Module 7 Assignment Solution

The assignment for Module 7 provides practice using the Crow's Foot notation. I encourage you to use both the ER Assistant and Visual Paradigm to complete the problems in module 7. Module 7 contains software demonstrations for both the ER Assistant and Visual Paradigm.

1. Create an ERD containing the *TestOrder* and *Specimen* entity types and a 1-M relationship from *Specimen* to *TestOrder*. For each specimen collected, the database should record a unique *SpecNo*, *SpecArea* (vaginal, cervical, or endocervical), and *SpecCollMethod* (thin prep or sure path). A test order contains a *TONo* (primary key), *TOTestName*, *TOTestType* (HPV, CT/GC, CT, or GC), and *TOTestResult* (positive, negative, equivocal, or failure). A specimen does not have a test order until a delay, from hours to days. If a test order produces a failure, the specimen is given a new test order and tested again until a non-failure result is obtained. A test order is created for exactly one specimen.
2. Augment your ERD from problem 1 with the *Supply* entity type and an M-N relationship between *TestOrder* and *Supply*. Choose a name for the relationship based on your common knowledge of test orders and supplies. Use the ER Assistant for this problem so that you can make a M-N relationship. A test order can use a collection of supplies (0 or more) and a supply can be used on a collection of test orders (0 or more). The *Supply* entity type contains *SuppNo* (primary key), *SuppName*, *SuppLotNo*, and *SuppQOH*.
3. Use the M-N equivalence rule to transform the M-N relationship in Problem 2. You should choose appropriate names for the new relationships and entity type.
4. For each diagram error in Figure 1, you should identify the diagram rule violated and suggest possible resolutions of the error. I suggest that you first try to determine consistency errors by

yourself and then use the Check Diagram feature to check your solution. The ERD has generic names to help will concentrate on finding diagram errors rather than focusing on the meaning of the diagram

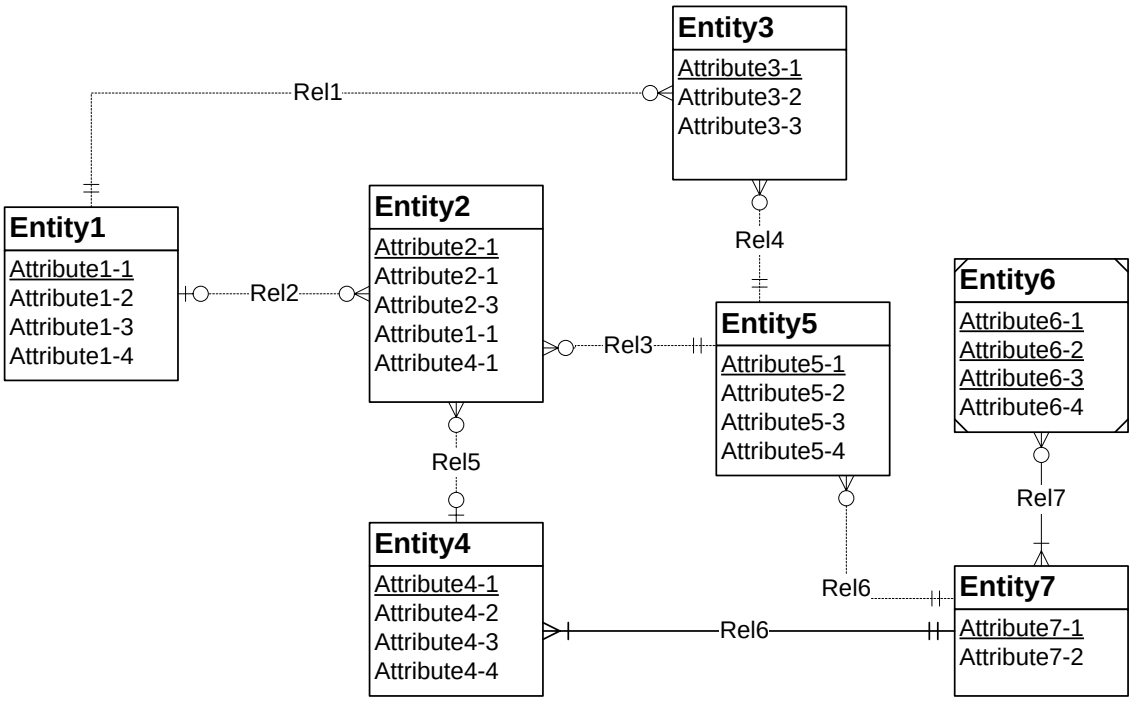
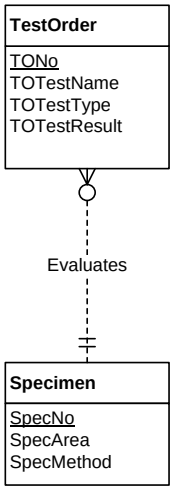


