

# LexEVS 6.x OWL Export Guide

## Contents of this Page

- [Preliminary Considerations](#)
- [Running an OWL/RDF Export with the Administration GUI](#)
- [Running an OWL/RDF Export Script from the Command Line](#)
- [Administration GUI export walk-through example](#)
- [Command Line Script Exporting Example](#)

LexEVS 6.x provides two methods to export loaded ontologies to an OWL/RDF format. One is to use the LexEVS administration GUI; and the other is to use an export script on the command line.

## Preliminary Considerations

- The OWL/RDF exporter is based on Jena 2.6.3. While it exports an OWL file, it also builds up a triple store. The triple store tables stored in the same database that LexEVS uses.
- The LexEVS 6.0 retrieval API has the limitation of retrieving the association that is from an entity to a data/value. Thus, the OWL/RDF exporter, based on LexEVS retrieval API, has the limitation of handling the owl:hasValue, owl:maxCardinality, owl:minCardinality, owl:cardinality constraints as well.
- The OWL/RDF exporter now can convert OWL, RDF, OBO, and UML formats to OWL/RDF. If the terminology format is not on this list, the exported OWL ontology may be incorrect.



Note that OWL2 is not currently supported, nor is an export to the OWL2 format. Much of what is loaded to LexEVS is currently OWL2, and cannot be exported. See JIRA Item [LEXEVS-3661](#)

## Running an OWL/RDF Export with the Administration GUI

If you chose to install the LexEVS GUI when you installed LexEVS, you will have a 'gui' folder inside of your LexEVS home directory. Assuming you installed the GUI for all operating systems, you will have the following programs under the 'gui' folder:

- Linux\_64-lbGUI.sh
- Linux-lbGUI.sh
- OSX-lbGUI.command
- Windows-lbGUI.bat

Step	Action
------	--------

1. Launch the GUI by executing the appropriate executable for your platform. You will be presented with an application that looks like this. If the Available Code System table is empty, you will need to load at least one ontology.

The screenshot shows the LexBIG Console interface. At the top, there are menu options: 'Commands', 'Load Terminology', 'Export Terminology', and 'Help'. Below this is a table titled 'Available Code Systems' with the following columns: Code System Name, Code System Version, URI, Tag, Status, Last Update Time, and a set of action buttons (Get Code Set, Get Code Graph, Get History, Refresh, Load Manifest, Change Tag, Activate, Deactivate, Remove, Remove History, Remove Metadata, Rebuild Index).

