



DIGITAL HUMANITIES 2022

# Tool intro: Protégé

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# Protégé

## Protégé ontology editor

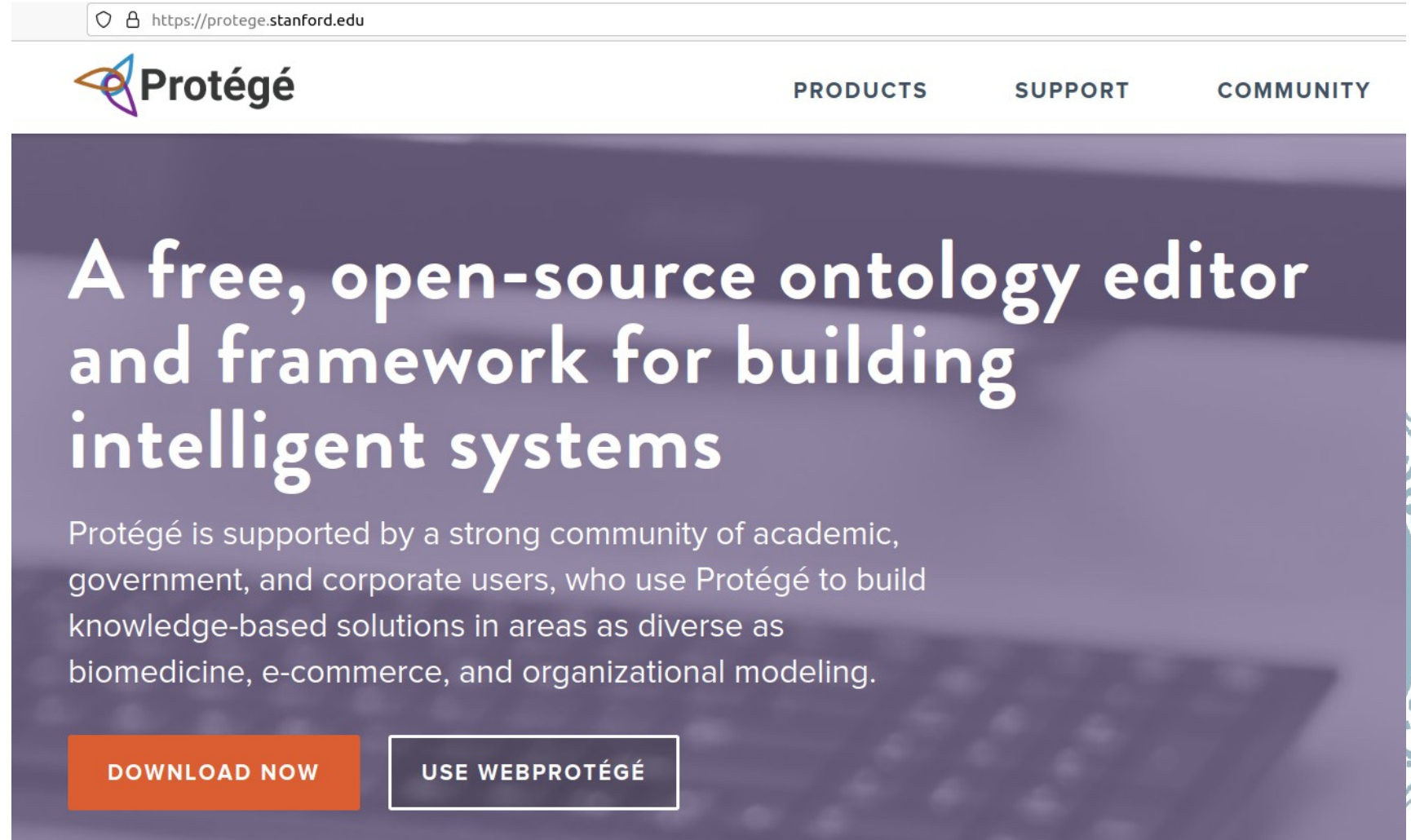
two flavors:

- web version
- desktop version

use for browsing,  
querying, editing  
or creating ontologies

vast amount of plugins:

- visualizations
- reasoners
- domain adaptations



The screenshot shows the Protégé website homepage. At the top, there is a navigation bar with the Protégé logo on the left and links for 'PRODUCTS', 'SUPPORT', and 'COMMUNITY' on the right. The main content area has a dark purple background with the text 'A free, open-source ontology editor and framework for building intelligent systems' in large white font. Below this, a paragraph describes the tool's support by a strong community of academic, government, and corporate users. At the bottom, there are two buttons: 'DOWNLOAD NOW' (orange) and 'USE WEBPROTÉGÉ' (white with a black border).

https://protege.stanford.edu

**Protégé**

PRODUCTS SUPPORT COMMUNITY

## A free, open-source ontology editor and framework for building intelligent systems

Protégé is supported by a strong community of academic, government, and corporate users, who use Protégé to build knowledge-based solutions in areas as diverse as biomedicine, e-commerce, and organizational modeling.

[DOWNLOAD NOW](#) [USE WEBPROTÉGÉ](#)



