CS 317 & CS 387 Database Information Systems

Lecture 02-A
ER Modeling Exercises

Steps in ER Modeling

1. Find out the entities in the spec.
2. Find out the relationships among the entities.
3. Figure out attributes of the entities and (if any) of the relationships.
4. Figure out constraints between entities and relationships.
5. Check to see if you miss anything in spec.

Dept. of Motor Vehicles

- 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. 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.

Steps – 1 - Entities

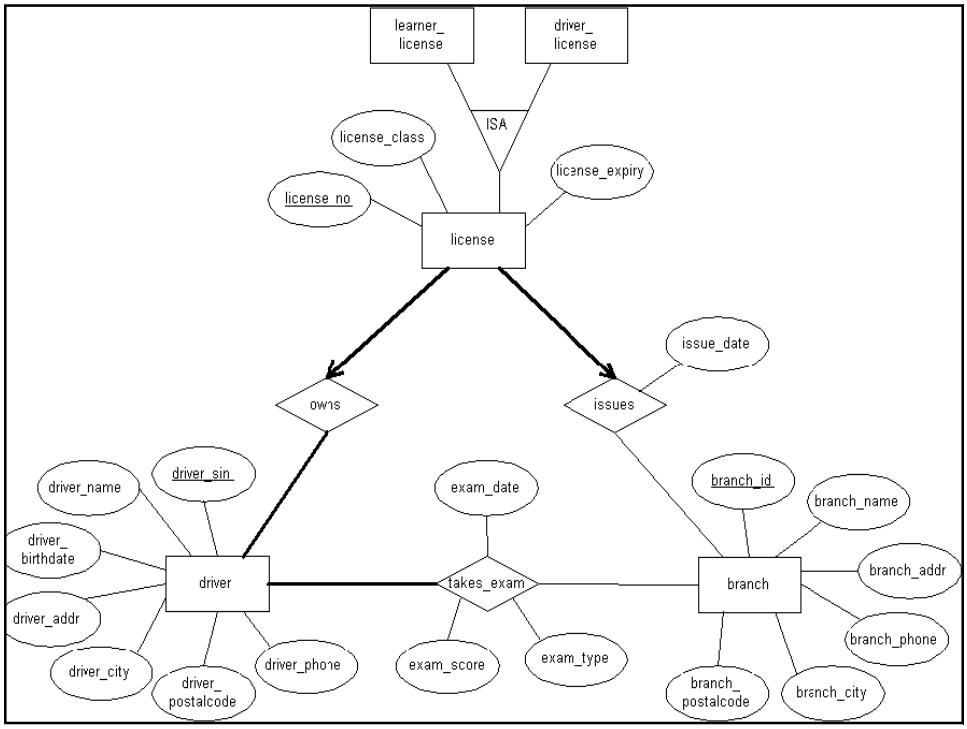
- ***Driver***: driver ID, driver name, driver birth data, driver addr, driver city, driver postal code, driver phone
- ***Branch***: branch id, branch name, branch addr, branch phone, branch city, branch postalcode
- ***License***: license no, license class, license expiry
  - Learner license:
  - Driver license:

Step 2 - Relationships

- ***owns***(license, driver)
- ***takes exam***(driver,branch):exam date, exam score, exam type
- ***issues***(license, branch): issue data
- ***The "is a" relationships*** : Learner license, Driver license "is a" license.