Code System Name	Code System Version	URI	Tag	Status	Last Update Time	
Thesaurus.owl	05.09.bvt	http://ncicb.nci.nih.gov/xml/owl/E...		inactive	5:31:35 AM on 10/12/2	Get Code Set
NCI Thesaurus	10.07e	http://ncicb.nci.nih.gov/xml/owl/E...		active	10:41:17 AM on 09/20/2	Get Code Graph
NCI Thesaurus	10.10a	http://ncicb.nci.nih.gov/xml/owl/E...	PRODUCTION	active	8:11:07 AM on 10/14/2	Get History
Zebrafish	1.2_June_14_2010	http://ncicb.nci.nih.gov/xml/owl/E...		active	1:17:29 PM on 09/26/2	Refresh
Nanoparticle Ontology	1.0_Jan_29_2010	http://publ.bioontology.org/ontolog...		active	9:46:21 AM on 10/21/2	Load Manifest
Fungal_anatomy	UNASSIGNED	urn:lsid:bioontology.org:fungal_a...		active	10:17:06 AM on 10/04/2	Change Tag
Gene Ontology	October2010	urn:lsid:bioontology.org:GO	PRODUCTION	active	6:50:03 AM on 10/21/2	Activate
autos	1.0	urn:oid:11.11.0.1		inactive	10:10:41 AM on 10/04/2	Deactivate
Automobiles Extension	1.0-extension	urn:oid:11.11.0.1.1-extension		inactive	7:53:49 AM on 10/15/2	Remove
NCI Metathesaurus	200601	urn:oid:2.16.840.1.113883.3.26.1.2		active	10:51:33 AM on 09/21/2	Remove History
Logical Observation Iden...	229	urn:oid:2.16.840.1.113883.6.1	PRODUCTION	active	6:58:30 AM on 09/20/2	Remove Metadata
Logical Observation Iden...	226	urn:oid:2.16.840.1.113883.6.1		inactive	7:26:07 PM on 09/27/2	Rebuild Index
Current Procedural Termi...	2010	urn:oid:2.16.840.1.113883.6.12		active	1:08:15 PM on 10/06/2	
Medical Dictionary for Re...	12.0	urn:oid:2.16.840.1.113883.6.163		active	9:25:32 AM on 09/24/2	
ICD_9_CM	1.0	urn:oid:2.16.840.1.113883.6.2		active	1:06:36 PM on 10/06/2	
SNOMED Clinical Terms, ...	2010_01_31	urn:oid:2.16.840.1.113883.6.96		active	6:05:03 PM on 09/18/2	
SNOMEDCT_2010_01_3...	20100131	urn:oid:C2733618.SNOMEDCT.IC...		active	6:11:09 AM on 10/25/2	
MDR:MDR12_1_TO_ICD...	200909	urn:oid:CL413320.MDR.ICD9CM		active	1:32:43 PM on 10/14/2	
MDR:MDR12_1_TO_CST...	200909	urn:oid:CL413321.MDR.CST		active	1:32:01 PM on 10/14/2	
NCI to ICD9CM Mapping	1.0	urn:oid:NCI_to_ICD9CM_Mapping		active	1:03:55 PM on 10/06/2	

Below the table, there are two main sections: 'Selected CodedNodeSets and CodedNodeGraphs' and 'Restrictions'. The 'Selected CodedNodeSets and CodedNodeGraphs' section contains buttons for Union, Intersection, Difference, Restrict to Codes, Rel to Source Codes, Rel to Target Codes, Remove, and LogExport. The 'Restrictions' section contains buttons for Add, Edit, and Remove, and a message: 'You must choose a single Code Set or Graph on the left.'

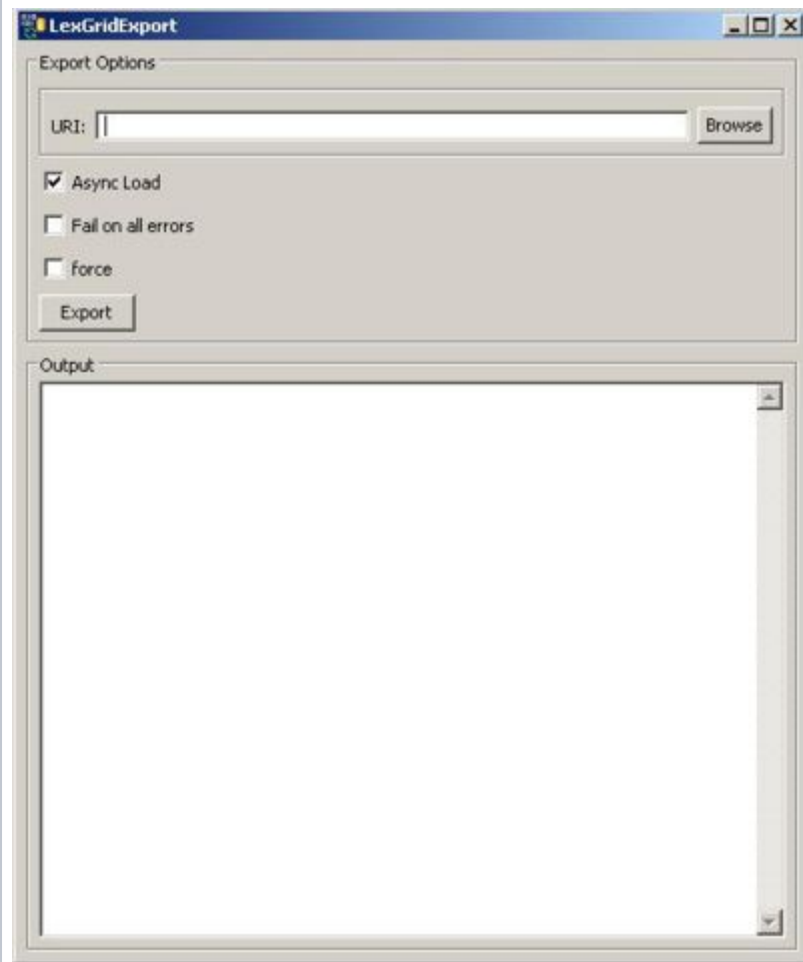
2. Selecting 'Enable Admin Options' provides administrative access to all commands.

