Containerization Project Report

Overview:

This project entailed the development of a containerized microservices architecture aimed at demonstrating authentication, data entry, analytics, and data presentation functionalities. Utilizing Docker and Docker Compose, the project encompasses four custom-built microservices (**auth-app**, **data-entry**, **show-data-app**, **and analytics-service-app**) alongside MySQL and MongoDB databases to handle authentication, data manipulation, and analytics.

Microservices:

1. **auth-app**: Manages user authentication against the MySQL database, ensuring secure access.
2. **data-entry**: Uses the CRUD operations on MySQL's "grade" table, dependent on successful authentication via **auth-app**.
3. **show-data-app**: Retrieves statistics from MongoDB, also depending on **auth-app** for authentication.
4. **analytics-service-app**: Periodically analyzes data from MySQL and stores computed statistics in MongoDB.

Databases:

- **MySQL**: Hosts the "school_management_4" database, containing user credentials and grade data.
- **MongoDB**: Stores analytical results produced by the **analytics-service-app**.

Docker and GitHub Actions:

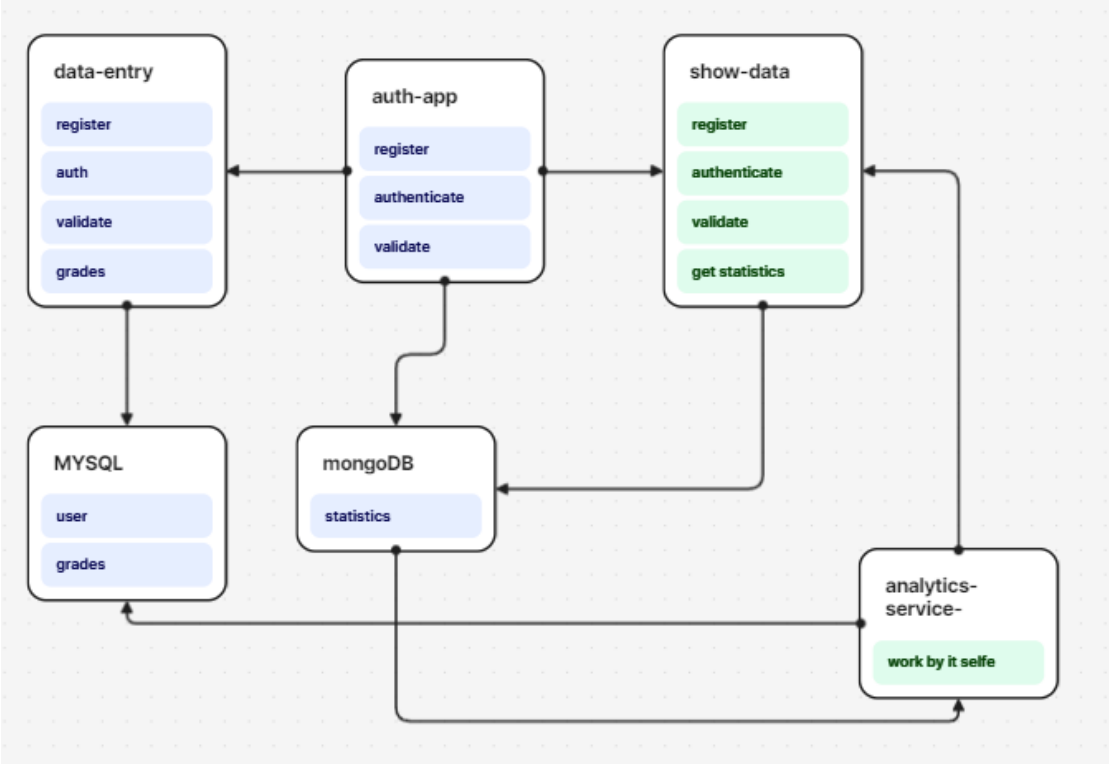
Dockerfiles were crafted for each service, ensuring a standardized and efficient deployment process. GitHub Actions automated the CI/CD pipeline, facilitating the building, testing, and deployment of Docker images to Docker Hub repositories.

Deployment:

The application stack is deployed using Docker Compose, orchestrating service dependencies and network configurations. GitHub Actions streamline the deployment process upon code updates, enhancing the development workflow.

Conclusion:

This project showcases the effectiveness of containerization and CI/CD practices in developing and deploying microservices-based applications, emphasizing automation, security, and scalability.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