Facade Pattern Tutorial

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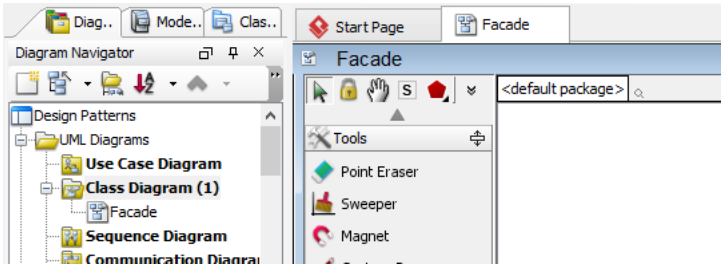
This tutorial is aimed to guide the definition and application of Gang of Four (GoF) facade design pattern. By reading this tutorial, you will know how to develop a model for the facade pattern, and how to apply it in practice.

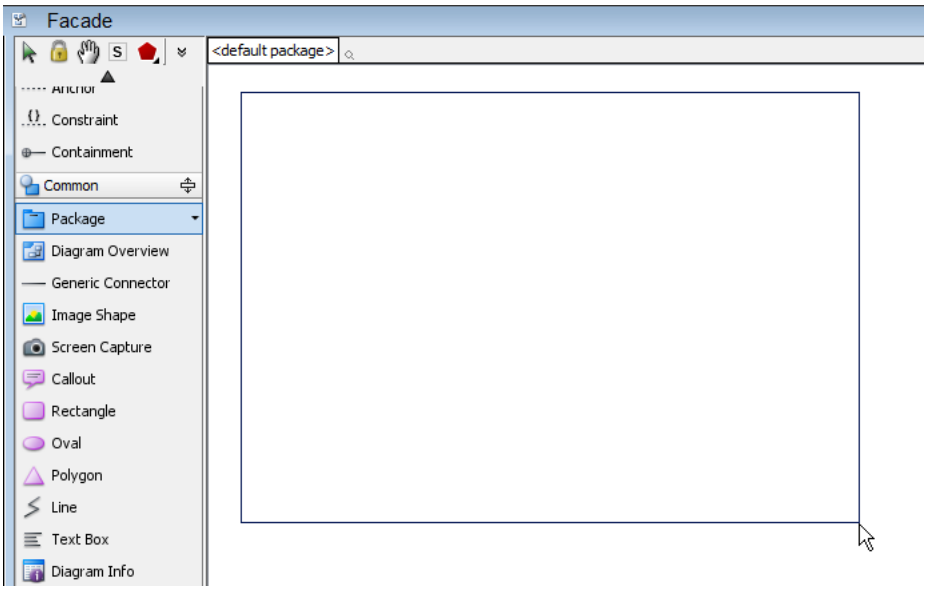
Modeling Design Pattern with Class Diagram

1. Create a new project *Design Patterns*.

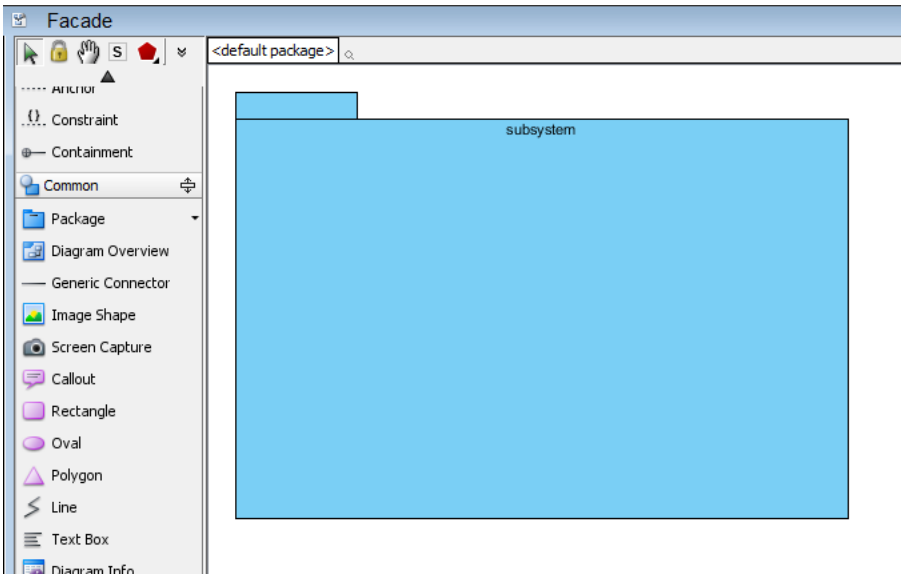
2. Create a class diagram *Facade*.



