INF0216
Lab 1

Introduction and RDF

Group Overview

01

Group 1

Day: Wednesday 08:15 - 10:00
Room: Ulrike Pihls hus - Seminarrom 4B
TA: Robin
Contact: rbo027@uib.no

02

Group 2

Day: Monday 10:15 - 12:00
Room: Ulrike Pihls hus - Seminarrom 2C
TA: Balázs
Contact: balazs.mosolygo@uib.no

03

Group 3

Day: Monday 08:15 - 10:00
Room: Ulrike Pihls hus - Seminarrom 4B
TA: Balázs
Contact: balazs.mosolygo@uib.no

04

Group 4

Day: Wednesday 14:15 - 16:00
Room: Ulrike Pihls hus - Seminarrom 4A
TA: Robin
Contact: rbo027@uib.no

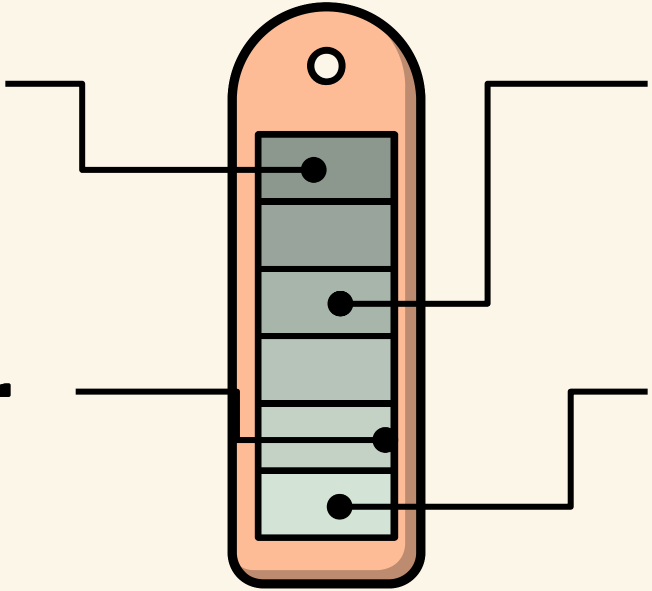
INFO216 WIKI

You can find all **files**, **tasks** and **solutions** in the Wiki of the course page.

- https://wiki.app.uib.no/info216/index.php?title=INFO216_Wiki

Solutions will be put out after all the labs are concluded, presumably on thursdays or fridays.

Lab Format



5 - 15 Min

Walkthrough and questions about lab solution

5 - 15 Min

Introduction about the week’s lab assignment and questions

Rest of Seminar

Work on the lab assignment

MISC

If desired, a 5 - 15 min break will be at whole hour e.g. 9 AM for 8:15 groups. Also, livecoding is also applicable

Schedule

14 Labs in total (check your calendar or schedule for updates)

- No labs in **week 13** (25th - 29th March)
- No labs for **Group 2 and 3** on Monday the 1st of April (due to easter)
- No labs for **Group 1 and 4** on 1st of May (due to Workers' day)

Mandatory attendance (75%)

- If you need approved absence (e.g. through doctors note), email Katja at **seminar.ifi@uib.no**

Subject — predicate — Object

SAY YOU HAVE THE FOLLOWING SENTENCE YOU WISH TO REPRESENT IN TRIPLES:

Joe biden is the president of the United States of America

:JoeBiden — :presidentOf — :UnitedStatesofAmerica

THE SUBJECT IN THIS SENTENCE IS JOE BIDEN AND THE OBJECT IS UNITED STATES OF AMERICA

WE WANT TO DESCRIBE THE RELATIONSHIP THE SUBJECT HAS WITH THE OBJECT, IN THIS INSTANCE, IT'S "PRESIDENTOF".

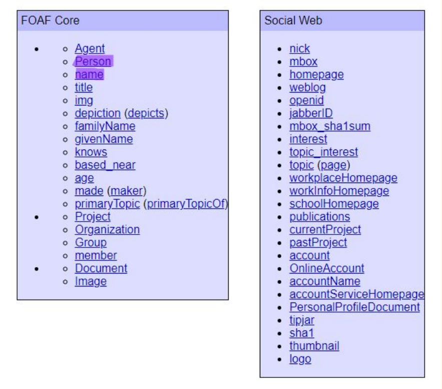
NOW WE ARE GOING TO ADD SOMETHING CALLED VOCABULARIES (NAMESPACES).
VOCABULAIRES CONTAIN DEFINITIONS FOR CLASSES AND PROPERTIES. FOR EXAMPLE, THE NAMESPACE FOAF (FRIEND OF A FRIEND).