The screenshot shows the LexBIG Console interface with the configuration menu open. The 'Enable Admin Options' checkbox is checked. The 'Available Code Systems' table is visible with the following columns: Code System Version, URI, Tag, Status, Last Update Time, and a set of action buttons (Get Code Set, Get Code Graph, Get History, Refresh, Load Manifest, Change Tag, Activate, Deactivate, Remove, Remove History, Remove Metadata, Rebuild Index).

Code System Version	URI	Tag	Status	Last Update Time	
1.1	http://CST.test.shell		inactive	9:29:50 AM on 1	Get Code Set
1.1	http://MDR.test.shell		inactive	9:29:27 AM on 1	Get Code Graph
05.09.bvt	http://ncicb.nci.nih.gov/xml/owl/E...		active	3:14:18 PM on 1	Get History
1.0	urn:oid:11.11.0.1		active	3:13:40 PM on 1	Refresh
200909	urn:oid:CL413321.MDR.CST		active	9:28:38 AM on 1	Load Manifest

The configuration menu on the left includes: Configure,  Enable Admin Options, Clean Up, View Log File, and Exit.

3. Select an active terminology (if the code system status is 'inactive', you can use the Activate button to activate it). Click on 'Export as OWL/RDF' button on the 'Export Terminology' menu, the exporter window will pop up. Fill in the parameters. See the export parameter descriptions in the Administration Guide. Click the 'Export' button, the exporter will generate the OWL file to the specified path.



## Running an OWL/RDF Export Script from the Command Line

After installing LexEVS, you will have an 'admin' folder inside of your LexEVS base installation. The OWL/RDF exporter shell script is in the following folder (for Linux or Windows):

```
ExportOwlRdf.[sh|bat]
```

This command will export OWL/RDF without a GUI. For detailed information please refer to the [command line parameters for this command](#) in the *Administration Guide*.

Examples:

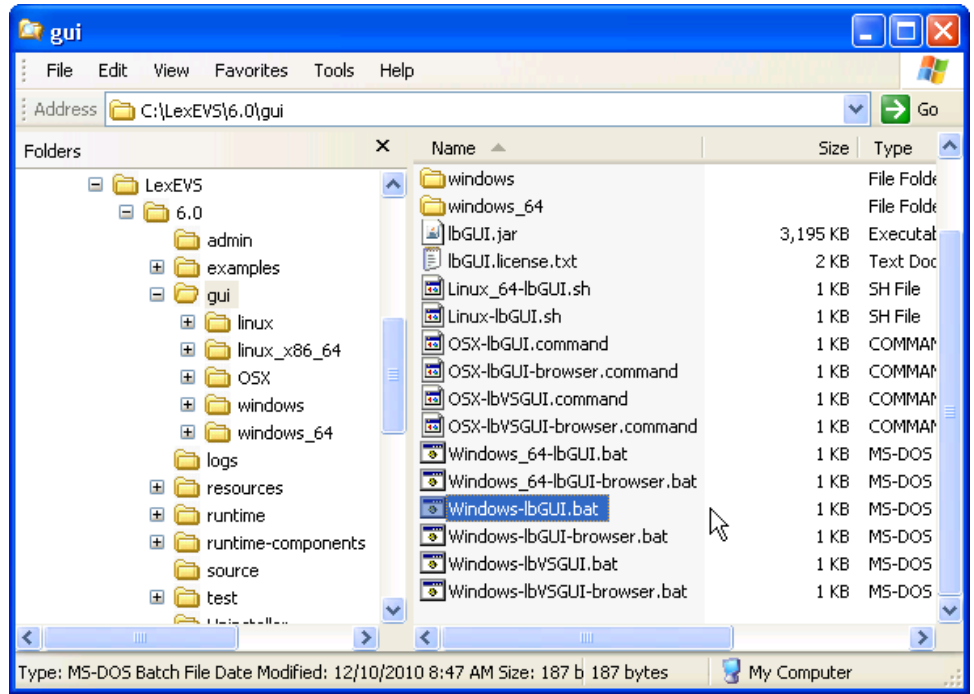
```
ExportOwlRdf -out "file:///path/to/dir" -f  
ExportOwlRdf -out "file:///path/to/dir" -u "sample" -v "1.0" -f
```

## Administration GUI export walk-through example

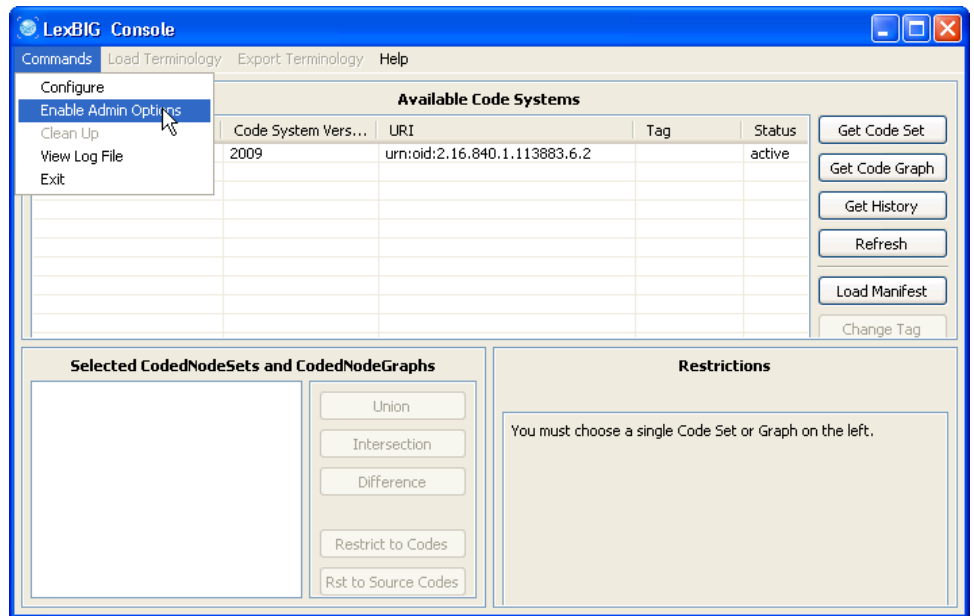
This walk through will show you how to load a terminology and then export it in OWL/RDF format.

