Graph Databases

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Agenda

- Graphs
- Types of graphs.
- History of Graph Databases.
- DBMS Examples.
- Graph Databases in Neo4j.
- Example.

Graphs

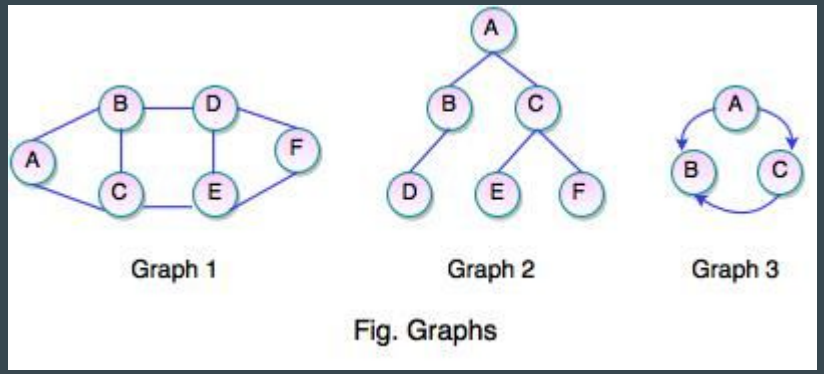
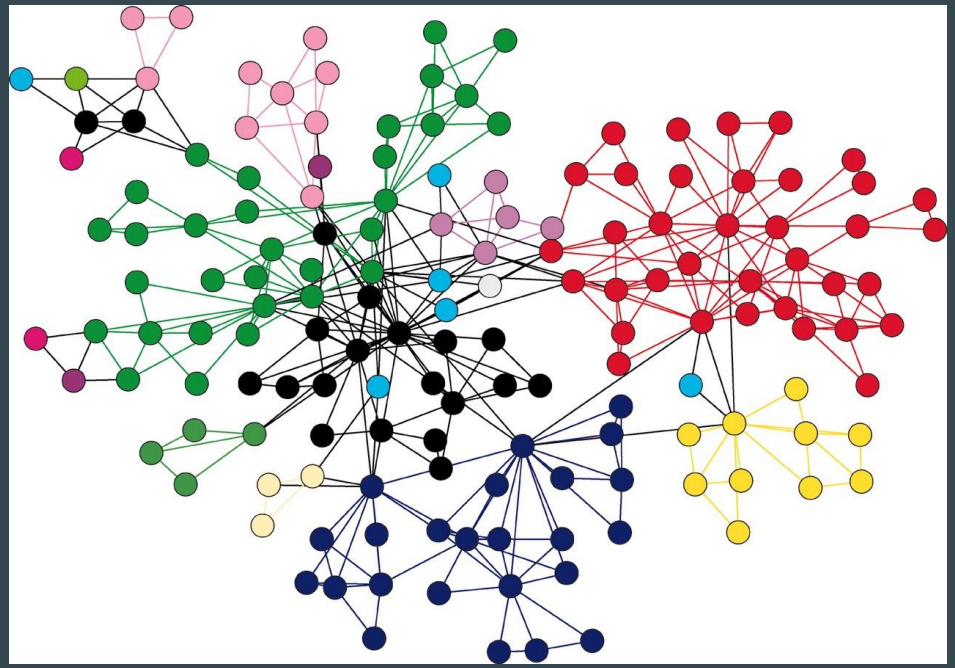
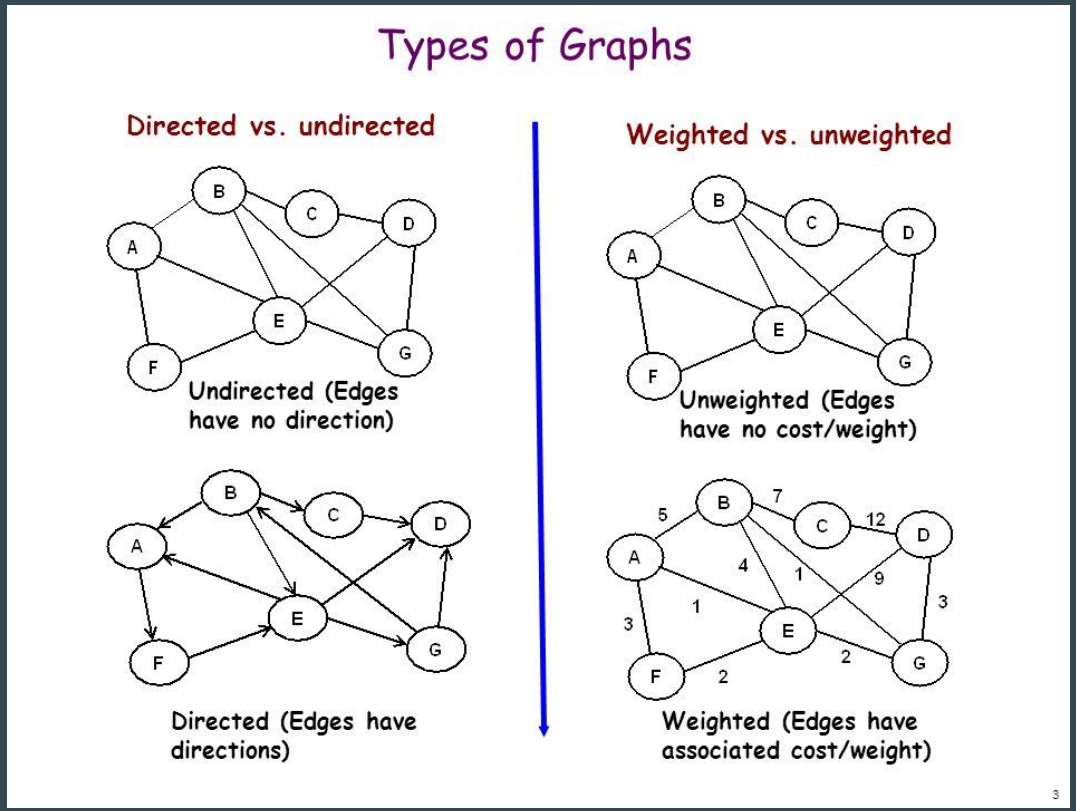


