

$\{$ partition key to 'City'

Germany	D	356100	8350000	Berlin	Berlin
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name of city / province of Capital

= Tuple

- ✓ Syntax
- ✓ Data
- Knowledge
- information

no Metadata!
 → symbolic Evaluation, e.g. Algebra

SQL: data and metadata associated
 rel. Algebra

⇒ 90's self-describing data models

DB lecture, slide 61: Tuple μ is a tuple, e.g. formally: includes metadata, is self-describing

$\mu = \begin{cases} \text{name} \rightarrow \text{'Germany'} \\ \text{code} \rightarrow \text{'D'} \\ \text{area} \rightarrow 356100 \\ \text{pop} \rightarrow 83500000 \\ \text{capital} \rightarrow \text{'Berlin'} \\ \text{prov} \rightarrow \text{'Berlin'} \end{cases}$

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Self describing data

Mid 90s: "semistructured data"

→ XML 1996... 1998... 2001 ✓

"Data item" $\langle \text{city code} = \text{'D'} \rangle$
 $\langle \text{name} \rangle \text{Berlin} \langle / \text{name} \rangle$
 $\langle / \text{city} \rangle$

⇒ self-describing

⇒ property-value-combinations

metadata ✓
 (also included into other languages)
 → names still syntactic, no semantics (90s + then)
 → semantic web

Okt 25-11:00

Semantic webs :

- ✓ data
- ✓ metadata
- + description of metadata
- + Reasoning (complexity ↑)

Relational ≠ SQL : polynomial
 Owl : etc., undecidable

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2nd Aspect :

SHODUKU Query moments → Reasoning

$f(x, y)$

Rows, columns

for each row :

Artificial Intelligence Human Intelligence

$(f(r, 1) = 1 \vee f(r, 2) = 2 \vee \dots) \leftarrow f(r, y_1) = 4 \wedge f(r, y_2) = 6$

Okt 25-11:27