
Publishing data on the Semantic Web

In this exercise, we want to publish structured data in RDF, following Linked Data principles and best practices.

We will start by observing existing data on the Web, then modelling your own data by reusing known vocabularies and linking your data to other data sources.

1. Observing existing data

We will start by examining data from a well-known Linked Data provider, [DBpedia](#).

1. Start a Web browser.
2. Open a blank text file that you will save as <yourfirstname>-<yourlastname>.txt. Please answer to the questions below in this file and send the file at the end of the class. Your answers should be very short.
3. Using your Web browser, go to http://dbpedia.org/page/Tim_Berners-Lee. What is this page describing? Write your answer in English or Portuguese in the text file.
4. Observe the data available there. The Web page is an HTML document, but it shows RDF triples from the RDF database DBpedia, in an almost human-readable form. Try to figure out the triples that are shown there. Give 3 examples of RDF triples (each on a different line in your text file) observed in this file. Write them in Turtle format.
5. The Web page shows a table with two columns. The first column (with header **Property**) has values that are hyperlinks. Click on one of those links, for instance [dbo:birthDate](#) and look at what is shown there. What kind of information does this property provide? Write your answer in the text file.
6. Go back to the previous page. Look at the second column in the table, with head **Value**. Some values are hyperlinks, some are not. What does it mean when the value is a hyperlink? Try to explain as concisely as possible in your text file.
7. Consider the line where the Property is [dbp:education](#). Move your mouse on the second link in the Value column. On the bottom left of the browser window, you should see the URL to which this link is pointing to. Write this URL in your text file.
8. Click on the link, then look at the address bar in Firefox. Compare it to the link you saw just before and write it down in your text file. Why are they different? What does the address on the link represent about what the address to which you are redirected to? Explain concisely in your text file.
9. At the first page (that is, http://dbpedia.org/page/Tim_Berners-Lee) consider the Property `dbp:birthYear`. What is the number in the Value column? What does the text between brackets represent? Take a look at `dbp:children`. What does the value formally represent? What is its type? Write your short answers in the text file.
10. In the header of the page, you can see "Formats". Select the Turtle format and look at its content. You can also look at other RDF formats, in particular RDF/XML and JSON-LD.
11. Tim Berners-Lee is also described in other RDF data sets on the Web. Find the property `owl:sameAs` and look at the values there. You can see URIs that point to other domains. All of them contain RDF data.

As in DBpedia, the data is usually displayed in HTML, but there are links to the RDF data. Find RDF files that describe Tim Berners-Lee at the Deutsche National Bibliothek, and at the BBC.

2. Authoring data in RDF

Now that you have seen how an existing Linked Data web site works, you will be editing and publishing your own RDF files.

In this exercise, you will be describing your personal profile to build a distributed social network.

You will be writing some RDF in the [Turtle](#) format. Use the Turtle Editor YATE: <https://perfectkb.github.io/yate/>

The important part of this work is **graph-based modelling**. Instead of writing pure RDF, you *may* draw a graph on paper.

1. You first need to define an IRI for yourself. If you have a personal website, or a LinkedIn account, you may use this. You may also invent a fake namespace for this exercise, such as `me:`.
2. As an example, you can take a look at the [FOAF example](#) at the related Wikipedia page. This document says that `a` is a `foaf:Person`. `foaf:Person` is in fact representing the IRI `http://xmlns.com/foaf/0.1/Person` because we defined the [prefix](#) `foaf:` at the beginning of the document. Add other classes to which you belong (such as `Student`, `Man` or `Woman`), etc.
3. To enrich your RDF profile, you can say what your topics of interest are, your past projects, etc. It provides useful property IRIs that you can use to describe yourself. Add triples to your RDF document to indicate that one of your interests is the Semantic Web. For this, you can use the IRI `http://dbpedia.org/resource/Semantic_Web` that DBpedia defines to identify the Semantic Web. You can add more topics of interest.
4. Add your fullname, or you firstname and lastname, possibly your nickname. Relate yourself to your university. You may have to invent new predicates for this. You can always use the prefix `me:` as a "put it all" prefix.
5. Add more things about yourself, such as your address, your previous schools, your family members (real or fictitious), friends, etc.
6. You can indicate that you know someone (or vice-versa), for instance using the property `foaf:knows`. Add a triple that would state that you know at least one of your classmates. Ask them which IRI they chose and reuse it.
7. More difficult: express in your graph that you are a master student since October 2021 (or whatever date you started a master programme).