IN FOAF, WE HAVE A CLASS OF PERSON, WITH THE DEFINITION:

- THE PERSON CLASS REPRESENTS PEOPLE

IN FOAF, WE HAVE A PROPERTY OF NAME, WITH THE DEFINITION:

- A NAME FOR SOMETHING.



FOAF Core

-
  - Agent
  - Person
  - name
  - title
  - img
  - depiction (depicts)
  - familyName
  - givenName
  - knows
  - based_near
  - age
  - made (maker)
  - primaryTopic (primaryTopicOf)
-
  - Project
  - Organization
  - Group
  - member
-
  - Document
  - Image

Social Web

- nick
- mbox
- homepage
- weblog
- openid
- jabberID
- mbox_sha1sum
- interest
- topic_interest
- topic (page)
- workplaceHomepage
- workInfoHomepage
- schoolHomepage
- publications
- currentProject
- pastProject
- account
- OnlineAccount
- accountName
- accountServiceHomepage
- PersonalProfileDocument
- tipjar
- sha1
- thumbnail
- logo

WE ALSO HAVE SELF DEFINED NAMESPACES, IN THIS INSTANCE WE CAN USE "HTTP://EXAMPLE.ORG/".
WE ARE GOING TO CREATE OUR OWN NAMESPACES FOR THE FIRST COUPLE OF LABS. HOWEVER, DO KEEP IN MIND THERE ARE VOCABULAIRES THAT CAN (AND WILL) BE USED

AFTER INTRODUCING THE NAMESPACE, WE SHOULD ADD IT TO THE TRIPLES WE DEFINED EARLIER

```
@prefix ex: <http://example.org/> .

ex:JoeBiden   ex:presidentOf   ex:UnitedStatesofAmerica.
```

“EX” IS A DEFINED PREFIX FOR THE VOCABULARY WE CREATED. INSTEAD OF TYPING THE FULL URL (EXAMPLE.ORG) WE INSTEAD HAVE A PREFIX TO SHORTEN. IMAGINE THAT EVERYTHING WITH EX: IN FRONT OF IT ACTUALLY HAS HTTP://EXAMPLE.ORG/.

THE FOLLOWING IS WHAT WE CALL “TURTLE” AND IS A SERIALIZATION FORMAT. NOTICE THE SYNTAX, IT USES : BETWEEN PREFIX AND SUBJECT, PREDICATE AND OBJECT. ALSO NOTICE THE . AT THE END OF THE TRIPLE, IT DEFINES IT’S THE END OF THE TRIPLE. IF WE WOULD WANT TO CONTINUE WITH THE SUBJECT, WE COULD USE A ; AND EVEN , TO CARRY BOTH THE SUBJECT AND PREDICATE TO THE NEXT LINE.

WE ARE GOING TO BE USING A PYTHON LIBRARY CALLED RDFLIB, WHERE CREATING TRIPLES WILL BE A BIT DIFFERENT.

BEFORE WE GET INTO THE PROGRAMMING ITSELF, LET'S TAKE A LOOK AT “LITERALS”. WE USE LITERALS WHEN WE WANT THE OBJECT TO BE A VALUE, SUCH AS A STRING, NUMBER OR DATE. WE ARE GOING TO EXPAND UPON THE GRAPH BELOW, BY ADDING THE TRIPLE THAT SAYS THE “JOE BIDEN’S NAME IS ‘JOE BIDEN’”.

```
@prefix ex: <http://example.org/> .

ex:JoeBiden   ex:presidentOf   ex:UnitedStatesofAmerica;
              ex:name          “Joe Biden”^^xsd:string.
```