Fig. Graphs



Types of Graphs



History of Graph Databases

70's → Tabular Databases

80's → Relational Databases

90's → NoSQL.

BASE	ACID
Basic **A**vailability	**A**tomic: Everything in a transaction succeeds or the entire transaction is rolled back.
Soft-state	**C**onsistent: A transaction cannot leave the database in an inconsistent state.
Eventual consistency	**I**solated: Transactions cannot interfere with each other.
	Durable: Completed transactions persist, even when servers restart etc.

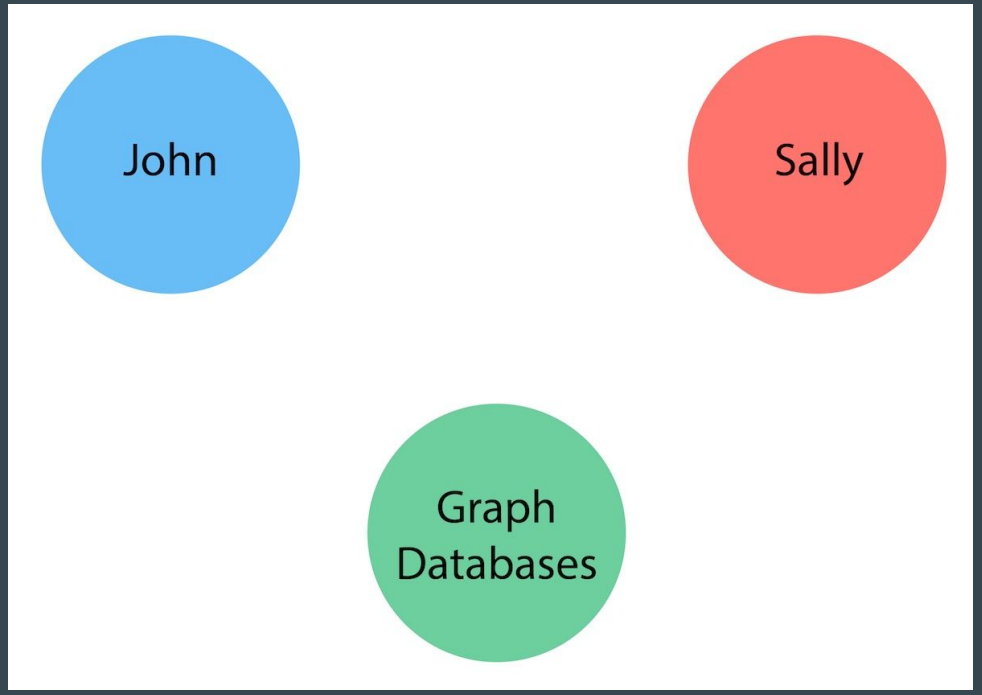
DBMS Examples.

neo4j	Cypher	Most famous graph database, Cypher O(1) access using fixed-size array
DSE Graph DATASTAX AURELIUS	Gremlin	Distributed graph system based on Cassandra
ArangoDB	AQL	Multi-model database (Document + Graph)
OrientDB	OQL	Multi-model database (Document + Graph)

Graph Databases in Neo4j.