# WebProtégé:

## <https://webprotege.stanford.edu/>

Protégé ontology editor

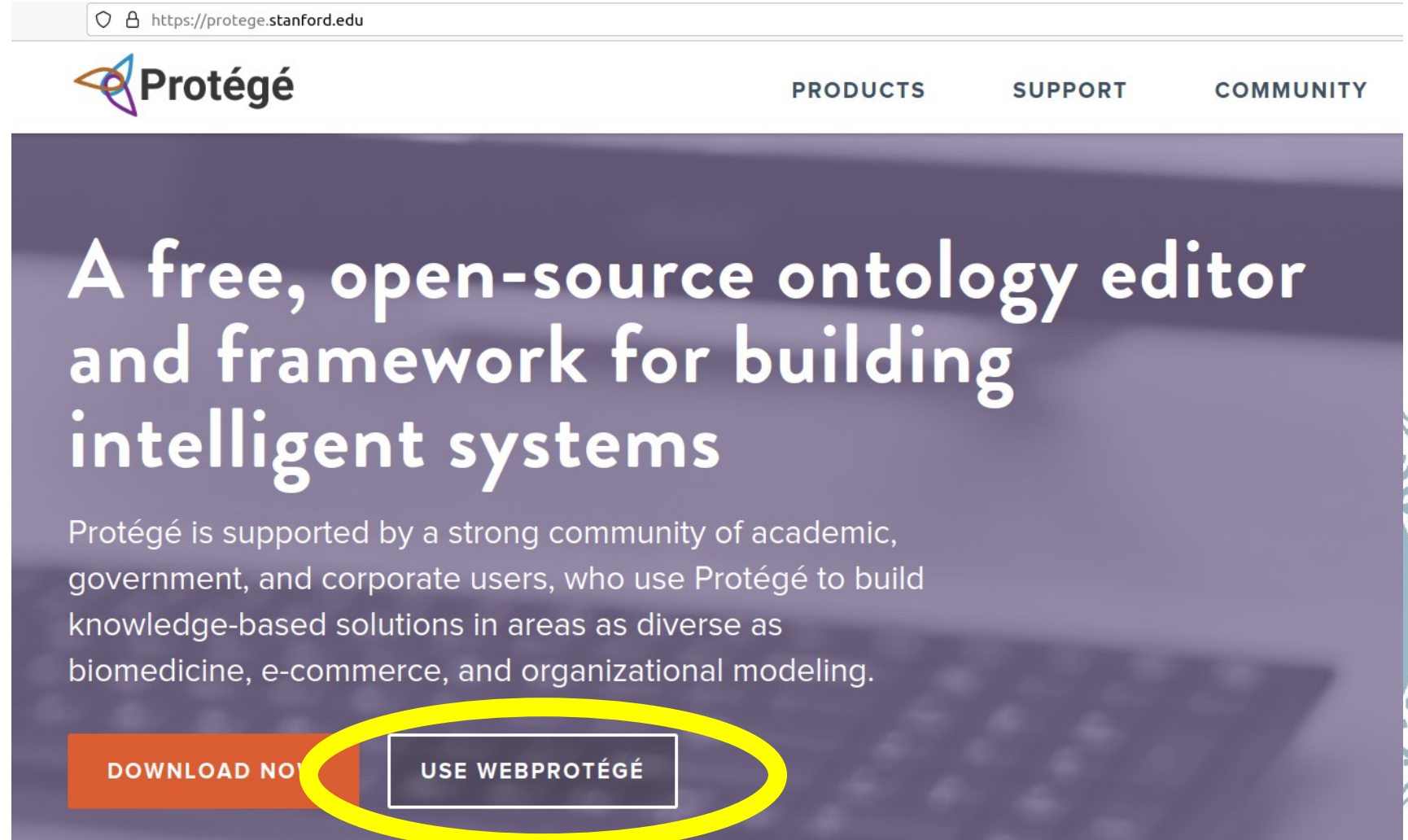
two flavors:

- web version
- desktop version

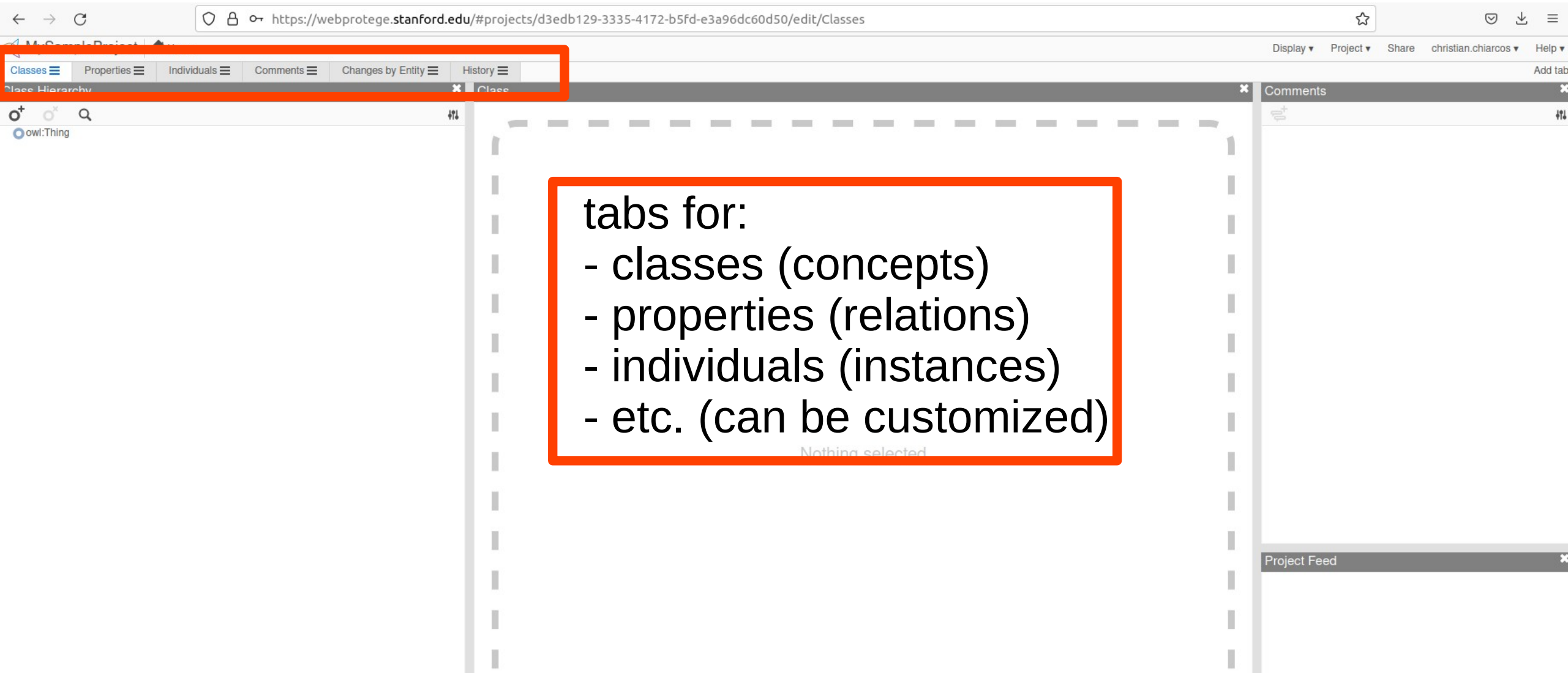
use for browsing,  
querying, editing  
or creating ontologies

vast amount of plugins:

- visualizations
- reasoners
- domain adaptations



# WebProtégé: Tabs / Views



# Class View (first/default tab)

The screenshot displays the Protege software interface for 'MySampleProject'. The top navigation bar includes 'Home', 'Display', 'Project', 'Share', 'christian.chiarcos', and 'Help'. Below this is a tabbed interface with 'Classes' selected. The 'Classes' tab is further divided into 'Class Hierarchy', 'Class: Fruit', and 'Comments: Fruit'. The 'Class Hierarchy' panel on the left shows a tree structure starting from 'owl:Thing', with 'Fruit' highlighted under 'Consumable'. The 'Class: Fruit' panel in the center shows the class definition with sections for 'IRI' (http://webprotege.stanford.edu/RDt8mvi3JXGuJ5og00oT7nl), 'Annotations' (rdfs:label 'Fruit' in English), 'Parents' (Food), and 'Relationships'. A red-bordered box is overlaid on the 'Class: Fruit' panel, containing the text 'Class Definitions add your own:' followed by a list: '- annotations', '- parents', and '- relationships'. The 'Comments: Fruit' panel on the right is currently empty. At the bottom right, a 'Project Feed' shows a recent update by christian.chiarcos: 'Moved class Fruit from owl:Thing to Food'.

MySampleProject Home Display Project Share christian.chiarcos Help

Classes Properties Individuals Comments Changes by Entity History Add tab

Class Hierarchy Class: Fruit Comments: Fruit

owl:Thing  
Organism  
Plant  
Tree  
Consumable  
Food  
Fruit  
Drink

IRI  
http://webprotege.stanford.edu/RDt8mvi3JXGuJ5og00oT7nl

Annotations  
rdfs:label Fruit en  
Enter property Enter value lang

Parents  
Food  
Enter a class name

Relationships  
Enter property Enter value lang

Class Definitions  
add your own:  
- annotations  
- parents  
- relationships

Project Feed  
christian.chiarcos Moved class Fruit from owl:Thing to Food  
Less than one minute ago

# Individuals View: Create an individual

MySampleProject Home Display Project Share christian.chiarcos Help

Classes Properties Individuals Comments Changes by Entity History Add tab

Individuals by Class

owl:Thing

All instances Direct instances only

Individuals

Enter search string to filter list

apple

Individual

IRI

http://webprotege.stanford.edu/Ru7FT4xHvnMk0ZsukYCGsV

Annotations

rdfs:label apple en

Enter property Enter value lang

Types

Fruit

Enter a class name

Relationships

Enter property

Same As

Enter an individual name

Comments: apple

Project Feed

christian.chiarcos Edited apple  
NamedIndividual: [apple](#)  
Less than one minute ago

christian.chiarcos Created

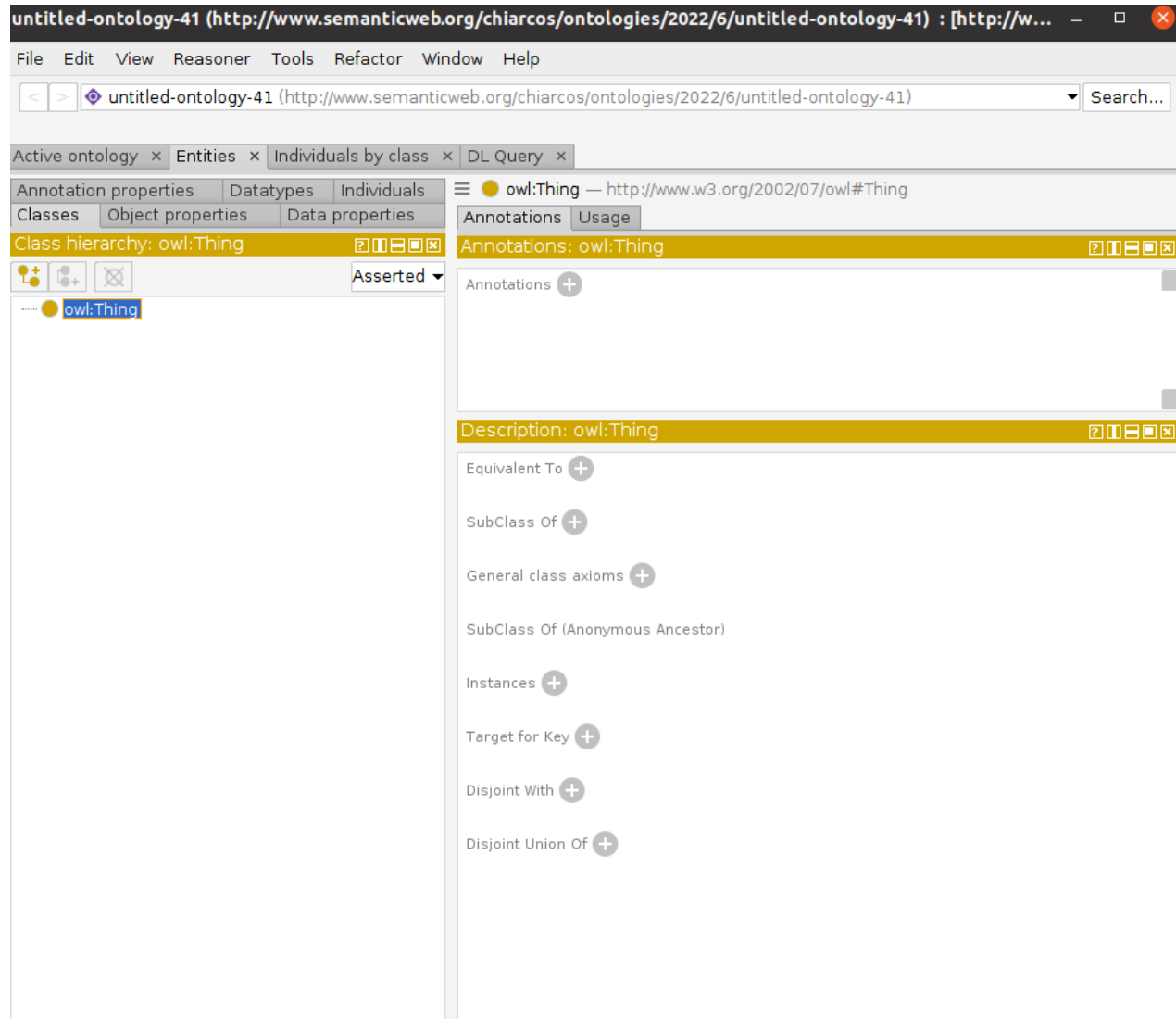
**click on the symbol  
and make up a name ;)  
note that this will be an  
instance of owl:Thing  
("anything")  
We should give it a type**

