

Name: Patil Yogeshwar Jitendra

Roll No: 48

Docker

Screenshots:

```
C:\Windows\system32\cmd.exe - docker run -it node
C:\Users\Devl\docker run -it ubuntu
docker: request returned Internal Server Error for API route and version http://32f32f.32fpipe32fdocker_engine/v1.24/containers/create, check if the server supports the requested API version.
See 'docker run --help'.

C:\Users\Devl\docker run -it ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
3c64583de29: Pull complete
Digest: sha256:1b8d8ff4777f36f190fe73ee4df01e3a0b789caeff29caa019539ec7c9a57f95
Status: Downloaded newer image for ubuntu:latest
root@13e752193da8:/# ls
bin boot dev etc home lib lib32 lib64 libx32 media mnt opt proc root run/sbin srv sys usr var
root@13e752193da8:/# pwd
root@13e752193da8:/#
exit

C:\Users\Devl\docker run -it node
Unable to find image 'node:latest' locally
latest: Pulling from library/node
609c73870867: Pull complete
124f8e8018e1: Pull complete
0e374906f382: Pull complete
04580645a8e5: Pull complete
4f93b8a085c: Pull complete
467998ba85d7: Pull complete
9513f49817f6: Pull complete
62a192274dc: Pull complete
Digest: sha256:162d92c5f1467ad877bf6d8a098d9b0e4d7303879017a2f3644bf01de1fc88ff0
Status: Downloaded newer image for node:latest
Welcome to Node.js v21.7.1.
Type ".help" for more information.
>
```

```
--platform string      Set platform if server is multi-platform capable
--privileged            Give extended privileges to this container
-p, --publish list     Publish a container's port(s) to the host
-P, --publish-all     Publish all exposed ports to random ports
--pull string          Pull image before running ("always", "missing", "never") (default "missing")
-q, --quiet            Suppress the pull output
--read-only            Mount the container's root filesystem as read only
--restart string       Restart policy to apply when a container exits (default "no")
--rm                  Automatically remove the container when it exits
--runtime string       Runtime to use for this container
--security-opt list    Security options
--shm-size bytes       Size of /dev/shm
--sig-proxy            Proxy received signals to the process (default true)
--stop-signal string   Signal to stop the container
--stop-timeout int     Timeout (in seconds) to stop a container
--storage-opt list     Storage driver options for the container
--sysctl map           Sysctl options (default map[])
--tmpfs list           Mount a tmpfs directory
-t, --tty              Allocate a pseudo-TTY
--ulimit ulimit        Ulimit options (default [])
-u, --user string       Username or UID (format: <name|uid>[:<group|gid>])
--users string         User namespace to use
--uts string           UTS namespace to use
-v, --volume list      Bind mount a volume
--volume-driver string Optional volume driver for the container
--volumes-from list    Mount volumes from the specified container(s)
-W, --workdir string   Working directory inside the container

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Redirecting... [Docker Hub]

Microsoft Edge [What's New]

Docker Hub

http://hub.docker.com

dockerhub

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Official Docker images for the machine learning framework TensorFlow...

☆2.4K ± 50M+

pytorch/pytorch

PyTorch is a deep learning framework that puts Python first.

☆953 ± 10M+

langchain/langchain

building applications with LLMs through composability

☆79 ± 10K+

ollama/ollama

The easiest way to get up and running with large language models locally.

☆354 ± 1M+

Trending this week

homeassistant/amd64-a...

☆69 ± 5M+

paketobuildpacks/build

☆31 ± 50M+

viteess/lite

A slimmed down version of Viteess containers, with just the Viteess...

☆20 ± 10M+

