse that name.

Run 'docker run --help' for more information
PS C:\WINDOWS\System32> docker run -it --name test-container -v C:\Users\Nimra Tanveer\Downloads\OS_dockerlab:/home/ ubuntu:resolute-20251130 bash
docker: invalid reference format

Run 'docker run --help' for more information
PS C:\WINDOWS\System32> docker run -it --name test-container -v C:\Users\Nimra Tanveer\Downloads\OS_dockerlab:/home/ubuntu:resolute-20251130 bash
docker: invalid reference format

Run 'docker run --help' for more information
PS C:\WINDOWS\System32> docker run -it --name test-container -v D:\dockerlab:/home/ubuntu bash
docker: Error response from daemon: Conflict. The container name "/test-container" is already in use by container "3400bbc24c03ab56091705138e7f7f150 dcf608cdf888a3419306efd9d4a55ea". You have to remove (or rename) that container to be able to reuse that name.

Run 'docker run --help' for more information
PS C:\WINDOWS\System32> docker run -it --name test-container -v D:\dockerlab:/home/ubuntu bash
bash-5.3# |
```

## HTML INDEX

The screenshot shows the Visual Studio Code interface with the following details:

- Title Bar:** index.html - lab\_osdocker - Visual Studio Code
- Search Bar:** lab\_osdocker
- Explorer:** LAB\_OSDOCKER folder containing node\_modules, public, Dockerfile, index.js, index1.js, package-lock.json, and package.json. index.html is selected.
- Editor:** Content of index.html:

```
public > <!DOCTYPE html>
1 <html lang="en">
2 <head>
3 <meta charset="UTF-8">
4 <title>Lab OS Docker</title>
5 </head>
6 <body>
7
8 <h1>Hello World</h1>
9 <p>HTML file is running using Express server</p>
10 </body>
11 </html>
```
- Terminal:** PS C:\Users\Nimra Tanveer\Desktop\lab\_osdocker> node index1.js
- Bottom Status Bar:** 75°F Partly sunny, Search, various icons, 4:25 PM, 12/19/2025

## Docker file

The screenshot shows the Visual Studio Code interface with the following details:

- Title Bar:** Dockerfile - lab\_osdocker - Visual Studio Code
- Search Bar:** lab\_osdocker
- Explorer:** LAB\_OSDOCKER folder containing node\_modules, public, Dockerfile, index.js, index1.js, package-lock.json, and package.json. Dockerfile is selected.
- Editor:** Content of Dockerfile:

```
Dockerfile
1 # Base image
2 FROM node:16-alpine3.23
3
4 # Copy files
5 COPY index.js .
6
7 COPY package.json .
8
9 # install packages
10 RUN npm install
11
12 CMD ["node", "index1.js"]
```
- Terminal:** PS C:\Users\Nimra Tanveer\Desktop\lab\_osdocker> node index1.js
- Bottom Status Bar:** 75°F Partly sunny, Search, various icons, 4:25 PM, 12/19/2025

## Index1.js

The screenshot shows the Visual Studio Code interface with the title bar "index1.js - lab\_osdocker - Visual Studio Code". The Explorer sidebar on the left shows a project structure with files: LAB\_OSDOCKER (node\_modules, public, Dockerfile, index.js, index1.js), package-lock.json, and package.json. The main editor area displays the following code:

```
JS index1.js X Dockerfile index.html JS indexjs packagejson ...
JS index1.js > ...
1 import express from 'express';
2
3 const app = express();
4
5 app.use(express.static('public'));
6
7 app.listen(3000);
```

The terminal at the bottom shows a PowerShell prompt: "PS C:\Users\Nimra Tanveer\Desktop\lab\_osdocker> node index1.js". A tooltip in the terminal says: "You have Docker installed on your system. Do you want to install the recommended extensions from Microsoft for it?". The status bar at the bottom right shows the date and time as "12/19/2025 4:26 PM".

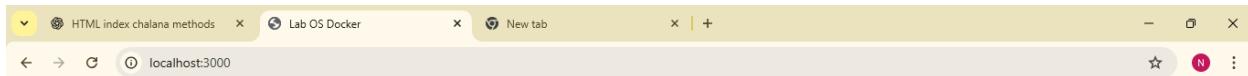
## Package.js

The screenshot shows the Visual Studio Code interface with the title bar "package.json - lab\_osdocker - Visual Studio Code". The Explorer sidebar on the left shows a project structure with files: LAB\_OSDOCKER (node\_modules, public, Dockerfile, index.js, index1.js, package-lock.json, package.json). The main editor area displays the following code:

```
JS index1.js Dockerfile index.html JS indexjs packagejson ...
JS packagejson > ...
1 {
2   "name": "lab_osdocker",
3   "version": "1.0.0",
4   "description": "",
5   "main": "index1.js",
6   "scripts": {
7     "test": "echo \\\"Error: no test specified\\\" && exit 1"
8   },
9   "keywords": [],
10  "author": "",
11  "license": "ISC",
12  "type": "module",
13  "dependencies": {
14    "express": "5.2.1"
15  }
16}
```

The terminal at the bottom shows a PowerShell prompt: "PS C:\Users\Nimra Tanveer\Desktop\lab\_osdocker> node index1.js". A tooltip in the terminal says: "You have Docker installed on your system. Do you want to install the recommended extensions from Microsoft for it?". The status bar at the bottom right shows the date and time as "12/19/2025 4:27 PM".

## Output: localhost:3000



**Hello World**

HTML file is running using Express server

