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| **Homework 4** | **Basic SQL** |
| **Due Wed, Oct 7 at 11:30 pm** | **Objectives:** Practice of Basic SQL |

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**6.6.** Repeat Exercise 6.5, but use the AIRLINE database schema of Figure 5.8.

(a) What are the referential integrity constraints that should hold on the schema?

(b) Write appropriate SQL DDL statements to define the database.

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**6.8.** Write appropriate SQL DDL statements for declaring the LIBRARY relational database schema of Figure 6.6. Specify the keys and referential triggered actions.

**6.9.** How can the key and foreign key constraints be enforced by the DBMS? Is the enforcement technique you suggest difficult to implement? Can the constraint checks be executed efficiently when updates are applied to the database?

**6.12.** Specify the following queries in SQL on the database schema of Figure 1.2.

(a) Retrieve the names of all senior students majoring in 'COSC' (computer science).  
  
(b) Retrieve the names of all courses taught by professor King in 85 and 86.  
  
(c) For each section taught by professor King, retrieve the course number, semester, year, and number of students who took the section.  
  
(d) Retrieve the name and transcript of each senior student (Class=5) majoring in COSC. Transcript includes course name, course number, credit hours, semester, year, and grade for each course completed by the student.  
  
(e) Retrieve the names and major departments of all straight A students (students who have a grade of A in all their courses).  
  
(f) Retrieve the names and major departments of all students who do not have any grade of A in any of their courses.

**6.13.** Write SQL update statements to do the following on the database schema shown in Figure 1.2.

a. Insert a new student, <‘Johnson’, 25, 1, ‘Math’>, in the database.

b. Change the class of student ‘Smith’ to 2.

c. Insert a new course, <‘Knowledge Engineering’, ‘cs4390’, 3, ‘cs’>.

d. Delete the record for the student whose name is ‘Smith’ and whose student number is 17.

**6.16.** Write SQL statements to create a table EMPLOYEE\_BACKUP to back up the EMPLOYEE table shown in Figure 5.6.