Generating C# from Class Diagram in Visual Studio?

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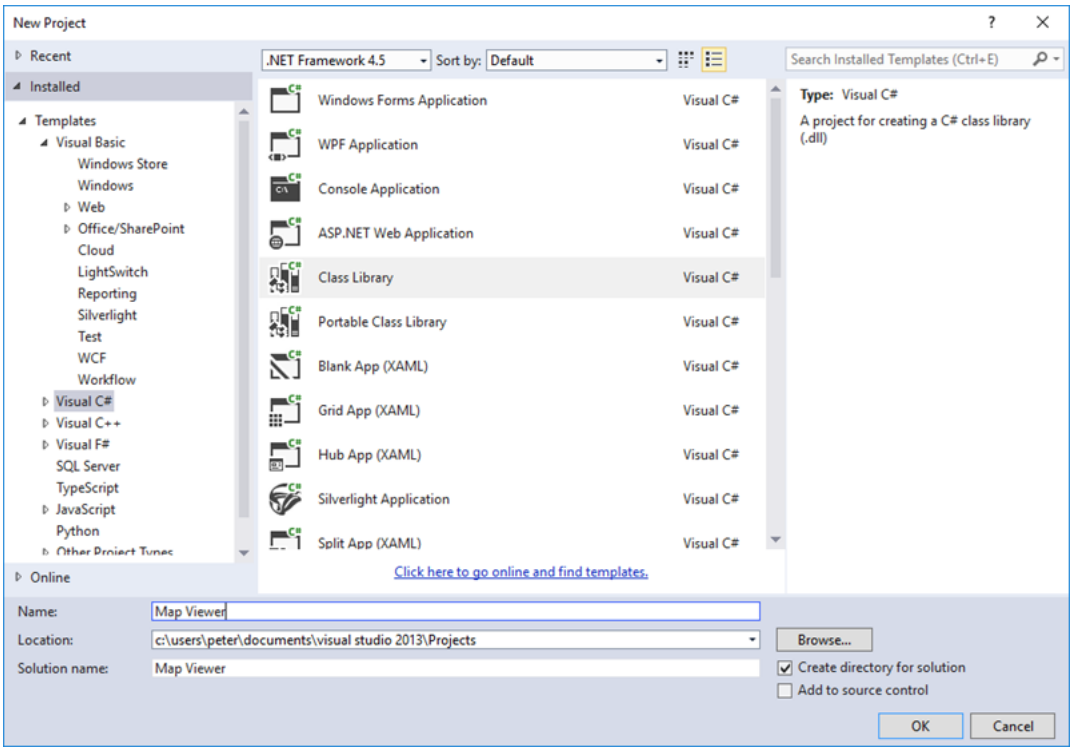
You can perform round-trip engineering in Visual Studio, to keep C# source code and class model in sync. In this tutorial, we will see how to create a class model in Visual Studio, and eventually generating source code from model.

Preparation

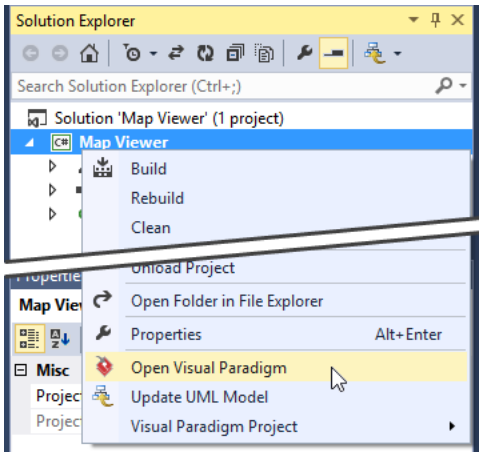
In order to follow and complete this tutorial, you must have Visual Paradigm installed, which can be downloaded from Visual Paradigm download page. Of course, you need Visual Studio ready, and with Visual Studio integration installed in advance. Finally, to make the tutorial easier to follow we are not 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

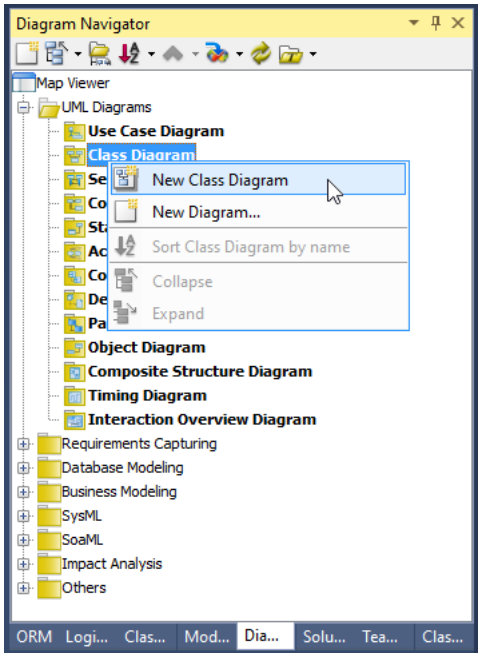
1. Create a C# library project *Map Viewer* in Visual Studio.



