Project 1 Instructions

Part 1 – Data Model (40 points)

* Using the supplied SRS, design a crows-foot ERD for the airline DBMS that satisfies first-normal form.
  + There shall be no data duplication across any of the relational tables
* Submit your ERD as an image in PDF format.
  + You can do this using MS Word and saving/printing as PDF.

Part 2 – Implementation (40 points)

* Write the DDL (CREATE) statements to create the database implementing the PK and FK constraints.
* Write the SQL queries/views for the highlighted requirements in section 2.3

Part 3 – Discussion (20 points)

* What types of performance constraints do you see Customers potentially facing if you do not create Views for the queries described in the CUSTOMER FUNCTIONS section?
  + Do you think this creates more overhead for the DB?
  + Do you think query performance will scale as the database scales up?
  + How would you alleviate any potential scaling problems with the DB?
  + Do you think a first-normal form RDBMS is best suited for a highly transactional web-application?
* Your answer should be a minimum of 1000 words or 4 paragraphs.
* Use and cite at least three sources to support your answers.

Jatana, N., Puri, S., Ahuja, M., Kathuria, I., & Gosain, D. (2012). A survey and comparison of relational and non-relational database. *International Journal of Engineering Research & Technology*, *1*(6), 1-5.

Kolonko, K. (2018). Performance comparison of the most popular relational and non-relational database management systems.

Gadiraju, K. K., Verma, M., Davis, K. C., & Talaga, P. G. (2016). Benchmarking performance for migrating a relational application to a parallel implementation. *Future Generation Computer Systems*, *63*, 148-156.

Rolik, O., Ulianytska, K., Khmeliuk, M., Khmeliuk, V., & Kolomiiets, U. (2021, December). Increase efficiency of relational databases using instruments of second normal form. In *2021 IEEE 3rd International Conference on Advanced Trends in Information Theory (ATIT)* (pp. 221-225). IEEE.