

Semantics in RDF and SPARQL

Some Considerations

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Semantics of RDF: Summary

I. URI (today IRI)

Distributed creation and management of resources and vocabulary.

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Plus inconsistencies with SPARQL

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Plus inconsistencies with SPARQL

IV. Complex Logic

Even for RDFS

The relational core of SPARQL

SPARQL 1.1

SELECT, FILTER, AND, UNION, and **EXCEPT**

Multiset Relational Algebra (MRA)

$\pi, \sigma, \bowtie, \uplus$ and \setminus

Multiset nr-Datalog⁻

SQL

SELECT, WHERE, NATURAL JOIN, UNION ALL, and EXCEPT

The relational core of SPARQL

Equivalences (hold even under multiset semantics)

SPARQL	Multiset Rel. Algebra	nr-Datalog [¬]	SQL
SELECT X	$\pi_X(\dots)$	$L \leftarrow L_1, \dots, L_n$	SELECT X ...
P FILTER C	$\sigma_C(p)$	$L \leftarrow L_p, C$	FROM p WHERE C
P . Q	$p \bowtie q$	$L \leftarrow L_p, L_q$	p NAT JOIN q
P UNION Q	$p \uplus q$	$L \leftarrow L_p$ $L \leftarrow L_q$	p UNION ALL q
P EXCEPT Q	$p \setminus q$	$L \leftarrow L_p, \neg L_q$	p EXCEPT q

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(sub) SELECT and its consequences

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V. Delegation features

FROM NAMED, GRAPH, SERVICE

(And More) Semantic extensions of the SPARQL core

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Logical reasoning

RDFS, OWL etc.

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Several protocols

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Who knows what else ...

God protects us ...

Two morals and a suggestion

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SPARQL is an extremely complex language

Warning

It is not evident that the semantics of each extension behaves well when interacting with the other parts.

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Suggestion

To study the themes of federation work with the core