Exercise_5 Volumes

- Docker volumes to persist data between containers. First, an Apache HTTPD web server is set up using a Docker container. Then, a new HTML file is added to the server using the docker cp command. However, containers are considered ephemeral and can die unexpectedly, potentially leading to data loss. To solve this problem, volumes can be used to persist data across container generations.
    - Setting up the server
    - **docker run --rm -d --name apache -p 80:80 httpd:2.4**
    - This command will start a new container from HTTP 2.4, name it apache, bind port 80 to the host machine (more on this later), and set a flag to delete the container when it stops.

```
dhruvrajsinh@sf-cpu-371:~$ docker run --rm -d --name apache -p 80:80 httpd:2.4
Unable to find image 'httpd:2.4' locally
2.4: Pulling from library/httpd
26c5c85e47da: Pull complete
2d29d3837df5: Pull complete
2483414a5e59: Pull complete
e78016c4ba87: Pull complete
757908175415: Pull complete
Digest: sha256:a182ef2350699f04b8f8e736747104eb273e255e818cd55b6d7aa50a1490ed0c
Status: Downloaded newer image for httpd:2.4
291f9d385717d136b9664f3ee5fc4749564cdc360a22c6867814f489dbaef856
```

- To replace the default index.html file in a new Apache 2.4 installation, use the docker cp command to copy the new index.html file from the host machine to the container. Specify the source path of the new file on the host machine and the destination path in the container. The container name is required in the command, and /usr/local/apache2/htdocs/ is the location where the web server serves HTML from. After replacing the file, running the curl command will show the updated content.

```
dhruvrajsinh@sf-cpu-371:~$ docker ps
CONTAINER ID   IMAGE                  COMMAND                  CREATED             STATUS             PORTS
          NAMES
f5ff2ea73d6a   httpd:2.4              "httpd-foreground"       14 seconds ago      Up 13 seconds      80/tcp, 0.0.0.0:90->90/tcp, :::90
->90/tcp   apache
7e4d36b00ab5   dabhidhruvraj/reactapp  "docker-entrypoint.s…"   About an hour ago   Up About an hour   0.0.0.0:3001->3000/tcp, :::3001->
3000/tcp   reactcontainer
dhruvrajsinh@sf-cpu-371:~$ docker cp index.html apache:/usr/local/apache2/htdocs/
```

- In Docker, volumes are file stores that are independent of Docker containers and function similar to EBS volumes in AWS or mountable media like USB thumb drives. They can be created, deleted, and mounted on containers at specific locations within an image. To list the volumes, run the command "docker volume ls".

```
local     nodejs-expess-mongodb-crud_employee
local     shared-vol
dhruvrajsinh@sf-cpu-371:~$
```

- To remove volume in docker

```
dhruvrajsinh@sf-cpu-371:~$ docker volume rm shared-vol
shared-vol
dhruvrajsinh@sf-cpu-371:~$
```

- a new volume named httpd_htdocs is created using the command "docker volume create". The volume is mounted on the container using the -v flag, and the modified HTML file is copied into the volume using "docker cp". Finally, the container is stopped using the --rm flag.

```
dhruvrajsinh@sf-cpu-371:~$ curl localhost
My name is Dhruvraj
dhruvrajsinh@sf-cpu-371:~$ docker stop apache
apache
dhruvrajsinh@sf-cpu-371:~$
```

- As an alternative to using volumes, if you have a directory on your host machine you'd like to use like a volume, you can mount those too. This technique is useful in development environments, where you might want to mount your local repo onto a Docker image and actively modify the contents of a Docker container without rebuilding or copying files to it.

- The -v flag to accomplish this is almost identical to the previous one. Simply specify an absolute path to a local directory instead. In our case, we'll pass . to specify the 5-volumes directory in this repo, which conveniently contains a modified version of the HTML file.