SQL Database Analysis

Using a PostgreSQL, we will perform queries against the database find information that is requested. First, we were provided with multiple CSV files and uploaded these CSV into PostgreSQL. One CSV represents one table in the database. When the CSV is imported, it translates the headers from the CSV to the column names in the database tables. And all of the data contained in the CSV is also imported into the database table. From here no primary key, foreign key, or other constraints are assigned to the database table attributes.

From analyzing the CSV files, we determine which column headers translate to primary keys, foreign keys and determine what other constraints are needed on each attribute. First we assign the primary keys to the tables. In this example, only two tables needed primary keys – “Employees” table and the “Departments” table. Then the other tables – “Department Employee,” “Department Manager,” “Tiles,” and “Salaries” – as they either reference the foreign key of “Employee,” “Department” or both. Then the other attributes are assigned as NOT NULL as all data is present in the database tables.

Here we also determined which datatype each attribute in the database tables receive. The primary key in the “Employee” table was assigned as an INTEGER as all of the values in the table is an integer value. However, the primary key in “Departments” was assigned as a VARCHAR data type as it starts with a “d” followed by numbers. Therefore, we could not assign the primary key in the “Department” an INTEGER data type.

For the remaining “Employees” attributes “first name,” “last name” and “gender” have been assigned as VARCHAR data types. And the “first name” and “last name” have been assigned a “Not Null” constraint while the “gender” attribute has been no constraint in spite of none of everyone disclosed their gender in this example, but in real life situations someone may not want to disclose their gender identity. The “birth date” and “hire date” are assigned DATE data types as these are required fields for employers. Hence, they have been assigned as a constraint as “Not Null.”

For the remaining “Departments” attribute “department name” has been assigned a VARCHAR data type and given a “Not Null” constraint.

The “Department Employee” table has a foreign key referencing the “Department” table called “department number” and another foreign key referencing the “Employee” table called “employee number.” The “Department Employee” also has two additional attributes – “from date” and “to date.” They are both DATE data types and have been assigned “Not Null” constraints.

The “Department Manager” table has a foreign key referencing the “Department” table called “department number” and another foreign key referencing the “Employee” table called “employee number.” The “Department Manager” also has two additional attributes – “from date” and “to date.” They are both DATE data types and have been assigned “Not Null” constraints.

The “Titles” table has a foreign key referencing the “Employees” table. It also has a “title” attribute that is a VARCHAR data type and has a “Not Null” constraint. It also has a “from date” and “to date” which are both DATE data types and have been assigned “Not Null” constraints.

The “Salaries” table has a foreign key referencing the “Employees” table. It also has a “salary” attribute that is an INTEGER data type and has a “Not Null” constraint. In real life, the salary will be a floating-point data type but all of the salary values are integers. It also has a “from date” and “to date” which are both DATE data types and have been assigned “Not Null” constraints.