5DV021   Principles of Database Systems   Fall 2008
Obligatory Exercise 1
Due date: November 18, 2008 at 8am (0800)

1. Do problem 7.4 on page 231 of (the fifth edition of) the textbook, using the procedure of Section 7.1 of the text, or (equivalently) of the course slides. It would be a good idea to show some work, but your final answer must be clearly indicated (so the grader can find it quickly), and must be in the form of Figure 5.7 of the text. In particular, underline the primary keys and use arrows to indicate foreign keys.

In the fourth edition of the textbook, the problem number is the same, but it is on page 204. Note that two identifiers have been changed in the new edition.

- The *relationship* VISITS in the fourth edition has been renamed to SHIP_AT_PORT in the fifth edition.

- The *entity* VISITS in the fourth edition has been renamed to PORT_VISIT in the fifth edition.

Please use these new names in your solution, regardless of which edition of the book you have.

Note that this question uses the ER notation illustrated in Figure 3.2 of the text, and not the notation of Figure 3.15 (which is much closer to that of the course notes). Bear in mind in particular the reversed meaning of "1" and "N" on the edges connecting entities to relationships. (See page 5 of the slides on ER-to-Relational Mapping.)

The following are some clarifications which may be useful in understanding the algorithms presented in the textbook.

- Step 2 (p. 220 of the fifth edition; p. 194 of the fourth edition) Replace "with owner entity type E" with "with owner entity type(s) $\{E_1, E_2, \ldots, E_n\}$. [The point here is that there may be multiple owner entity types, and the algorithm must take all of them into account.]

- Steps 3, 5, and 7 (pp. 221-223 of the fifth edition; pp. 194-197 of the fourth edition) Replace "for each binary" with "for each regular (strong) binary". [Weak entity types are handled separately, in Step 2.]

Further Notes:

1. As stipulated in the course syllabus, this exercise may be done either individually, in a group of two, or in a group of three. Remember that there are point penalties for late submission. See the course syllabus.

2. It is strongly recommended that you use a graphical tool to display your results. If you draw them by hand, they must be very neat. It is not allowed to copy the work of others. The submission

must be the original work of the individual(s) in the working group. The grader reserves the right to interview members of the working group about the solution.

3. So that solutions may be discussed in a class meeting, students and/or groups that are very late in preparing a solution may be required to solve an alternate problem to receive credit for this exercise.

4. If you have solved this problem for a previous offering of the course, you may re-use your old solution, subject to the following conditions: (a) You may not work with any partners, except possibly those with whom you worked to prepare the solution in the previous course. (b) You must explicitly note any partners from the previous course with whom you submitted a joint solution for that course. Note that grading criteria may not be identical between years, so that a solution which was found to be satisfactory last year may not be evaluated similarly this year.