Construction of the Ontology Design for Political Parties' Ideological Characteristics Using Protégé

User Manual

version 1.0

Table of Contents

1 Introduction

We construct an ontology for political parties' ideological characteristics based on FCA model in Hanum et al. and verify its correctness or consistency using Protégé. We use Protégé because it is an open-source ontology editor and offers the user to edit the properties, instances, and classes.

The ontology construction from the concept lattice is conducted using a similar approach by Aloui et al., i.e., the ontology is built based on an aforementioned concept lattice. In addition, we add several properties related to the political parties.

For correctness or consistency checking, firstly we conduct a translation from FOL formulas representing the canonical basis of implications associated with the concept lattice into description logic (DL) formulas. These formulas are then compared with the resulted formulas from the ontology in Protégé. From this outcome, we can infer about the consistency of our resulting ontology.

2 Hardware and Software Requirements

The following are the several mandatory requirements that must be fulfilled to run the program:

2.1 Hardware Requirements

To run this program properly, please complete the following minimum hardware specifications.

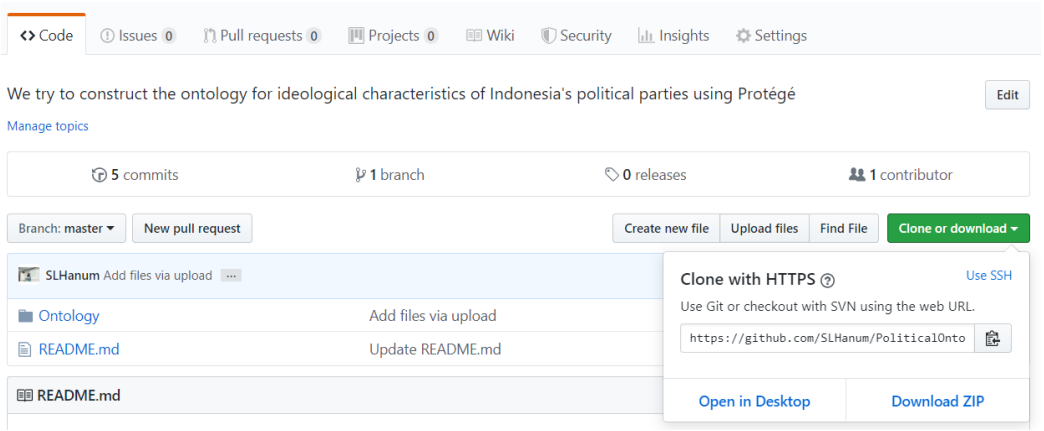
Operating system : Windows 7 or higher.
Processor : Intel Processor with clock speed 2.0 GHz or higher.
RAM : 2 GB of RAM or higher.

2.2 Software Requirements

Please install Protégé version 5.2.0 or higher.

3 Getting Started

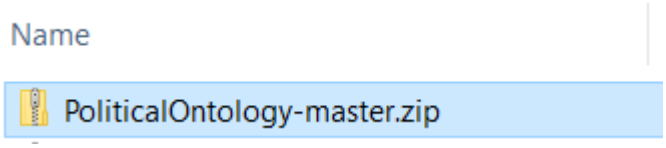
1. **Download the OWL file**



Please download the OWL file in the following repository: https://github.com/SLHanum/PoliticalOntology. The OWL file is in the folder named Ontology.

