CIT3495 – Project1

Implement one of the following ideas, and upload your solution to the drobox before the deadline:

1. Build a containerized microservices data collection and analytics system as shown in Fig.1 You need to write a docker file for each image (service), and docker compose file to run the system. You can refer to the following post for a sample app. You need to use two programming languages as least, typically Python and Nodejs.

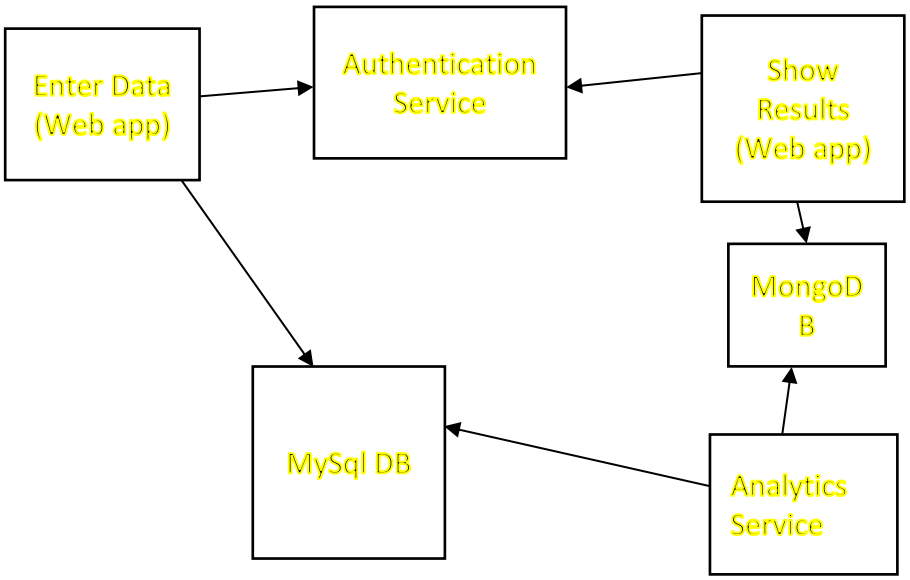

Fig. 1 The Data collection and Analytics System Architecture

The system microservices can be described as follows:

- Enter data (web app) is used to collect data (any data: grades, temperatures, ..etc.). Users are allowed to enter data after validating their credentials through the Authentication Service. Any entered data will be written to MySql DB service.
- Show results (web app) is used to present simple analytics (max, min, average …etc.). Users are allowed to see the analytics after validating their credentials through the Authentication Service. The Show Results service reads data from Mongo DB service.
- The Authentication Services is a simple service to validate users credentials.
- The Analytics Service read data from MySql DB service, gets simple statistics like Max, Min, Avg…etc. and write that to Mongo DB Service.

2. Build a containerized Video Streaming System as shown in Fig. 2. You need to write a docker file for each image (service), and docker compose file to run the system. You can use any programming language(s) you prefer.

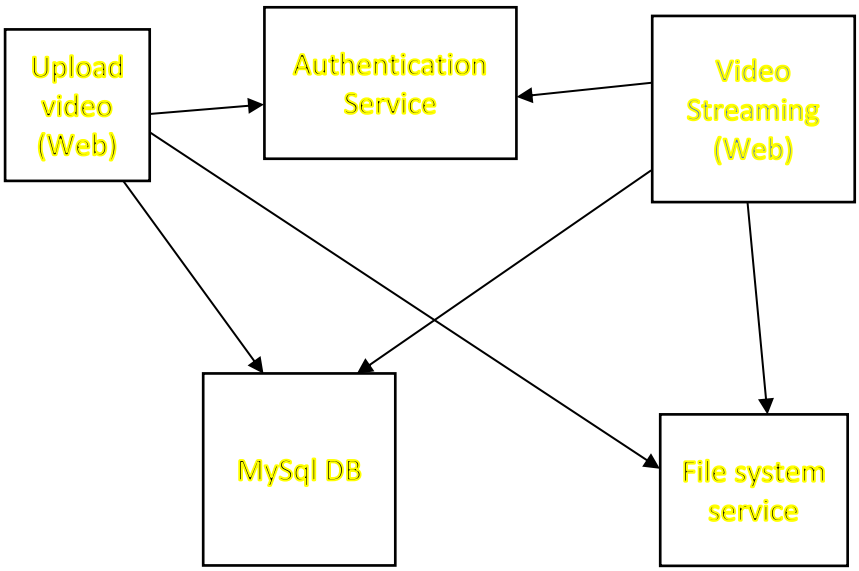

Fig. 2 The Video Streaming System

The system microservices can be described as follows:

- Upload Video (Web app) is used to upload MP4 file (or any video format). Users are allowed to upload videos after validating their credentials through the Authentication Service. Video names and paths on the filesystem are written to the MySql Service. The file itself is Written to a file storage through the File System Service.

- Video Streaming (Web app) is used to view videos. Users are allowed to view videos after validating their credentials through the Authentication Service. The list of videos and their paths are taken from MySql DB service, and the video itself can be read from the file storage through the File System Service.

- The Authentication Services is a simple service to validate users credentials.
- The File System service is a simple service to write and read files to/from file storage (HDD, AWS S3,…etc)
- MySql DB service will have a list of videos and their corresponding (path/URL) on file storage.

Bonus: You need to build a CI/CD pipeline for each service you develop that ends up in deploying the services on the cloud (AWS, GCP, Azure).

Deliverables:

- All docker files, docker compose, and code files
- A presentation
- A technical report that explains your solution