**Individual Reflection: DBA and ETL Engineer – Tilan Wickramasinghe 1820222033 – 罗卡**

In this project, I acted as both a Database Administrator (DBA) and an ETL Engineer, focusing on data storage, flow, migration and ETL processes.

**Key Responsibilities**

* **Database Design:** Managed the SQLite database for fast queries and data integrity, creating tables for user data and chat interactions.
* **Data Integration:** Collaborated with the backend developer for seamless app and database integration.
* **ETL Pipelines:** Used Python scripts to extract, transform, and load user profiles and chat histories from JSON and CSV files.
* **Backup and Security:** Set up backup strategies and encryption for user data protection.
* **Making migrations for the database:** python manage.py makemigrations Python manage.py migrate

**Challenges and Solutions**

* **Real-Time Performance:** Ensured smooth chat updates by optimizing the software.
* **Handling Large Data Volumes:** Improved chat table design and implemented batching for quicker access.
* **External Data Integration:** Created Python scripts for accurate data extraction.
* **Backup Strategy:** Regular backups and SQLite encryption for data safety.

**Team Collaboration**

I worked closely with:

* **Backend Developer:** Designed efficient API endpoints.
* **Frontend Developer:** Provided data models for the UI.
* **WebSocket Integrator & CI/CD Engineer:** Ensured smooth testing and deployment.

Using Git for version control helped maintain data integrity.

**Conclusion**

This experience improved my skills in database management and data processing. Collaborating with my team and overcoming challenges prepared me for future projects.