Nodes

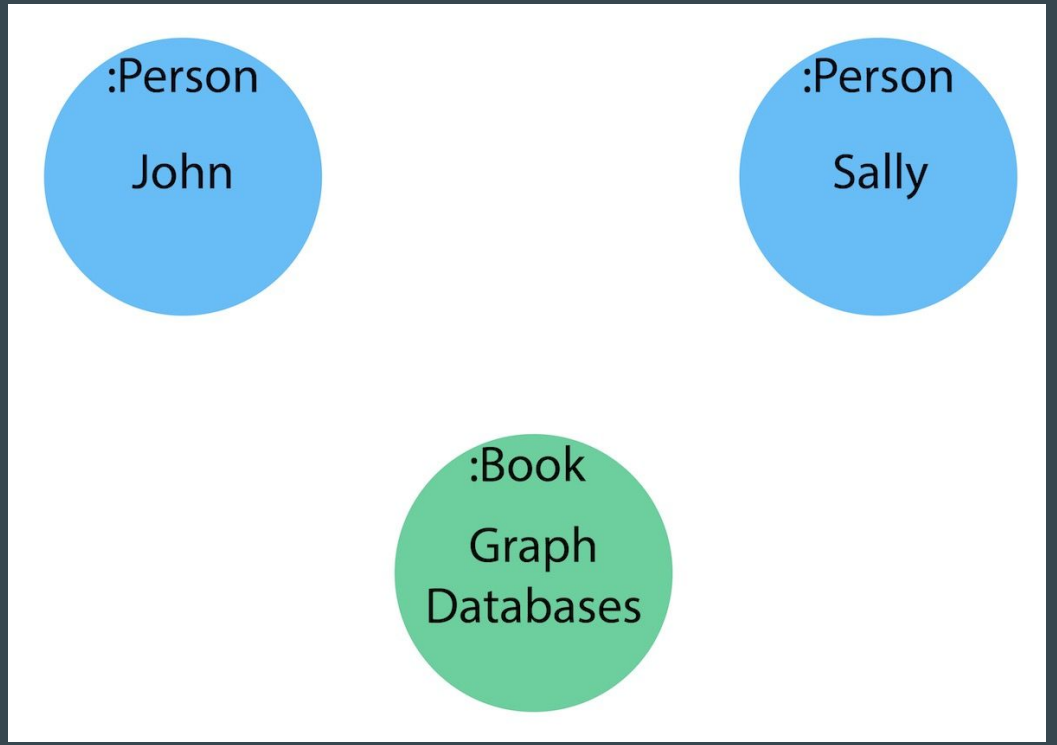
- Most basic entity
- Can have labels
- Represent objects
- Labels for roles



Graph Databases in Neo4j.