# WebProtégé and Desktop Edition

WebProtégé gives you a head start

Desktop edition

- similar structure and look
- can read and write exactly the same data as WebProtégé
- supports many more extensions (you can actually write your own)
- interface a bit more crowded
- you can work offline ;)





# Properties, Statements, Axioms, Inference

## **Protégé can be used to**

- create/manage taxonomies of concepts
- create instances

## **But there's more to it:**

- browse/query/explore knowledge graphs
- create properties  
(relations between/features of concepts)
- create axioms  
(formal definitions of concepts and properties)
- perform reasoning  
(drawing inferences from concept definitions)

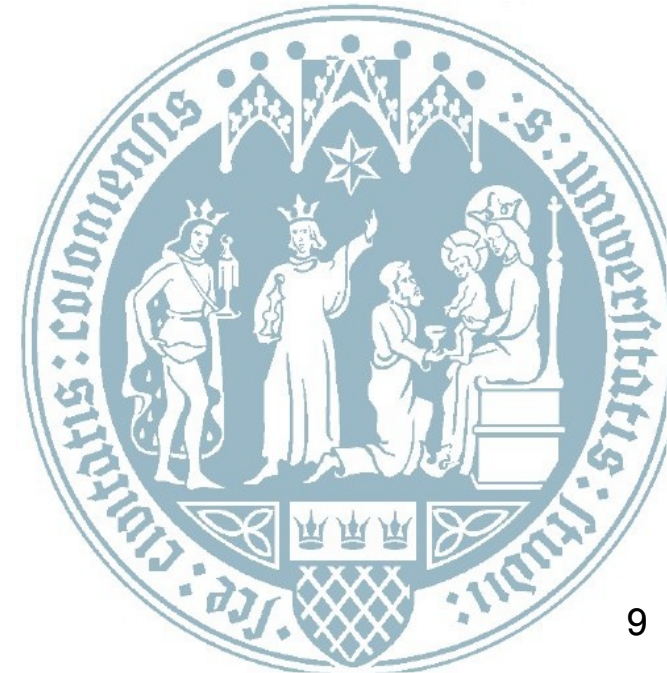




# For your convenience

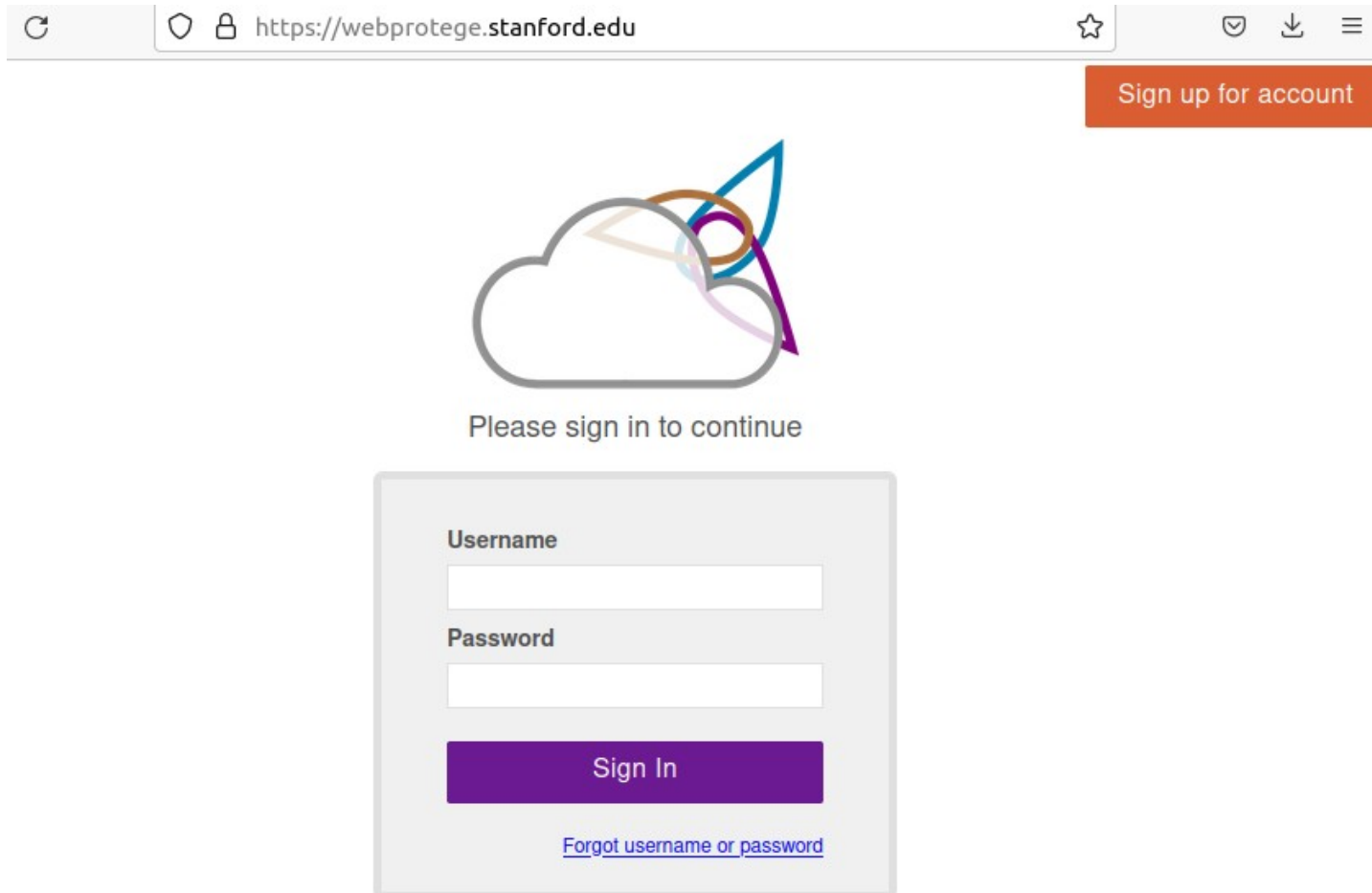
Complementary slides with a mini-walk through for creating an ontology with WebProtégé

In the tutorial, we will have a more thorough walk-through through Desktop Protégé ;)