friendica

Welcome to the free social web.

☆77 ± 1M+

Most pulled images

alpine

A minimal Docker image based on Alpine Linux with a complete package...

☆10K+ ± 1B+

mongo

MongoDB document databases provide high availability and easy scalability.

☆10K+ ± 1B+

openjdk

Pre-release / non-production builds of OpenJDK

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memcached

Free & open source, high-performance, distributed memory object caching...

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Conveniently open your Docker containers in Warp terminal subshells...

± 9.9K

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A Kubernetes debugging toolkit. Get your favorite shell with all your debug...

± 10K+

DockasaurusRX

Docker Resource Management Extension

± 2.4K

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This extension allows you to call well-known 'dd' and 'dump' functions in you...

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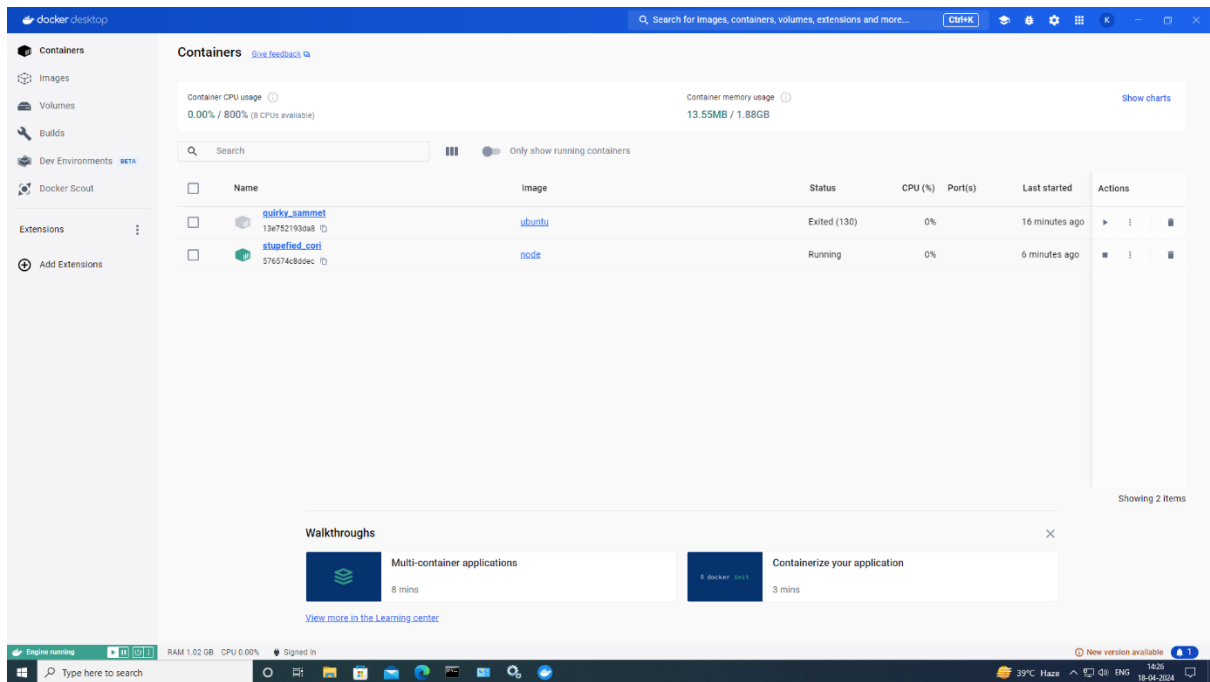
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Theory:

Docker is an open-source software platform used for creating, deploying, and managing virtualized application containers. It was launched in 2013 and has since revolutionized application development by democratizing software containers. Docker containers are standard units of software that package code and all its dependencies, ensuring that the application runs quickly and reliably from one computing environment to another.

Containers are an abstraction at the application layer that packages code and dependencies together. They share the operating system kernel with other containers, running as isolated processes in user space. This design makes containers more portable and efficient than virtual machines (VMs), which abstract physical hardware and include a full copy of an operating system for each VM.

Docker containers run on Docker Engine, which was initially launched as an open-source Docker Engine and later extended to support Microsoft Windows and Apple OS X. Docker Engine includes a server-side daemon process that handles images, containers, networks, and storage volumes. The engine also provides a client-side command-line interface (CLI) for users to interact with the daemon.

Docker has several components and tools that help create, verify, and manage containers. Dockerfiles define the composition of components in a Docker container, while Docker Compose files define the composition of multi-container Docker applications. Docker Engine is the underlying technology that handles the tasks and workflows involved in building container-based applications.

Docker has several benefits, including efficient containerized application development, portability, and the ability to scale and manage containers across Docker hosts. However, there are potential challenges with Docker, particularly in terms of security. Despite excellent logical isolation, containers share the host's operating system, which can potentially compromise all the containers running on top of the OS if there is a flaw or attack in the underlying OS. Docker has regularly added security enhancements to the platform, and various container security scanning tools have emerged to help address these concerns.

In recent years, Kubernetes has become the de facto standard for container orchestration, with most Kubernetes offerings running Docker behind the scenes. However, security remains a concern, and organizations can take steps to mitigate potential security risks, such as using containers within a VM, lower-profile VMs, or ensuring that container hosts are not exposed to the internet and only using container images from known sources.