How to Model the CEDS Ontology in Protégé

The instructions below are for using Protégé to build the CEDS Ontology. You can find Protégé at <https://protege.stanford.edu/>.

# Metadata

* All entities should have the following metadata
  + rdfs:Label = The human readable version of the class or option set value (with spaces)
  + dc:Description = the CEDS definition of the element
  + dc:creator = "Common Education Data Standard"
  + dc:identifier = The element's Global ID

# Class Structure

* Most of the classes created will either mirror concepts created in the IDS or will be entirely new.
* There are some instances where class inheritance is a better way to implement the CEDS model than simply assigning an option set element to a generic class. For instance, Organization is the base type for all of the organization types listed in the CEDS element "Organization Type" because the data elements linked to these organization types is different. A K12 School, for example, will have different data properties than an LEA. A good indicator for this technique is to look if table inheritance was implemented for the elements in the IDS. Organization does implement table inheritance in the IDS--the K12Lea and K12School tables are both sub-tables of Organization.

# Option Set Elements

* All CEDS elements that have an option set are created as classes with individuals of that class with the name of the option. This includes yes/no and yes/no/unknown elements.
  + The metadata for the individual should be completed as such:
    - IRI = [option set element name]\_[Option set code], e.g. "ProgramType\_73056"
    - rdfs:Label = The "Description" of the element, e.g. "Adult Basic Education"
    - dc:Description = the "Definition" of the element, e.g. "Adult Basic Education is a grade offered by the education institution."
    - dc:creator = "Common Education Data Standard"
    - dc:identifier = The element's Global ID
    - ceds:sortOrder = The sort order from the REF table in the IDS
  + There is a script you can use to automate the import of all of the individuals with the associated classes that pulls element details from the IDS & CEDS databases. See "Importing from the IDS into Protégé" for more details.

# Data Type Elements

* Many elements in CEDS are meant to store string or number values, such as Organization Name. These should be created as Data Properties and linked to the classes that implement them. The data property OrganizationName has the domain of "Organization"

# Equivalents

* If there are two entities that serve the same basic purpose but maybe have a different name can be linked as equivalents. To link two entities together as equivalent, use the "Equivalent To" property.

# Object Properties

* Object properties are the most complicated element to model as they often aren't currently defined in CEDS. For instance, "isCharterSchool" links together a "K12School" object to a "CharterSchoolIndicator" object. The best practice is to try to find a new description that sounds good in a sentence. For instance "K12School accreditedBy AccreditationOrganization".
* Below are common prefix verbs that can help.
  + has
  + uses
  + is
* You may often need to remove the word "type" from the end of an object property or change it to "OfType" to make it a good name. For example "K12School usesBlendedLearningModel BlendedLearningModelType"