HOW COULD WE “IMPROVE” THE ADDED TRIPLE *EX:JOEBIDEN EX:NAME “JOE BIDEN”^^XSD:STRING.?*

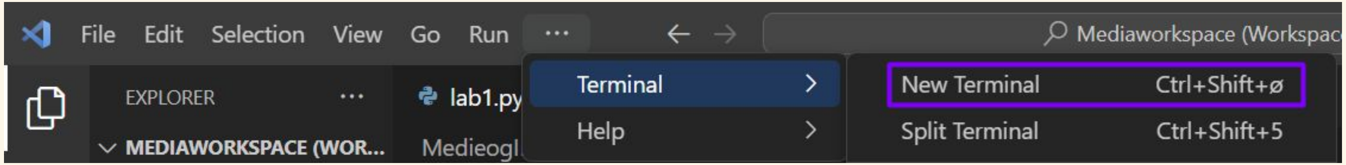
THE ^^XSD:STRING IS TO DEFINE WHAT TYPE OF VALUE THE LITERAL IS. HERE IS A LIST OF ALL THE DIFFERENT XSD TYPES. IT IS NOT STRICTLY NECESSARY; HOWEVER, IT’S USEFUL TO INCLUDE.

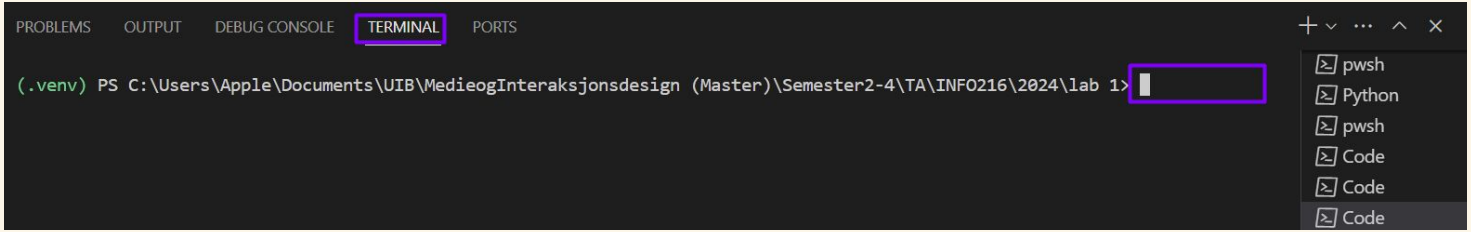
IF YOU DO NOT HAVE AN IDE (E.G. VISUAL STUDIO CODE), FOLLOW THE STEPS ON THE FIRST ASSIGNMENT TO DOWNLOAD AN IDE, AND SETTING UP YOUR VIRTUAL ENVIRONMENT.

ONCE WE HAVE AN IDE, WE WANT TO START BY INSTALLING THE LIBRARY THROUGH PIP INSTALL IN YOUR IDE'S TERMINAL

```
pip install rdflib
```

```
pip3 install rdflib
```





```
(.venv) PS C:\Users\Apple\Documents\UIB\MedieogInteraksjonsdesign (Master)\Semester2-4\TA\INFO216\2024\lab 1>
```

Important Commands for Lab 1

g = Graph()

Creates an empty graph, and assigns it to the variable g

g.add((s, p, o))

Adds triples to your graph. Remember to replace **s p & o.**

Literal()

When we want to use a value as object, we use literal. E.g. to define numbers and stings.

g.serialize()

To serialize your graph into different formats, such as turtle

NOTICE THE DIFFERENCE IN SYNTAX BETWEEN TURTLE AND RDFLIB

TURTLE

```
ex:JoeBiden   ex:presidentOf   ex:UnitedStatesofAmerica.
```

RDFLIB

```
g.add((ex.JoeBiden, ex.presidentOf, ex.UnitedStatesofAmerica))
```

YOU ARE GOING TO WORK A LOT WITH THE RDFLIB VERSION OF RDF, SO JUST KEEP IN MIND THAT THERE IS A DIFFERENCE IN WRITING IT IN PYTHON (WITH RDFLIB) AND TURTLE.

Syntax Difference

CLASS	UnitedStatesOfAmerica UnitedStatesofAmerica United_States_Of_America
PROPERTY	birth_day birthDay birthday
NAMESPACE	http://example.org/ http://example.org#

All of these are different!

One is not necessarily more correct than the other, but make sure you are consistent, and use the same. Unless you specifically define that they are similar (which requires OWL, more about that later in the course) they will not be.