DBS311 Advanced Database Services

Lab Exercise#3 – SQL Group Functions

Screen Captures are due at the end of class today.

SQL SELECT

Using SQL Developer and screen captures of your output you are to add the following constraints to the tables you created last week in the lab exercise. You have been given the following script file to run against your schema to create and populate some tables for this lab exercise. If you have already run this script for Northwoods you will need to run it again. If you have not run the script go to Blackboard and find the **northwoods.sql** script. Download and run this script to recreate the tables. The tables will now agree with the diagram below.

You can refer to the following diagram to see the tables. Look at the schema for Northwoods University. Show screen captures for all sample questions.

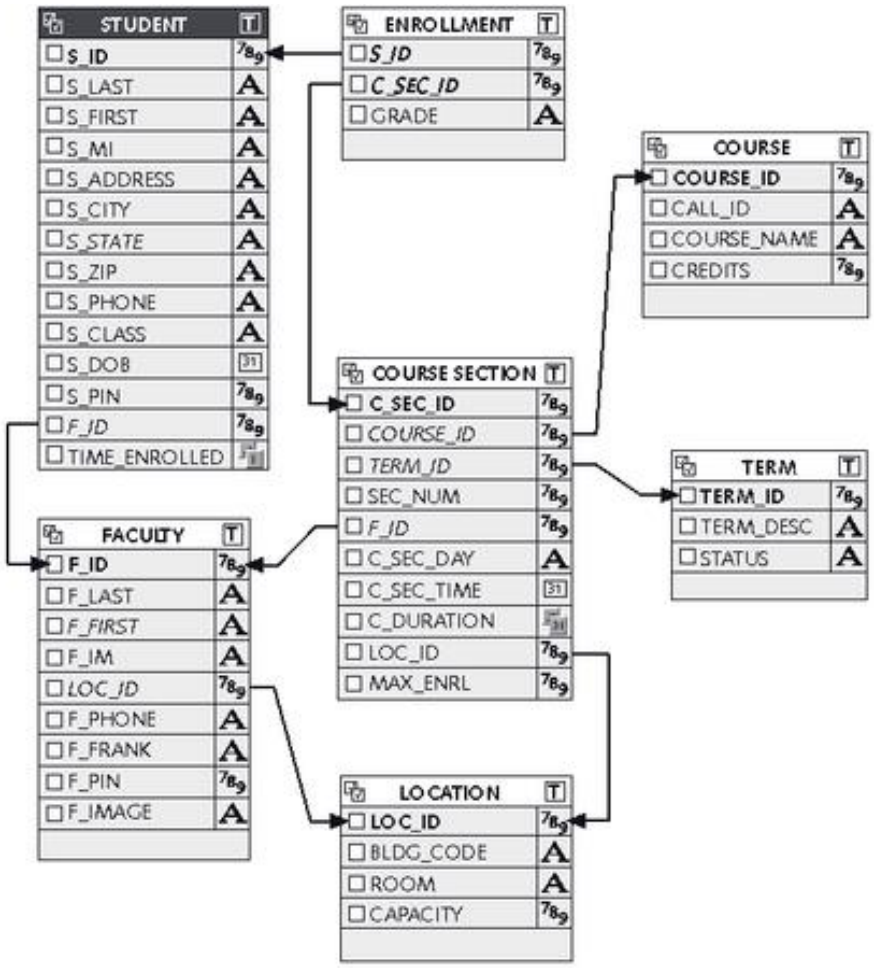

Figure 1-17 Visual representation of the Northwoods University database

Practice Questions

Group functions

Last week's lab exercise gave a few GROUP BY statements to enter and see the results. Database applications often need to display information about a group of rows. You may need to know the total number of students who enrol in a specific course section. To display data that summarizes multiple rows you use the Oracle group functions. There are a handful of these functions that can be used: This week you will be given a few questions or statements involving the various group functions. You will need to figure them out this time.

Here are the various group functions again as a reminder.

AVG(fieldname) – returns the average value of a numeric field's returned values

COUNT(*) – returns an integer representing the number of returned rows

COUNT(fieldname) – returns an integer representing a count of the number of returned rows for which the value of the fieldname is NOT NULL

MAX(fieldname) – returns the maximum value of a field's returned values

MIN(fieldname) – the minimum value of a field's returned values

SUM(fieldname) – sums a numeric field's returned values

Practice Questions

Today's lab exercise is to expose you to the group functions that we covered this week.

Question 1

```
SELECT SUM(max_enrl), AVG(max_enrl), MAX(max_enrl), MIN(max_enrl)
FROM course_section
WHERE term_id = 6;
```

Question 2

```
SELECT COUNT(*)
FROM enrollment
WHERE s_id = 5;
```

Question 3

```
SELECT COUNT(grade)
FROM enrollment
WHERE s_id = 5;
```

Use the GROUP BY clause to group data.

Question 4

```
SELECT bldg_code, capacity
FROM location;

SELECT bldg_code, SUM(capacity)
FROM location
GROUP BY bldg_code;
```

Question 5

```
SELECT bldg_code, SUM(capacity)
FROM location;
```
(Yes this will produce an error message, it is supposed to do that)

Question 6

```
SELECT bldg_code, SUM(capacity)
FROM location
GROUP BY bldg_code
HAVING SUM(capacity) > 100;
```

Try these yourself

Question 7

From the COURSE_SECTION table where term_id is equal to 6, sum of the max_enrl, the average max_enrl, the maximum max_enrl and the minimum max_enrl for term_id = 6. This should be one SELECT statement to determine all of the requested values.

Question 8

Northwoods University requires a report that will display the bldg_code for each building as well as the total capacity for all the rooms located in each building. Order the output of this output by bldg_code. Use an appropriate column alias the capacities.

Question 9

The enrollment table contains the grades for each student at Northwoods. How many grades in the enrollment table are there for s_id = 1.

Question 10

Modify question 3 so it displays the s_id value for each student and the number course sections they are enrolled in (c_sec_id)) also count rows where there are NULL values for grades because the grades have not been entered yet.

Question 11

Rewrite question 2 so it will only display the building codes and capacities of the building if they are greater than or equal to 100. Order the output in ascending sequence by the capacity.

Question 12

How many course sections are being taught by each of the faculty members?

Question 13

Rewrite question 3 so it displays the student's last name and the number of grades in the enrollment table for each student.