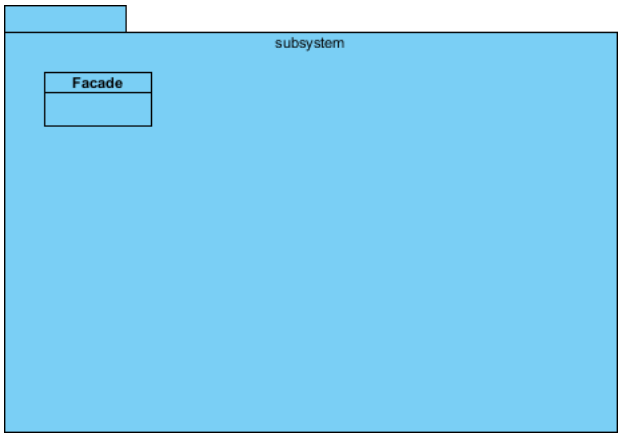
3. Select **Package** from diagram toolbar. Press on the diagram and drag it towards bottom right to form a package representing a subsystem.



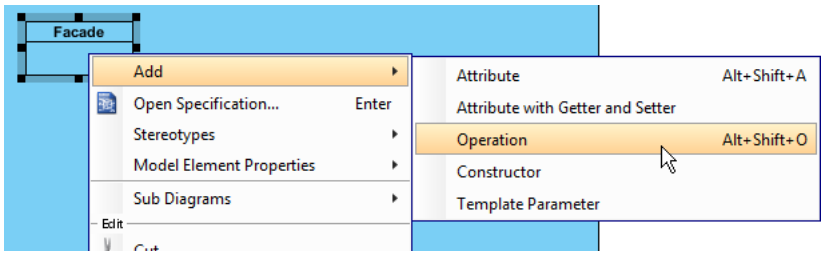
4. Name the package *subsystem*.



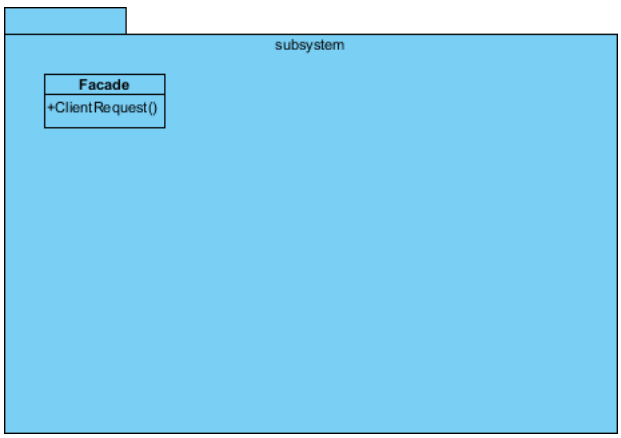
5. Select **Class** from diagram toolbar. Click inside subsystem to create a class. Name it as *Facade*.



6. Right click on *Facade* and select **Add** > **Operation** from the popup menu.



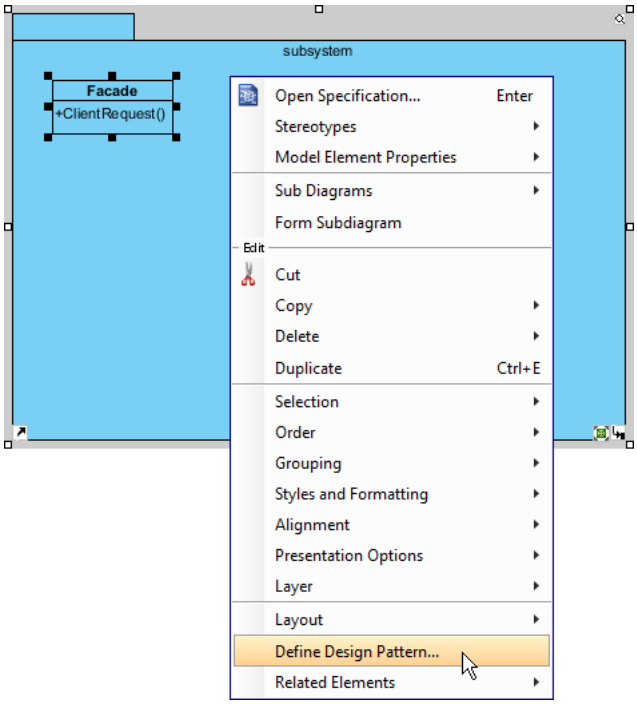
7. Name the operation *ClientRequest*. Note that it must be a public operation that enables classes external to the subsystem to access it.



