



How to Keep Java and Class Diagram in Sync with Round-trip Engineering?

Written Date : March 03, 2016

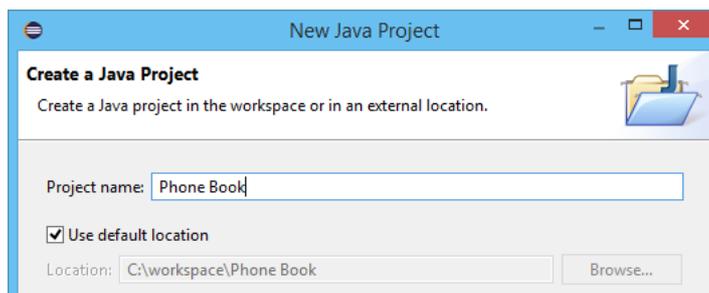
You can perform round-trip engineering in Eclipse, to keep Java source code and class model in sync. In this tutorial, we will see how to create a class model and eventually generating source code from model and vice-versa.

Preparation

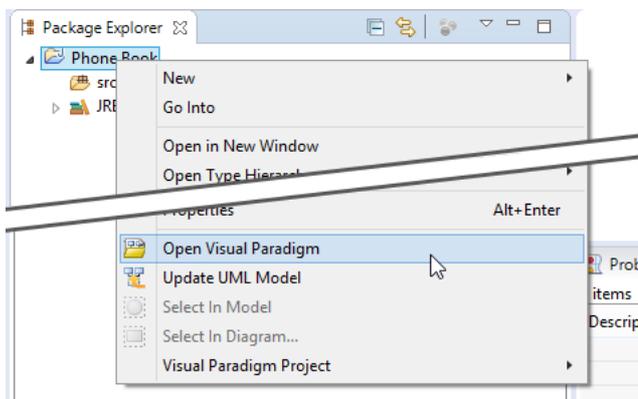
In order to follow and complete this tutorial, you must have Visual Paradigm installed, which can be downloaded from Visual Paradigm [download page](#). Of course, you need the Eclipse IDE as well. We suppose you have already installed it but if you haven't, please download it from the www.eclipse.org and get it installed. Besides, make sure you have [installed Eclipse integration from Visual Paradigm](#). Finally, to make the tutorial easier to follow we are not going to describe every little step required to draw a class diagram in detail. We are assuming that you have the basic skills required to draw [UML class diagram](#) in Visual Paradigm.

Design system with UML Class Diagram

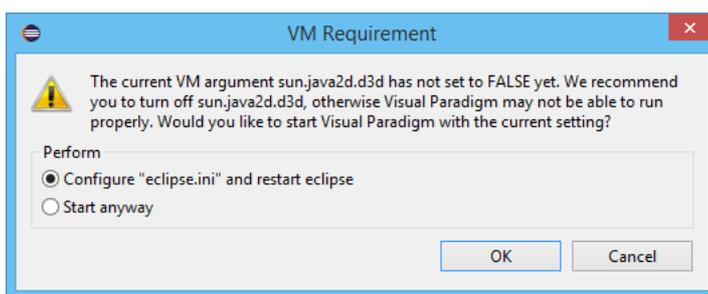
1. Create a Java project *Phone Book* in Eclipse.



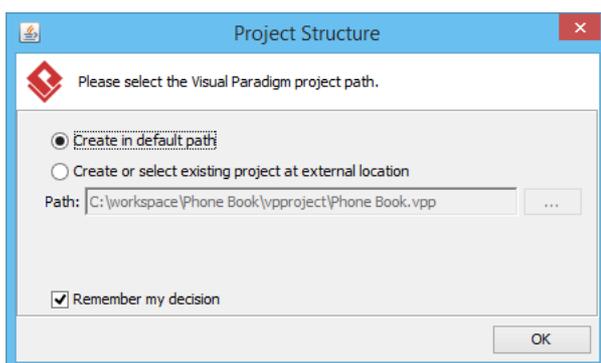
2. Right-click on the project node in **Package Explorer** and select **Open Visual Paradigm** from the popup menu.



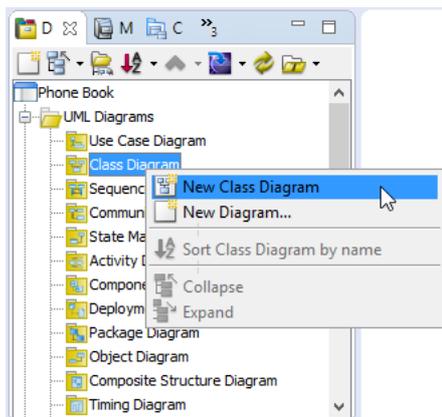
3. If you see the **VM Requirement** dialog box, please keep the option **Configure "eclipse.ini"** and **restart eclipse** selected and click **OK** to restart Eclipse, and then re-perform the previous step to open Visual Paradigm.



