1. Consider the schemas shown on the next page.

   The President needs a report that shows, for each 3-year major the number of students who declared that major and the number of students who graduated with that major in the Fall 2014 term. A sample report:

Number of majors, number of graduates per **3-year** degree in Fall 2014		
Major Name	**Number of majors declared**	**Number of graduates**
Applied Computer Science	2	2
Health Informatics	2	0
Information Systems	0	2
…	…	…

   Usually students declare their major a year or two before they graduate. The second column shows how many students declared a major in Fall 2014. The third column shows how many students graduated in Fall 2014.

   a) Add these two schemas to your Assignment 1 database. Create data in your database so the above report (just the HI, IS, and ACS lines) would be generated. You need data for Fall 2014 where:
      - 2 students declared a 3-year HI major,
      - 2 students graduated with a 3-year IS major,
      - 2 students declared an ACS major,
      - 2 students graduated with an ACS major,
      - In addition, your database must also have 2 other students (one who declared a major and another who graduated in some term that is not Fall 2014).

      Hand in SQL to list each of the tables: Major, Declarations, Graduations, Term and Student. Include the results from each of these SQL statements.

   b) Create a query that accesses your stars and produces the data for the results shown above. If your database implements a full outer join then use that, otherwise use a SQL statement to emulate a full outer join (reference pages 80-82). This query must order the result set in ascending sequence by major name.

      Hand in this SQL query, and the results when the query is run.

   c) The following query is intended to join two fact tables, and is considered an improper way to obtain the data for the report above. What is the result set when this query is run in your database? Note that you may need to make minor syntax adjustments for this query to be syntactically correct for your SQL system.

```
SELECT Major.majorName AS 'Major Name',
       Sum(Declarations.count) AS 'Number of majors declared',
       Sum(Graduations.count)  AS 'Number of graduates'
FROM Major
INNER JOIN Graduations
      ON Major.majorKey = Graduations.majorKey
INNER JOIN Declarations
      ON Major.majorKey = Declarations.majorKey
INNER JOIN Term
ON (
      Term.termKey = Graduations.termKey
      AND
      Term.termKey = Declarations.termKey
)
WHERE    Term.description = 'Fall 2014'
AND         Major.year = 3

GROUP BY Major.majorName
ORDER BY Major.majorName;
```

Graduation Schema and the MajorDeclaration Schema