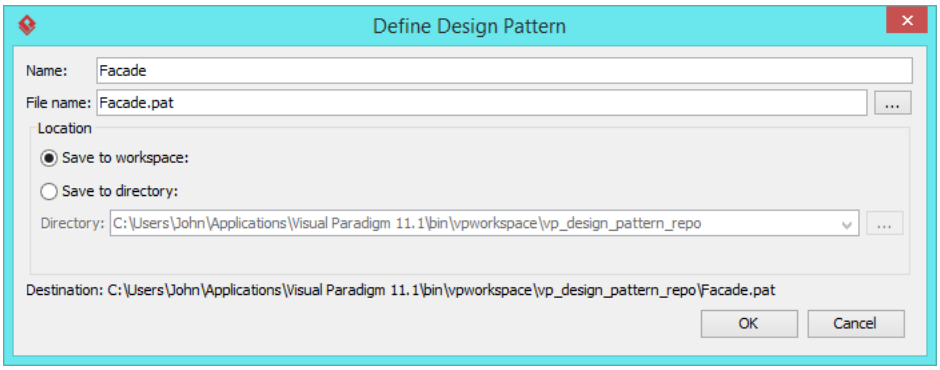
Defining Pattern

1. Select everything on the class diagram.

2. Right click on the Singleton class and select **Define Design Pattern...** from the popup menu.



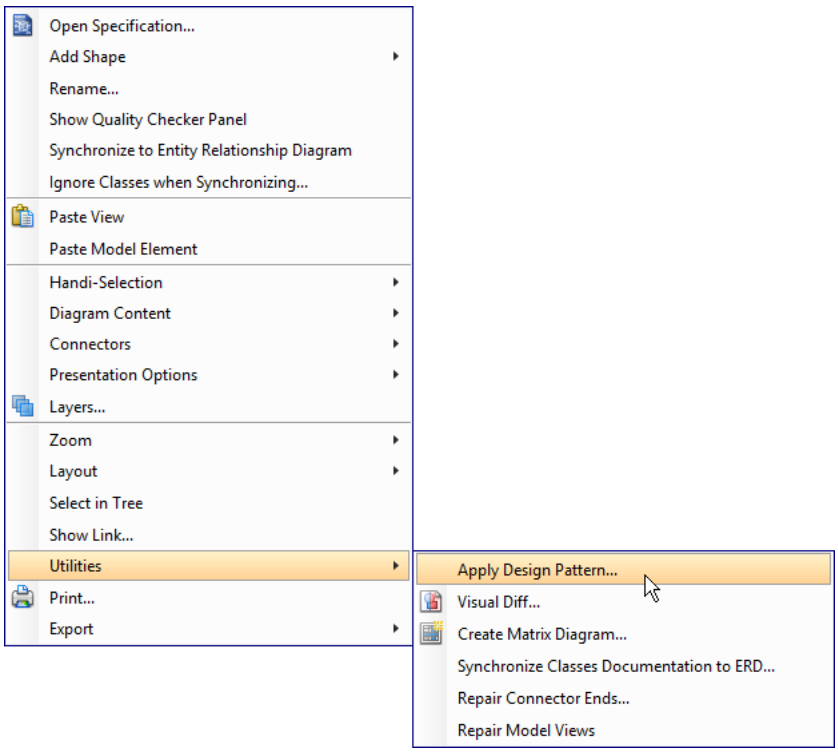
3. In the **Define Design Pattern** dialog box, specify the pattern name *Facade*. Keep the file name as is. Click **OK** to proceed.