2. **Extract the .zip file**

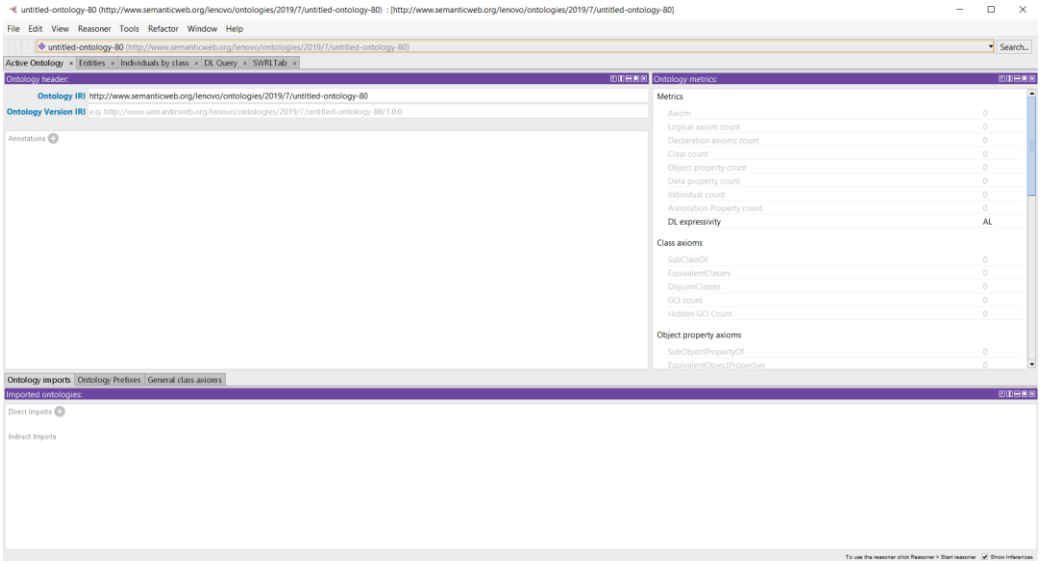
To extract the .zip file, firstly, please go to the folder's directory. By default, the folder's name is PoliticalOntology-master.zip.



Afterward, to extract the folder, simply right-click on the folder and extract it.

3. **Run the Protégé**

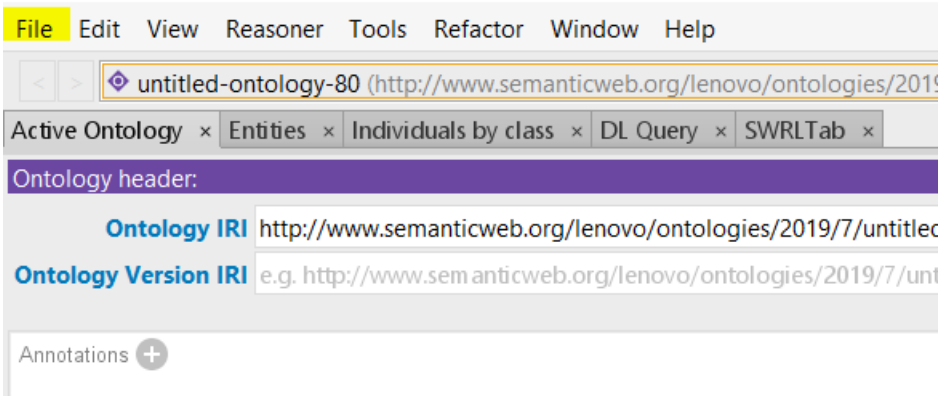
Please ensure that Protégé 5.2.0 has been installed on your laptop. Open the Protégé application and the following interface will appear:



4. Open the OWL file in Protégé

Here are the steps to open the OWL file:

