CLOUD COMPUTING APPLICATIONS

Graphs: Databases - Intro

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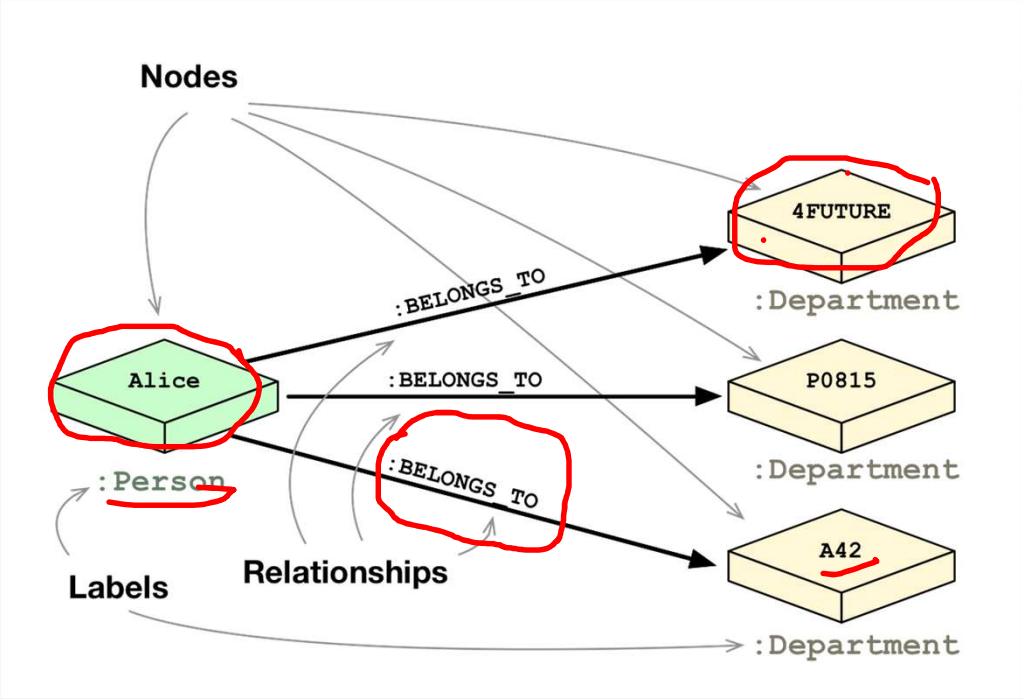
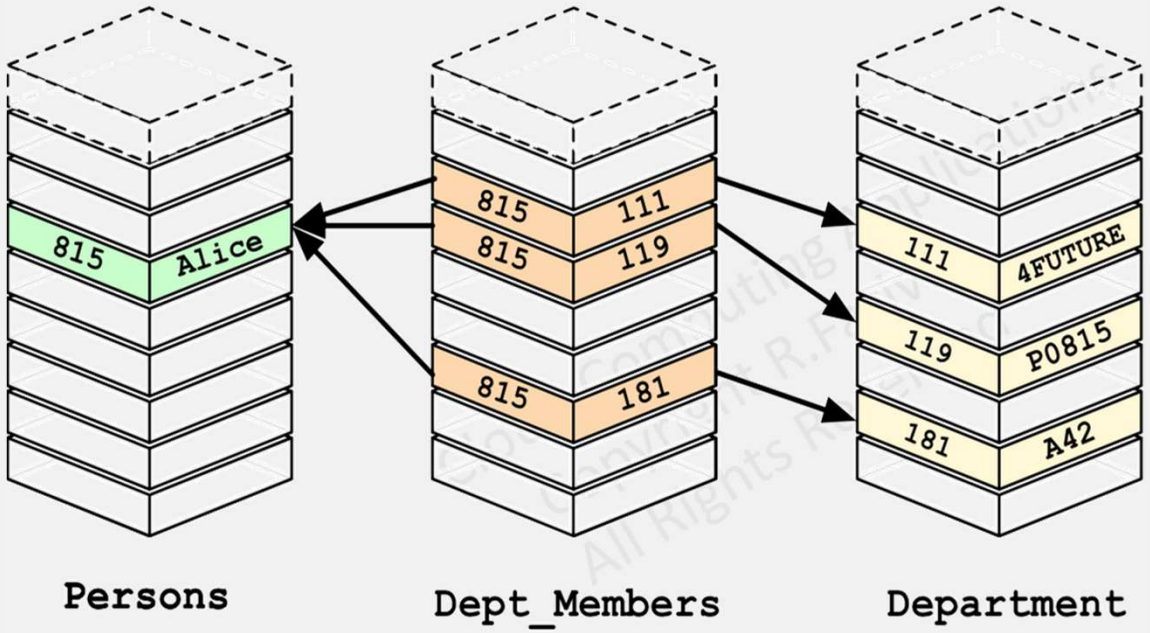
Graph Model


Nodes
4FUTURE
:Department
:BELONGS_TO
Alice
:BELONGS_TO
P0815
:Department
:BELONGS_TO
:Person
A42
Labels
Relationships
:Department

