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# Database Systems

Instructors: Winston Hsu, Hao-Hua Chu  
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## Assignment 2: SQL

Deadline: At the end of the class, Nov 4 (Wed), 2009

This is an individual assignment, that is, no group submissions are allowed.

Cheating Policy: If you are caught cheating, your grade is 0.

Late Policy: We will not accept any assignment submissions.

Submission Policy: Hand in PAPER PRINTOUT that contains your answers to the two questions. Please include your name and ID.

Assignment Description: There are **two parts** in this assignment, please do make sure that both of these are done.

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### *Part 1*

1. Textbook Exercise 4.3 (relational algebra only)
2. Textbook Exercise 4.4

### *Part 2*

#### **Introduction**

On World Wide Web there are more than 100 different web pages dedicated to Star Wars. However, the answer to a specific trivia question is sometimes difficult to find, precisely because of the abundance of information. In this assignment we will be creating a new Star Wars Trilogy database for the trivia lovers. We decided to begin with the time tables - who went where and when. We have started to input the information into the database. Your task will be to create SQL queries that answer some of the often asked questions (or questions that we found most fascinating and asked often).

A database has been created using Microsoft Access in the UGLab. The database currently contains:

**Characters:** contains information about the character's Name (primary key), Race (if known), Homeworld (if known) and Affiliation (rebels/empire/neutral/free-lancer).

**Planets:** contains information about the planet's Name (primary key), its Type (gas/swamp/forest/handmade/ice/desert), and its Affiliation (rebels/empire/neutral).

**TimeTable:** contains Character's Name, Planet's Name, Movie in which the character visited the planet and the time of arrival and departure from the planet. The primary key is Character's Name, Planet's Name and Movie. Movie 1 represents The Star Wars, Movie 2 represents Empire Strikes Back, and Movie 3 represents Return of the Jedi. Each movie has been divided into 10 time chunks and these chunks are used to define time of arrival and departure. So that, if Darth Vader visited Bespin (Cloud City) in Empire Strikes Back from the middle of the movie till its end, the record of it will look like this:

Character's Name	Planet's Name	Movie	Time of Arrival	Time of Departure
Darth Vader	Bespin	2	5	10

### Queries

Write SQL queries that answer the questions below (one query per question) and run them on the Microsoft ACCESS Database System using its SQL interpreter. The query answers must not contain duplicates, but you should use the SQL keyword distinct only when necessary. You should copy the database from the class directory into your personal directory before you start writing queries.

After you open the ACCESS file “StarWars.mdb” with ACCESS 2000, you’ll see the “StarWars:資料庫” database control panel (the ACCESS XP and the ACCESS 2007 does the same work). The main frame default shows all the tables contained in this database. At this time, you may check the tables by double clicking on it. To add a new query, you should first change the frame to “查詢” and then click on “設計檢視”. Then, a GUI-based control panel will appear on the screen. To get to the SQL interpreter, close the dialog, right click the title bar, and then select the “SQL 檢視”. Then, you may write your SQL command on this form.

The SQL interpreter in ACCESS is not quite the same as the one described in the textbook. If the query you write is not accepted by ACCESS (usually it gives you some strange errors), try different ways until you get one that works with ACCESS. For this assignment, creation of temporary tables is not allowed, i.e., for each question you have to write exactly one SQL statement.

## **Query Commands**

select, from, where, not, in, exists, distinct, group by, order by, max, [field name]

## **Questions**

Write the following SQL queries:

1. Which planet(s) does R2-D2 go to in movie 3?
2. How many characters visited Tatooine in movie 3?
3. Who visited his/her homeworld in movie 1?
4. Find all characters that have been on all neutral planets.
5. Find distinct names of the planets visited by empire affiliated humans.
6. For each character and for each neutral planet, how much time total did the character spend on the planet?
7. On which planets and in which movies has Luke Skywalker been at the same time on the planet as Darth Vader.
8. Find humans that visited desert planets and droids that visited swampy planets. List the movies when it happened and the names of the characters. The output should be sorted by the movie and the character's name.
9. For each movie 1, 2, and 3, which character(s) visited the highest number of planets?
10. Which planet(s) have not been visited by any characters in all movies (1, 2 and 3)?
11. Find the character(s) that have appeared in all movies.
12. For Luke Skywalker, for each movie that Luke appears in, what is the planet that has the different affiliation with him and that he travels to for the longest length of time?
13. Who visited the planet Star Destroyer earlier and leave later than Obi-Wan Kanobi?
14. Find all characters that is rebels affiliates humans and his/her homeworld is known.
15. Which planet(s) has been visited by less than three different characters?

## **Result**

The submission should contain fifteen queries using this format:

[Query 1]

[Result of Query 1]

[Query 2]

[Result of Query 2]