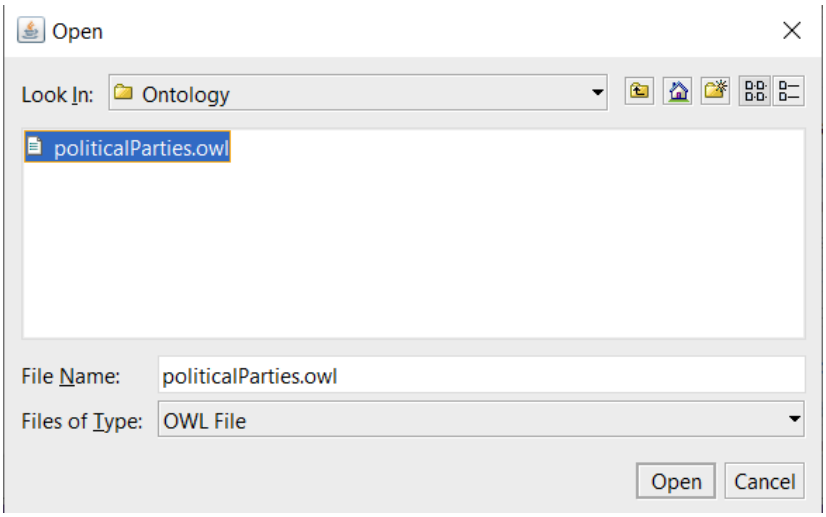
a. Left-click on the **File** menu at the top-leftmost in Protégé.



b. Click **Open**.

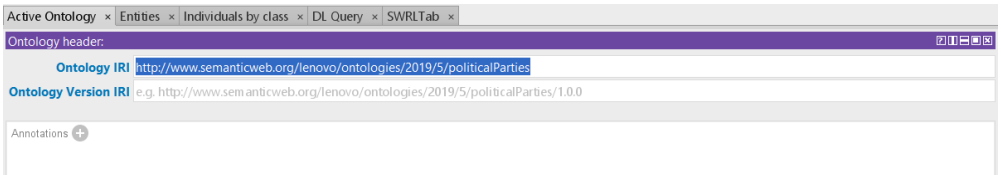
c. Go to the folder's directory that is previously extracted.

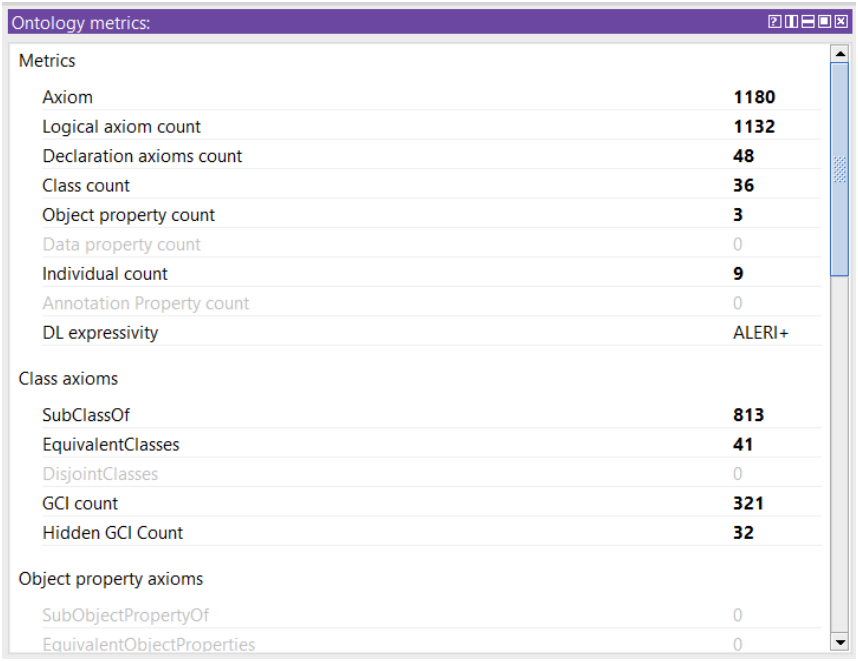
d. Click on the file named politicalParties.owl.



e. Click **Open**.

