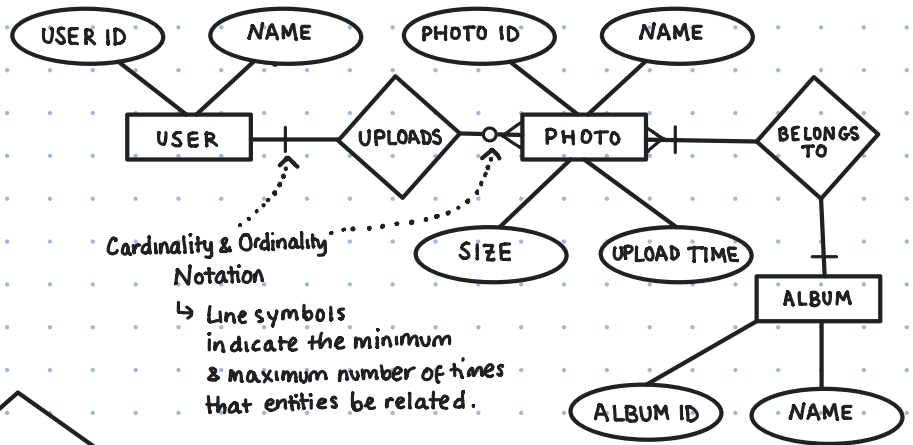


DATABASE DESIGN

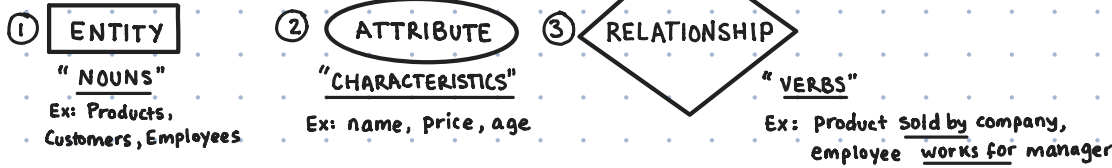
Example ER Diagram



Cardinality & Ordinality Notation
 ↳ Line symbols indicate the minimum & maximum number of times that entities be related.

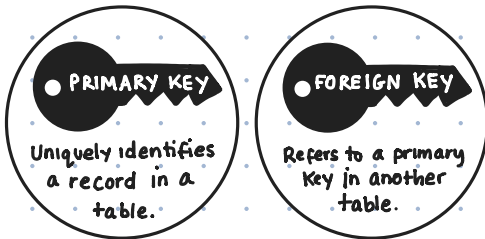
ENTITY RELATIONSHIP DIAGRAMS

- **GOAL**: Model & design relational databases.
- ER Diagrams consist of 3 main symbols:



- These components are arranged to visually illustrate connections between data objects.

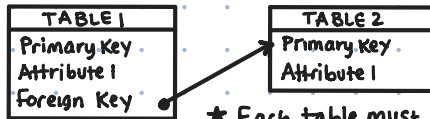
RELATIONAL MODEL ALTERNATIVES?
 NoSQL: mongoDB, Redis, Cassandra, HBase



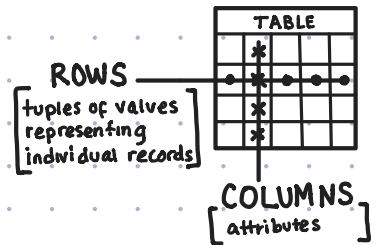
RELATIONAL MODELLING

- ↳ Based on the mathematical concept of "relations" - i.e. tables of values
- ↳ Made up of 2 parts: relational schema + relational instance

Blueprint for database structure that illustrates primary & foreign key connections between tables:

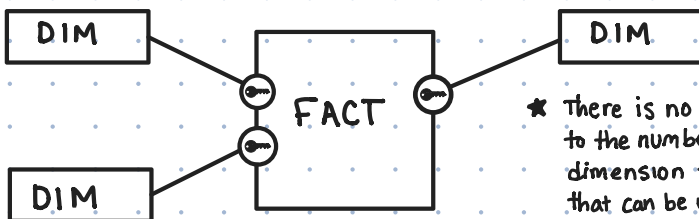
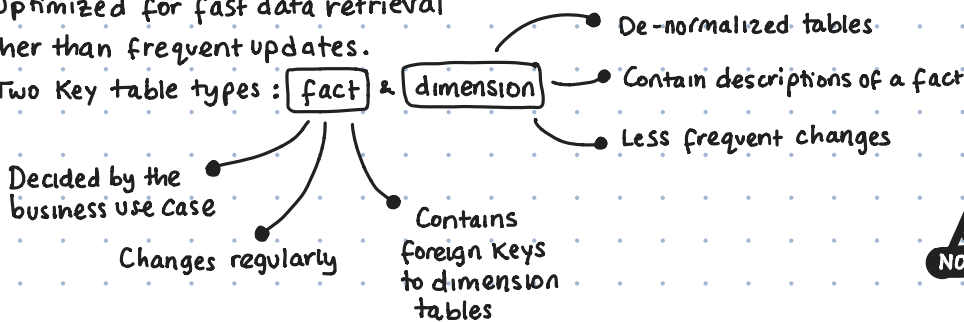


* Each table must have 1 primary key.



DIMENSIONAL MODELLING

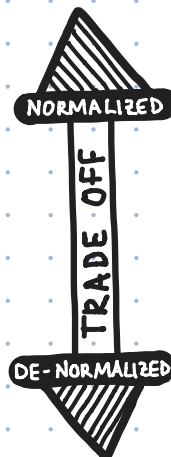
- ↳ An adaptation of the relational model for data warehouses
- ↳ Optimized for fast data retrieval rather than frequent updates.
- ↳ Two key table types: fact & dimension



* There is no limit to the number of dimension tables that can be utilized.

NORMALIZATION

A design choice that weighs data integrity vs. data retrieval.



Reduce redundancy & favor consistency by dividing data into small, logical units.

Aggregate data, at the cost of redundancy, to improve query performance.