1]Docker installation: Install Docker on your local system (Windows, macOS, or Linux). Verify the installation by running the docker --version and docker info commands.

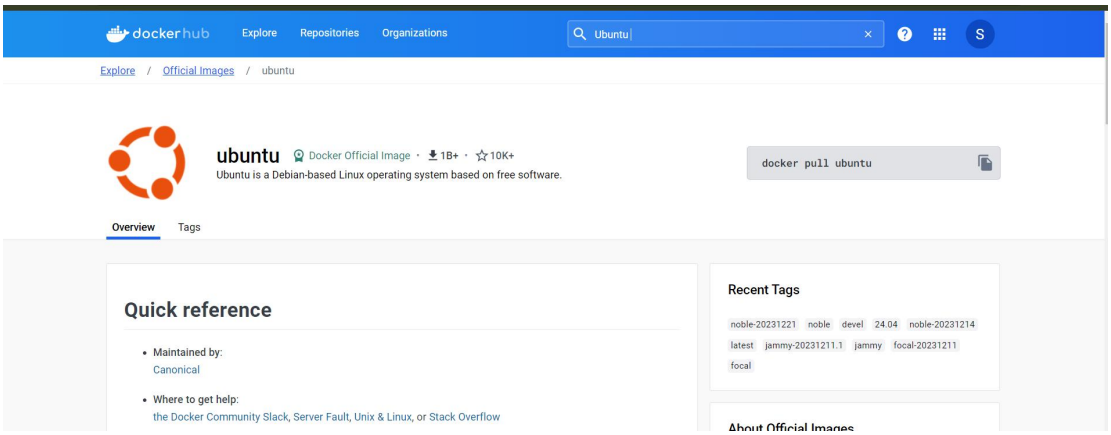
SOLUTION:-

```
root@DESKTOP-VIDGD8F:DOCKER# docker --version
Docker version 24.0.7, build afdd53b
root@DESKTOP-VIDGD8F:DOCKER#
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker

Usage:  docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Common Commands:
  run         Create and run a new container from an image
  exec        Execute a command in a running container
  ps          List containers
  build       Build an image from a Dockerfile
  pull        Download an image from a registry
  push        Upload an image to a registry
  images      List images
  login       Log in to a registry
  logout      Log out from a registry
  search      Search Docker Hub for images
  version     Show the Docker version information
  info        Display system-wide information

Management Commands:
  builder     Manage builds
  buildx*     Docker Buildx (Docker Inc., v0.11.2)
  compose*    Docker Compose (Docker Inc., v2.21.0)
  container   Manage containers
  context     Manage contexts
  image       Manage images
  manifest    Manage Docker image manifests and manifest lists
  network     Manage networks
  plugin      Manage plugins
  system      Manage Docker
  trust       Manage trust on Docker images
  volume      Manage volumes

Swarm Commands:
```

2]Working with Docker images: Search for the official Ubuntu image on Docker Hub, pull it to your local system using docker pull, and list all available images on your system using docker images.

SOLUTION:-




```
root@DESKTOP-VIDGD8F:DOCKER# docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
a48641193673: Pull complete
Digest: sha256:6042500cf4b44023ea1894effe7890666b0c5c7871ed83a97c36c76ae560bb9b
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
root@DESKTOP-VIDGD8F:DOCKER#
```

3] Creating a Docker container: Run a Docker container using the Ubuntu image, and execute a command inside the container (e.g., echo "Hello, Docker!").

SOLUTION:-

```
root@DESKTOP-VIDGD8F:DOCKER# docker container create -it ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
a48641193673: Pull complete
Digest: sha256:6042500cf4b44023ea1894effe7890666b0c5c7871ed83a97c36c76ae560bb9b
Status: Downloaded newer image for ubuntu:latest
65d9753c69704756e86be536f7d5d4cfa482807f78556549e4289f2b8ae00cb2
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker container ls
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
root@DESKTOP-VIDGD8F:DOCKER# docker container ls -a
CONTAINER ID   IMAGE     COMMAND       CREATED          STATUS    PORTS     NAMES
65d9753c6970   ubuntu    "/bin/bash"   54 seconds ago   Created             gifted_kalam
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker container start gifted_kalam
gifted_kalam
root@DESKTOP-VIDGD8F:DOCKER#
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker container ls
CONTAINER ID   IMAGE     COMMAND       CREATED              STATUS         PORTS     NAMES
65d9753c6970   ubuntu    "/bin/bash"   About a minute ago   Up 2 seconds             gifted_kalam
root@DESKTOP-VIDGD8F:DOCKER#
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker exec -it gifted_kalam bash
root@65d9753c6970:/# echo "Hello, Docker!"
Hello, Docker!
root@65d9753c6970:/#
```

4] Inspect the Ubuntu Docker container to ensure it is in the "created" state only.