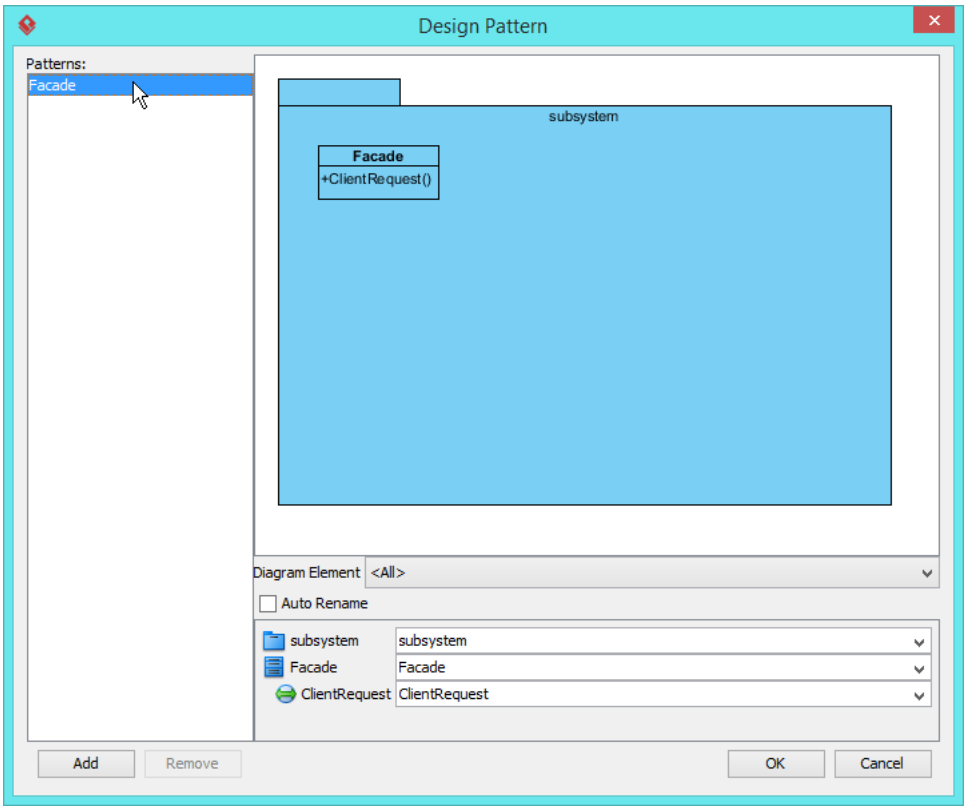
Applying Design Pattern on Class Diagram

In this section, we are going to apply the facade pattern in modeling a code generator.

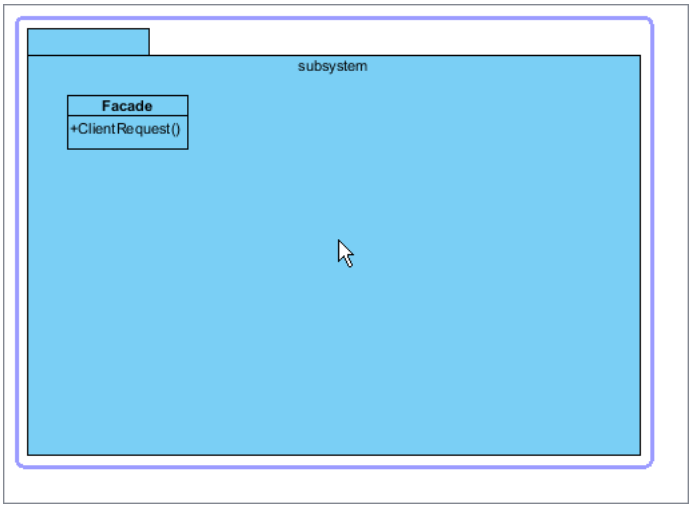
1. Create a new project *Code Generator*.
2. Create a class diagram *Generator*.
3. Right click on the class diagram and select **Utilitiews** > **Apply Design Pattern...** from the popup menu.



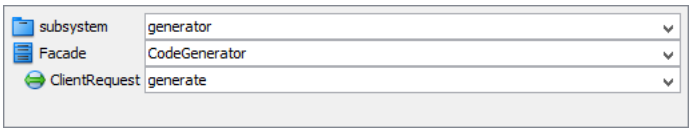
4. In the **Design Pattern** dialog box, select *Facade* from the list of patterns.



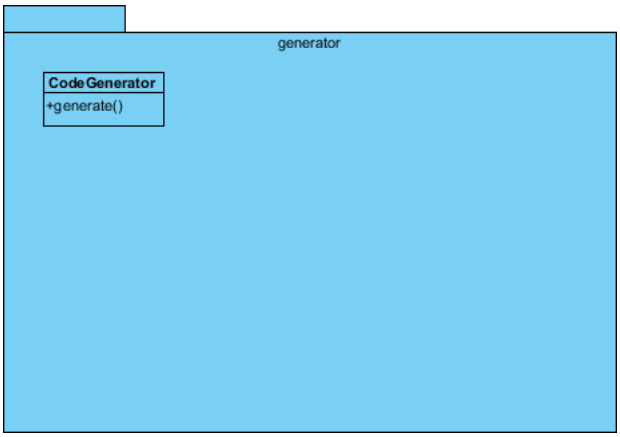
5. Select *subsystem* in the overview pane.