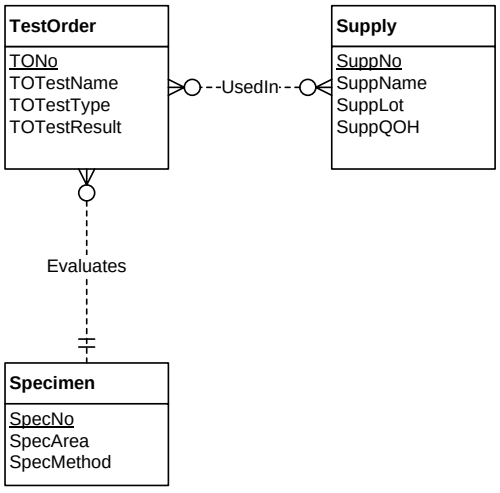
Figure 1: ERD for Problem 4

Solutions

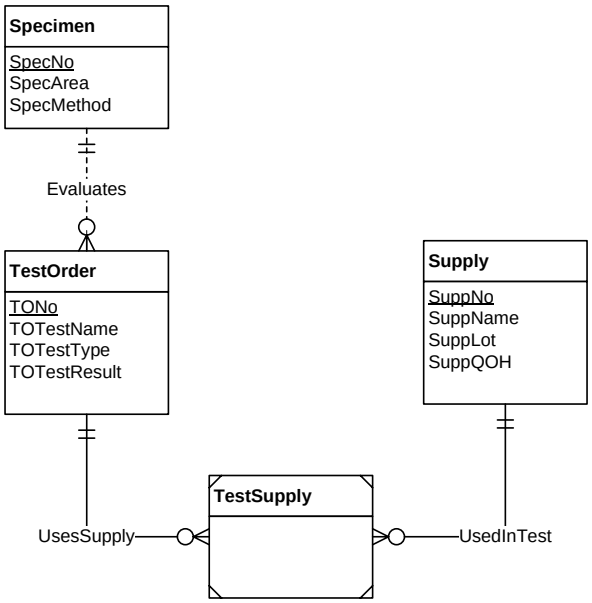
1.



2.

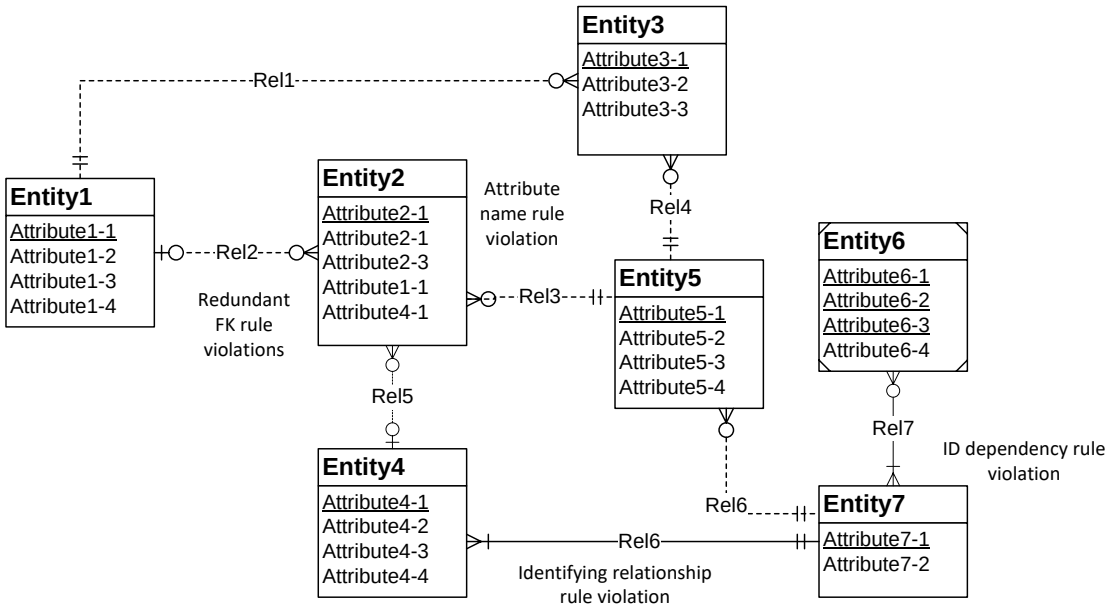


3.


Specimen
SpecNo
SpecArea
SpecMethod
Evaluates
TestOrder
TONo
TOTestName
TOTestType
TOTestResult
Supply
SuppNo
SuppName
SuppLot
SuppQOH
TestSupply
UsesSupply
UsedInTest

4.

Consistency rule violations are noted on the ERD. Note that there is no violation for identical relationship names.



The following list identifies possible ways to fix the consistency errors:

- Attribute name rule resolution: rename one of the Attribute2-1 attributes. Probably renaming the second attribute is easier because it is not the PK.
- Identifying relationship rule resolution: The problem can be resolved by changing Entity4 to a weak entity or changing the relationship (Rel6) to regular (non-identifying).
- Identification dependency cardinality rule resolution: The problem can be resolved by changing the weak entity type's cardinality in Rel7 (near Entity7) to (1,1). Alternately, Rel7 can be made non-identifying and Entity6 can be changed to strong (non-weak).
- Redundant foreign key rule resolution: Normally the problem can be resolved by removing the redundant foreign keys (Entity2.Attribute1-1 and Entity2.Attribute4-1).

If the attributes do not represent foreign keys, they should be renamed instead of removed.