

SIT725_8.1P

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Using both virtualization and Dockerization in the FinGro project will streamline development, testing, and deployment.

Building the System with Docker:

Virtualization allows you to run different parts of your app in isolated environments. You could run the frontend, backend, and database in separate virtual machines (VMs) to keep them independent. However, Docker provides a more efficient solution by using containers, which are lighter, faster, and easier to manage than VMs. Docker ensures that FinGro runs the same way in any environment, whether it's a local machine, a teammate's machine, or the cloud.

Creating Docker Images:

The first step in Dockerization is creating Docker images for each part of FinGro. A Docker image includes the app's code, dependencies, and environment settings. For FinGro, you'll create:

- **Frontend Image:** Contains HTML, CSS, and JavaScript.
- **Backend Image:** Includes the Node.js server code.
- **Database Image:** MongoDB for data storage.

You will write Dockerfiles for each part, then use `docker build` to create the images. This ensures that each part of FinGro is packaged with all required dependencies, guaranteeing consistency across different environments.

Integration and Testing:

Docker makes it easy to test how the containers (frontend, backend, and database) interact. With isolated environments, you can verify that the frontend communicates with the backend and the backend can access the database.

Deployment and Updates:

Docker makes deployment simple. You can deploy containers to a cloud platform, ensuring that FinGro runs the same everywhere. When updates are needed, you can replace old containers with new ones with minimal downtime.

Benefits:

- **Portability:** Docker ensures consistency across all environments.
- **Scalability:** Easily scale parts of the app for more users.
- **Efficiency:** Docker containers are lightweight, saving resources.

Docker and virtualization make FinGro more scalable, efficient, and easier to manage.