Step	Action
------	--------

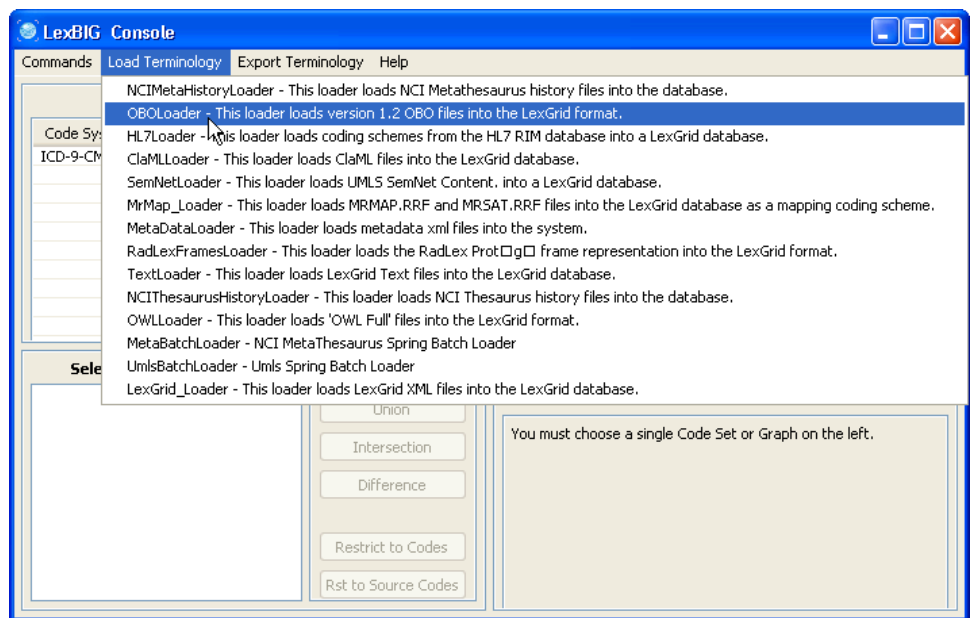
1. Launch the administration GUI.



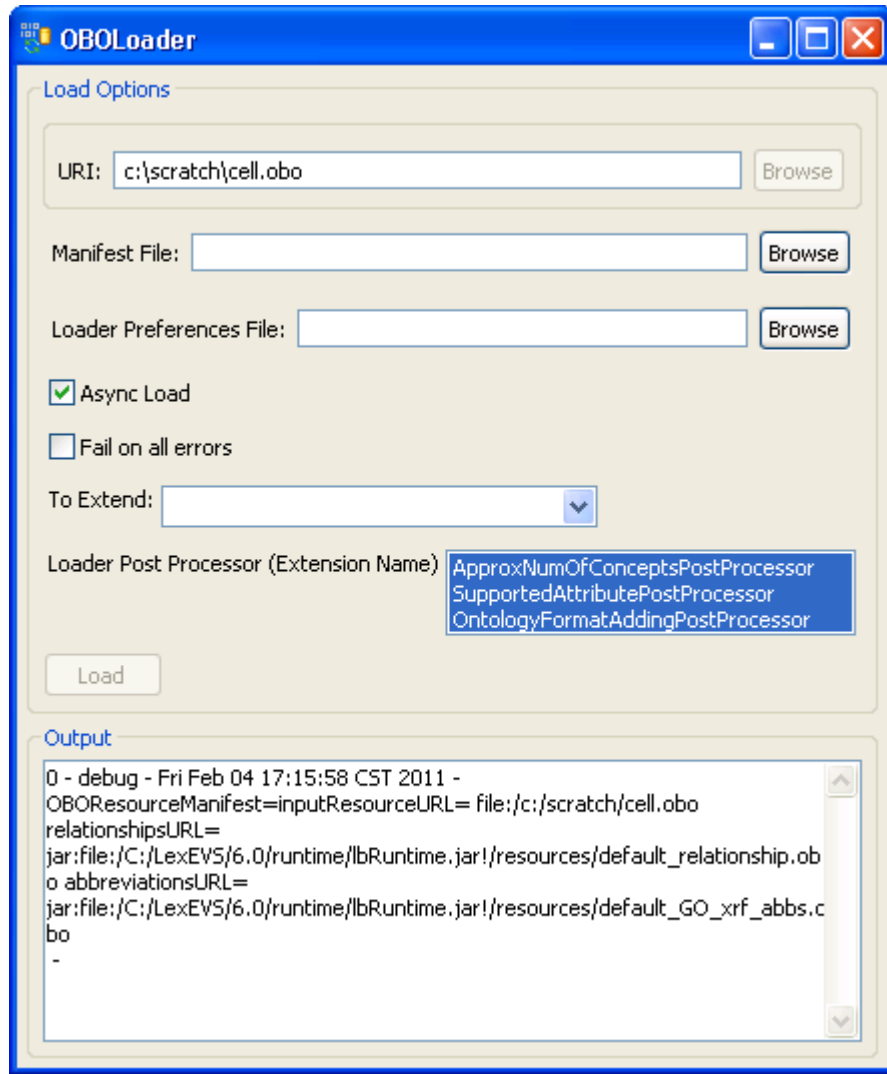
2. Enable the administration option.



