Bill Davis
605.441 Problem Set 2

1. (3.11) A recursive relationship occurs when the same entity partici-
   pates in numerous roles in a relationship type, ie an entity associated
   with itself. For example an employee both has a supervisor and may
   in turn be a supervisor and thus have subordinates.
   Another example could be a parts lists. A part could be made up of
   numerous component parts, and it in turn, could be a component of a
   larger part.

2. (3.22)

3. (3.25) The (min,max) constraints for textbooks could be described as follows. (0, 20) for INSTRUCTOR ADOPTS TEXTBOOK. Since Instructors don't have to use a textbook, an INSTRUCTOR may adopt 0 textbooks. Alternatively, they may adopt up to 5 textbooks per course, and since each INSTRUCTOR may teach up to 4 courses, the may adopt a total of 20 TEXTBOOKS.

   For the reverse the constraint could be (1,n), meaning that for each textbook, at least 1 professor has adopted it. This assumes that textbooks which are not being used by any professor be dropped from the database. And, depending on the number the number of instructors, and number of them could have adopted a particular textbook.

4. (5.17) The foreign keys here are Serial_No, used in the CAR, OPTION and SALE tables. This assumes that the Serial Number is unique across cars. Also Salesperson_id, used in the SALE and SALESPERSON tables, assuming again that the Salesperson_id is unique across sales people.

   Car

Serial_no	Model	Manufacturer	Price
5	Honda	Civic	15,000
8	Honda	Accord	23,000

   .

   Option

Serial_no	Option_name	Price
5	Spoiler	350

   Sale

Salesperson_id	Serial_no	Date	Sale_price
2	8	Oct 7	21,000

   Salesperson

Salesperson_id	name	phone
1	Betty Jane	301-555-9832
2	Jane Betty	301-555-9833

If we tried to enter in a new row in the sale table with values (3, 5, Oct 7, 21,000) this would violate referential integrity because there is no Salesperson with Salesperson_id 3.

On the other hand if we entered in a new row into the sales table with values (1, 5, Oct 7, 21000) then this abides by referential integrity.