Lesson Plan 03, ISTA-420

Chapter 2, T-SQL Fundamentals

June 1, 2017

1 Class Discussion

Pages 27 – 52.

1. What is a *primary key constraint*? What two other constraints is it equivilent to?
2. What is a *nullability constraint*? What does it prevent?
3. What is a *unique constraint*? What does it prevent?
4. What is a *foreign key constraint*? What does it allow?
5. What is a *check constraint*? What does it allow?
6. What is a *default constraint*? What does it allow?
7. What is *domain integrity*? This is not in your text book, but it's important.
8. What is the difference between the *where* and the *having* clauses? How are they alile?
9. What SQL operator has the highest precedence? What SQL operator has the lowest precedence?
10. Yes or no: In the SQL standard, is *NULL* equal to *NULL*? Why or why not?

2 In Class Exercises

Using SQLite and the Northwind database, write a SQL script that executes the following queries. Your deliverables should be your SQL script and the text output.

1. List the countries with most customers from high to low?
2. What is the average price of products for each product category?
3. What product category has the lowest number of units in stock?
4. What postal codes experienced a significant delay in shipping on average?
5. Do we have more revenue selling a few high priced items or many low priced items?

```
1 select country, count(country) as count from customers group by country order by count desc;
2
3 select categoryID, avg(UnitPrice) as averagePrice from products group by categoryID order by
      averagePrice desc;
4
5 select categoryID, sum(UnitsInStock) as inStock from products group by categoryID order by
      inStock;
6
7 select shipPostalCode, 'average lag time', avg(OrderDate - ShippedDate) as lagTime from
      orders group by shipPostalCode having lagTime > 7;
```

```
8
9  select productID , unitprice , quantity , (UnitPrice * quantity)  as total from
       order_details where unitprice < 10 group by productID ;
10 select productID , unitprice , quantity , (UnitPrice * quantity)  as total from
       order_details where unitprice >150 group by productID ;
11
12 select substr(contactname, 1, pos-1) as first_name,
13        companyname
14 from
15   (select *,
16           instr(contactname,' ') as pos
17    from customers)
18 order by first_name;
19
20 select strftime("%d", orderdate) as december_day from orders where orderdate like '19___12%'
       ;
```

3 Graded Labs

No graded labs today.

4 Course Project

4.1 Software Process

Requirements analysis and requirements engineering, UML and use cases.

4.2 Version Control

We will learn how to add files to a Git repository.

4.3 Project Assignment

Create a basic requirements specification. Write and execute a SQL script that meets your requirements specification. You can use either SQLite or SQL Server, your choice. We will probably be using SQLite in the early stages of the project, but we will move to SQL Server later on. This has two purposes: (1) SQLite is simple and easy for developing prototypes of projects in the early stages, and (2) you need to learn how the SQL dialects understood by different database systems are mutually intelligible, and how they differ.

5 Homework

5.1 Readings

Read chapter 2 of the textbook T-SQL Fundamentals, pages 52 through 73.

5.2 Exercises

- Do exercises 6 through 10 beginning on page 93. You are allowed to look at and copy the solutions, but make sure you understand the concepts. For example, if you give a query similar to exercise 1 but for another month, would you understand how to do it?
- Read the Microsoft T-SQL documentation for the functions used in these exercises.