POLITÉCNICO
DO PORTO
ESCOLA
SUPERIOR
DE MEDIA ARTES E DESIGN

DATABASES

Database modeling

TECNOLOGIAS E SISTEMAS DE INFORMAÇÃO PARA A WEB

Contents

- Conceptual database models
- Entity-Relationship Diagram
- E-R conversion to Relational model

Conceptual model

To provide a data-centric perspective of the problem by documenting how different entities relate to one another

- Created at the conceptual stage
- Along/After requirements definition
- Relevant to all stakeholders
- Abstract from implementation issues
- Usually graphic
- Most usual model: Entity-Relationship Diagrams (ERD)

Entity-Relationship Diagram

- Most used tool for database modeling
- Allows problem modeling in an easier notation for most stakeholders
- Lays on three concepts:
  - Entities
  - Attributes
  - Relations

Entity

- Entity ("thing") about which we want to store information
- Collection of Information that needs to be kept by the system
- Can be a physical object or a concept without physical representation
- Usually identified by a noun in singular
- Represented by a rectangle
- Ex: student, teacher, course

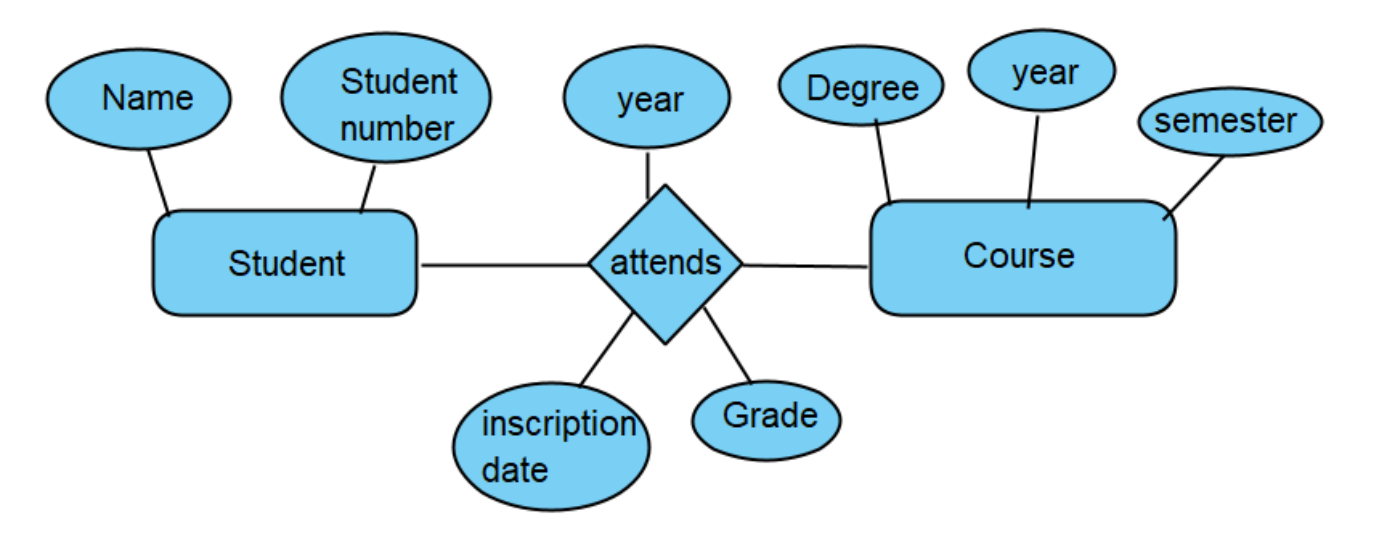
Attribute

- Characteristics of the entities with relevance for the problem
- Atomic / Structured / Derived
- Represented by ellipsis
- Ex: name, mobile number, address, degree, year, semester

Relationship

- Represents an association between entities
- Usually binary but can be n-ary
- Can have attributes
- Represented by a line connecting the entities

Example



Refs

- Fundamentos de Bases de dados
- https://www.erwin.com/solutions/data-modeling/conceptual.aspx