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C:\Windows\system32\cmd.exe - docker run -it node

C:\Users\Oell>docker run -it ubuntu
docker: request returned Internal Server Error for API route and version http://XZfXZf.XZfpipeXZfdocker_engine/v1.24/containers/create, check if the server supports the requested API version.
See 'docker run --help'.

C:\Users\Oell>docker run -it ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
3c645031de29: Pull complete
Digest: sha256:1b8d8ff4777336f19bfe73ee4f61e3ab678bcaeff29caa019539ec7c9d57f95
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:/# ^C
root@13e752193da8:/#
exit

C:\Users\Oell>docker run -it node
Unable to find image 'node:latest' locally
latest: Pulling from library/node
080c738708d7: Pull complete
727ea881e485: Pull complete
be374d06f382: Pull complete
b45386d4a8e5: Pull complete
0f93b0f025c: Pull complete
e67998ba05d7: Pull complete
031f46a571f6: Pull complete
e21e02227dc6: Pull complete
Digest: sha256:1d3092c5f4e7ad8776fd8a09b0b04d7301879017a2f3644fb1de1cf8b8f0
Status: Downloaded newer image for node:latest
Welcome to Node.js v12.7.1.
Type ".help" for more information.

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--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])
--usersns 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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## Theory:

Docker, an open-source software platform launched in 2013, has transformed the landscape of application development by popularizing software containers. These containers are standardized units that encapsulate an application's code and its dependencies, ensuring consistent and reliable performance across various computing environments. Unlike traditional virtual machines (VMs), which include a full operating system copy and abstract physical hardware, containers operate at the application layer. They share the host operating system's kernel, running as isolated processes, making them more portable and efficient.

At the core of Docker is the Docker Engine, initially introduced as an open-source tool and later expanded to support Microsoft Windows and Apple OS X. This engine comprises a server-side daemon responsible for managing images, containers, networks, and storage volumes. Additionally, it offers a client-side command-line interface (CLI) for users to interact with the daemon. Docker provides various components and tools to facilitate container creation, verification, and management. Docker files define container compositions, while Docker Compose files handle multi-container applications.

Despite its advantages, including streamlined development, portability, and scalability, Docker presents challenges, especially concerning security. Containers, while logically isolated, share the host's operating system. A vulnerability or attack on the underlying OS could potentially compromise all containers running on it. To address these concerns, Docker continuously integrates security enhancements into its platform, and numerous container security scanning tools have emerged to bolster protection.

In recent years, Kubernetes has emerged as the predominant container orchestration platform, often utilizing Docker as its container runtime. While Kubernetes enhances container management and scalability, security remains paramount. Organizations can mitigate risks by employing containers within VMs, opting for lower-profile VMs, or ensuring that container hosts remain isolated from the internet and only use images from trusted sources.