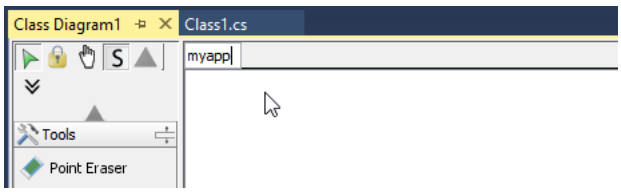
2. Right-click on the project node in **Solution Explorer**, and select **Open Visual Paradigm** from the popup menu.



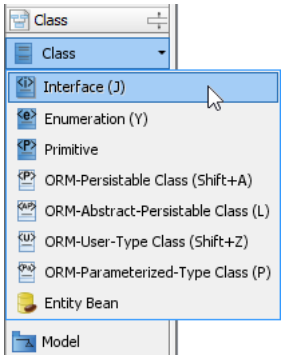
3. In **Diagram Navigator**, right-click on class diagram and select **New Class Diagram** from the popup menu.



4. A new diagram is created. You are asked to enter a package header on top of the diagram. 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 code level, those classes will be in *myapp* namespace.



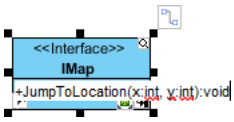
5. Click on the down arrow button near the shape selection **Class** in diagram toolbar, and select **Interface**.



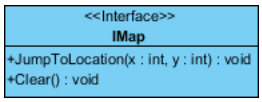
6. Click on the diagram to create an interface class and name it as *IMap*.

7. Create operations in *IMap*. Right-click on the class *IMap* and select **Add** > **Operation** from the popup menu.

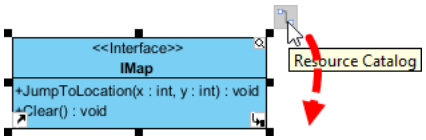
8. Enter *JumpToLocation(x:int, y:int): void* to create a public operation *JumpToLocation* with parameter x, y and return void.



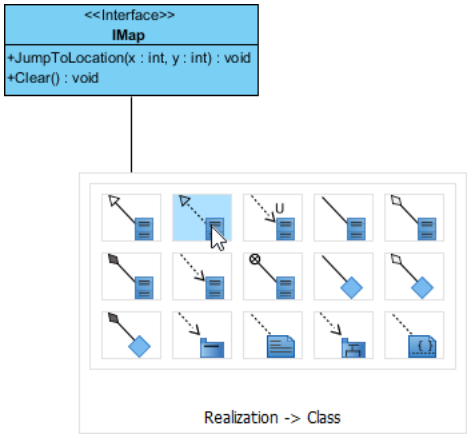
9. Press **Enter** to create another operation, Name it *Clear() : void*. Click on diagram to confirm editing.



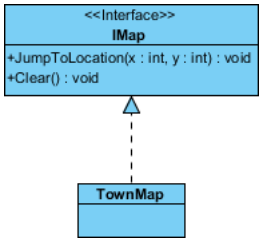
10. We need to create a class for town map which inherits *IMap*. Move the mouse pointer over interface *IMap*, press on the **Resource Catalog** icon and drag it out.



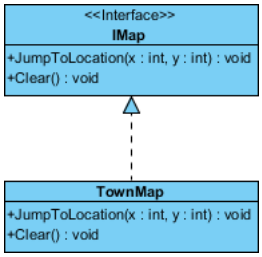
11. Release your mouse button on the empty space. Select **Realization -> Class** from Resourece Catalog to create a new class.



12. Name the class as *TownMap* and press **Enter** to confirm.

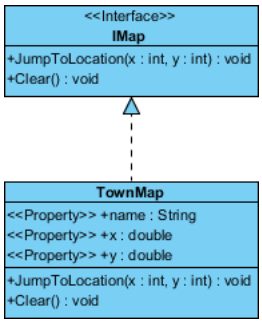


13. As the *TownMap* class is implementing the interface *IMap*, we need to implement the operations defined in *IMap*. Right-click on class *TownMap* and select **Related Elements** > **Realize all Interfaces** from the popup menu. You can see that operations *JumpToLocation* and *Clear* are both inherited.

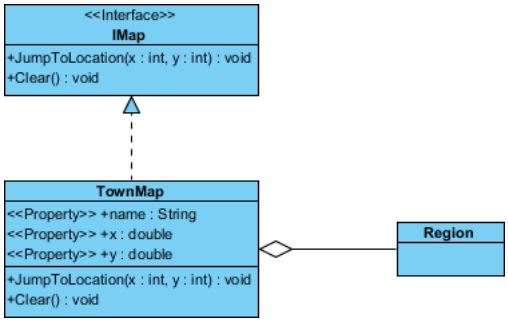


14. It is time to add properties to class. Right-click on class *TownMap* and select **Add** > **Property** from the popup menu.

15. Enter *name : string* to name the property as *name*, and set the type as *string*. Press **Enter** to proceed to the next property. Enter *x : double* as property name and type. Then, press **Enter** and create property *y : double*.