SOLUTION:-

```
root@DESKTOP-VIDGD8F:DOCKER# docker container ls -a
CONTAINER ID   IMAGE     COMMAND       CREATED          STATUS    PORTS     NAMES
65d9753c6970   ubuntu    "/bin/bash"   54 seconds ago   Created             gifted_kalam
root@DESKTOP-VIDGD8F:DOCKER#
```

5] Execute the Ubuntu Docker container and confirm that the container's state is "running."

SOLUTION:-

```
root@DESKTOP-VIDGD8F:DOCKER# docker ps
CONTAINER ID   IMAGE     COMMAND       CREATED          STATUS          PORTS     NAMES
65d9753c6970   ubuntu    "/bin/bash"   19 minutes ago   Up 18 minutes             gifted_kalam
root@DESKTOP-VIDGD8F:DOCKER#
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker container inspect 65d9753c6970
[
    {
        "Id": "65d9753c69704756e86be536f7d5d4cfa482807f78556549e4289f2b8ae00cb2",
        "Created": "2024-01-09T08:25:44.618117747Z",
        "Path": "/bin/bash",
        "Args": [],
        "State": {
            "Status": "running",
            "Running": true,
```

6] Launch an HTTP container, verify its state, and then remove the container and image from your local system.

SOLUTION:-

```
root@DESKTOP-VIDGD8F:DOCKER# docker container create -it httpd
Unable to find image 'httpd:latest' locally
latest: Pulling from library/httpd
af107e978371: Pull complete
eba4da411ea0: Pull complete
4f4fb700ef54: Pull complete
ed4d6291a6c2: Pull complete
b42c390e1de9: Pull complete
eafe388a0bb8: Pull complete
Digest: sha256:f0a93744d8006e6f7ee5086c9ddccdcfa33d1091f15269a00547b4c382459c1f
Status: Downloaded newer image for httpd:latest
55ec4bb0447a0bb6a231e02a741b3107c75d6d33bd0c6984e7b1e2fc287e62e2
root@DESKTOP-VIDGD8F:DOCKER#
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker container start sharp_banach
sharp_banach
root@DESKTOP-VIDGD8F:DOCKER#
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker container ls
CONTAINER ID   IMAGE     COMMAND              CREATED             STATUS          PORTS     NAMES
55ec4bb0447a   httpd     "httpd-foreground"   About a minute ago   Up 4 seconds    80/tcp    sharp_banach
65d9753c6970   ubuntu    "/bin/bash"          28 minutes ago       Up 27 minutes             gifted_kalam
root@DESKTOP-VIDGD8F:DOCKER#
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker container rm -f sharp_banach
sharp_banach
root@DESKTOP-VIDGD8F:DOCKER# docker container ls
CONTAINER ID   IMAGE     COMMAND       CREATED          STATUS          PORTS     NAMES
65d9753c6970   ubuntu    "/bin/bash"   29 minutes ago   Up 28 minutes             gifted_kalam
root@DESKTOP-VIDGD8F:DOCKER#
```

```
root@DESKTOP-VIDGD8F:DOCKER# docker image ls
REPOSITORY   TAG       IMAGE ID       CREATED        SIZE
ubuntu       latest    174c8c134b2a   3 weeks ago    77.9MB
httpd        latest    6fd77d7e5eb7   2 months ago   167MB
root@DESKTOP-VIDGD8F:DOCKER# docker image rm -f 6fd77d7e5eb7
Untagged: httpd:latest
Untagged: httpd@sha256:f0a93744d8006e6f7ee5086c9ddccdcfa33d1091f15269a00547b4c382459c1f
Deleted: sha256:6fd77d7e5eb732dacab601d4556c04a6c312928fb8989fe3b0a47d82db772441
Deleted: sha256:182c1af747d0a2ececd86c81cf1a0a6b0fde0b1fc82f43bc6d08b9424704bee6
Deleted: sha256:e54e0c05fe4f251ec22da736ce53230922f53122eb277ed4340b13d2fb33b7ee
Deleted: sha256:919f2fe845437e6aafaeff643bf2989b31c06851746e46651d0dc93294c6d499
Deleted: sha256:1ad6aa5d8466f1d57283c01a6db9ead817ef489c57c6a5fd89353f99d0d05526
Deleted: sha256:bbbcf99e6e47545823c0b9aea2dcaf8f2d50808c3b27219e8d99bf3ceb1d0c9e
Deleted: sha256:7292cf786aa89399bca4e3edd105d3b2ee0683a46ef1f5ff436c0f9d1d49e765
root@DESKTOP-VIDGD8F:DOCKER# docker image ls
REPOSITORY   TAG       IMAGE ID       CREATED       SIZE
ubuntu       latest    174c8c134b2a   3 weeks ago   77.9MB
root@DESKTOP-VIDGD8F:DOCKER#
```

7] Execute a command to display a filtered list of containers, showing only their short container IDs.

```
root@DESKTOP-VIDGD8F:DOCKER# docker ps -q
65d9753c6970
root@DESKTOP-VIDGD8F:DOCKER#
```