Assignment 1 – Animal Scouter

University of Aveiro

Web Semântica

2022/2023

Group nº 2:

* João Bernardo Coelho Leite - 115041
* João Pedro dos Reis - 115513
* Luís Miguel Gomes Batista - 115279



Index

[Introduction 2](#_Toc135223504)

[Data Operations (SPARQL) 2](#_Toc135223505)

[Transformations 2](#_Toc135223506)

[Ontology definition 2](#_Toc135223507)

[Ontology (RDFS & OWL) 2](#_Toc135223508)

[Transformations 2](#_Toc135223509)

[SPIN Inferences 2](#_Toc135223510)

[Use of Wikidata/DBpedia 3](#_Toc135223511)

[Application Features 3](#_Toc135223512)

[Conclusions 3](#_Toc135223513)

[Application Configuration 4](#_Toc135223514)

[Requirements 4](#_Toc135223515)

[Creating the database 4](#_Toc135223516)

[Running with PyCharm 4](#_Toc135223517)

[Running with command line 4](#_Toc135223518)

[References 5](#_Toc135223519)

Introduction

In today's digital era, websites serve as powerful platforms for information dissemination, interaction, and engagement. As technologies continue to evolve, web developers are constantly seeking innovative ways to enhance user experiences and improve the functionality of their websites. One such avenue of exploration involves leveraging the capabilities of inferences and SPIN (SPARQL Inferencing Notation) to extract meaningful insights from data and enable advanced functionalities.

This report delves into the creation of a new tab on a website, aimed at exploring the potentials of inferences and SPIN. The dataset employed for this endeavour is a version of a previously used dataset of multiple features of animals. To maximize its inferential capabilities, the dataset has undergone a transformation from N-triples to N3 format OWL (Web Ontology Language) techniques. This transformation enhances the dataset's expressiveness, enabling more sophisticated reasoning.

To facilitate the creation and management of inferences, the ontology editor Protégé was utilized. By utilizing Protégé, we can easily define and configure rules, axioms, and constraints.

Through this report, we aim to showcase the potential of employing inferences and SPIN in a website context. By exploring the creation of a new tab, we will demonstrate how inferences derived from an enriched dataset can enhance the website's functionality, provide more comprehensive information, and deliver a richer user experience.

Overall, this report presents a practical demonstration of the benefits and possibilities that arise from incorporating inferences and SPIN into a website's design.

Data Operations (SPARQL)

## Transformations

Ontology definition

## Ontology (RDFS & OWL)

### Transformations

ssss

## SPIN Inferences

Use of Wikidata/DBpedia

Application Features

Conclusions

Application Configuration

## Requirements

Installation requirements to set the developed application up and running:

* Python (preferably 3.8.10 or higher)
* GraphDB
* s4api (pip install s4api)

## Creating the database

In GrapDB control panel, it is needed to create a database named “zoo” and import the provided “zoo.nt” N-Triples file.

Optionally, for the base url, [*http://zoo.org/*](http://zoo.org/)may be used.

## Running with PyCharm

To run the application with PyCharm, simply open the wsproject folder and press the run button. Then, a localhost link should appear in the console which needs to be opened with a web browser.

## Running with command line

For running the application using the command line, open a new command line in the “/wsproject/” directory and type the command “py manage.py runserver”. A localhost link should appear in the console which needs to be opened with a web browser.

References

Dataset

<https://www.kaggle.com/datasets/agajorte/zoo-animals-extended-dataset>

Slides

Representação do Conhecimento, Standards da Web Semântica, WS, DETI, UA

Representação do Conhecimento, A Linguagem SPARQL, WS, DETI, UA

Representação do Conhecimento, A *Triplestore* GraphDB, WS, DETI, UA

Web references

<https://docs.djangoproject.com/en/4.1/ref/forms/widgets/>

<https://docs.djangoproject.com/en/4.1/ref/forms/fields/>