W3C: World Wide Web Consortium
OWL: Web Ontology Language
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W3C: What is it?

The World Wide Web Consortium (W3C) is an international community where Member organizations, a full-time staff, and the public work together to develop Web standards. Led by Web inventor and Director Tim Berners-Lee and CEO Jeffrey Jaffe, W3C's mission is to lead the Web to its full potential.

Source:
https://www.w3.org/Consortium/#:~:text=The%20World%20Wide%20Web%20Consortium,Web%20to%20its%20full%20potential

OWL: What is it?

The Web Ontology Language (OWL) is a family of knowledge representation languages for authoring ontologies. Ontologies are a formal way to describe taxonomies and classification networks, essentially defining the structure of knowledge for various domains: the nouns representing classes of objects and the verbs representing relations between the objects. Ontologies resemble class hierarchies in object-oriented programming but there are several critical differences. Class hierarchies are meant to represent structures used in source code that evolve fairly slowly (typically monthly revisions) whereas ontologies are meant to represent information on the Internet and are expected to be evolving almost constantly. Similarly, ontologies are typically far more flexible as they are meant to represent information on the Internet coming from all sorts of heterogeneous data sources. Class hierarchies on the other hand are meant to be fairly static and rely on far less diverse and more structured sources of data such as corporate databases.

Source:
https://en.wikipedia.org/wiki/Web_Ontology_Language

The OWL languages are characterized by formal semantics. They are built upon the World Wide Web Consortium's (W3C) XML standard for objects called the Resource Description Framework (RDF). OWL and RDF have attracted significant academic, medical and

commercial interest.

The W3C Web Ontology Language (OWL) is a Semantic Web language designed to represent rich and complex knowledge about things, groups of things, and relations between things. OWL is a computational logic-based language such that knowledge expressed in OWL can be exploited by computer programs, e.g., to verify the consistency of that knowledge or to make implicit knowledge explicit. OWL documents, known as ontologies, can be published in the World Wide Web and may refer to or be referred from other OWL ontologies. OWL is part of the W3C's Semantic Web technology stack, which includes RDF, RDFS, SPARQL, etc.

The current version of OWL, also referred to as "OWL 2", was developed by the [W3C OWL Working Group] (now closed) and published in 2009, with a Second Edition published in 2012. OWL 2 is an extension and revision of the 2004 version of OWL developed by the [W3C Web Ontology Working Group] (now closed) and published in 2004. The deliverables that make up the OWL 2 specification include a Document Overview, which serves as an introduction to OWL 2, describes the relationship between OWL 1 and OWL 2, and provides an entry point to the remaining deliverables via a Documentation Roadmap.

Source:
https://www.w3.org/OWL/

RDF: What is it?

Resource Description Framework (RDF) is a standard model for data interchange on the Web. RDF has features that facilitate data merging even if the underlying schemas differ, and it specifically supports the evolution of schemas over time without requiring all the data consumers to be changed. RDF extends the linking structure of the Web to use URIs to name the relationship between things as well as the two ends of the link (this is usually referred to as a "triple"). Using this simple model, it allows structured and semi-structured data to be mixed, exposed, and shared across different applications. This linking structure forms a directed, labeled graph, where the edges represent the named link between two resources, represented by the graph nodes. This graph view is the easiest possible mental model for RDF and is often used in easy-to-understand visual explanations.

Source:
https://www.w3.org/2001/sw/wiki/RDF

SPARQL: What is it?

SPARQL (pronounced "sparkle") is an RDF query language—that is, a semantic query language for databases—able to retrieve and manipulate data stored in Resource Description Framework (RDF) format. It was made a standard by the RDF Data Access Working Group (DAWG) of the World Wide Web Consortium, and is recognized as one of the key technologies of the semantic web. On 15 January 2008, SPARQL 1.0 was acknowledged by W3C as an official recommendation, and SPARQL 1.1 in March, 2013.

Source:
https://en.wikipedia.org/wiki/SPARQL

SPARQL is the Query Language used for RDF where “RDF is a directed, labeled graph data format for representing information in the Web. This specification defines the syntax and semantics of the SPARQL query language for RDF. SPARQL can be used to express queries across diverse data sources, whether the data is stored natively as RDF or viewed as RDF via middleware. SPARQL contains capabilities for querying required and optional graph patterns along with their conjunctions and disjunctions. SPARQL also supports extensible value testing and constraining queries by source RDF graph. The results of SPARQL queries can be results sets or RDF graphs.”

https://www.w3.org/2001/sw/wiki/SPARQL

RDF data can also be considered a table with three columns – the **subject** column, the **predicate** column, and the **object** column. In SQL relational database terms, the subject in RDF is analogous to an entity in a SQL database, where the data elements (or fields) for a given business object are placed in multiple columns, sometimes spread across more than one table, and identified by a unique key. In RDF, those fields are instead represented as separate predicate/object rows sharing the same subject, often the same unique key, with the predicate being analogous to the column name and the object the actual data. Unlike relational databases, the object column is heterogeneous: the per-cell data type is usually implied (or specified in the ontology) by the predicate value. Also unlike SQL, RDF can have multiple entries per predicate; for instance, one could have multiple “child” entries for a single “person”, and can return collections of such objects, like “children”.

Further readings: More TIPS files

TIPS_NLP_DBpedia Ontology classes.pdf
TIPS_NLP_Annotator.pdf
TIPS_NLP_Annotator dictionary.pdf
TIPS_NLP_Annotator extractor.pdf