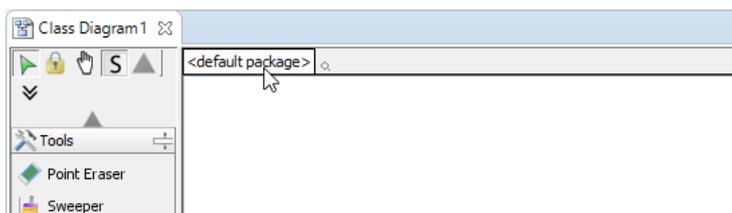
4. Click **OK** when you are prompted to select a path to store the .vpp file.



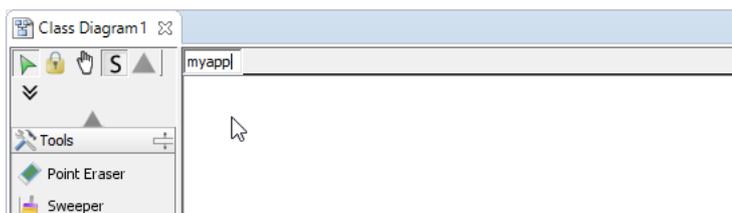
5. In **Diagram Navigator**, right-click on **Class Diagram** node and select **New Class Diagram** from the popup menu.



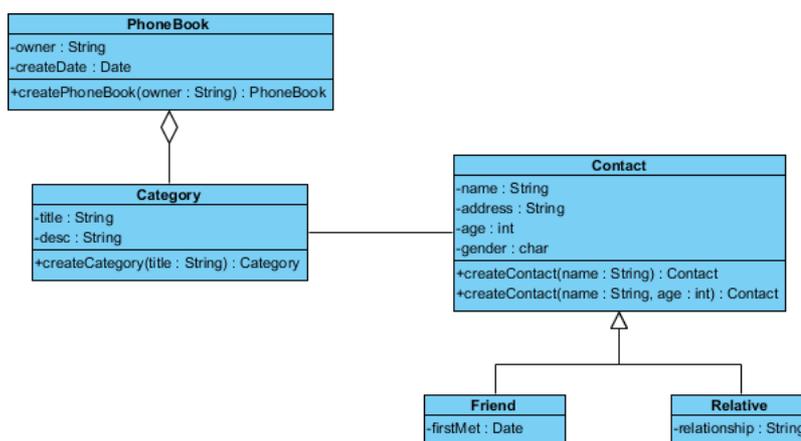
6. A new diagram is created. Double click on the package header field at the top left corner of the diagram, with a labeled **<default package>** in it.



7. Enter *myapp* and press **Enter**. From now on classes to be drawn in this diagram will be placed in a (new) package named *myapp*. In practice you can also enter a nested package structure like *com.vp.myapp*.



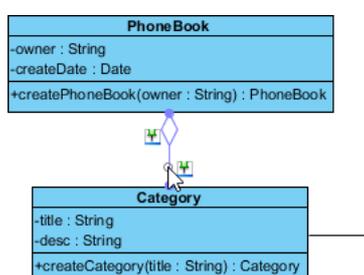
8. Draw the following class diagram.



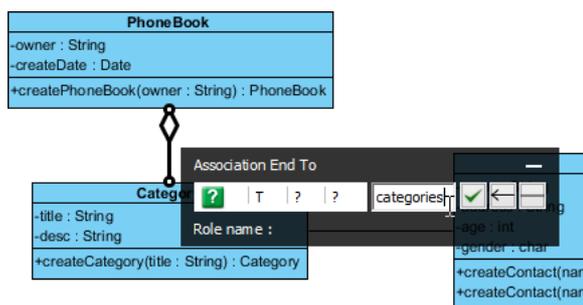
As said earlier we want to focus on the integration with Eclipse in this tutorial, and are not going to detail the steps related to diagramming. If you have difficulties in drawing this diagram, here are some tips that may help:

- To create a class, select the **Class** tool from the diagram and click on the diagram.
- To add an attribute, right-click on the class and select **Add > Attribute** from the popup menu. Type the name and type inline (e.g. *owner : String*) and press **Enter** to confirm creation.
- To add an attribute, right-click on the class and select **Add > Operation** from the popup menu. Type the method signature inline (e.g. *createPhoneBook(owner:String):PhoneBook*) and press **Enter** to confirm creation.
- To create a related class (e.g. an associated class), make use of the Resource Catalog. Move your mouse pointer over a class, press and drag out the **Resource Catalog** icon at the top right of the class.

