Exercise Problems for Module 6

1. Draw an ERD containing *Student* and *Paper* entity types connected by a 1-M relationship. The *Student* entity type should have attributes for *StdNo* (primary key), *StdFirstName*, *StdLastName*, *StdAdmitSemester*, *StdAdmitYear*, and *StdEnrollStatus* (full or part-time). The Paper entity type should have attributes for *PaperNo* (primary key), *PaperTitle*, *PaperSubmitDate*, *PaperAccepted* (yes or no), and *PaperType* (first, second, proposal, or dissertation). Add a 1-M relationship from *Student* to *Paper*.
2. Extend the ERD with an *Evaluator* entity type and an M-N relationship between *Paper* and *Evaluator*. The Evaluator entity type should have attributes for *EvalNo* (primary key), *EvalFirstName*, *EvalLastName*, *EvalEmail*, and *EvalOffice*. The M-N relationship should have attributes for *EvalDate*, *EvalLitReview* (1 to 5 rating), *EvalProbId* (1 to 5 rating), *EvalTechWriting* (1 to 5 rating), *EvalModelDev* (1 to 5 rating), *EvalOverall* (1 to 5 rating), and *EvalComments*.
3. Transform the M-N relationship from problem 9 into an associative entity type and identifying relationships.

Exercise Problems for Module 7

Most of these problems are covered in the video lessons in Module 7 and associated slides. The full solutions are given for all problems in a document in the module 7 part of the website.

4 A. Draw an ERD containing the *Order* and *Customer* entity types connected by a 1-M relationship from *Customer* to *Order*. Choose an appropriate relationship name using your common knowledge of interactions between customers and orders. Define minimum cardinalities so that an order is optional for a customer and a customer is mandatory for an order. For the *Customer* entity type, add attributes *CustNo* (primary key), *CustFirstName*, *CustLastName*, *CustStreet*, *CustCity*, *CustState*, *CustZip*, and *CustBal* (balance). For the *Order* entity type, add attributes for the *OrdNo* (primary key), *OrdDate*, *OrdName*, *OrdStreet*, *OrdCity*, *OrdState*, and *OrdZip*. If you are using a data modeling tool that supports data type specification, choose appropriate data types for the attributes based on your common knowledge.

4 B. Extend the ERD from problem 4 A with the *Employee* entity type and a 1-M relationship from *Employee* to *Order*. Choose an appropriate relationship name using your common knowledge of interactions between employees and orders. Define minimum cardinalities so that an employee is optional to an order and an order is optional to an employee. For the *Employee* entity type, add attributes *EmpNo* (primary key), *EmpFirstName*, *EmpLastName*, *EmpPhone*, *EmpEmail*, *EmpCommRate* (commission rate), and *EmpDeptName*. If you are using a data modeling tool that supports data type specification, choose appropriate data types for the attributes based on your common knowledge.

5. Extend the ERD from problem 4 with a self-referencing 1-M relationship involving the *Employee* entity type. Choose an appropriate relationship name using your common knowledge of organizational relationships among employees. Define minimum cardinalities so that the relationship is optional in both directions.
6. Extend the ERD from problem 5 with the *Product* entity type and an M-N relationship between *Product* and *Order*. Choose an appropriate relationship name using your common knowledge of connections between products and orders. Define minimum cardinalities so that an order is optional to a product, and a product is mandatory to an order. For the *Product* entity type, add attributes *ProdNo* (primary key), *ProdName*, *ProdQOH*, *ProdPrice*, and *ProdNextShipDate*. For the M-N relationship, add an attribute for the order quantity. If you are using a data modeling tool that supports data type specification, choose appropriate data types for the attributes based on your common knowledge.
7. Revise the ERD6 by transforming the M-N relationship into an associative entity type and two identifying, 1-M relationships.
8. Using your ERD from problem 7, add violations of consistency rules for identification dependency (weak entity type rule, identifying relationship rule, and identification dependency cardinality rule) and redundant foreign keys (1 rule).
9. For each diagram error in Figure P9, identify the diagram rule violated and suggest possible resolutions of the error. The ERD has generic names so that you will concentrate on finding diagram errors rather than focusing on the meaning of the diagram.

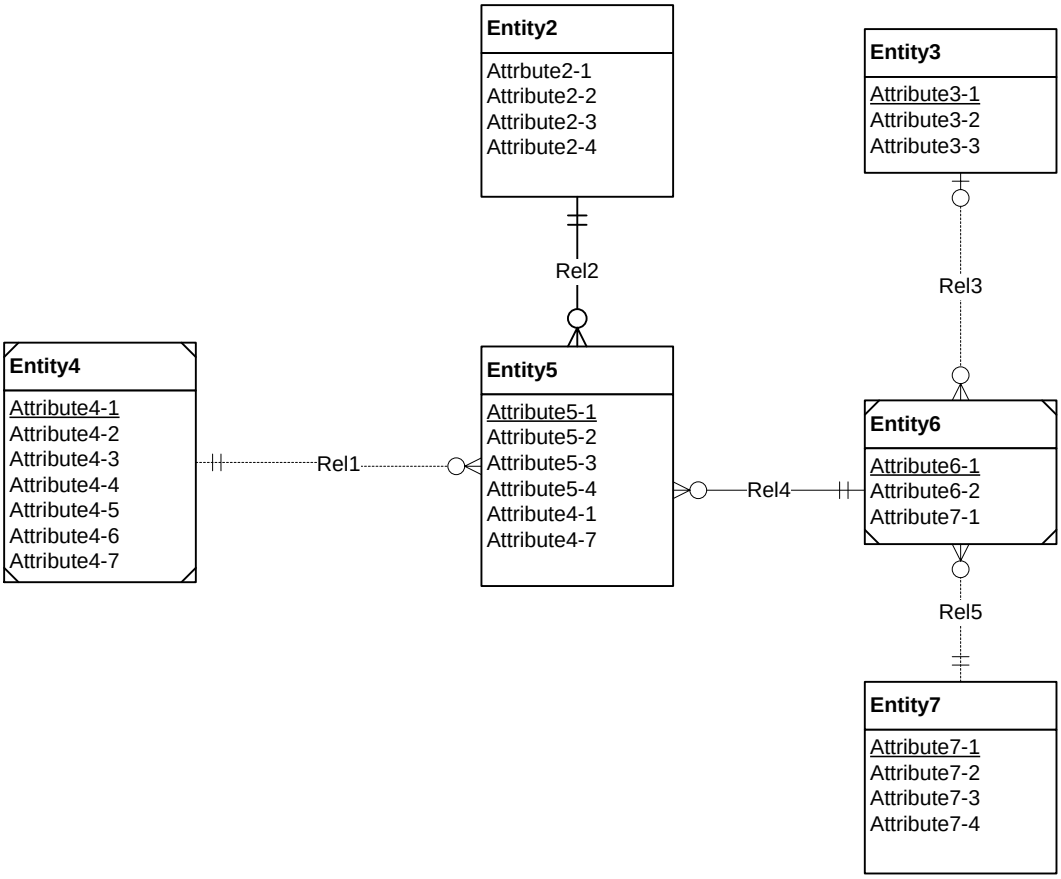

Figure P9: ERD9