ER Diagram Book 2/4/21 Notes (Chapter 4) 4.1-4.4

ER => "Entity-Relationship"

* Visual model

Uses 3 principle element types:

1. Entity sets
2. Attributes
3. Relationships

Entity Sets

- a collection of abstract objects
- entities are looked at as values of a table/columns and sets being the collection of those values

Attributes

- entity sets have associated attributes
- primitive types
- seen as columns in a relation

Relationships

- connections among two or more entity sets

ER Model variations

Attributes can be viewed as:

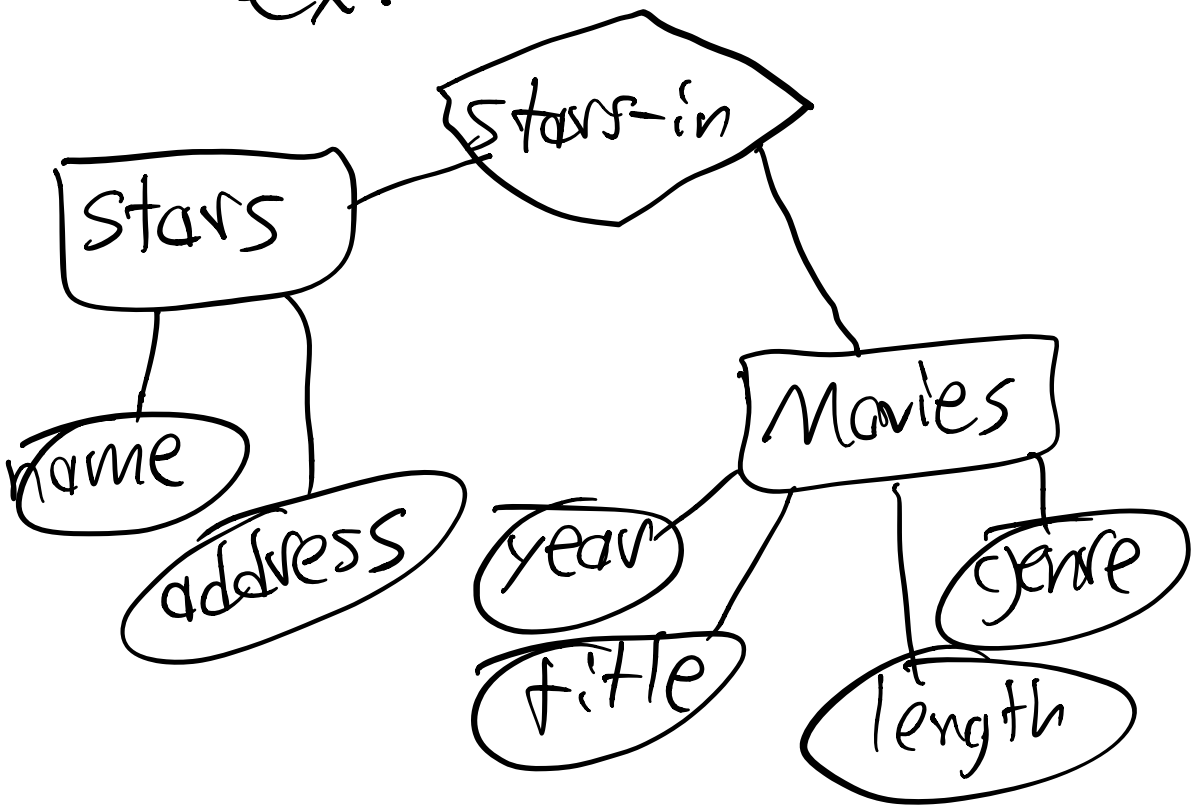
1. a primitive type
2. a struct in C
3. a set of values of one type

ER Diagrams

- entity sets => rectangles
- attributes => ovals
- relationships => diamonds

* edges connect relationships and attributes to it's entity set

ex.



Relationship set for R — a set of tuples in an entity set that are connected by a relationship R

Multiplicity of Binar ER Relationships

- if each member of E can be connected by R to at most one member of F, then we say that R is many-one from E to F
- if R is both many-one from E to F and F to E then we say R is one-one
- if R is neither then we say R is many-many

★ Use arrow pointing outward from relationship to entity sets

ex.

★ "at most one"

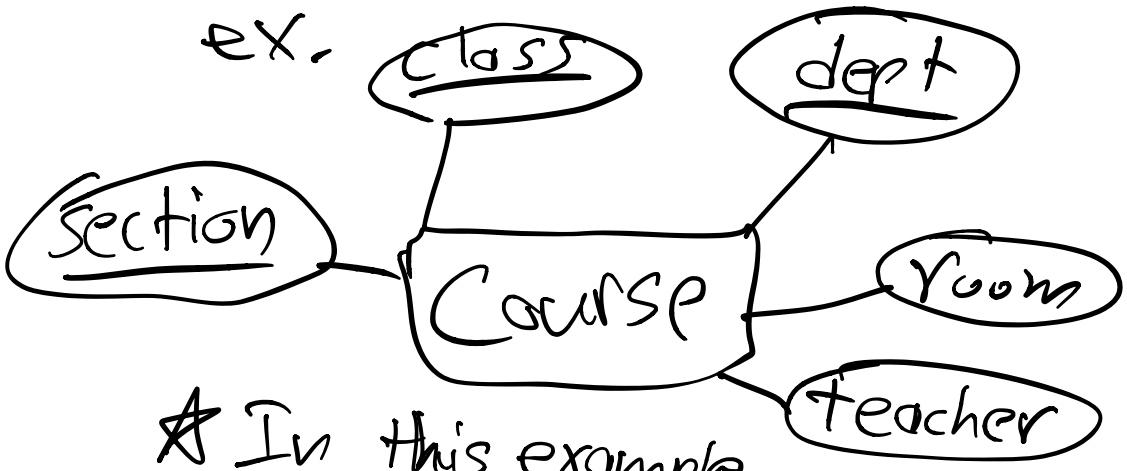
★ edge labels are called "Roles"

★ ~~★~~ need to get more info from teacher

★ Questions! ★

1. To determine which attribute(s) form a key, you need to find the minimum set of attributes that uniquely identify a tuple in a relation.

ex.

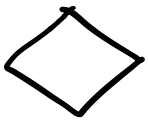


★ In this example, class, department, and section are the minimum amount of attributes needed to uniquely identify a tuple in the Course relation.

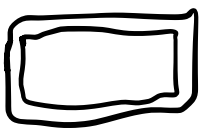
2. Pictorial Representations

 - entity set

 - attribute

 - relationship

 - subclass

 - weak entity set

☆ Some general design principles when creating a database are

1) Figuring out exactly what you need, like what your client wants and what types of capabilities your data base will need to provide.

2) Creating a high level description using a conceptual design or ER diagram

3) Translate the ER diagram directly to database implementation

4) Refine the database, make sure everything is consistent and working properly

☆ This document contains notes from book and answers to weekly questions.