3. In this example, we use the cell.obo ontology as the example ontology, so we choose OBOLoader.



4. Provide cell.obo file's path. If you don't have a manifest file or preferences file then leave these fields blank. Click on the 'Load' button. After a few minutes, the loading process is done. You can find 'End State: complete' in the Output message box. Close this window, and return to the administration GUI, a 'cell' record should show up on the Available Code Systems list.



5. Select the cell ontology row and click the 'Activate' button. The status column of 'cell' should change to active.

The screenshot shows the LexBIG Console interface. At the top, there are menu items: Commands, Load Terminology, Export Terminology, and Help. Below the menu is a section titled "Available Code Systems" containing a table with the following data:

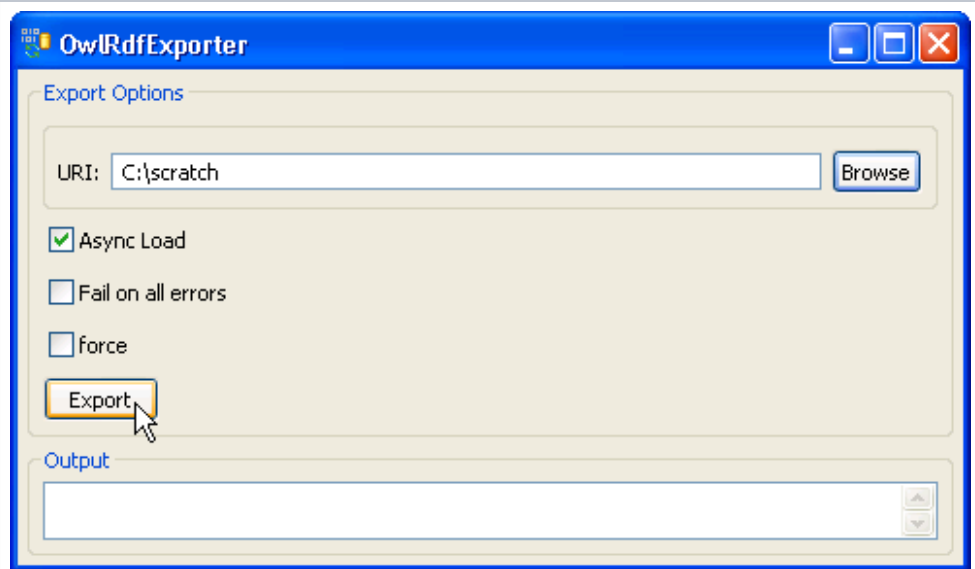
Code System Name	Code System Vers...	URI	Tag	Status
cell	UNASSIGNED	urn:lsid:bioontology.org:cell		inactive
ICD-9-CM, 2009	2009	urn:oid:2.16.840.1.113883.6.2		active

To the right of the table are several buttons: Get Code Set, Get Code Graph, Get History, Refresh, Load Manifest, Change Tag, Activate (highlighted with a mouse cursor), and Deactivate. Below the table are two sections: "Selected CodedNodeSets and CodedNodeGraphs" with buttons for Union, Intersection, and Difference; and "Restrictions" with a message: "You must choose a single Code Set or Graph on the left."