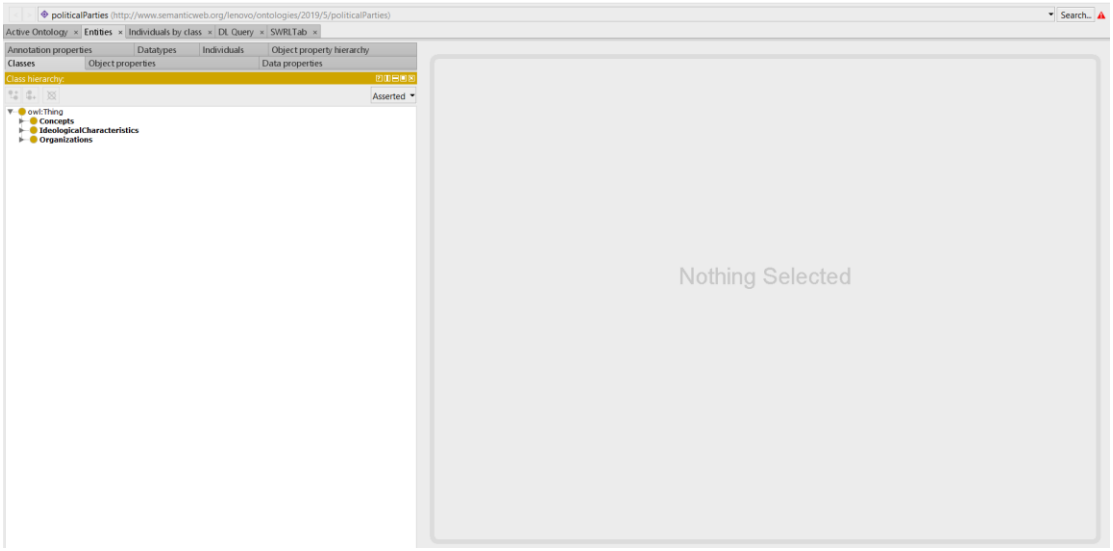
f. To ensure the opened file is correct file, please check the **Ontology metrics** in the **Active Ontology** tab. If the Ontology metrics show the information precisely as follows, then it is the correct file.





5. **See the ontology**

   To see the ontology and its class hierarchy, please click the **Entities tab**. Then you will see the following interface:



Besides **Active Ontology** and **Entities** tabs, you may also move to other tabs that are provided as needed.

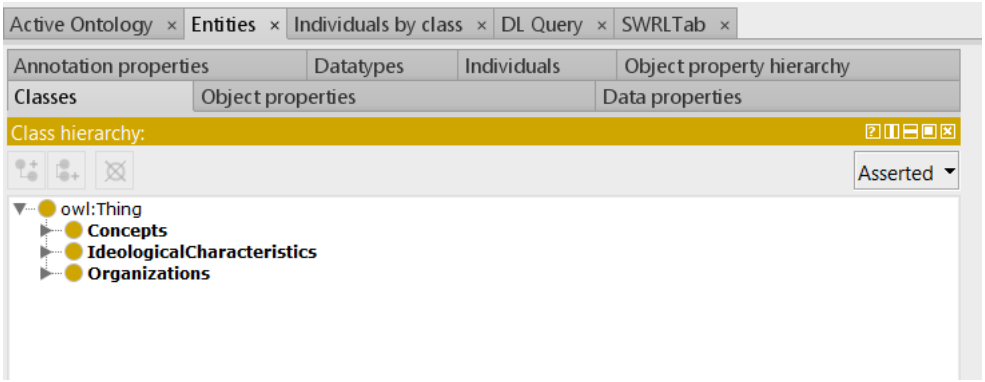
4 Program Descriptions

4.1 Ontology Design

As desribed in the paper, there are three main components in the resulting ontology, i.e., classes, individuals, and object properties.

