**22/03/2025**

**Docker assignment**

**1. What is Docker, and why is it used?**

**Ans.** Docker is open source and it is a containerization tool, using docker can pack applications and its dependencies into a standardized unit is called container

Docker simplifies the application deployment by ensuring consistency across environments

**2. How is Docker different from a virtual machine (VM)?**

**VMware:**

VMware uses full virtualization, which virtualizes at the hardware level. Each virtual machine runs its own OS with a dedicated portion of hardware resource

Each Virtual machine has its own OS, requiring more CPU and storage

**Docker:**

Docker uses containerization, which virtualizes at the operating system level. Containers share the host OS kernel and are lightweight

Docker is lightweight because containers share the OS kernel, leading to faster startup times and less resource consumption

**3. What are the main components of Docker?**

**Docker engine:** run time for running applications

**Docker image:** docker can build the images automatically by reading the instructions from a docker file

**Docker container:** docker container is a server/os/process. Docker container is a instance of docker image

**Docker hub:** cloud repository for docker images

**Docker cli:** command line tool for managing docker

**4. Explain the difference between Docker images and Docker containers.**

Docker images are automatically build by reading the instructions of docker file

Docker containers are the instance of docker images

**5. What is a Dockerfile?**

Docker file is a text document that contains all the commands a user could call on the command line to assemble an image

**6. What command is used to build a Docker image?**

Docker build -t image\_name

**7. How do you run a container from an image?**

Docker run -d image\_id/image\_name

**8. How do you list all running containers?**

Docker ps

**9. What command is used to stop a running container?**

Docker stop container\_ID/container\_name

**10. How do you remove a Docker container?**

Docker rm container\_name/container\_id

**11. What is the difference between CMD and ENTRYPOINT in a Dockerfile?**

**CMD:** specify default commands

**ENTRYPOINT:** specify the default executable

**12. What is a Docker volume, and why is it used?**

Docker volumes are persistent storage mechanism that allow you to store data outside of the container

**13. How do you persist data in Docker containers?**

Docker volume create volume\_name

**14. What is a Docker Compose file? How is it used?**

Docker compose is a tool

Docker compose is used for multi-container applications

**15. How do you scale services using Docker Compose?**

Docker-compose up –scale service\_name:number

**16. How do you check the logs of a running container?**

Docker logs container\_id/container\_name

**17. What is the purpose of the .dockerignore file?**

It excludes unnecessary files from the image build context, it reduces the build time

**18. What are the different networking modes in Docker?**

Bridge: default

Host

None

overlay

macvlan

**19. How do you expose ports in a Docker container?**

Docker run -itd –name name -p docker\_host\_port:docker\_container\_port image\_id/image\_name

**20. What is the difference between docker stop and docker kill?**

**Docker stop:** stops the running container

**Docker kill:** terminate the docker container