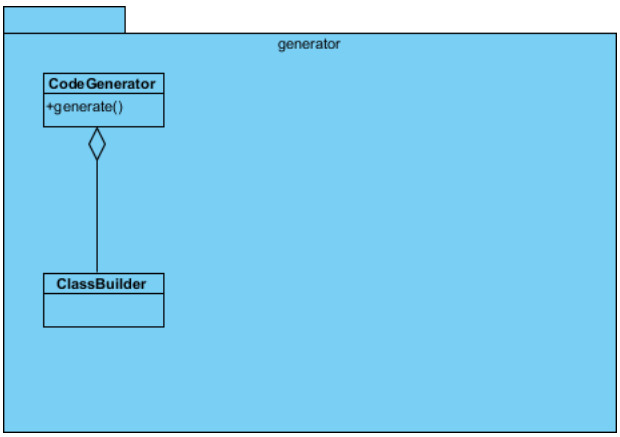
6. At the bottom pane, rename *subsystem* to *generator*. Rename *Facade* to *CodeGenerator* and *ClientRequest* to *generate*.



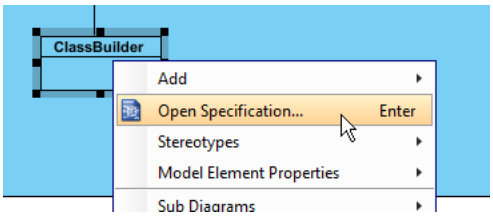
7. Click **OK** to apply the pattern. This is the diagram obtained:



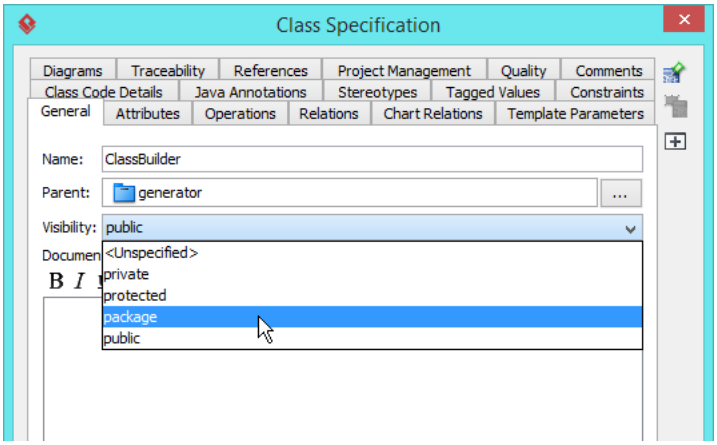
8. We need to fill in the subsystem. Move the mouse cursor over the *CodeGenerator* class, and drag out **Aggregation** > **Class** to empty region in the package to create a class. Name the class *ClassBuilder*.



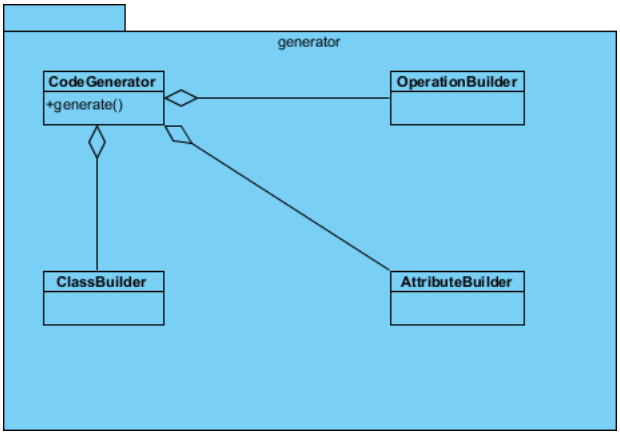
9. Right click on *ClassBuilder* and select **Open Specification** from the popup menu.



10. In the **Class** Specification, set **Visibility** to be **package**. Click **OK** to confirm.



11. Repeat steps 8 to 10 to create classes *AttributeBuilder* and *OperationBuilder*.



Resources

1. Design Patterns.vpp
2. Facade.pat

Related Links

- Full set of UML tools and UML diagrams

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

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