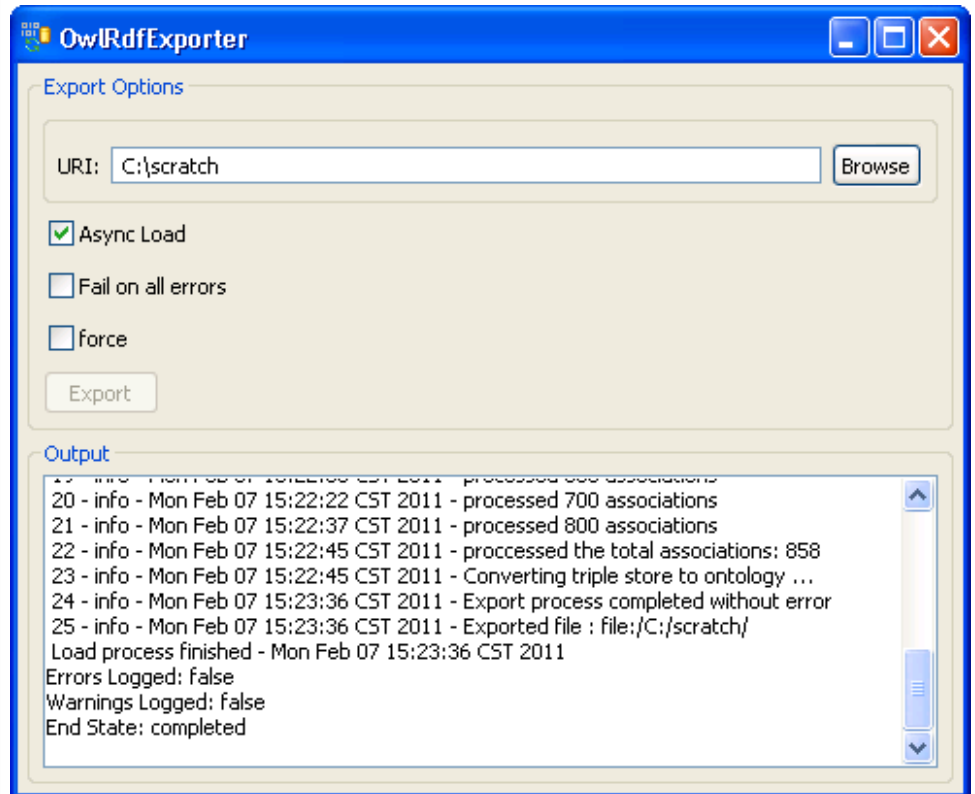
6. Make sure the cell ontology is still selected. Go to the 'Export Terminology' menu, click on 'Export as OWL/RDF' in the drop down menu.

The screenshot shows the LexBIG Console interface with the "Export Terminology" menu open. The menu options are: Export as LexGrid XML, Export as OWL/RDF (highlighted with a mouse cursor), and Export as OBO. The "Available Code Systems" table is visible in the background, with the "cell" row still selected. The "Activate" button is now dimmed, and the "Deactivate" button is visible below it. The "Restrictions" section remains the same, displaying the message: "You must choose a single Code Set or Graph on the left."

