

# Storing Data as Entities, Attributes, and Values



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# Overview



**Examples of sparse data**

**Implement using traditional design**

**Entity, Attribute, Value (EAV) model**

**Demonstrate EAV tables and queries**

**Discuss pros and cons of using EAV**

**Alternatives:**

- Sparse columns
- XML
- JSON

**Quick review**



# Demo 1



**The problem of sparse data**



# Entity, Attribute, Value model

**Entity**  
Item stored

**Attribute**  
Information type

**Value**  
Information value





## Demo 2



**Refactoring to an EAV model**



## Demo 3



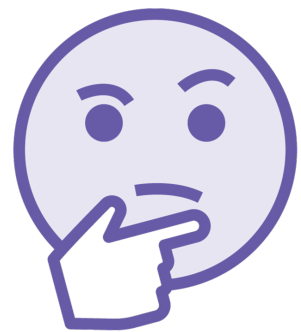
**Refactoring the attributes**



# Recap



**Many attributes versus relational table schemas**



**Unpivot attribute columns into rows**



**Separate attribute names from EAV table**



**We've replaced RDBMS schema with our own mini-database**



# Sacrificed for EAV

**Data typing**

**Check constraints**





## Demo 4



**Types and constraints in an EAV model**



## Demo 5



**Dynamic constraints**



# Using SPARSE Columns



**SPARSE column option means no space when value is NULL or 0**



**SELECT, INSERT, UPDATE, DELETE sparse columns by name**



**Constraints can be defined**



**Up to 30,000 sparse columns!**





## Demo 6



**Using SPARSE columns**





## Demo 7



**Using XML to store attributes**



## Demo 8



Using JSON for attributes



# Summary



**Examples of sparse data**

**Implement using traditional design**

**Entity, Attribute, Value (EAV) model**

**Handling multiple entity types**

**Pros and cons**

**Alternatives:**

- Sparse columns
- XML
- JSON

