Faculty of Computing
Sabaragamuwa University of Sri Lanka
SE6103 - Parallel and Distributed Systems
Assignment 01

Time Frame: (2 hours)

The goal of this assignment is to test your understanding of Docker basics, including images, containers, Docker Compose, and networking.

- Complete each task step by step.
- Document your commands and outputs in a separate Word file.
- Submit your files, including any created
- Ensure you use proper naming conventions for your containers, images, and services.

Question 1

1. What is Docker, and why is it used?
2. Explain the difference between a Docker image and a Docker container.
3. What are the benefits of using Docker in software development?

Question 2

Task 1: Pull and Run a Container

1. Pull the official Nginx image from Docker Hub.
2. Run a container named `my-nginx` using the pulled Nginx image.
3. Map port `8080` on your host machine to port `80` in the container.

4. Open a browser and verify Nginx is running by navigating to `http://localhost:8080`.

Task 2: Inspect and Stop the Container

1. Use appropriate commands to inspect the running container's:
    - IP Address
    - Mount points (if any)
2. Stop and remove the `my-nginx` container.

Question 3

Task 3: Create a Custom Image

1. Create a folder named `my-app`. Inside it, create the following:
    - A file named `Dockerfile`.

An `index.html` file with the content:

```
<html>
  <body>
    <h1>Welcome to My Custom Docker Container!</h1>
  </body>
</html>
```

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2. Write a `Dockerfile` that:
    - Uses the official `nginx:latest` image as the base.
    - Copies your `index.html` file to the appropriate location inside the container.
3. Build the image with the name `custom-nginx`.
4. Run a container from this image, mapping port `8081` to port `80` in the container.
5. Verify the container is running and accessible at `http://localhost:8081`.