**Question#1: (Problem: 4.5 Book A)**

The Hudson Engineering Group (HEG) has contacted you to create a conceptual model whose application will meet the expected database requirements for the company’s training program. The HEG administrator gives you the following description of the training group’s operating environment. (Hint: Some of the following sentences identify the volume of data rather than cardinalities. Can you tell which ones?) The HEG has 12 instructors and can handle up to 30 trainees per class. HEG offers 5 Advanced Technology courses, each of which may generate several classes. If a class has fewer than 10 trainees, it will be canceled. Therefore, it is possible for a course not to generate any classes. Each class is taught by one instructor. Each instructor may teach up to 2 classes or may be assigned to do research only. Each trainee may take up to 2 classes per year. Given that information, do the following: a. Define all of the entities and relationships. (Use Table 4.4 as your guide.) b. Describe the relationship between instructor and class in terms of connectivity, cardinality, and existence dependence.

**Solution:**

1. List out entity classes along with appropriate attributes.







1. Identify all necessary relationships.

|  |  |  |
| --- | --- | --- |
| **ENTITY** | **RELATIONSHIP** | **ENTITY** |
| INSTRUCTOR | teaches | CLASS |
| COURSE | generates | CLASS |
| CLASS | Is listed in | ENROLL |
| TRAINEE | Is written in | ENROLL |

1. Identify the connectivity for each relationship.

|  |  |  |
| --- | --- | --- |
| **ENTITY** | **CONNECTIVITY** | **ENTITY** |
| INSTRUCTOR | 1:M | CLASS |
| COURSE | 1:M | CLASS |
| CLASS | 1:M | ENROLL |
| TRAINEE | 1:M | ENROLL |

1. Draw ER / EER model using MS Visio.



1. You can make your assumptions (if needed).