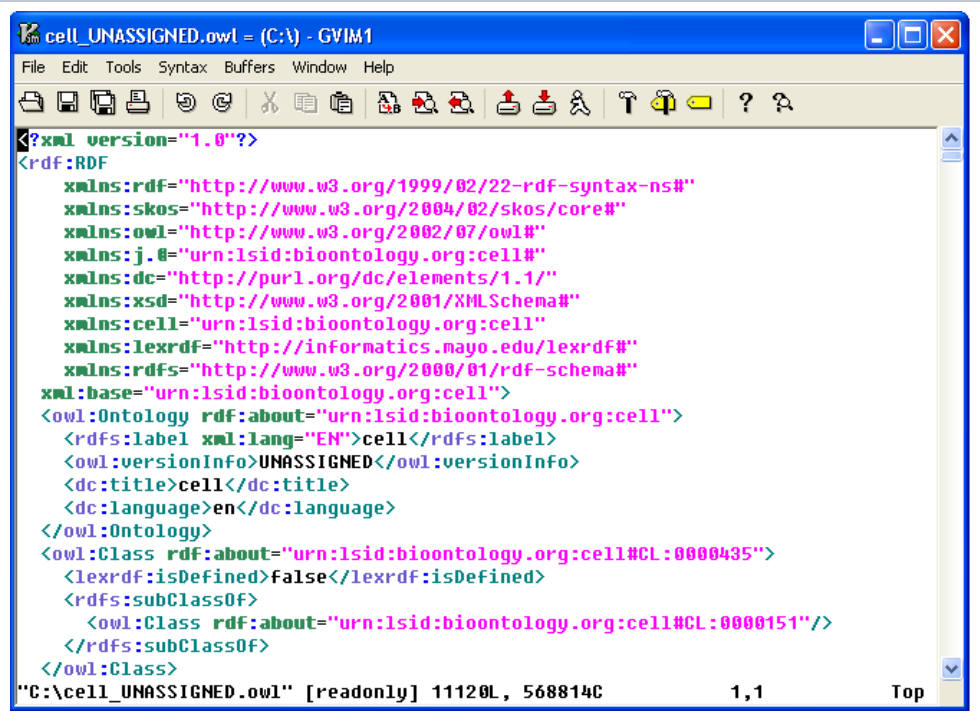
7. Provide a path in the 'URI' text box. The exported file name is automatically generated by the system, so we don't need to specify the file name. Click on the 'Export' button.



8. A set of status messages will show up in the Output text box. When the 'End State: completed' statement pops up, the exporting process is complete.



9. The convention of the exported file name is: <coding system name>\_<version>.owl. In this example, cell ontology has no version information, so 'UNASSIGNED' is used as the version. The name of the OWL file in this case will be cell\_UNASSIGNED.owl and it is in the C drive's root directory. You can check the exported OWL file with a text editor. Yours may not show highlighting for the XML syntax.



```
cell_UNASSIGNED.owl = (C:\) - GVIM1
File Edit Tools Syntax Buffers Window Help
?xml version="1.0"?
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:skos="http://www.w3.org/2004/02/skos/core#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:j.0="urn:lsid:bioontology.org:cell#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:cell="urn:lsid:bioontology.org:cell"
  xmlns:lexrdf="http://informatics.mayo.edu/lexrdf#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xml:base="urn:lsid:bioontology.org:cell">
  <owl:Ontology rdf:about="urn:lsid:bioontology.org:cell">
    <rdfs:label xml:lang="EN">cell</rdfs:label>
    <owl:versionInfo>UNASSIGNED</owl:versionInfo>
    <dc:title>cell</dc:title>
    <dc:language>en</dc:language>
  </owl:Ontology>
  <owl:Class rdf:about="urn:lsid:bioontology.org:cell#CL:0000435">
    <lexrdf:isDefined>false</lexrdf:isDefined>
    <rdfs:subClassOf>
      <owl:Class rdf:about="urn:lsid:bioontology.org:cell#CL:0000151"/>
    </rdfs:subClassOf>
  </owl:Class>
</rdf:RDF>
"C:\cell_UNASSIGNED.owl" [readonly] 11120L, 568814C      1,1      Top
```

## Command Line Script Exporting Example

We still use the cell.obo as our example ontology and assume that it has been loaded already. It is straightforward to run a command like this instead of using the GUI:

```
ExportOwlRdf -out "file:///home/MyHome" -u "cell" -v "1.0" -f
```

A set of statements will show up, like the following, if it runs successfully:

```
Output from command line execution...
```

A file named "cell\_UNASSIGNED.owl" will be generated and saved under the specified path. The content of this file is the same as the file generated by the administration GUI.