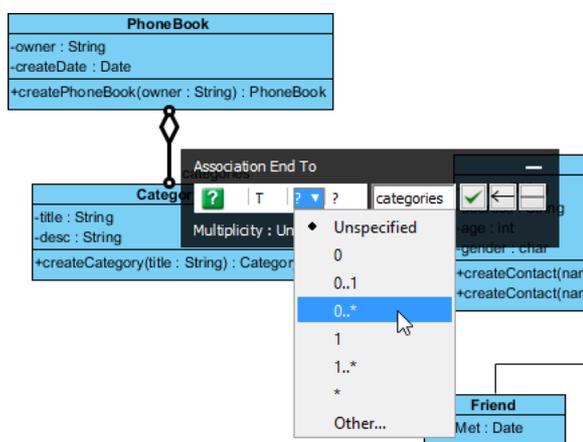
9. Let's set the role names. Double click on the *Category* end of the connector between class *PhoneBook* and *Category*.



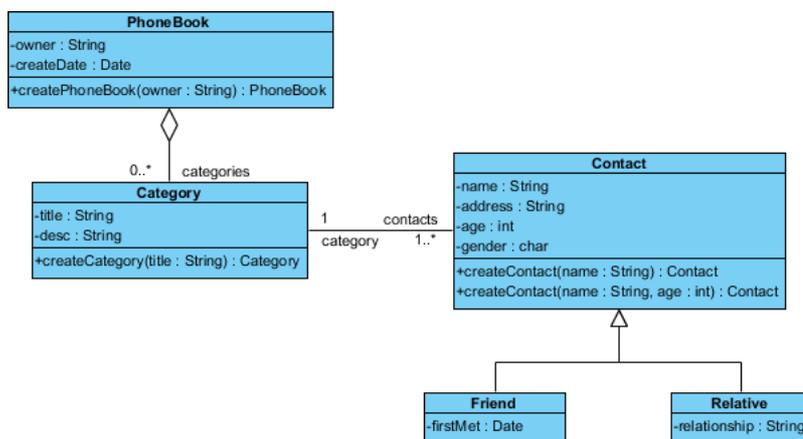
10. Name the role *categories*.



11. Set multiplicity as *0..**. These changes will affect the attribute of category that will be generated in the class *PhoneBook*.



12. Similarly, edit the connector between *Category* and *Contact* by setting the role names of the two ends to *category* and *contacts*, and multiplicities to *1* and *1..** respectively. This is the completed diagram.



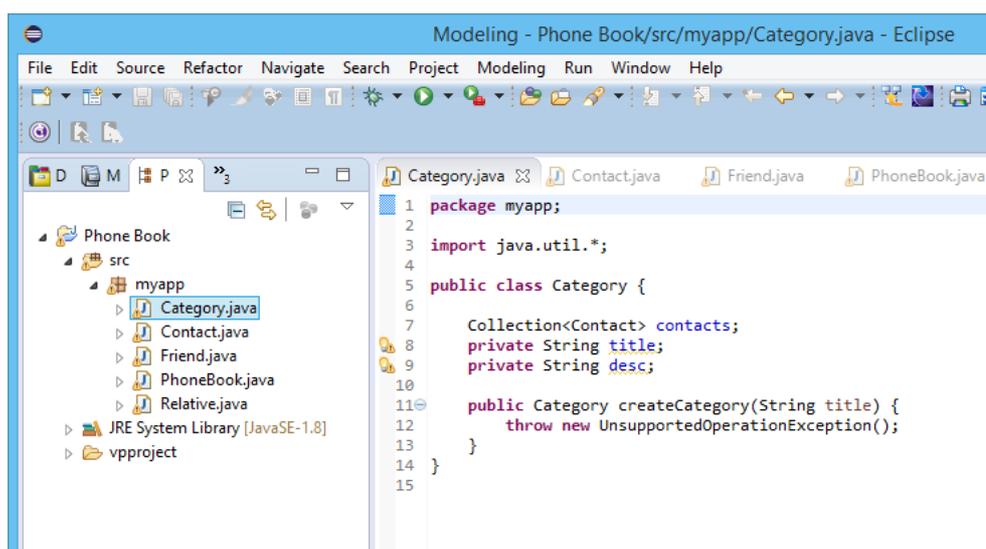
13. Press **Ctrl + S** to save the project.

UML to Java code generation in Eclipse

1. Now comes the code generation. Click on the **Update Code** button on the toolbar of Eclipse.



2. Check the **Package Explorer**. You should see a list of generated file. You can open them to fill in the code body.



3. This is the end of the tutorial. Instead of closing Eclipse now, you may try something more by editing the code like to add, rename or delete class, attributes and operations, and click the **Update UML Model** button, which is the one next to the **Update Code** button, and observe the changes that will make in the class model. Enjoy!

Related Links

- [User's Guide - Overview and installation of Eclipse integration](#)
- [Tutorial - Begin UML Modeling in Eclipse](#)
- [Tutorials on Visual Paradigm IDE Integration](#)
- [Full set of UML tools and UML diagrams](#)



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(<https://www.visual-paradigm.com/>)

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