# WebProtégé:

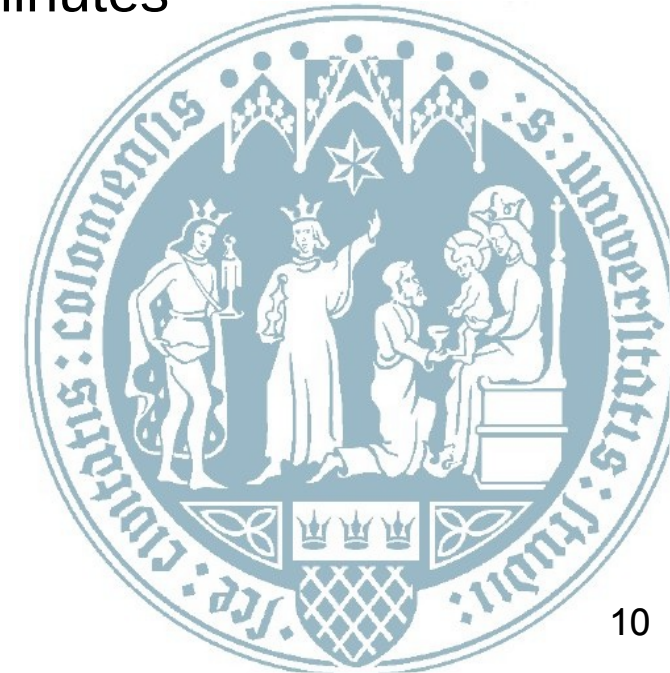
## <https://webprotege.stanford.edu/>



A screenshot of the WebProtégé login page. At the top, a browser address bar shows the URL <https://webprotege.stanford.edu>. To the right of the address bar is a red button labeled "Sign up for account". Below the address bar is a logo consisting of a cloud with three overlapping loops in blue, orange, and purple. Underneath the logo is the text "Please sign in to continue". Below this is a login form with two input fields: "Username" and "Password". Below the "Password" field is a blue button labeled "Sign In". At the bottom of the form is a link that says "Forgot username or password".

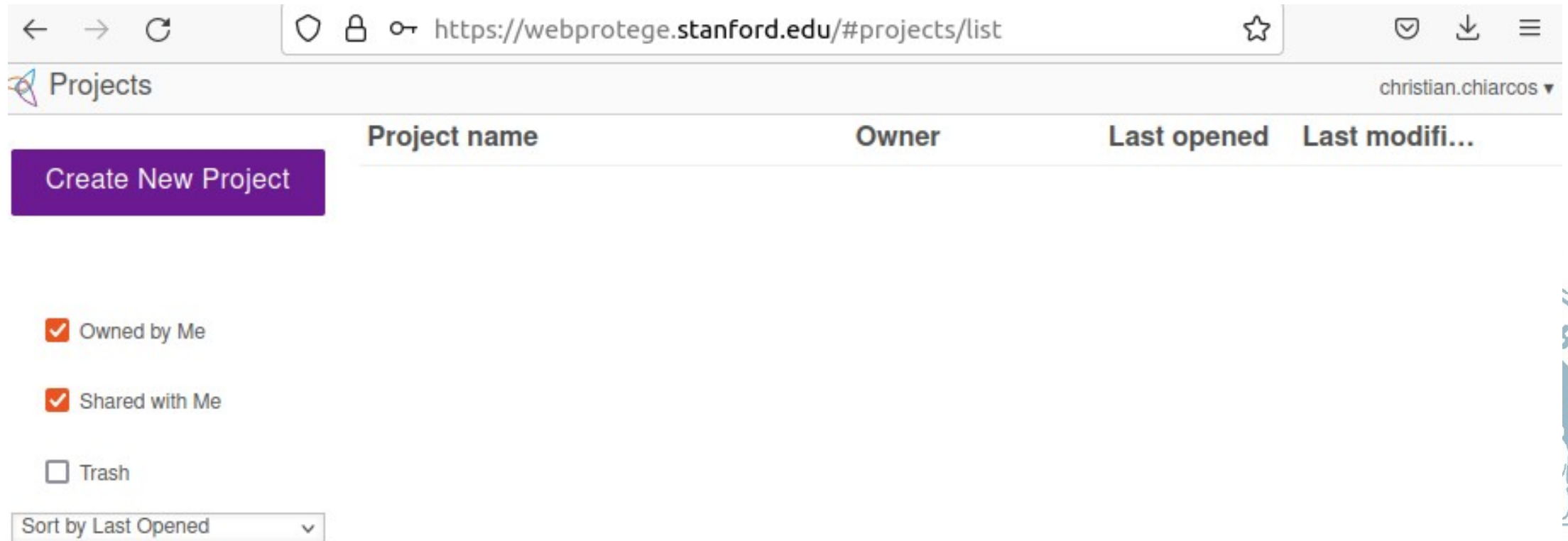
WebProtégé requires registration

Please do that *now*, you need your accounts in a few minutes



# WebProtégé:

## <https://webprotege.stanford.edu/>



So, create new project

Projects

Create New Project

☒ Owned by Me

☒ Shared with Me

☐ Trash

Sort by Last Opened

christian.chiarcos

Last modified...

Create New Project

Project name

MySampleProject

Language

en

Enter a language tag for labelling new entities and to use as the primary display language. Leave empty for no language tag.

Description

This is a toy project about fruits and trees ...


Create from existing sources

Browse...

No file selected.

