DataBases Models and MER

DataBase Foundations

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Outline

1. Databases Types

2. Entity-Relation Model (MER)

Outline

Relational DataBases I — Structured Data
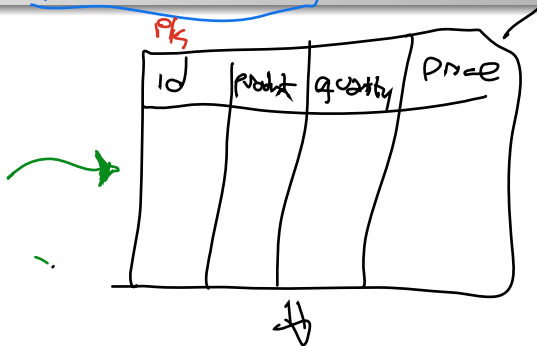
Relational DataBases II — Tables & Keys

Semi-Structured Data

{ "name": "Roberto",
"code: 123 }

<person>
<name>
Roberto
<name>
</person>

ETL

Unstructured	Semi-structured	Structured
PDFs, JPEGs, MP3, Movies, ...	CSV, JSON, XML, MongoDB, ...	Oracle, MSSQL, MySQL, DB2, ...

Common

NoSQL DataBases

What is NoSQL Database

High Scalability

High Availability

NoSQL Database

Big Data Capability

Fast Performance

Easy Replication

educba.com
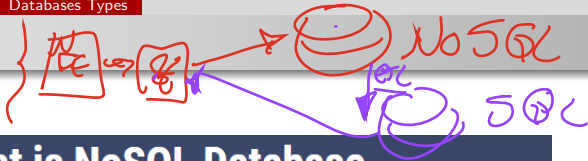
Document-Based NoSQL → MongaDB

Database(s)

Collection(s)

Document(s)   key: value

```
{
  _id:1,
  key:"Lime",
  qty: 50
}
```

Field(s)

Instance
(primary)
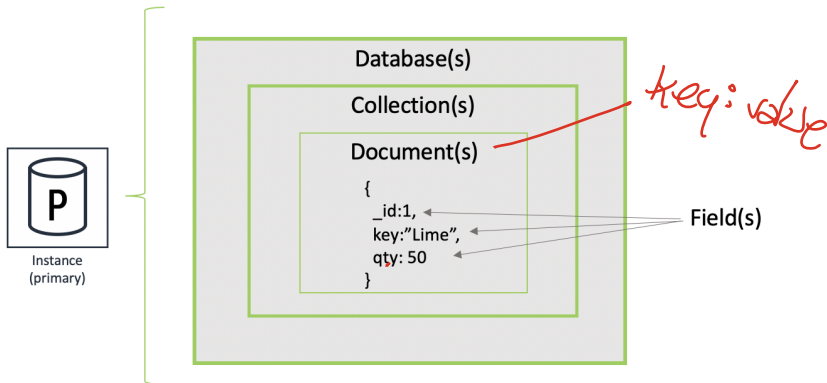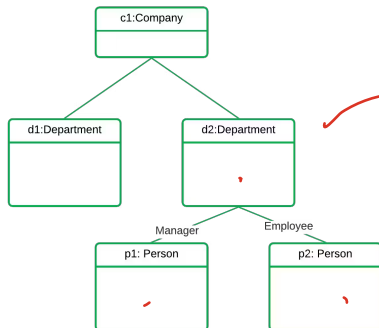
Object-Oriented NoSQL
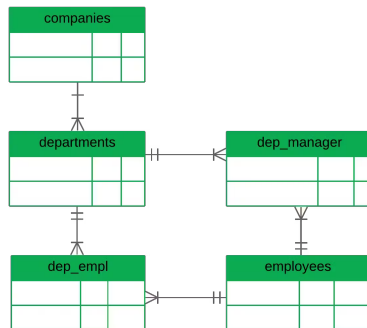
Graph-Based NoSQL

Outline

Basic Concepts

- **Entity**: A thing or object in the real world that is distinguishable from other objects.

- Attribute: A property or characteristic of an entity.

- Relationship: An association between entities.

- Cardinality: The number of instances of an entity that can be associated with another entity.

- Degree: The number of entities that participate in a relationship.

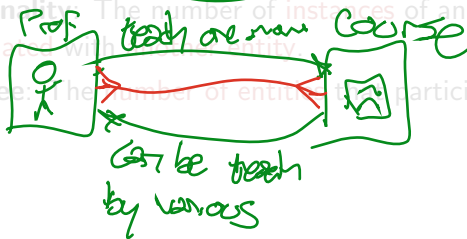*Entity → Properties with Information*

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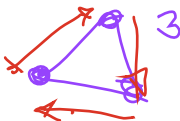- **Degree**: The number of entities that participate in a relationship.

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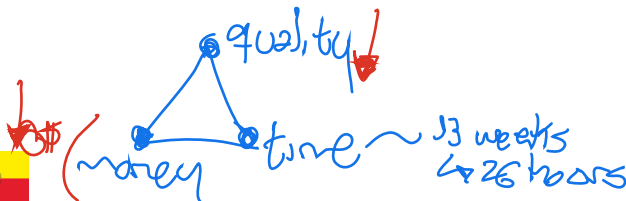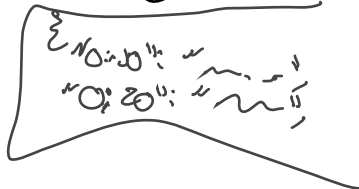# Step 1. Define Components

↳ Subsystem
module

Netflix

→ series
→ movies   } Phase 1 ✓

→ forums
→ documentals   Phase 2   Future
                               Work

quality

money — time ～ 3 weeks
                    ↳ 26 hours

Step 2. Define Entities

Step 3. Define Attributes per Entity

E1. Season = name, duration, date, description, revies episodes

E2. Episode = name, duration, date, description, casting, director, writer

E3. Category = name, minimumage, stands

Step 4. Define Relationships

Step 5. Define Relationships Types

Step 6. First Entity-Relationship Draw

Step 7. First Split Many-to-Many Relationships

Step 8. Second Entity-Relationship Draw

Step 9. Get Data-Structure E-R M

Step 10. Define Constraints and Properties of Data

Outline

Thanks!

Questions?

Repo: *https://github.com/EngAndres/ud-public/tree/main/courses/databases-foundations*