SOFTWARE ENGINEERING LAB

EXERCISE – 7

TOPIC – 2

MODIFY AND PUSH DOCKER IMAGE

By following these Commands, you will learn how to:

- Create and modify a container (E.g. Ubuntu).
- Save the changes to a custom image.
- Push the image to Docker Hub.
- Pull and reuse the image. This workflow is useful for creating reusable and shareable container environments.

- **Note: At every step take screenshots and save in a document**

1. Pull the Ubuntu image

```
docker pull ubuntu
```

•What it does: Downloads the official Ubuntu base image from Docker Hub to your local system. This image is like a minimal operating system ready to run inside a Docker container.

2. Run a container from the Ubuntu image

```
docker run -it --name newubuntu -d ubuntu
```

•What it does: Creates and starts a new container from the Ubuntu image.

•-it: Allows you to interact with the container (interactive terminal mode).

•--name newubuntu: Names the container "newubuntu" for easy identification.

•-d: Runs the container in the background (detached mode).

3. List all running containers

```
docker ps
```

•What it does: Displays a list of all currently running containers, showing details like the container ID, name, image used, and uptime.

4. Access the running container

```
docker exec -it 885a01bcdbe0 bash
```

•What it does: Opens a shell (terminal) inside the running container.

•exec: Executes a command in a running container.

•-it: Allows interactive access.

•885a01bcdbe0: The unique container ID of the running container.

•bash: Opens the bash shell inside the container.

5. Check if Git is installed

```
git --version
```

•What it does: Checks the version of Git installed in the container.

•Why it failed: The error bash: git: command not found means Git is not installed in the container.

6. Update the package list

```
apt update
```

•What it does: Updates the list of available software packages in the container. It prepares the system for installing new software by fetching the latest versions from online repositories.

7. Install Git

```
apt install git -y
```

•What it does: Installs Git inside the container.

•-y: Automatically confirms the installation (avoids asking for "yes/no").

8. Verify Git installation

```
git --version
```

•What it does: Checks if Git is installed correctly and displays its version (e.g., git version 2.43.0).

9. Exit the container

```
exit
```

•What it does: Closes the shell session inside the container and returns to your host system.

10. Stop the running container

```
docker stop 885a01bcdbe0
```

•What it does: Stops the running container. It doesn't delete the container, but it halts its operation.

11. Save the container as an image

```
docker commit 885a01bcdbe0 budarajumadhurika/newubuntu2024
```

•What it does: Creates a new image from the stopped container with all the changes (like the Git installation).

•budarajumadhurika/newubuntu2024: Names the new image with a custom name and tag.

12. List all local images

```
docker images
```

•What it does: Shows all the Docker images stored on your system, including the newly created image budarajumadhurika/newubuntu2024.

13. Log in to Docker Hub

```
docker login
```

•What it does: Logs you into your Docker Hub account so you can upload (push) your image.

•It will prompt for your Docker Hub username and password.

14. Push the image to Docker Hub

```
docker push budarajumadhurika/newubuntu2024
```

•What it does: Uploads the newly created image to your Docker Hub account so it can be accessed from anywhere.

15. Log out of Docker Hub

```
docker logout
```

•What it does: Logs you out of Docker Hub for security.

16. Remove the container

```
docker rm 885a01bcdbe0
```

•What it does: Deletes the stopped container permanently from your system.

17. Remove the local image

```
docker rmi budarajumadhurika/newubuntu2024
```

•What it does: Deletes the custom image from your local system, freeing up space. (The image is still available on Docker Hub.)

18. Pull the image from Docker Hub

```
docker pull budarajumadhurika/newubuntu2024
```

•What it does: Downloads the custom image budarajumadhurika/newubuntu2024 from Docker Hub to your local system.

19. Run a container from the custom image

```
docker run --name newubuntu2024 -it budarajumadhurika/newubuntu2024
```

•What it does: Starts a new container from the custom image.

•--name newubuntu2024: Assigns a name to the container for easy reference.

•-it: Allows interactive access to the container.

20. Check Git version

```
git --version
```

•What it does: Verifies that Git is still installed in the new container, confirming that the custom image retains the installed software.

21. Exit the container

```
exit
```

•What it does: Closes the shell session inside the container.

22. List all containers (including stopped ones)

```
docker ps -a
```

•What it does: Displays all containers on your system, including those that are stopped.

23. Remove the container

```
docker rm 28aee36085cb
```

•What it does: Deletes the container created from the custom image.

24. Remove the custom image

```
docker rmi budarajumadhurika/newubuntu2024
```

•What it does: Deletes the custom image from your local system again.