**RUT-SOM-DATA-PT-06-2020-U-C**  Douglas High

**09 SQL-Challenge** August 10, 2020

File Information:

**Data/** - This folder contains the csv files to load into postgres DB tables.

**Images/** - This folder contains database ERD and output charts from PyCharts.

**SQL-Queries/** - This folder is within Images and contains screenprints of sql queries run with output.

**PyCharts.ipynb** – Jupyter notebook python pgm, creates png image files.

**TableDefinitions.sql** – SQL code, defines tables for postgres DB.

**TableQueries** – SQL code, perform various queries against tables.

**Config.\*** - Not included, required for postgres password. Format : password = “*postgress password*”

Processes:

**In postgres**

1. Create a database named SQL\_Challenge.
2. Run TableDefinitions.sql to define tables.
3. Import csv files from Data folder to corresponding tables (headers=yes, comma delimited).

*note: The first three must be “Titles”, “Employees” , and “Departments”, in that order.*

1. Run TableQueries.sql to produce queries.

**In Jupyter Notebook**

1. Run PyCharts.ipynb to produce histogram and bar chart.

Database Considerations:

In creating my database, I spoke with representatives from several departments and the following conditions were determined, many of which in turn determined foreign key relationships and data types.

1. All table fields will have valid data, NULL values are disallowed.
2. An employee can work for multiple departments.
3. An employee can manage multiple departments.
4. A department can have multiple managers.
5. An employee can only have one title and one salary.
6. Department number will never be more or less than four characters.
7. Title-id is unnecessarily long at five bytes, but will always remain so, and must contain five characters.
8. The company is, and always will be, discriminant to people with first or last names longer than 30 characters, and will in no way ever hire such people.
9. Anyone suggesting a department name or job title be longer than 30 characters will be dismissed.
10. The company will be reverting back to a pre-Gregorian fiscal calendar, corporate celebrations will begin March 25th and go through April 1st each year. As a bonus, any employee still at the company in the year 2100 will have an extra day in their year (long live Caesar and the Julian calendar!).

Table Considerations: (numeric references [n] to rules outlined in Database Considerations above).

1. Employees - Primary Key is **emp\_no**.

> **emp\_title** is a foreign key to Titles.title\_id with a many:1 relationship.

1. Departments – Primary Key is **dept\_no**.
2. Dept\_emp – Primary Key is composed of **emp\_no** and **dept\_no** [2].

> **emp\_no** is a foreign key to Employees.emp\_no with a many:1 relationship [2].

> **dept\_no** is a foreign key to Departments.dept\_no with a many:1 relationship.

1. Dept\_manager – Primary Key is **dept\_no** and **emp\_no** [3,4].

> **dept\_no** is a foreign key to Departments.dept\_no with a many:1 relationship.

> **emp\_no** is a foreign key to Employees.emp\_no with a many:1 relationship[3].

1. Titles – Primary Key is **title\_id**.
2. Salaries – Primary Key is **emp\_no**.

> **emp\_no** is a foreign key to Employees.emp\_no with a 1:1 relationship [5].