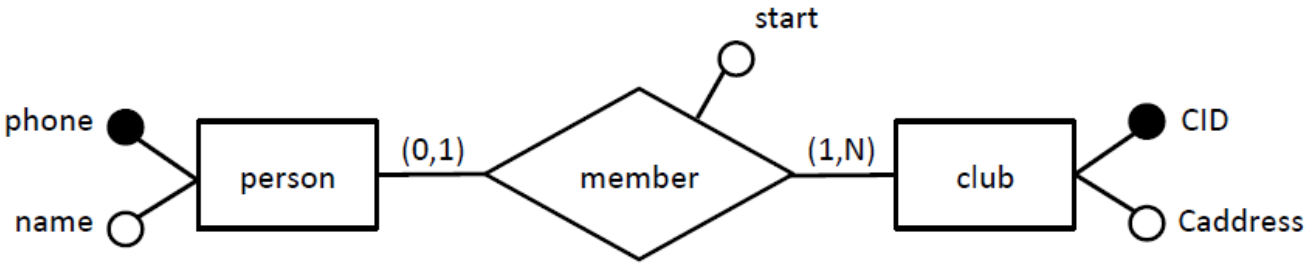
CSCC43 UTSC

Tutorial Week 9 – Entity Relationship Diagrams

Part 1: Understand an ER Diagram

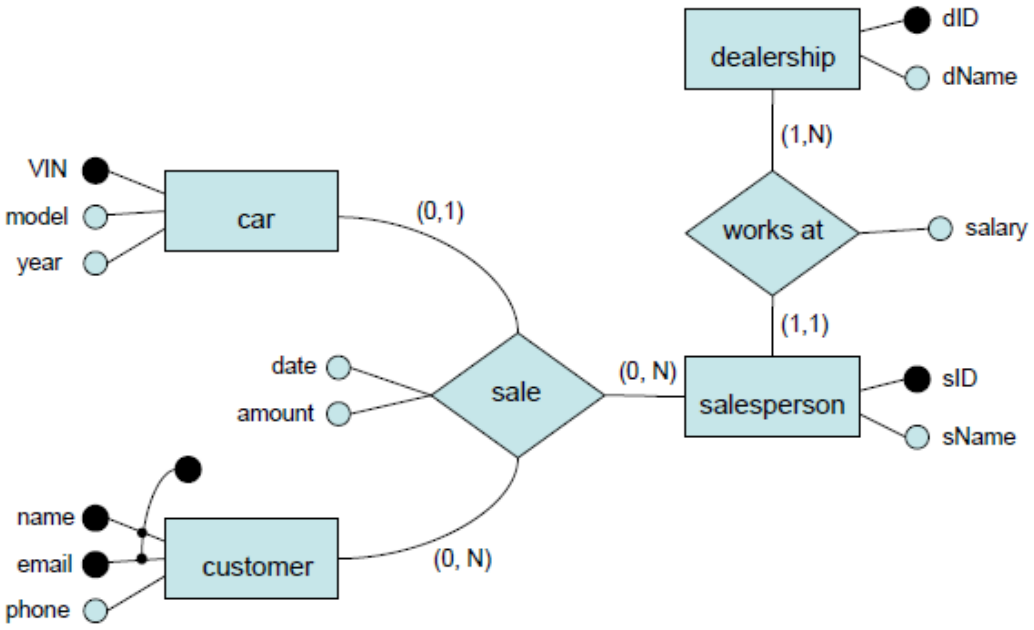
1. Consider the following ER Diagram:



Which of these cardinalities is possible?

$\|person\|$	$\|member\|$	$\|club\|$	Is it possible?
5	0	8	Yes No
5	7	8	Yes No
5	0	5	Yes No
5	10	5	Yes No
11	3	4	Yes No
11	9	4	Yes No

2. Below is an Entity-Relationship diagram about car dealerships. It may or may not represent the domain well. Answer the questions below.



(a) A car sale cannot involve more than one salesperson.

True False

(b) There can be two cars with the same VIN as long as the model and year are different.

True False

(c) A salesperson can work at any number of dealerships.

True False

(d) There cannot be more salespeople than dealerships.

True False

(e) There can be multiple sales on the same date.

True False

(f) Two salespeople can have the same sID as long as they work at different dealerships.

True False

(g) This model contains a weak entity set.

True False

(h) The works at relationship is a one-to-many relationship.

True False

Part 2: Draw ER diagrams.

University database

A university database contains information about professors (identified by social security number, or SSN) and courses (identified by courseid). Professors teach courses; each of the following situations concerns the Teaches relationship set. For each situation, draw an ER diagram that describes it (assuming no further constraints hold).

1. Professors can teach the same course in several semesters, and each offering must be recorded.

2. Professors can teach the same course in several semesters, and only the most recent such offering needs to be recorded (Assume this condition applies in all subsequent questions)

3. Every professor must teach some course.

4. Every professor teaches exactly one course (no more, no less)

5. Every professor teaches exactly one course (no more, no less), and every course must be taught by some professor.

6. Now suppose that certain courses can be taught by a team of professors jointly, but it is possible that no one professor in a team can teach the course. Model this situation, introducing additional entity sets and relationship sets if necessary.

Motor Vehicle Database

The Motor Vehicle Branch administers driving tests and issues driver's licenses. Any person who wants a driver's license must first take a learner's exam at any Motor Vehicle Branch in the province. If he/she fails the exam, he can take the exam again any time after a week of the failed exam date, at any branch. If he passes the exam, he is issued a license (type = learner's) with a unique license number. A learner's license may contain a single restriction on it. The person may take his driver's exam at any branch any time before the learner's license expiry date (which is usually set at six months after the license issue date). If he passes the exam, the branch issues him a driver's license. A driver's license must also record if the driver has completed driver's education, for insurance purposes.

Draw an ER diagram that captures this information (Show major attributes).