Deakin University

Applied Software Engineering

OnTrack Submission

Virtualization

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Outcome	Weight
ULO1	♦♦♦♦♦
ULO2	♦♦♦♦♦
ULO3	♦♦♦♦♦
ULO4	♦♦♦♦♦

Dockerization

May 4, 2025

SIT725 – Applied Software Engineering

Task 8.1P - Dockerization

For our RemixMeals application, we'll implement Docker containerization to ensure consistency, scalability, and easy deployment across all environments. our implementation will follow these steps:

First, we'll create a Dockerfile for each component (frontend, backend, database) specifying:

- Base images (Node.js for frontend/backend, MongoDB for database)
- Dependencies and setup scripts
- Startup commands

Using docker build, we'll create Docker images containing:

- File system layers for our code
- Installed dependencies
- Runtime configurations

These images will be pushed to a Docker Registry with docker push, giving all team members access to the latest versions.

For development, team members will use docker pull to retrieve images, then docker run to create containers with:

- Memory-resident processes
- Port mappings (frontend: 3000, backend: 4000, database: 27017)
- Linked volumes for persistent data
- Container networking

We'll use Docker Compose to orchestrate our multi-container setup through a docker-compose.yml file that:

- Configures networking between containers
- Sets up volume mounts for code and database persistence
- Defines environment variables for different deployment stages

This approach provides consistent environments across development machines, eliminates "it works on my machine" problems, and simplifies deployment. For production, we'll configure CI/CD pipelines to automatically build, test, and deploy our containers to cloud hosting.