


50 Essential Docker Interview Questions & Answers (Beginner to Expert)

Want to ace your next Docker interview? Here's a curated list of **50 must-know** Docker questions and answers, ranging from beginner to expert level! 

Beginner Level (1-15)

❶ What is Docker?

- ✅ Docker is an open-source platform for developing, shipping, and running applications in containers, ensuring consistency across different environments.

❷ What are Docker Images and Containers?

- ✅ A **Docker Image** is a blueprint for creating containers, while a **Docker Container** is a running instance of an image.

❸ How do you install Docker?

- ✅ Install Docker by downloading it from [Docker's official website](https://docs.docker.com/get-docker/), or use package managers like apt (Ubuntu) or brew (Mac).

❹ How do you check if Docker is running?

- ✅ Run:

```
docker --version
docker ps
```

❺ What is the difference between `docker run` and `docker start`?

- ✅ `docker run` creates and starts a container, while `docker start` restarts an existing container.

❻ What is a Dockerfile?

- ✅ A Dockerfile is a script that contains instructions for building a Docker image.

Example:

```
FROM node:alpine
WORKDIR /app
COPY . .
RUN npm install
CMD ["node", "server.js"]
```

❼ How do you build and run a Docker image?

- ✅ Use:

```
docker build -t my-app .
docker run -p 8080:80 my-app
```

8 How do you list all Docker containers?

- ✓ Running containers:

```
docker ps
```

- ✓ All containers:

```
docker ps -a
```

9 How do you stop and remove a container?

- ✓ Stop:

```
docker stop container_id
```

- ✓ Remove:

```
docker rm container_id
```

10 How do you remove an image?

- ✓ Use:

```
docker rmi image_id
```

11 What is Docker Hub?

- ✓ Docker Hub is a cloud-based registry for sharing container images.

12 How do you push an image to Docker Hub?

- ✓ Use:

```
docker login
docker tag my-app mydockerhub/my-app:v1
docker push mydockerhub/my-app:v1
```

13 What is .dockerignore?

- ✓ It excludes files from being copied into the image, improving build efficiency.

Example:

```
node_modules/
.git/
.env
```

14 What is the difference between CMD and ENTRYPOINT?

- ✓ CMD provides default execution commands, while ENTRYPOINT defines fixed commands that cannot be overridden.

15 How do you inspect a running container?

- ✓ Use:

`docker inspect container_id`

Intermediate Level (16-35)

66 What is Docker Compose?

✓ Docker Compose is a tool for defining and running multi-container applications with a `docker-compose.yml` file.

Example:

```
version: "3.8"
services:
  web:
    image: nginx
    ports:
      - "8080:80"
```

Run:

`docker-compose up -d`

77 How do you create a Docker network?

✓ Use:

`docker network create my_network`

88 What are the types of Docker networks?

✓ Bridge (default), Host, None, Overlay

99 How do you attach a container to a network?

✓ Use:

`docker network connect my_network container_id`

20 How do you copy files into and out of a container?

✓ Use:

`docker cp file.txt container_id:/path/`

... (More intermediate questions on logs, environment variables, linking containers, etc.)

Expert Level (36-50)

66 What is Docker Swarm?

✓ Docker Swarm is Docker's native clustering and orchestration tool.

37 How do you initialize a Swarm?

✓ Use:

```
docker swarm init
```

38 What is Kubernetes, and how does it compare with Docker Swarm?

✓ Kubernetes is an advanced orchestration tool with better scaling and auto-healing features.

Feature	Docker Swarm	Kubernetes
Ease of Use	Simple	Complex
Scaling	Basic	Advanced
Load Balancing	Yes	Yes

39 How do you monitor Docker containers?

✓ Use:

```
docker stats
```

40 What are multi-stage builds?

✓ Multi-stage builds reduce image size by separating build and runtime environments.

Example:

```
FROM node:alpine AS builder
WORKDIR /app
COPY . .
RUN npm install && npm run build
```

```
FROM node:alpine
WORKDIR /app
COPY --from=builder /app .
CMD ["node", "server.js"]
```

41 How do you optimize Docker images?

✓ Use smaller base images (alpine), reduce layers, and leverage caching.

42 What is the difference between Stateful and Stateless containers?

✓ **Stateful:** Requires persistent storage.

✓ **Stateless:** Doesn't retain data after a restart.

43 What are the different storage drivers in Docker?

✓ Overlay2 (default), aufs, devicemapper, btrfs

44 How do you configure persistent storage in Docker?

✓ Use Docker volumes:

```
docker volume create my_volume
docker run -v my_volume:/data my_app
```

55 What are the security best practices for Docker?

- ✓ Use **non-root users**, **scan images**, **enable SELinux/AppArmor**, **sign images**

56 What is a Docker Secret?

- ✓ It is a secure way to store sensitive information in Swarm mode.

57 How do you perform rolling updates in Docker Swarm?

- ✓ Use:

```
docker service update --image new_version service_name
```

58 How do you troubleshoot a failing container?

- ✓ Check logs:

```
docker logs container_id
```

59 How do you remove unused images and containers?

- ✓ Use:

```
docker system prune
```

60 How do you set up Docker CI/CD?

- ✓ Use **GitHub Actions**, **Jenkins**, or **GitLab CI/CD** with Docker Hub.
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