SIT725
APPLIED SOFTWARE ENGINEERING

We will utilize Docker containerization to manage deployment and development processes through our Secure File Sharing group project. The Docker technology helps create separate application domains to achieve security enhancement and standardized development throughout multiple environments.

Each major application component including Node.js, Express.js, MongoDB and HTML, CSS and JavaScript will have its own container infrastructure. The Dockerfile creation stage will generate separate files for main application components with instructions about base images and dependencies and start-up procedures. The Dockerfiles serve to generate Docker images that show our application layers.

The Docker Registry serves as a version control system for Docker images which will receive image pushing after their creation. Deployment occurs when we retrieve these images from Docker registry to operate them as weightless Docker containers. The backend container encrypts files while generating decryption links which it will store in the database container together with metadata. The frontend container enables user interaction with these systems.

During local testing and development, we will depend on docker-compose to control multiple container arrangements. The system guarantees smooth combined operations for frontend and backend and database without version-related errors and unnecessary manual setups. The developed solution implements a modular design similar to the microservices approach described in Lecture 8 Slide 16.

The use of Docker delivers immediate scaling abilities and automatic rollback features as well as reliable system behavior regardless of processing machine variation. By confining data in separate containers, the system protects itself because the breach of a single container does not affect others. The future development will integrate Kubernetes for managing multiple containers during production runs.

The goals of Docker-based virtualization for our Secure File Sharing system are to achieve deployment ease as well as portability while ensuring security and scalability which leads to higher project productivity.