COMP 3311: Database Management Systems

Lab 3 Exercise: SQL Functions and Subqueries

HOW TO GET THE CREDIT FOR THIS LAB

1. **Download** the Lab3.sql script file from the ***SQL Functions and Subqueries*** entry of the Lab Schedule course webpage and **execute** it in SQL Developer. The tables Student and Department created in the previous lab are dropped. Five tables are created Student, Course, EnrollsIn, Department and Facility. The Facility table records the number of projectors and computers for each department.
2. **Modify** your InsertMyself.sql script file constructed in the previous lab so that it inserts the following tuples.
   a. Into the Student table an additional tuple with the following values.
      - Your student id, first name, last name and HKUST email address.
      - Any phone number of your choosing (it does not have to be your phone number).
      - The value "3.57" for the cga attribute.
      - The value "COMP" for the departmentId attribute.
      - The value "2015" for the admissionYear attribute. ← **NEW!**

   b. Into the EnrollsIn table an additional tuple with the following values. ← **NEW!**
      - For the studentId attribute, your student id.
      - For the courseId attribute, the value "COMP3311".
3. **Execute** your modified InsertMyself.sql script file.
4. **Construct** a script file named Lab3ExerciseQueries.sql containing the following five SQL queries and **execute** it in SQL Developer.

   Query 1: Display the minimum, maximum, average and total number of computers over all departments as shown in Figure 1.

   Query 2: Display the firstName, lastName and studentId of the students from the COMP department with the highest CGA as shown in Figure 1.

   Query 3: For each course, display the course id and the average cga of the students enrolled in the course as shown in Figure 1. Order the result by average cga descending.

   Query 4: For each course, display the course id, student last and first name, department id and cga of the student who has the highest CGA in the course as shown in Figure 1. Order the result by department id ascending.

   Query 5: For each student, display first name, last name, department id and the number of courses in which the student is enrolled. Order the result by the number of courses ascending.

   Note 1: To output the statements beginning "Query …", you can use the builtin relation dual.

   Note 2: To suppress the output of table column headers in the Script Output pane of SQL Developer, place the command "set heading off" in your script file before the SQL statement(s) whose result column headers you want to suppress. Use the command "set heading on" to again show the column headers for the result of SQL statements.

   Note 3: Your query results should show the same headers for the columns for all queries as those shown in Figure 1.

   Note 4: All cga values should be truncated to exactly two decimal places as shown in Figure 1.

WHAT TO SUBMIT

1. Your Lab3ExerciseQueries.sql script file.
2. A screenshot of the SQL Developer window with File name: Lab3 and Type: JPEG showing the result of the three queries in the Script Output pane as shown in Figure 1.

HOW TO SUBMIT

By 11:59 p.m. on Friday of the current week, upload your Lab3ExerciseQueries.sql script file and SQL Developer screenshot file to Canvas by selecting "Lab 3" in the Assignments section of Canvas, and then selecting the "Submit Assignment" button. To check your submission, select the "Submission Details" button on the right side. For help, select the "Help" button at the top-right of Canvas.

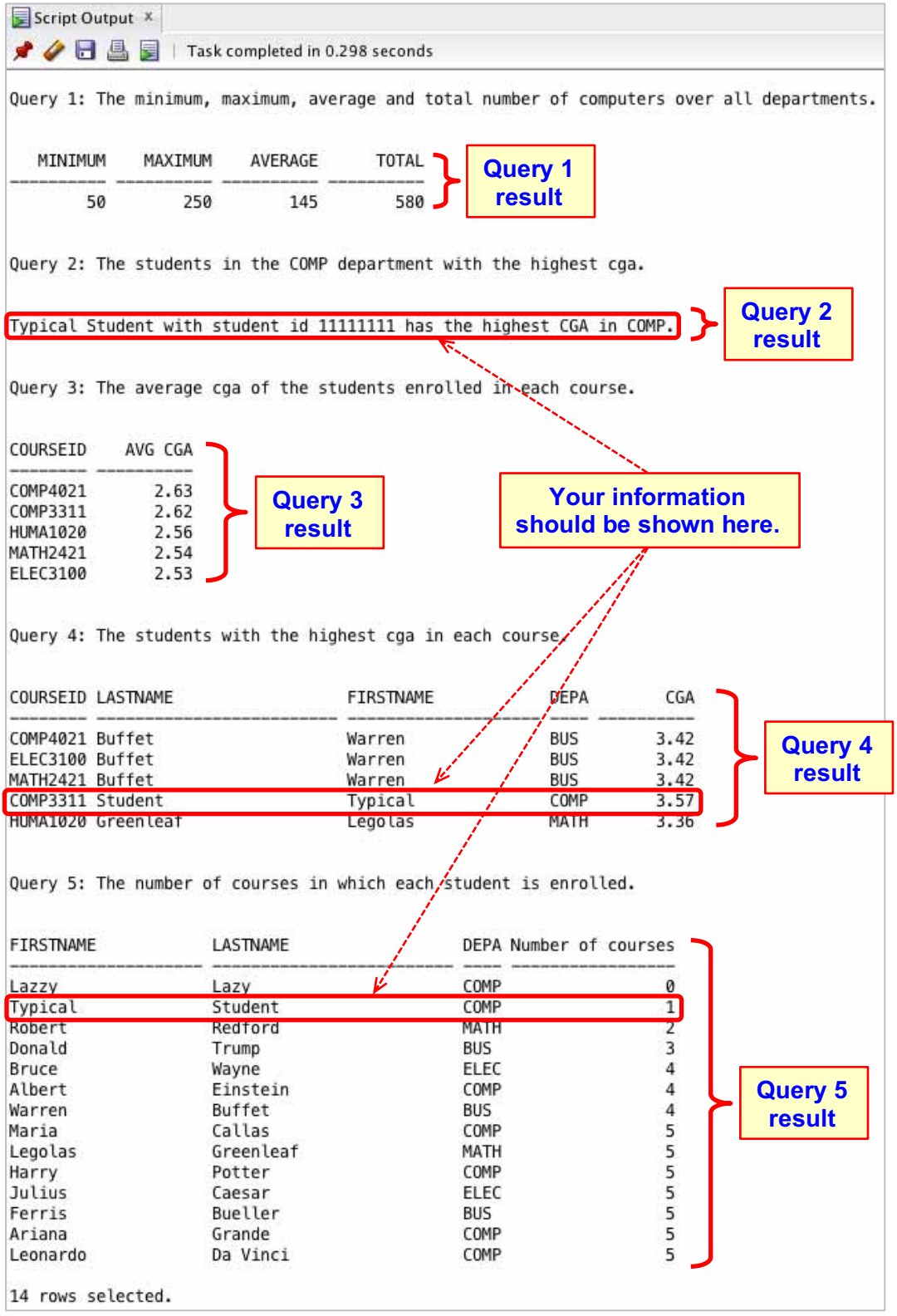

Figure 1: Example SQL Developer Script Output pane showing the result of executing the five queries.