Prototyping ECO models

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1 Overview

It is quite rare that a developer will get a design exactly right the first time unless the model is very simple, perfection is achieved through constant testing and refinement. Ordinarily a developer will have to manually put together some GUI to allow them to test their business model and this can take quite some time, especially if the developer is constantly modifying the model.

ECO has a built in tool to enable the developer to quickly prototype their application. This tool presents you with a form which will allow you to create instances of your business classes, use drag and drop to link these objects via their modeled associations, and even save / retrieve those objects from to / from a local XML file to save the developer from having to re-enter test data each time the prototyping tool is executed.

2 Prerequisites and goals

Prerequisites

To successfully follow this document the user should have read the preceding articles in this series and have a saved project containing an ECO model.

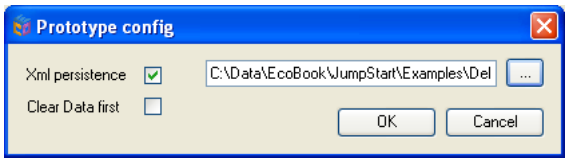
Goals

By the end of this document you will be able to

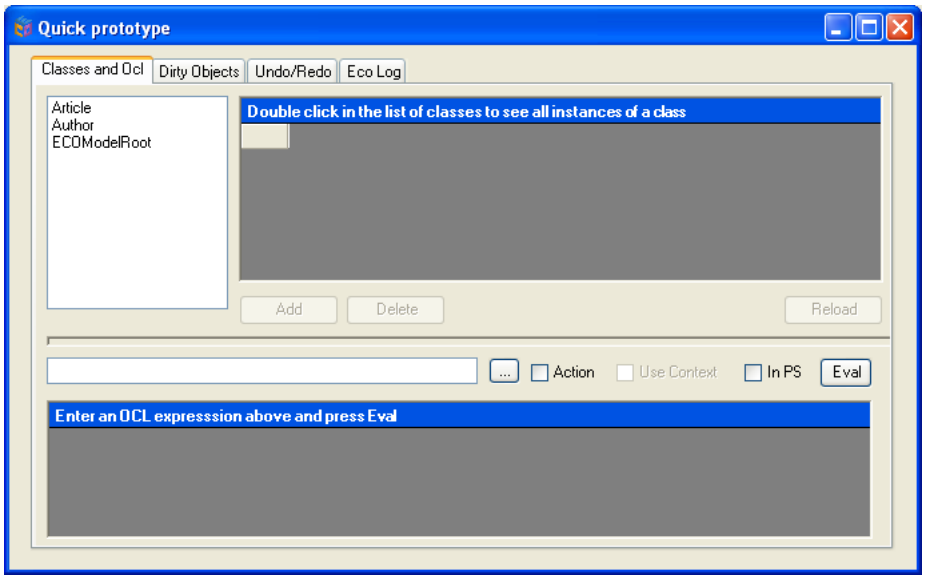
- Invoke the quick prototype tool for your ECO model.
- Create new object instances.
- Link object instances via their modeled associations using drag and drop support.

3 Invoking the tool

To start the prototyping tool select the ECO Utils->Quick prototype menu option, you will then be presented with the following form:



Tick the "Xml persistence" check box and enter a full path + filename into which the objects will be persisted, then click "OK". Next the ECO "Quick prototype" form will appear. It is not mandatory to specify persistence when prototyping, but if you do not then all of the test data you create will be lost when the prototyping tool is closed.

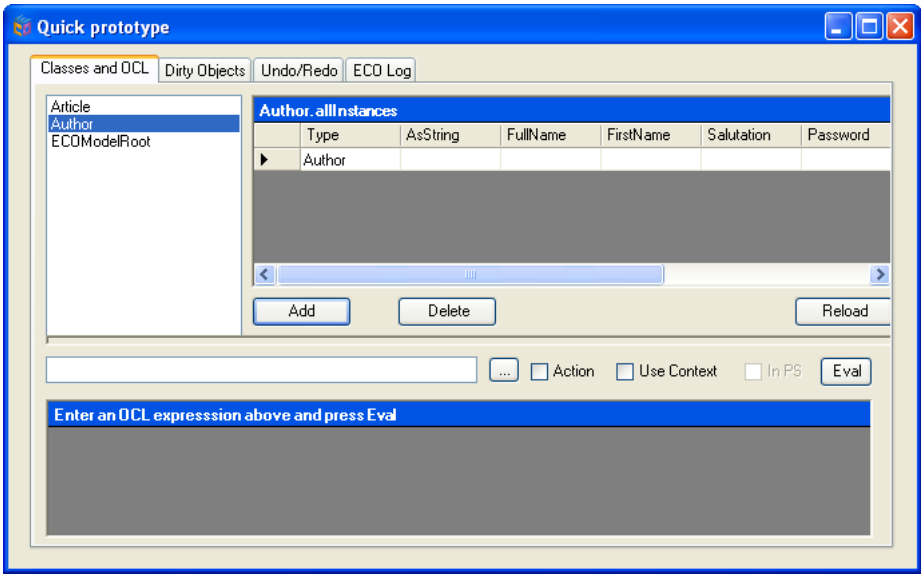


The form consists of four main tabs:

1. Classes and OCL: This tab allows you to view all instances of a specific class by double clicking the class name in the list to the left of the form. Once a class has been selected you may create new instances of that class or delete the instance selected in the grid. It is also possible to evaluate OCL (Object Constraint Language) expressions against your model.
2. Dirty Objects: This tab shows a list of all objects that have been modified in some way that would require a database update. On this tab it is possible to save selected "Dirty" objects to the database (in this case an XML file).
3. Undo / Redo: This tab allows you to perform modifications within a transaction so that these changes may be rolled back or committed as a single operation.
4. ECO log: This tab allows you to specify which actions to log, such as OCL evaluations, DB requests, and so on.

4 Creating object instances

1. Double-click the Author class in the list on the left of the form, the grid on the right of the form will now show the UML attributes of the Author class.
2. Click the "Add" button and a new Author instance will appear in the grid.



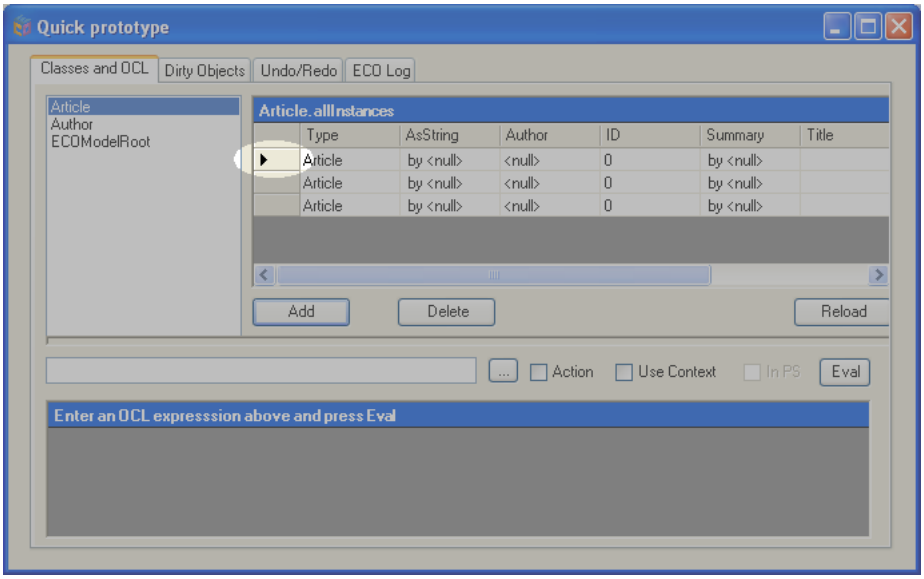
3. Enter information for each of the columns, FirstName, LastName, etc.
4. Double-click the Article class in the list on the left of the form, the grid on the right of the form will now show the UML attributes for the Article class instead.
5. Click the "Add" button and a new Article instance will appear in the grid.
6. Enter information for each of the article's columns.
7. Repeat steps 5 and 6 until you have two or three articles.

NOTE: The code-derived column "FullName" will not display a value during prototyping. This is because the prototyping tool works from the design-time model information rather than the runtime binary which is where the implementation resides. In fact it is possible to prototype models for which no source code has been generated at all.

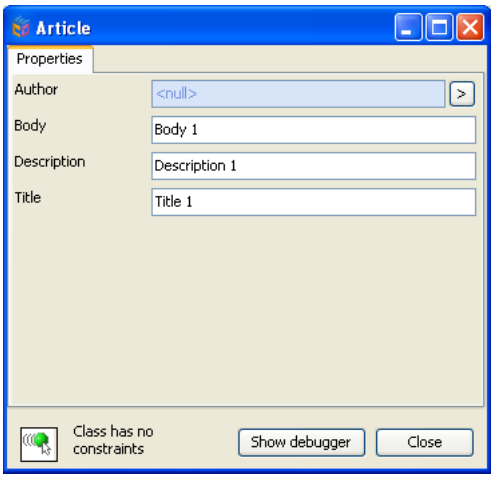
5 Auto forms

Once you have some objects in your prototype's cache (the "EcoSpace") you can now manipulate their data. One of the ways in which business objects store data is to hold references to each other, modeled as associations. In the "Creating a business model" steps a one-to-many association was added from the Author class to the Article class, to associate these objects during prototyping use of the ECO auto-forms feature is required.