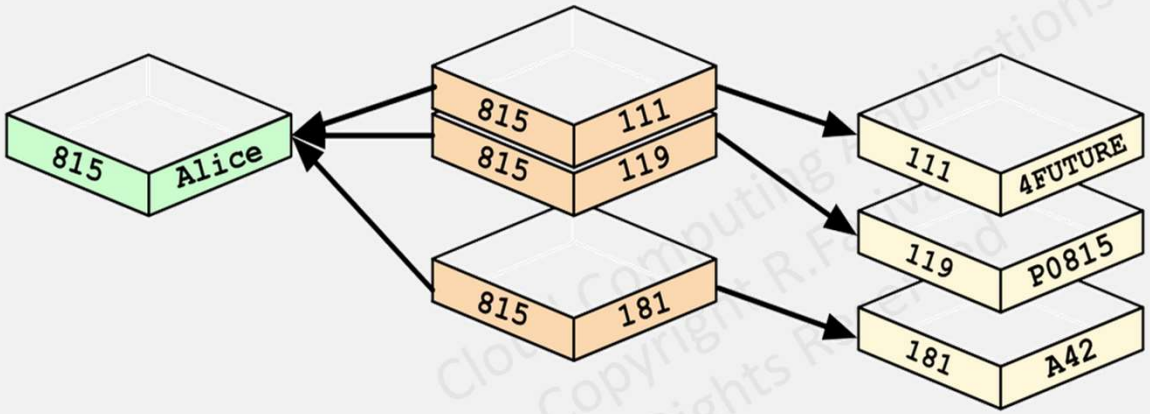
Relational Databases



Foreign Keys

Joins

Graph Databases

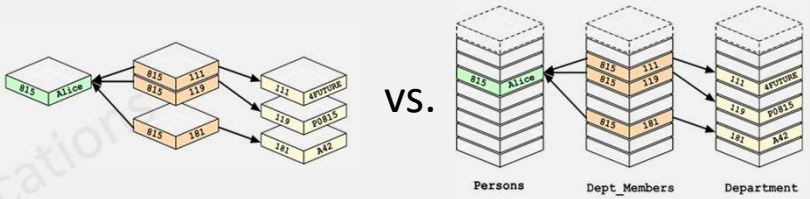


~~Foreign Keys~~

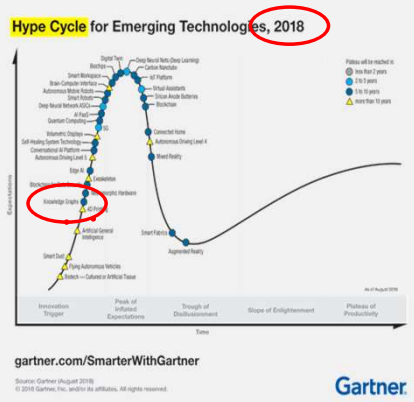
~~**Joins**~~

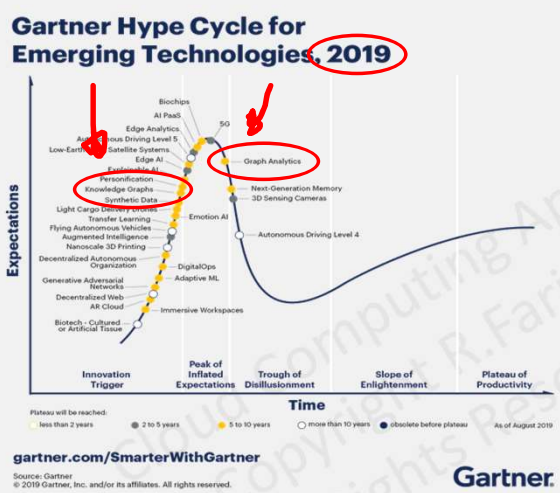
Graph and Relational Databases

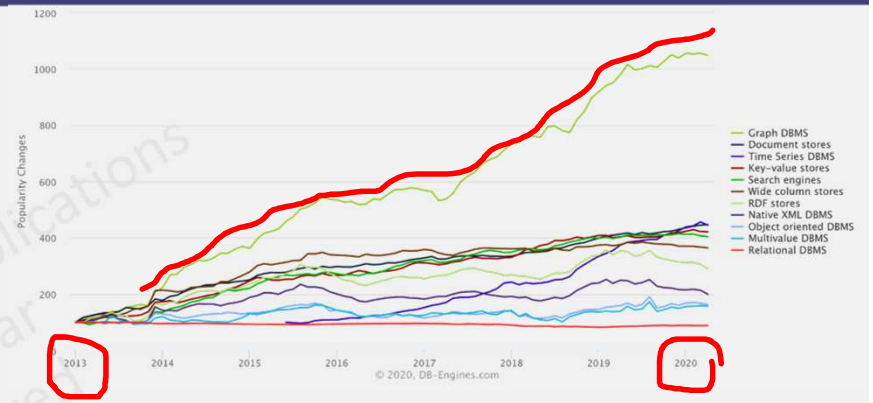
- Graph Database
  - Associative data sets
  - Structure of object-oriented applications
  - Do not require join operators
- Relational Database
  - Perform same operation on large numbers of data elements
  - Use relational model of data
  - Entity type has own table
    - Rows are instances of entity
    - Columns represent values attributed to that instance
  - Rows in one table can be related to rows in another table via unique key per row



Popularity Trend of Databases







Graph Databases

- A database with an explicit graph structure
  - Each node knows its adjacent nodes
  - As the number of nodes increases, the cost of a local step (or hop) remains the same
  - Plus an Index for lookups
- Can be faster than relational, particularly for graph-type queries
  - Who is a friend of a friend?
- Scales well
- Does not require joins
- Less rigid schema permits easier evolution