Labels

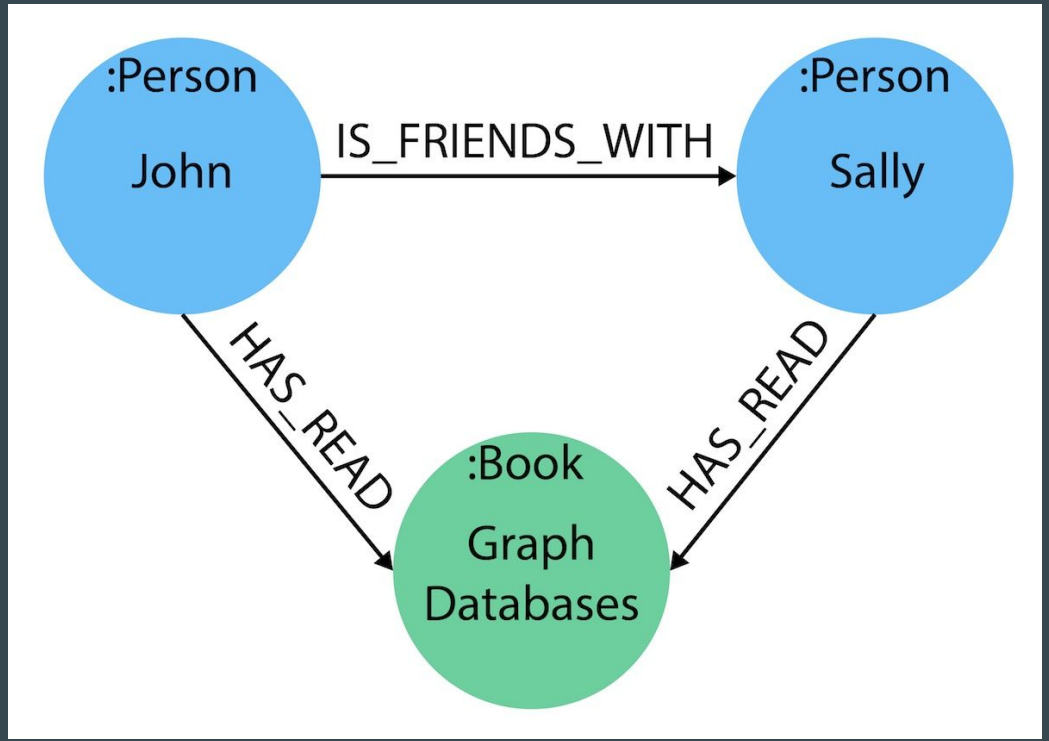
- Group nodes
- More efficient
- Used in entities
- Normally used for objects
- CamelCase practice



Graph Databases in Neo4j.

Relationships

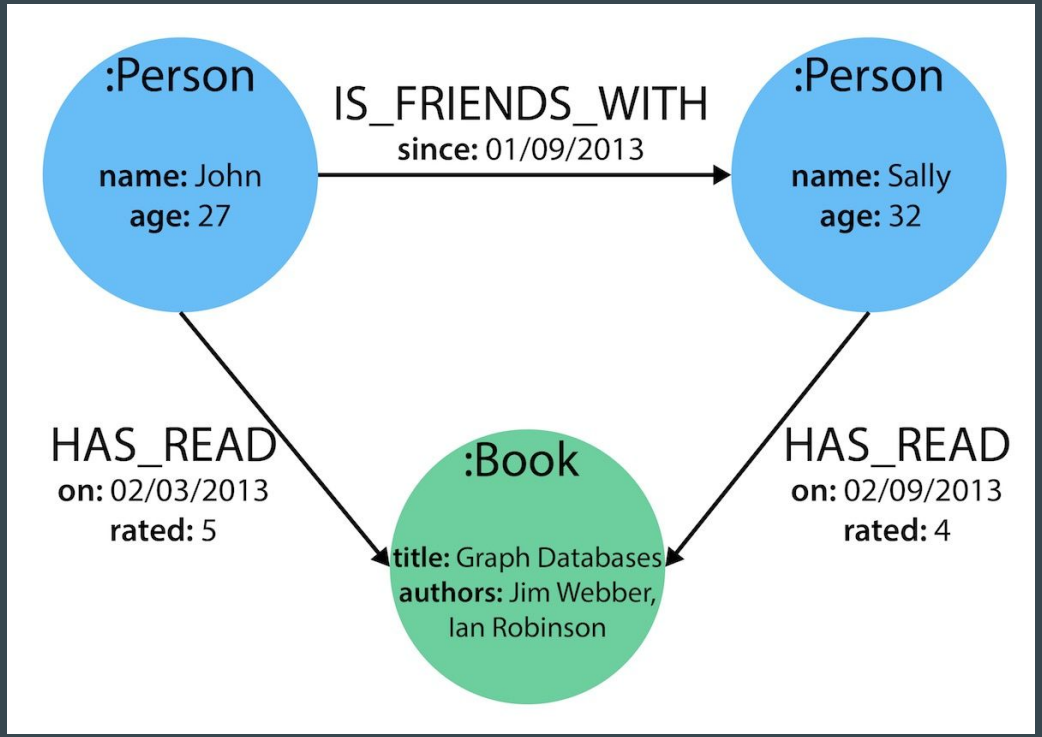
- Connection between nodes
- Source and target
- Directed and not-directed
- Represent actions/verbs



Graph Databases in Neo4j.

Properties

- Attributes
- Key and Value
- Used in nodes and relations
- Store information
- int, float, string, etc



Example

https://github.com/campos-97/GraphDBExample

https://neo4j.com/download/

Bibliography

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