Cancel

Create New Project

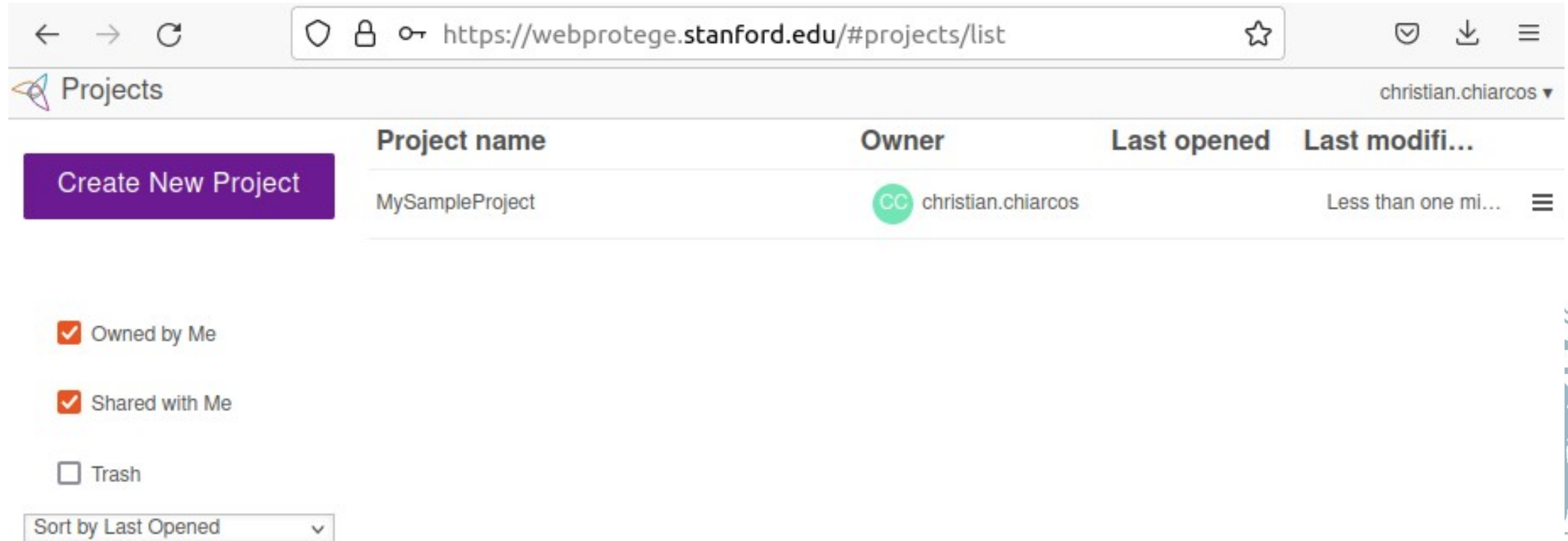


12





# WebProtégé:

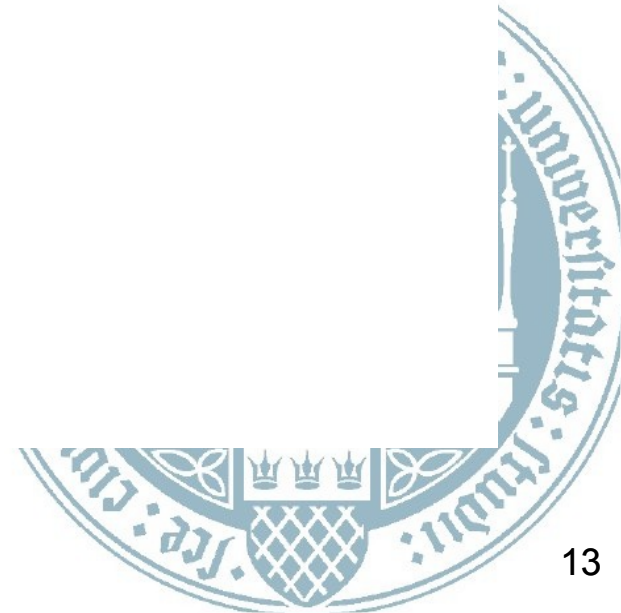
## <https://webprotege.stanford.edu/>

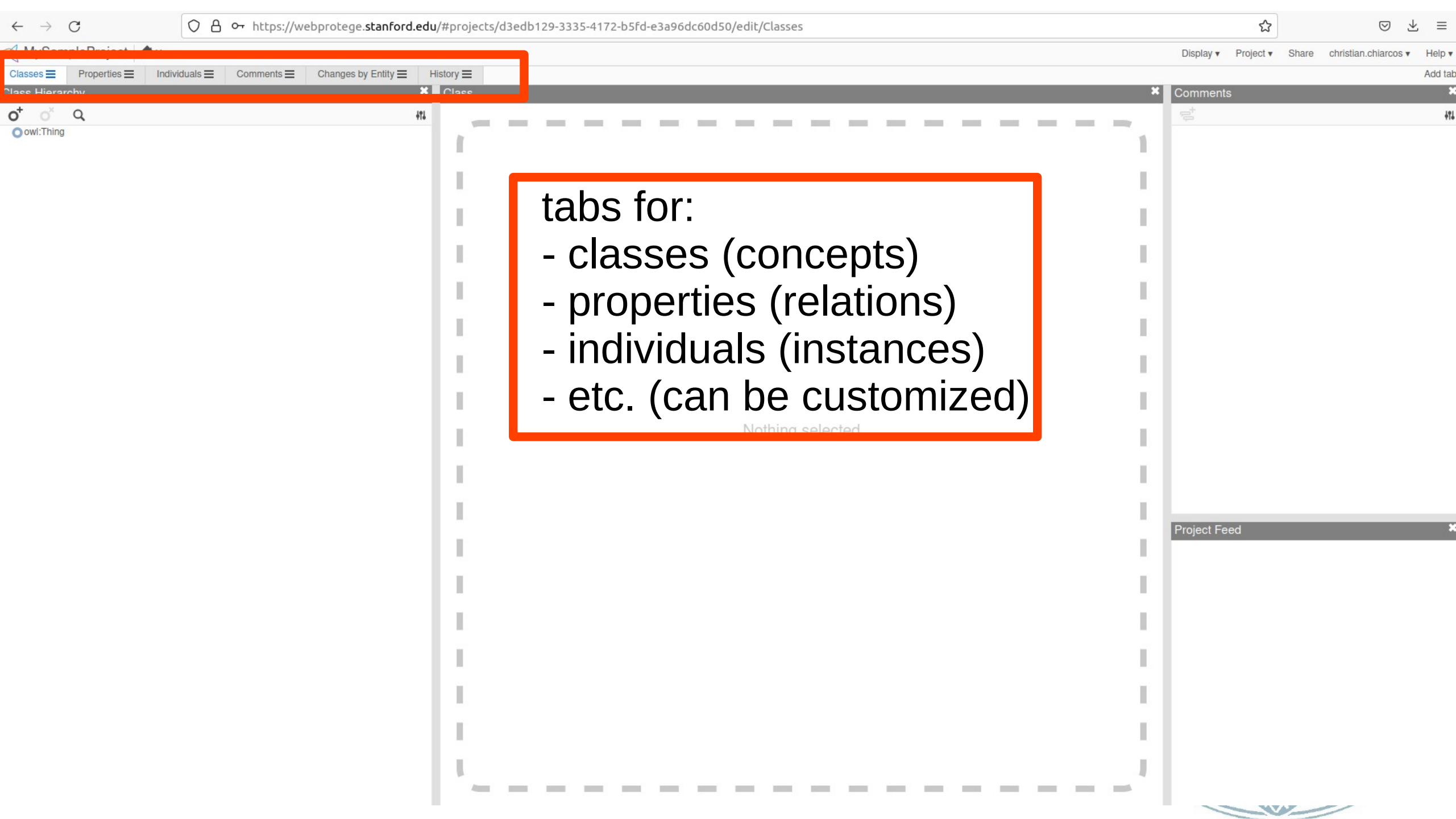


The screenshot shows the WebProtégé interface. At the top, the browser address bar displays <https://webprotege.stanford.edu/#projects/list>. Below the address bar, the page header includes the "Projects" title, a user profile for "christian.chiarcos", and a "Create New Project" button. A table lists the projects, with one entry "MySampleProject" owned by "christian.chiarcos". On the left side, there are filter checkboxes for "Owned by Me" and "Shared with Me", and a "Sort by Last Opened" dropdown menu.

Project name	Owner	Last opened	Last modifi...
MySampleProject	 christian.chiarcos		Less than one mi... 

Now, let's open "MySampleProject"





tabs for:

- classes (concepts)
- properties (relations)
- individuals (instances)
- etc. (can be customized)

# Class view (first/default tab)

The screenshot displays the 'MySampleProject' OWL editor interface. The top navigation bar includes 'Home', 'Display', 'Project', 'Share', 'christian.chiarcos', and 'Help'. Below this is a tabbed interface with 'Classes', 'Properties', 'Individuals', 'Comments', 'Changes by Entity', and 'History'. The 'Classes' tab is active, showing a 'Class Hierarchy' panel on the left with 'owl:Thing' selected. The main panel shows the 'Class: owl:Thing' details, including its IRI, annotations, parents, and relationships. A 'Comments: owl:Thing' panel is on the right, and a 'Project Feed' panel is at the bottom right.

**Class Hierarchy:**

- browse,
- create (O<sup>+</sup>),
- delete (O<sup>x</sup>)

concept hierarchy

**Class: owl:Thing**

IRI  
http://www.w3.org/2002/07/owl#Thing

**Annotations**  
Enter property      Enter value      lang

**Parents**  
Enter a class name

**Relationships**  
Enter property      Enter value      lang

**Comments: owl:Thing**

**Project Feed**

# Class view (first/default tab)

The screenshot displays the Protege software interface with the 'Class view' tab selected. The top navigation bar includes 'MySampleProject', 'Home', and various utility buttons like 'Display', 'Project', 'Share', and 'Help'. Below this, a tabbed interface shows 'Classes', 'Properties', 'Individuals', 'Comments', 'Changes by Entity', and 'History'. The 'Classes' tab is active, showing a 'Class Hierarchy' on the left and a 'Class: Fruit' definition in the center. The hierarchy lists 'owl:Thing' as the root, with children 'Organism', 'Plant', 'Tree', 'Consumable', 'Food', 'Fruit', and 'Drink'. The 'Fruit' class is highlighted. The 'Class: Fruit' panel shows its IRI, annotations (including 'rdfs:label' with value 'Fruit'), parents (including 'Food'), and relationships. A red-bordered box highlights the text 'Class Definitions add your own: - annotations - parents - relationships'. On the right, a 'Comments: Fruit' panel is empty, and a 'Project Feed' at the bottom shows a recent update by 'christian.chiarcos' moving the 'Fruit' class to 'Food'.

