

Set - 03 - Practice Based Assessment for NFV, Cloud, OpenStack and Docker/Kubernetes

Required: Attempt any 2 out of 4 questions

You also need to prepare theoretical concepts related to these questions and present them to evaluators.

Question 1

Containerizing a Basic Static HTML Page

Scenario

A small internal web application consisting of a single static index.html page displaying "Welcome to Docker World" needs to be packaged using Docker so that it can be run easily on any system.

Tasks

1. Write a Dockerfile that serves the static webpage using nginx or httpd.
2. Build the Docker image with a meaningful tag.
3. Run the container and expose it on port 8080.
4. Open the browser and confirm the webpage is accessible.

Explain

- Why static pages are ideal beginner Docker use-cases.
- Role of base images like nginx or httpd.
- Difference between an image and a container.

Deliverables

- Dockerfile
- Screenshot/output showing webpage running
- Short explanation (5–6 lines)

Question 2

Troubleshooting Static Website Not Loading in Docker

Scenario

A static website container is running but the page does not load in the browser. You must debug the issue and correct it.

Tasks

1. Check container logs for errors.
2. Verify port mapping and published port.
3. Inspect the container to confirm correct document root path.
4. Fix the issue and re-run successfully.

Explain

- Common causes of failure to load static sites in Docker.
- Importance of correct port mapping.
- Role of logs in troubleshooting.

Deliverables

- Error and fix screenshots
- Commands used
- Short explanation (5–6 lines)

Resources : (Common for all questions) to be shared with all students.

Free Static Website Templates for Students

Students may use the following free static website templates directly. These sites are HTML/CSS only and work perfectly with Docker.

HTML5 UP Templates

<https://html5up.net>

Suggested templates:

- Forty's portfolio
- Massively blog-style site
- Editorial documentation layout

Start Bootstrap Templates

<https://startbootstrap.com/templates>

Useful for beginners:

- Landing Page
- Simple Sidebar
- Business Frontpage
- Clean Blog

W3Schools Static Templates

https://www.w3schools.com/w3css/w3css_templates.asp

Very easy for students:

- Portfolio site
- Restaurant site
- Marketing site

Free CSS Templates

<https://www.free-css.com/free-css-templates>

Hundreds of static downloadable themes

Direct Template Examples

- Student portfolio website – <https://html5up.net/read-only>
- Resume website – <https://startbootstrap.com/template/resume>
- Educational site – <https://www.free-css.com/free-css-templates/page291/educational>
- Company landing page – <https://startbootstrap.com/template/landing-page>

Question 3

Running Two Static Websites on Different Ports

Scenario

Two static websites are provided: one student portal and one faculty portal. Both must run simultaneously using Docker containers.

Tasks

1. Build two separate images or reuse one image twice.

2. Run both containers in parallel on different host ports.
3. Access both websites in browser.
4. Verify that no port conflict occurs.

Explain

- Running multiple containers from the same image.
- Port mapping and port conflict.
- Use-case for hosting multiple static microsites.

Deliverables

- Docker commands used
- Screenshot showing both websites open
- Short explanation (5–6 lines)

Question 4

Scenario

A CDN edge VNF serves static web content to users geographically closer to them.

Tasks

1. Identify bandwidth, CPU, RAM, and disk needs.
2. Plan VM placement region (for AWS/OpenStack).

Explain

- Why geographic placement affects performance.
- One risk of underestimating bandwidth needs.

Deliverables

- Resource and placement plan
- Explanation (5–6 lines)