1. Double-click the Article class to show all Article instances.
2. Create one or more articles.
3. In the instances grid on the right double-click the leftmost column on a row where an object instance is listed.

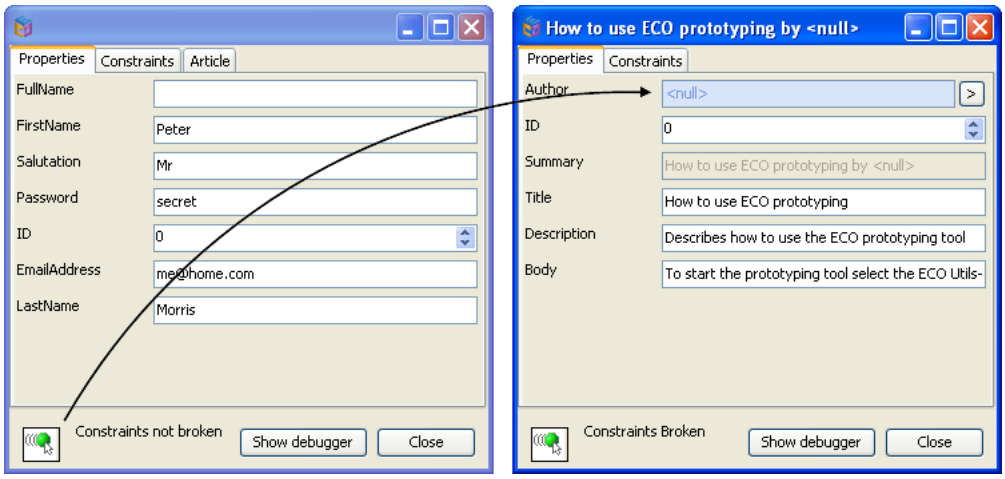


4. A form will be automatically generated based on the model information for the Article class and will be displayed.



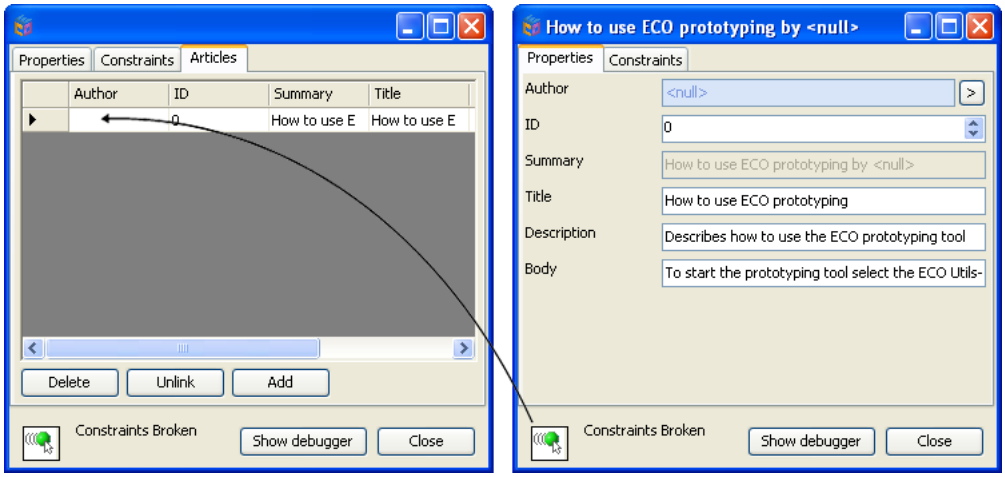
In this case the "Author" role is a single-role (0..1) whereas on the Author class the "Article" role is a multi-role (0..*). To associate objects using auto forms simply drag the small icon at the very bottom left of the auto-generated form and drop it onto a relevant role, for example, keeping the Article auto-generated form visible:

1. Double-click the Author class in the list to show all Authors.
2. Double-click the blank column to the left of the Author instance added earlier.
3. The Author auto-generated form will now appear.
4. Click and drag the "drag" icon at the bottom left of the Author form.
5. Drop it onto the read-only "Author" text box on the Article form.



To add an object to a multi-role such as Author.Articles it is as simple as dropping the object onto the relevant grid.

1. Click the [Articles] tab on the Author form.
2. Click and drag the drag icon at the bottom left of the Article form.
3. Drop it onto the Articles list on the Author form.



Alternatively you may create an article associated with an author without having to use the drag 'n' drop functionality. If you click the "Add" button at the bottom of the Articles grid on the Author form a new Article will be created and will automatically be associated with the Author.

6 Summary

This article has introduced you to the prototype tool, and how to use auto generated forms to enter data and associate instances of your business classes. In addition to what you have seen in this article it is also possible to test ECO state diagrams in the prototype tool, this will be covered in a later article.

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