MySampleProject Home Display Project Share christian.chiarcos Help

Classes Properties Individuals Comments Changes by Entity History Add tab

Class Hierarchy

- owl:Thing
  - Organism
    - Plant
      - Tree
  - Consumable
    - Food
  - Fruit**
  - Drink

Class: Fruit

IRI  
http://webprotege.stanford.edu/RDt8mvi3JXGuJ5og00oT7nl

Annotations

rdfs:label	Fruit	en	X
Enter property	Enter value	lang	

Parents

Food	X
Enter a class name	

Relationships

Enter property	Enter value	lang
----------------	-------------	------

Class Definitions  
add your own:  
- annotations  
- parents  
- relationships

Comments: Fruit

Project Feed

christian.chiarcos Moved class Fruit from owl:Thing to Food  
Less than one minute ago



# Class view (first/default tab)

The screenshot displays the 'MySampleProject' web application interface. The top navigation bar includes the project name, a 'Home' button, and user controls for 'Display', 'Project', 'Share', and the user 'christian.chiarcos'. Below this is a tabbed interface with 'Classes' selected. The main content area is divided into three panels:

- Class Hierarchy:** A tree view showing the ontology structure. 'Fruit' is highlighted under 'Consumable'.
- Class: Fruit:** The central panel showing details for the 'Fruit' class, including its IRI, annotations (e.g., 'rdfs:label' with value 'Fruit'), parents (e.g., 'Food'), and a section for relationships.
- Comments: Fruit:** A panel on the right showing a comment by 'christian.chiarcos' about the class's placement in agriculture vs. biology.

A red-bordered box highlights the 'Comments' and 'Project Feed' sections, with text indicating that users can add their own comments and view a project feed activity log.

Slack

# Properties View (analogous structure)

The screenshot displays the 'MySampleProject' web application. The top navigation bar includes 'Home', 'Display', 'Project', 'Share', 'christian.chiarcos', and 'Help'. Below this is a tabbed interface with 'Classes', 'Properties', 'Individuals', 'Comments', 'Changes by Entity', and 'History'. The 'Properties' tab is active, showing a 'Property Hierarchy' on the left with 'owl:topObjectProperty' and 'bearsFruit'. The main area shows the 'Property' details for 'bearsFruit', including its IRI, annotations (rdfs:label 'bearsFruit' in English), domain ('Tree'), and range ('Fruit'). A red box highlights the text: 'Object properties between individuals', 'Data properties attribute-value pairs', and 'Annotation properties properties of concepts'. On the right, there is a 'Comments: bearsFruit' section and a 'Project Feed' at the bottom showing a recent edit by christian.chiarcos.

