CS1100: Access Lab 4

To complete this assignment you must submit an electronic copy to Blackboard by the due date. Download the starter file and **save a copy of it**. **Do not open the Access database directly from Blackboard – save it to your desktop first!**

Knowledge Required

- Action queries
- Aggregate functions (especially COUNT and SUM)
- Calculated fields and expressions
- Selection criteria and WHERE clauses with aggregate functions
- Nested queries using multiple subqueries
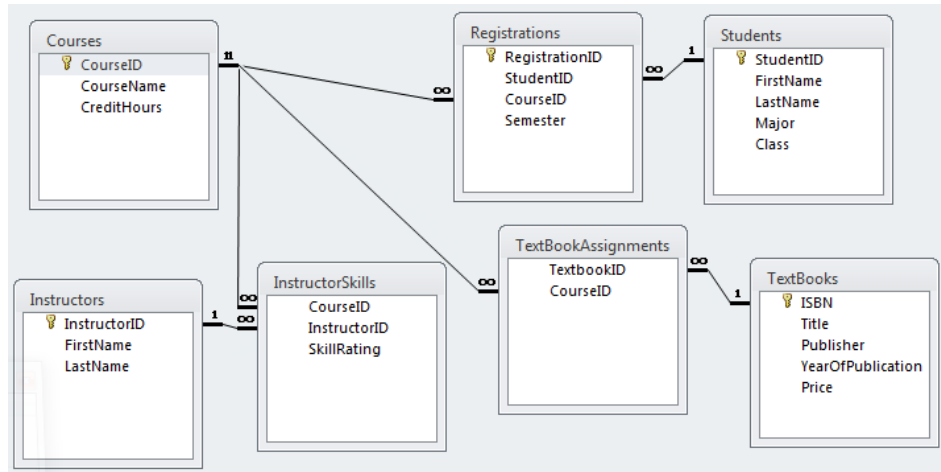- Hiding auxiliary queries

The Database

The Dean of Students at Draper University's Department of Mathematical and Computer Sciences has received a subset of University registration database in order to carry out some enrollment analysis.

The subset database received by the Dean contains the following tables:

Table	Description of Content
Courses	List of courses that the department offers. Each course has a unique course ID, a course name, and the number of credit hours awarded for the course.
Instructors	List of instructors in the department. For each instructor, the table contains a unique ID and the instructor's first and last name. Note that the names are not unique, but the ID's are and that there may be faculty who do not teach any courses.
Students	List of students taking or having taken courses in the department. The table contains each student's ID, first and last name, major and class year.
TextBooks	List of text books used in the courses. For each textbook, the table lists the ISBN (a unique ID), the title, publisher, and year of publication and price.
Registrations	An association table that contains a unique registration ID and an association between a student and a course. Each row is a student who is or has taken a particular course. For example, student 2 (James Kanata) is taking CS2000 (Discrete Structure), CS2110 (Fundies I), and CS3220 (Seminar).
InstructorSkills	A list of instructor ID's and the courses they can teach. Each row is an instructor and a course which means that that instructor is available and capable of teaching that course.
TextBookAssignments	A list of associations between text books and courses. Each row is a course and a textbook that is used in that course. Note that some courses do not use any textbooks and others use more than one.

Here are the relationships between the tables:

Save your queries using the naming pattern *QLastnameX*, where *Lastname* is your last name and *X* is the question number. For example, my solution for question 3 must be saved under the name *QRazzaq3*. Name your subqueries using the naming pattern *SubQLastnameXA*, where *X* is the question number and *A* is a letter. For instance, if I wrote a subquery for Query 1 it should be named SubQRazzaq1a. If I needed a second subquery for Query 1, it would be called SubQRazzaq1b. You may reuse subqueries in other questions without renaming them. Save your action queries too, but run them only once.

Queries (10 Points Each)

1. Add $10.00 to the price of every textbook using an Update Query.
2. Using a Make-Table Query, make a new table from all of the students that are of class 2012 or earlier. Name this new table Alumni
3. Use a Delete Query to delete textbooks published before 2005.
4. Use an Append Query to add any Prospective Students that have confirmed their enrollment to the Students table.
5. How many courses is each instructor available to teach? List the last name of the instructor who can teach and the number of courses they can teach. (<u>Careful</u>: there are two instructors that have the last name "Casey". The result should have 28 rows and Fell can teach 4 courses.)
6. How many courses use text books published by "Wiley"? (<u>Answer</u>: 6. <u>Hint</u>: There may be courses that use multiple books published by the same publisher.)
7. Who is available to teach "*Empirical Research*"? List the first and last names of instructors with those skills.
8. How many courses is each student taking assuming that they are taking or have taken at least one course? Only list the student's last name and the number of courses he or she is taking or has taken? (<u>Hint</u>: There may be students with the same name who are not the same student. The result should have 5 rows.)

9. How many students have taken each course? List the course name and the number of students who have taken that course.
10. How many students have taken more than 15 credit hours?

Bonus Queries (5 *Extra* Points Each)

11. Which students have taken an above average credit load, *i.e.*, who are the students whose total number of credits is greater than the average credit load? List their student ID, first name, and last name.
12. Which course has been taken by the most number of students? List the course ID, title, and the number of students enrolled.
13. List the last name or names of the student or students who have taken the smallest number of credits in the department, i.e., those students whose sum of the credit hours for the courses they have taken is the smallest among all students. (<u>Hint</u>: This query requires two or more subqueries.)

After you have completed these tasks, your modified version of the database should contain a number of additional queries. **Close Access and then submit this modified Access database to Blackboard.**

Grading Rubric

Criterion	Discussion	Grading
Queries named according to naming pattern	All queries must follow the pattern *QLastnameX*	-2% for each incorrectly named query
Queries produce correct output and are designed correctly	Each query must produce the correct result.	-10% for each query that does not produce correct result or is not designed to produce correct output for all data possibilities