Step 3 - Constraints

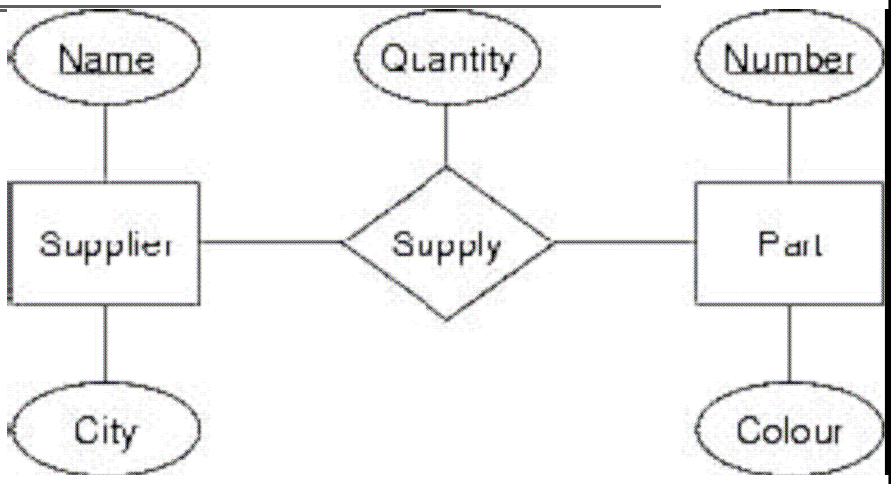
1. a [driver] must <own> (at least one) [license].
2. a [driver] must <take> at least one exam.
3. a [license] must be <owned> by one and only one [driver].
4. a [license] must be <issued> by one and only one [branch].



Exercise - Manufacturing

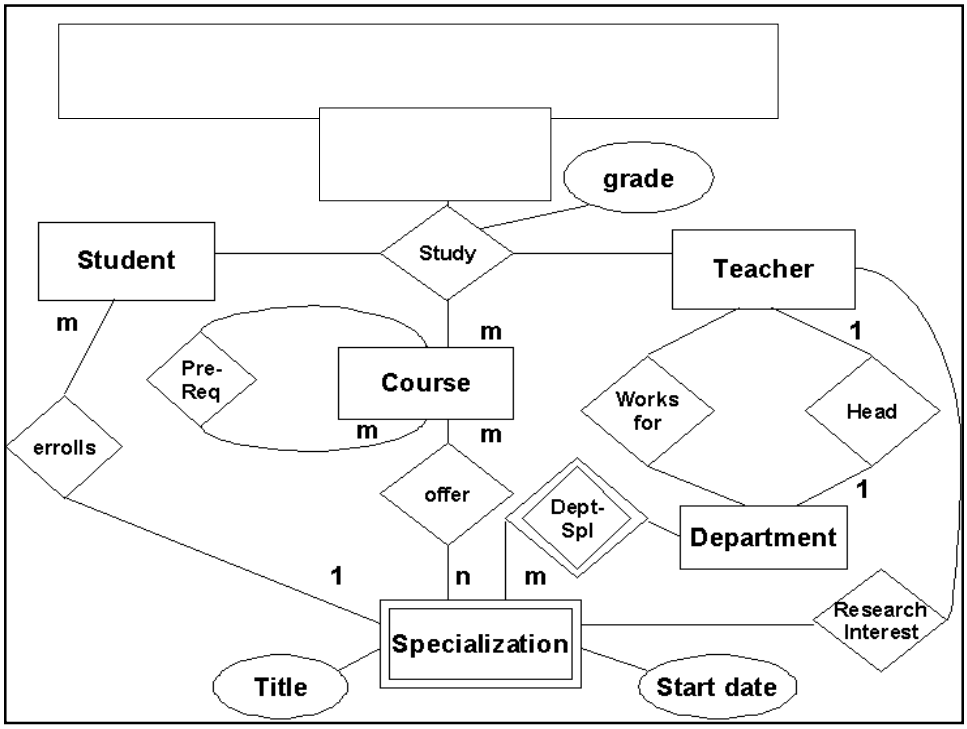
- Each supplier has a unique name.
- More than one supplier can be located in the same city.
- Each part has a unique part number.
- Each part has a color.
- A supplier can supply more than one part.
- A part can be supplied by more than one supplier.
- A supplier can supply a fixed quantity of each part.

Supplier-Part portion



EXERCISE - PG studies

- Students join a particular specialization offered by a department.
- A specialization with same title (e.g., MICROCOMPUTERS) may be offered by one/more departments independently.
- Teachers are appointed to a specific dept, and given a room and telephone.
- Every department must have one teacher as its head.
- Courses are offered under various specializations.
- A teacher may teach many courses and a course may be taught by many.
- A student studies a course under a teacher during some semester (e.g., semester 1 of 2003), and is awarded a grade.
- A teacher's research interest may lie in one/more specializations.
- Courses have one/more/zero prerequisites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Start date