MySampleProject Home Display Project Share christian.chiarcos Help

Classes Properties Individuals Comments Changes by Entity History Add tab

Property Hierarchy

Object Properties Data Properties Annotation Properties

owl:topObjectProperty

bearsFruit

Property

IRI

http://webprotege.stanford.edu/RBFv6CnB4Jd6Q0YHsEaJ7tD

Annotations

rdfs:label bearsFruit en

Enter property Enter value lang

Domain

Tree

Enter a class name

Range

Fruit

Enter a class name

Comments: bearsFruit

Project Feed

christian.chiarcos Edited bearsFruit ObjectProperty: bearsFruit Less than one minute ago

**Object properties**  
between individuals

**Data properties**  
attribute-value pairs

**Annotation properties**  
properties of concepts

# Individuals Tab: Create an individual

The screenshot shows the Protege web interface for 'MySampleProject'. The 'Individuals' tab is active, displaying a list of individuals under the 'owl:Thing' class. The 'apple' individual is selected. The 'Individual' panel shows the IRI and annotations for 'apple'. The 'Comments' panel shows the comment 'apple'. The 'Project Feed' panel shows recent activity.

**click on the symbol  
and make up a name ;)  
note that this will be an  
instance of owl:Thing  
("anything")  
We should give it a type**

# Individuals Tab: Give it a type

The screenshot shows the 'MySampleProject' web application. The 'Individuals' tab is active, displaying a list of individuals. The 'Types' section is highlighted with a red circle, and a red box contains the text: **click on “Types” and enter one of the classes/concepts you just created**.

**MySampleProject** Home Display Project Share christian.chiarcos Help

Classes Properties **Individuals** Comments Changes by Entity History Add tab

**Individuals by Class**

Class

owl:Thing

All instances Direct instances only

**Individuals**

Enter search string to filter list

apple

**Individual**

IRI

http://webprotege.stanford.edu/Ru7FT4xHvnMk0ZsukYCGsV

**Annotations**

rdfs:label apple en

Enter property Enter value lang

**Types**

Fruit

**Relationships**

Enter property

**Same As**

Enter an individual name

**Comments: apple**

**Project Feed**

christian.chiarcos Edited apple  
NamedIndividual: [apple](#)  
Less than one minute ago

christian.chiarcos Created



# Individuals Tab: Create statements

MySampleProject Home Display Project Share christian.chiarcos Help

Classes Properties **Individuals** Comments Changes by Entity History Add tab

Individuals by Class

Class

owl:Thing

All instances Direct instances only

Individuals

Enter search string to filter list

- appletree
- apple

Individual

IRI

http://webprotege.stanford.edu/R7tvvsdxfmk6GrzS2HVX2So

Annotations

rdfs:label	appletree	en	X
Enter property	Enter value	lang	

Types

- Tree

Relationships

bearsFruit	apple	X
Enter property	Enter value	lang

Same As

Comments: appletree

Project Feed

christian.chiarcos Edited appletree  
NamedIndividual: [appletree](#)  
Less than one minute ago

**“Relationships”**  
just enter the form  
with properties and  
individuals

# Individuals Tab: View your data

MySampleProject Home Display Project Share christian.chiarcos Help

Classes Properties Individuals Comments Changes by Entity History Add tab

Individuals by Class

Class

owl:Thing

All instances Direct instances only

Individuals

Enter search string to filter list

appletree

apple

Individual: appletree

Entity Graph

Plant Food

Tree Fruit

apple

appletree

bearsFruit

Project Feed

christian.chiarcos Edited appletree

NamedIndividual: [appletree](#)

2 minutes ago

**Entity Graph**  
(second logo)

- dashed lines are inferred triples

# Querying: Add tab ...

The screenshot displays the 'MySampleProject' web application interface. The top navigation bar includes a home icon, the project name 'MySampleProject', and a user profile 'christian.chiarcos'. Below this, a series of tabs are visible: 'Classes', 'Properties', 'Individuals' (which is the active tab), 'Comments', 'Changes by Entity', and 'History'. On the far right of the tab bar, an 'Add tab' button is circled in red.

The main content area is divided into three panels:

- Individuals by Class:** This panel on the left shows a search bar with 'owl:Thing' entered. Below the search bar, there are radio buttons for 'All instances' (selected) and 'Direct instances only'. Under the heading 'Individuals', a list shows 'appletree' and 'apple'.
- Individual: appletree:** The central panel displays a hierarchical diagram of the 'appletree' individual. It shows a vertical chain of inheritance: 'appletree' (purple box) inherits from 'Tree' (blue box), which inherits from 'Plant' (blue box). Simultaneously, 'appletree' inherits from 'apple' (purple box), which inherits from 'Fruit' (blue box), which in turn inherits from 'Food' (blue box). A dashed orange arrow points from 'appletree' to 'Tree', and another dashed orange arrow points from 'appletree' to 'apple'. A solid blue arrow labeled 'bearsFruit' points from 'appletree' to 'apple'.
- Comments: appletree:** This panel on the right is currently empty.

At the bottom right, a 'Project Feed' section shows a recent update: 'christian.chiarcos Edited appletree' with a link to the 'NamedIndividual: appletree' and a timestamp of '2 minutes ago'.

# Querying: Query Builder

MySampleProject Home Display ▼ Project ▼ Share christian.chiarcos ▼ Help ▼

Classes ≡ Properties ≡ Individuals ≡ Comments ≡ Changes by Entity ≡ History ≡ **Query ≡** Add tab

Query

Query

Entities that match  of the following:

Is an instance of

Has a relationship on  that

1 results

- appletree


## Implicit statements

We never declared  
*appletree* to be a plant  
Still, the query works ...





# Back to “Home”: Saving it

click on “download”

 Projects christian.chiarcos ▾

Create New Project

Project name	Owner	Last opened	Last modified
MySampleProject	 christian.chiarcos	Less than one minute ...	15 minutes ago



☒ Owned by Me

☒ Shared with Me

☐ Trash

Sort by Last Opened ▾

# Beyond toy ontologies

When creating a new project, you can also load external ontologies from local files

The screenshot shows a web application interface for creating a new project. A modal dialog titled "Create New Project" is open. It contains the following fields and options:

- Project name:** A text input field.
- Language:** A text input field with a placeholder instruction: "Enter a language tag for labelling new entities and to use as the primary display language. Leave empty for no language tag."
- Description:** A larger text area.
- Create external sources:** A section containing a "Browse..." button, which is highlighted with a red circle, and the text "No file selected."

At the bottom of the dialog are "Cancel" and "Create New Project" buttons. The background shows a sidebar with a "Create New Project" button and filters for "Owned by Me", "Shared with Me", and "Trash". A table on the right lists projects with "Last modified" dates.