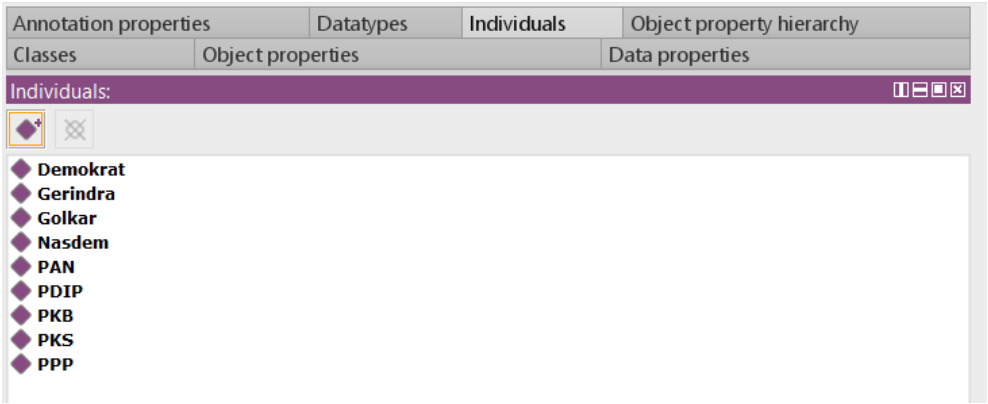
1. **Classes**

To see the classes, click **Classes** tab in the **Entities** tab. Then you will see the following interface:



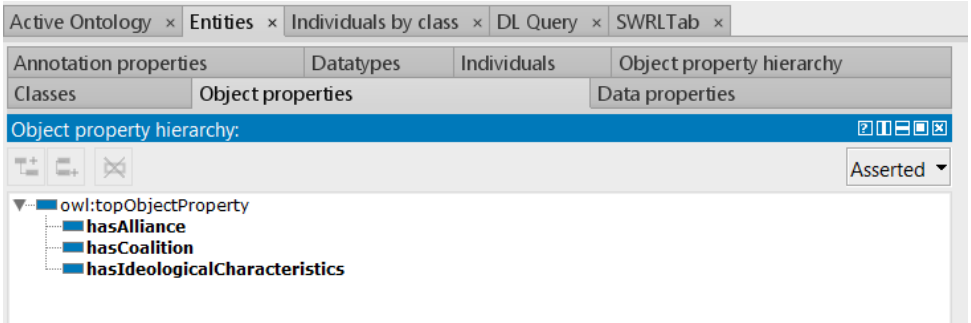
2. **Individuals**

To see the individuals, click the **Individuals** tab in the **Entities** tab. Then you will see the following interface:



3. **Object properties**

To see the classes, click **Object properties** tab in the **Entities** tab. Then you will see the following interface:



4.2 Program Functionality and DL Query

The program has several functionalities and DL queries that can be executed as follows:

1. Find the inferred axioms.

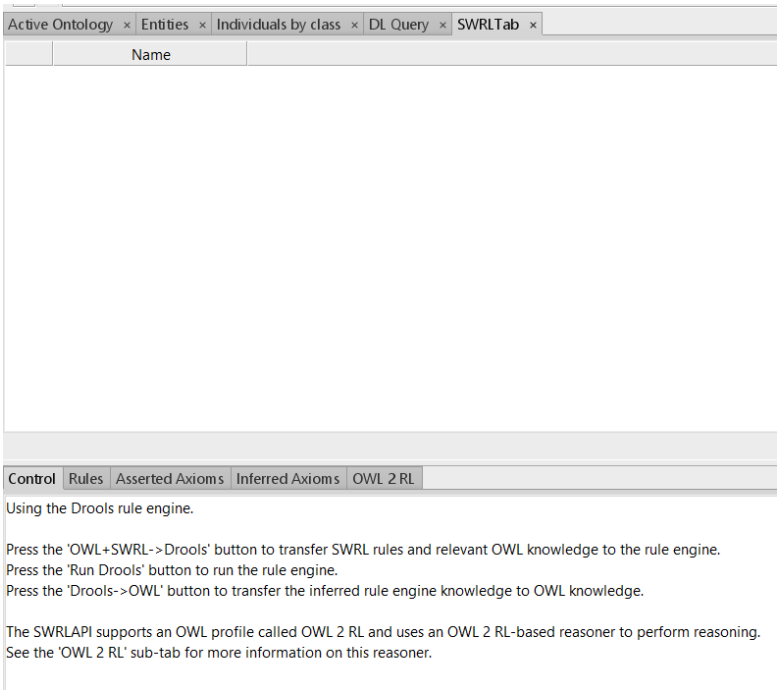
   Find the inferred axioms without assert it. The inferred axioms will be useful later for the consistency checking of ontology. To see the inferred axioms, you can add the SWRLTab. Here are the steps to add the SWRLTab:

   a. Click **Window** menu.

   b. Click **Tabs**.

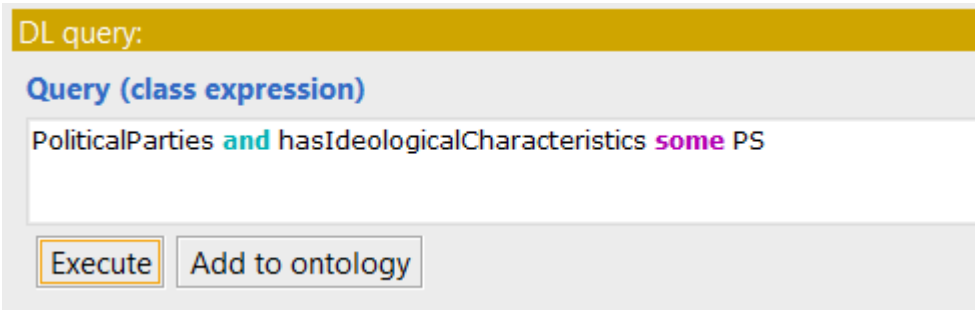
   c. Check the **SWRLTab**. (if it has not checked yet).

      The interface will appear as follows:



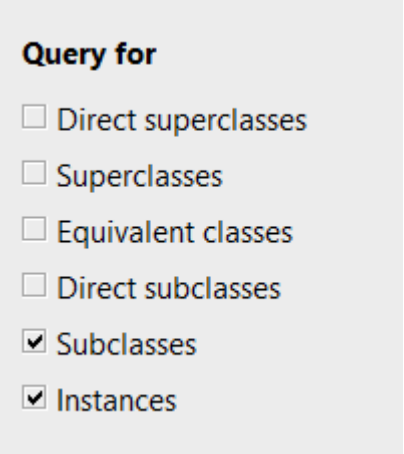
2. Find the political parties based on their ideological characteristics.

   To find the political parties, please click **DL Query** tab.

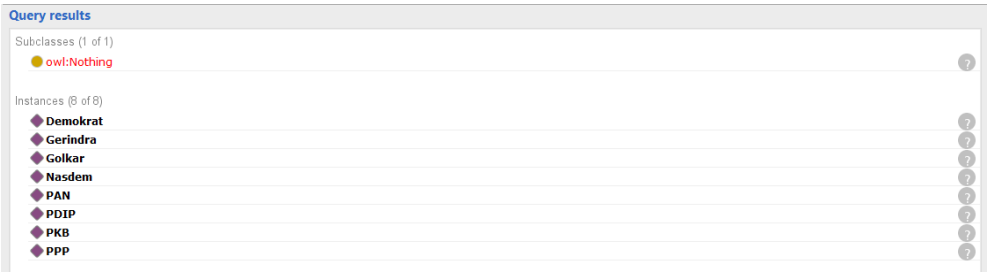


   For instance, we want to find all political parties that satisfy Pancasila attribute (as their ideological characteristic). We create a query first: **PoliticalParties and hasIdeologicalCharacteristics some PS** then we click

Execute button. Do not forget to check the **Instances** box in the **Query for** column since the political parties are **Individuals**.



Then, here is the query results:



Thank you.