Ch 5 Advanced Data Modeling Exercises

1. Given the following business scenario, create a Crow's Foot ERD using a specialization hierarchy if appropriate.

Two-Bit Drilling Company keeps information on employees and their insurance dependents. Each employee has an employee number, name, date of hire, and title. If an employee is an inspector, then the date of certification and the renewal date for that certification should also be recorded in the system. For all employees, the Social Security number and dependent names should be kept. All dependents must be associated with one and only one employee. Some employees will not have dependents, while others will have many dependents.

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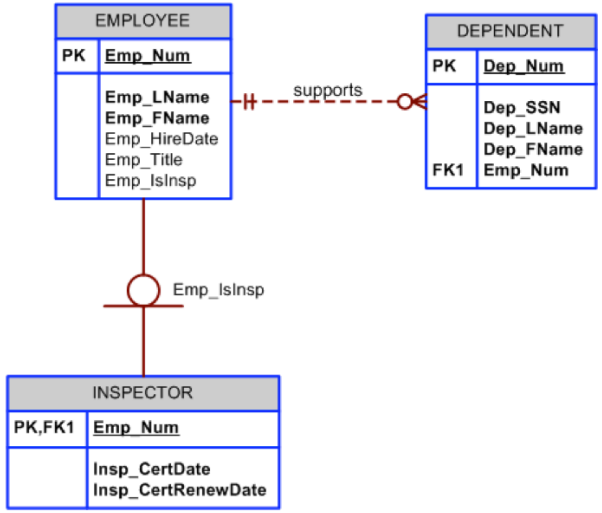
The data model for this solution is shown in FigP5.1 below.

FIGURE P5.1 Two-Bit Drilling Company ERD



In this scenario, a specialization hierarchy is appropriate because there is an identifiable type or kind of employee (Inspectors), and additional attributes are recorded that are specific to just that kind or type. It is worth noting that if there is only a single subtype, the disjoint/overlapping designation may be omitted – if there is only one subtype then there is no other subtype to overlap or be disjoint from. Also, when there is only a single subtype, the completeness constraint is always *partial completeness*. If the completeness constraint were identified as total completeness, that would mean that every employee must be an inspector, in which inspector would be a synonym for employee not a kind of employee.

2. Some Tiny College staff employees are information technology (IT) personnel. Some IT personnel provide technology support for academic programs. Some IT personnel provide technology infrastructure support. Some IT personnel provide technology support for academic programs and technology infrastructure support. IT personnel are not professors. IT personnel are required to take periodic training to retain their technical expertise. Tiny College tracks all IT personnel training by date, type, and results (completed vs. not completed). Given that information, create the complete ERD containing all primary keys, foreign keys, and main attributes.

FIGURE 5.6a Minimal Tiny College IT Staffing Solution

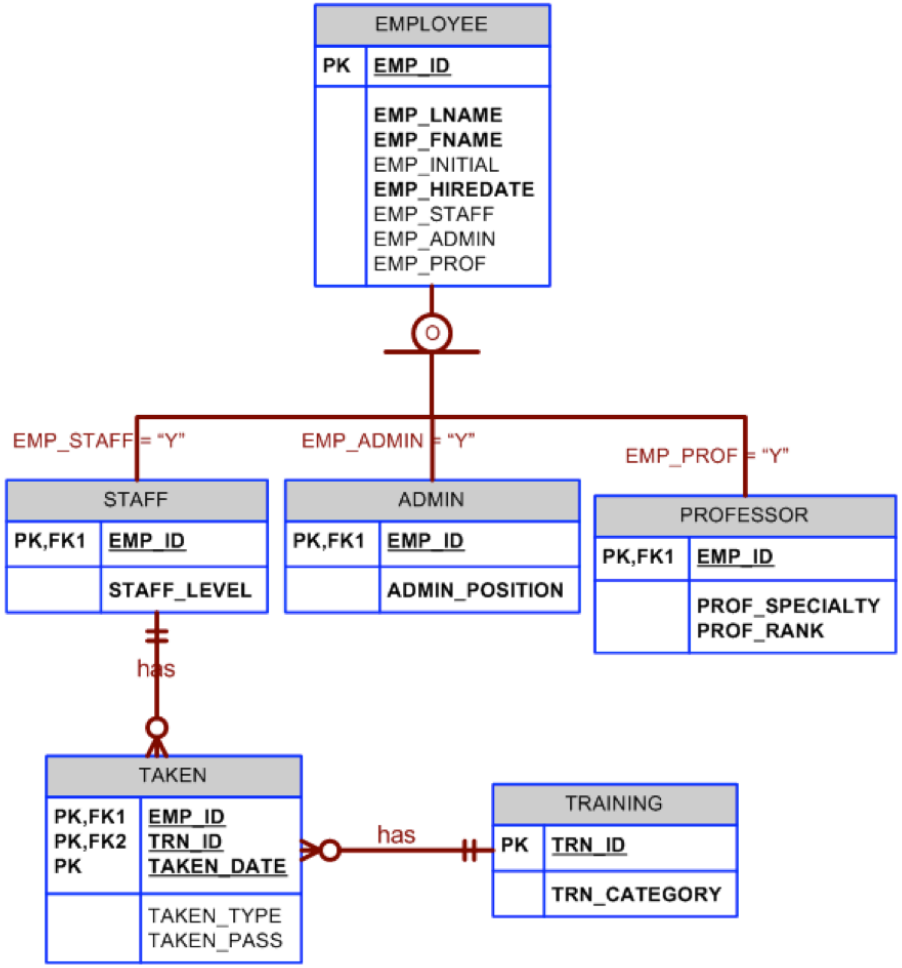


FIGURE 5.6b Expanded Tiny College IT Staffing Solution