CS 411 Final Report

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1. Please list out changes in directions of your project if the final project is different from your original proposal (based on your stage 1 proposal submission).

We cannot track the users' mileage as we proposed in our original proposal.

We cannot view users' history trips.

We allow users to write comments if they took that flight and we will autofill their comments based on their rating when they leave comments blank.

2. Discuss what you think your application achieved or failed to achieve regarding its usefulness

We did not achieve the function of managing mileage and history flights.

We achieve the social aspect of sharing their experience with the flights or airline in the comments.

3. Discuss if you changed the schema or source of the data for your application.

We changed our source of the data once because we need more readable data so users without much knowledge about airlines can also understand. In the meanwhile, we changed our schema for more attributes.

4. Discuss what you change to your ER diagram and/or your table implementations. What are some differences between the original design and the final design? Why? What do you think is a more suitable design?

When we first create our ER diagram, we have a table called success login info and Email, however, after our discussion, we delete these tables and use the JWT token for the Authentication and make email a column. Because we do not need to have an email table because one user has one email address only. And we use the JWT for Authentication so the successloginfo table is useless

5. Discuss what functionalities you added or removed. Why?

We add the auto comment part for this system using a trigger and a procedure. Because our system has a creative part with rating and comments. Many users may not want to write the comment by themself. So we can use this function to auto comment the part of the user.

We add the filter for all the conditions about the flight status, including source airport, destination airport, and the airline. This filter makes people can choose whatever data that what

6. Explain how you think your advanced database programs complement your application.

Our advanced database programs use triggers and procedures to make an auto-comment from the rating. With the advanced SQL query and the for loop to compare. We can use the rating and know whether this flight rating is better than other flights and whether this flight is the user's preferred flight.

7. <u>Each team member</u> should describe one technical challenge that the team encountered. This should be sufficiently detailed such that another future team could use this as helpful advice if they were to start a similar project or where to maintain your project.

Xinyuan Chen: We completed the design of the ER diagram before looking at and thinking about our data tables, and it was not until we saw the data that we realized that some of the entity relationships were not designed correctly, for example, there were some many-to-many relationships that we designed as one-to-many. I strongly recommend that other groups look at their datasets carefully before designing their ER diagrams or UML diagram, and split the data according to the original dataset in order to observe the keys and foreign keys of each table.

Guangyuan Liu: We use Django for the backend and we have a problem that some advanced SQL we use does not have the model in this application. So we tend to use a new file called the raw SQL model and apply what we need in this model. So that we can use the advanced SQL and show the data in our API.

Chang Xu: Unfortunately our GCP MySQL instance got hacked because of misconfiguration of network access (we used 0.0.0.0/0 due to laziness) and an easy password. We had to rebuild our database entirely because our entire database got dropped.

Taihao Liu: When we tried to upload our data into GCP using MySQL workbench, there were some characters that could not be encoded into utf-8. We were supposed to clean the data before trying to upload the data.

8. Are there other things that changed comparing the final application with the original proposal?

We finished most of the work in our original proposal except for removing the table "Flight" because of the lack of data in the original dataset. We did not complete the creative part mentioned in the proposal: visualized routes with a map. We think all is good because the basic and important features are designed well in our final application compared with the original proposal.

9. Describe future work that you think, other than the interface, that the application can improve on.

- Our application is deployed standalone, which is not efficient for parallel processing. We can use distributed systems to handle scaling issues.
- Investigate each query and based on the users' use habits design a more suitable index to optimize those queries' performance.
- Our flight management system only contains a flight route table. However, most routes are scheduled for a time period like daily but the database system fails to interpret the relationship. We can add a new table "ScheduledRoute" to interpret it.
- We may transfer our database from the relational database to the NoSQL database like MongoDB. A graphical database like MongoDB can help us to find all possible options for the user to take flight from A city to B city easier.

10. Describe the final division of labor and how well you managed teamwork.

We use pair programming and most of the work is done together through zoom meetings. We use Git and Google Docs to work collaboratively on code and reports. We divided the work well in each stage of Project Track 1 and collaborated to complete our project. For example, during the midterm-demo stage, Xinyuan and Guangyuan collaborated on the back-end code of the application, Chang and Taihao collaborated on the front-end code of the application, and the whole team would work together to help solve problems when someone encountered one. All team members were satisfied with our teamwork and division of labor.