

# Graph DB With Langchain

① Knowledge Graphs

② Neo4j Graph Databases → Cypher Queries

③ RAG Application With Graph Database

Langchain → Langgraph

Multi AI Agents

① Knowledge Graph → Semantic Network → N/W of Real World Entities

Eg: Events, Situation, Concepts → illustrate the relationship between them

NLP Use case : Rohit Sharma is the captain of Indian Cricket Team.

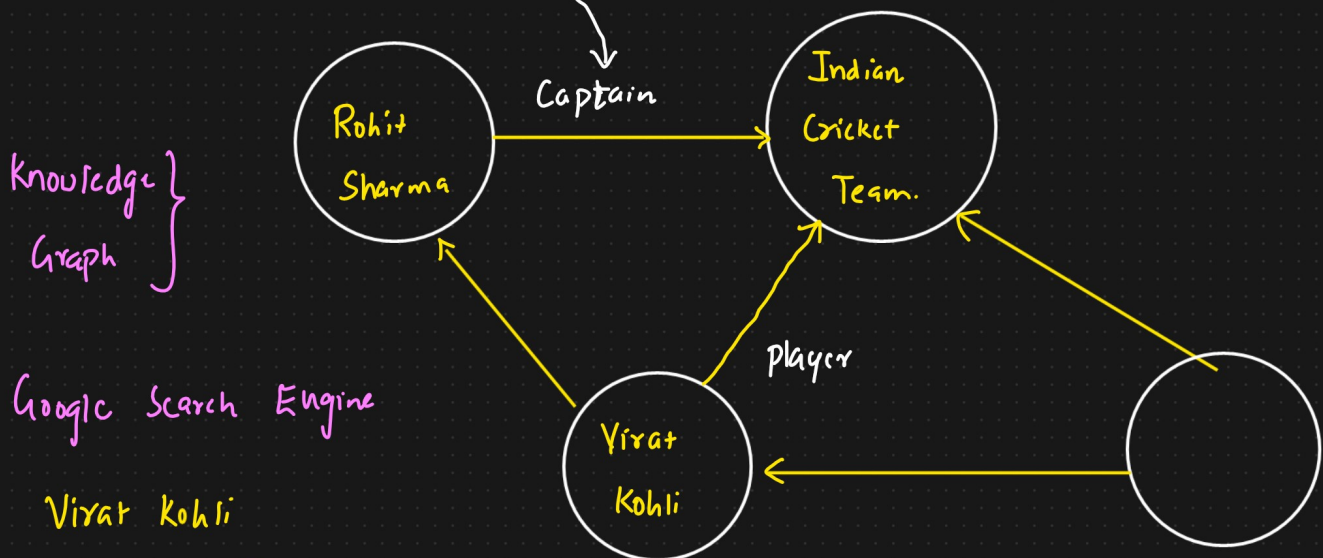
Virat Kohli is the player of Indian Cricket Team.

Knowledge Graph : Three main components

① nodes → Any object, place or person can be a node.

② Edges → An edge defines the relationship between the nodes.

③ labels →



Google Search Engine

Virat Kohli

Suggestion → Rohit Sharma

# RDBMS Vs Graph Databases



Relational DBMS → MySQL, SQL SERVER

## RDBMS

- 1) Tables
- 2) Insert Records → Rows
- 3) Columns and Data
- 4) Constraints → Primary, Foreign, Candidate Key
- 5) Joins Queries

## GRAPH DATABASE

GRAPH

Nodes



Properties And Values

Relationships



Traversal

ACID → } Atomicity  
Consistency  
Isolation  
Durability

## Advantages of Neo4j [flexible Schema]

- ① Data Model → Nodes, Relationship, Properties And Values
- ② Real time Insights
- ③ Easy Retrieval → Cypher Query.
- ④ Cypher query language → Declarative query language to represent the graph visually.
- ⑤ No joins

## ⑥ Neo4j Property Graph Data Model

Neo4j Graph Database → Property Graph Model → STORE AND MANAGE DATA



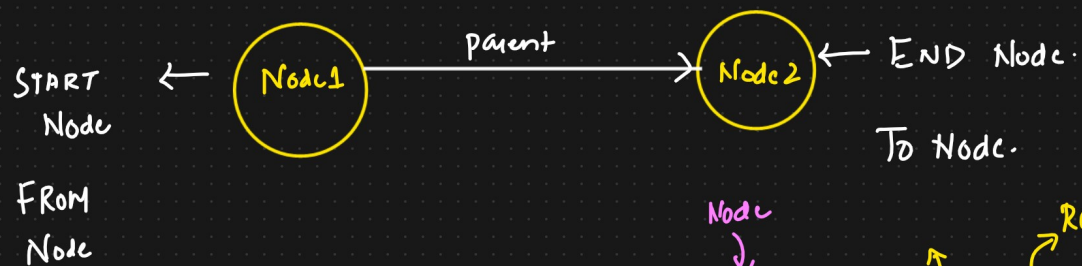
Data = { ① Nodes ② Relationships ③ Properties }



Unidirectional  
And Bidirectional

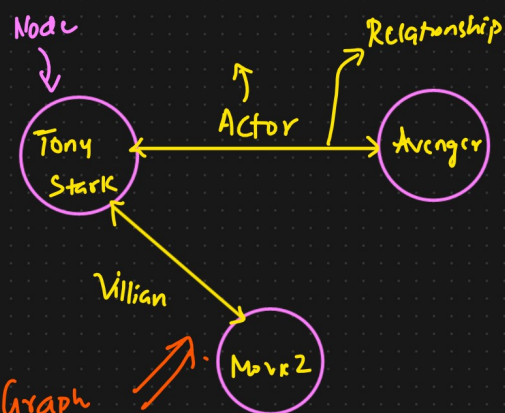


Key value pairs



### GRAPH DB DATA MODEL

- ① Nodes
- ② Relationship
- ③ Properties.



NLP  
TEXT DATA  $\Rightarrow$  Graph Neural N/w