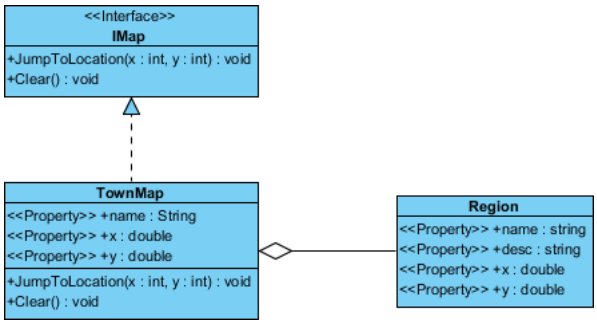
16. We need to create a new class *Region* with an aggregation (association) from class *TownMap*. Again, use Resource Catalog to create a class from *TownMap*. This time, use the resource **Aggregation -> Class**.



17. Follow the previous steps to create properties in class *Region*.

Class	Properties
Region	name : string
	desc : string
	x : double
	y : double

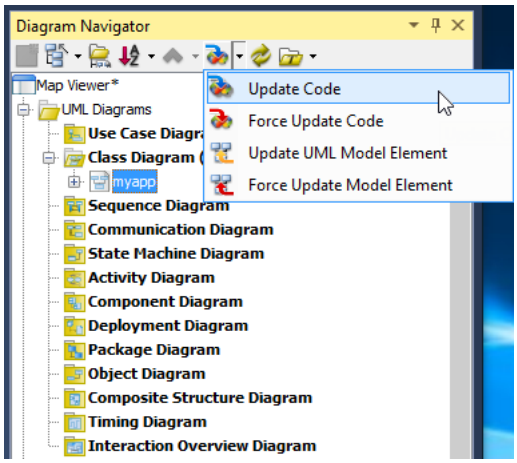
18. Up to now, the diagram should look like:



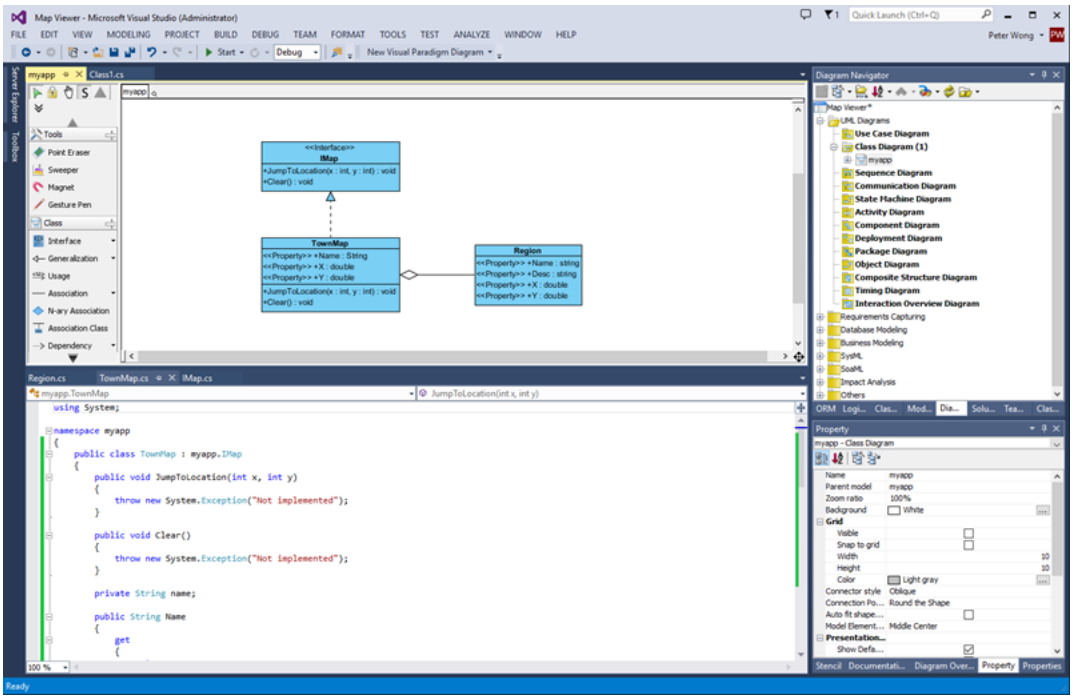
UML to C# code generation in Visual Studio

1. Save your work via the File menu.

2. Now comes the code generation. Select the menu **Update Code** on **Diagram Navigator**.



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



4. This is the end of the tutorial. Instead of closing Visual Studio now, you may try something more by editing the code like to add, rename or delete class, properties and operations, and select **Update UML Model** from **Diagram Navigator**, and observe the changes that will make in the class model. Enjoy!

Related Links

- User's Guide - Overview and installation of Visual Studio integration
- Full set of UML tools and UML diagrams

Visual Paradigm

Visual Paradigm home page
(https://www.visual-paradigm.com/)

Visual Paradigm tutorials
(https://www.visual-paradigm.com/tutorials/)