



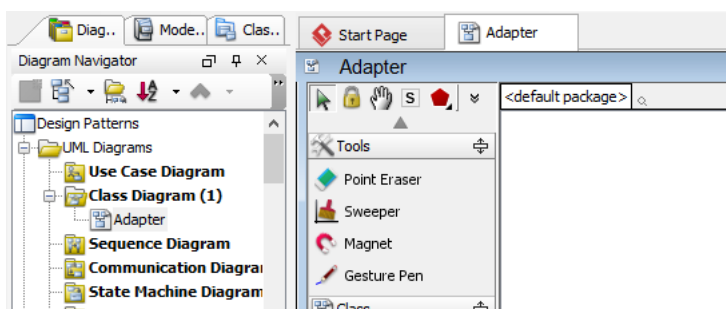
Adapter Pattern Tutorial

Written Date : October 7, 2009

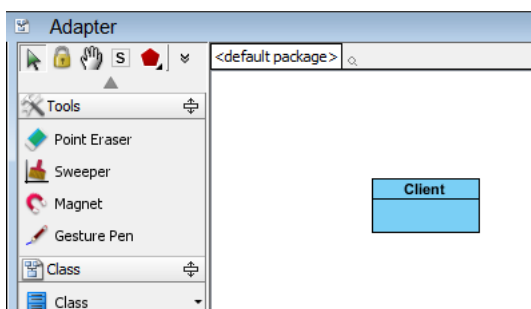
This tutorial is aimed to guide the definition and application of [Gang of Four \(GoF\)](#) adapter [design pattern](#). By reading this tutorial, you will know how to develop a model for the adapter pattern, and how to apply it in practice.

Modeling Design Pattern with Class Diagram

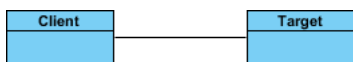
1. Create a new project *Design Patterns*.
2. Create a class diagram *Adapter*.



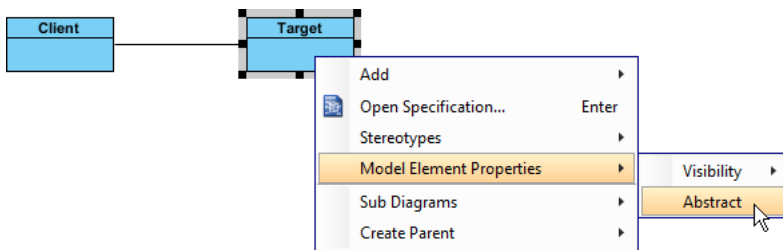
3. Select **Class** from diagram toolbar. Click on the diagram to create a class. Name it as *Client*.



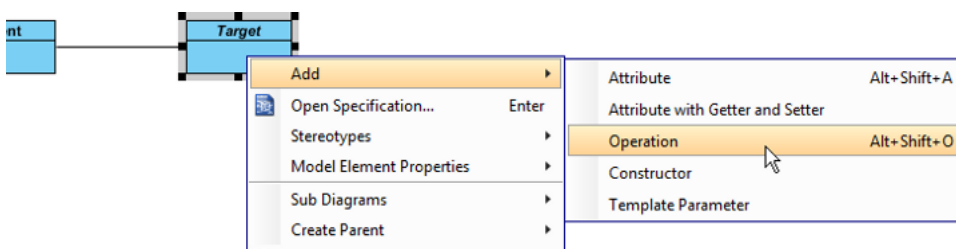
4. Move the mouse cursor over the *Client* class, and drag out **Association** > **Class** to create an associated class *Target*.



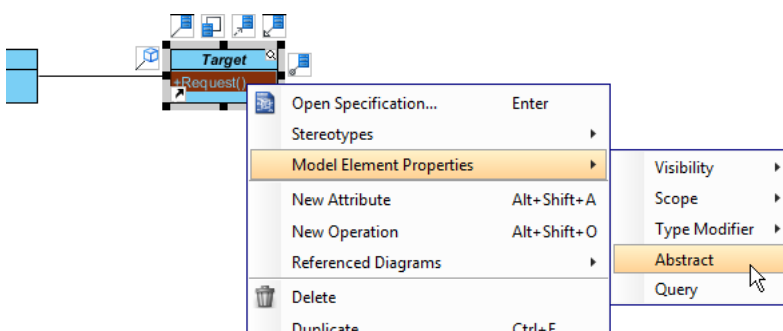
5. Right-click on *Target*, and select **Model Element Properties** > **Abstract** to set it as abstract.



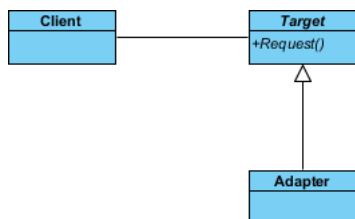
6. Right-click on the *Target* class, and select **Add** > **Operation** from the popup menu.



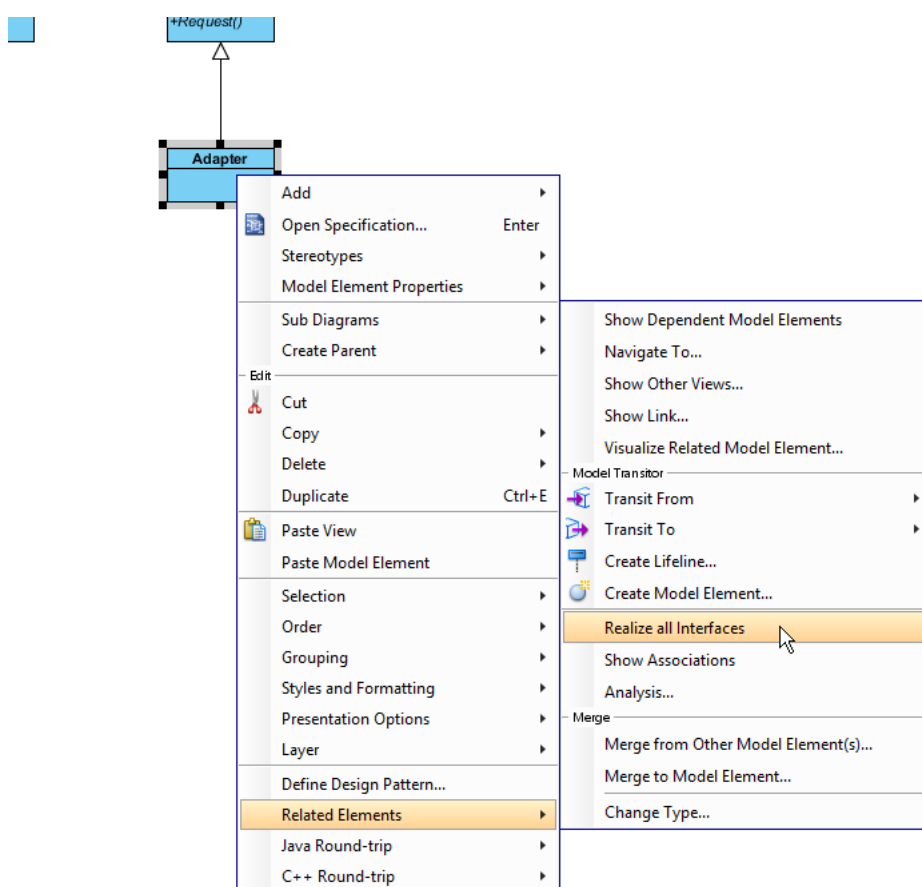
7. Name the operation *Request()*.
8. Right-click on *Request*, and select **Model Element Properties** > **Abstract** to set it as abstract.



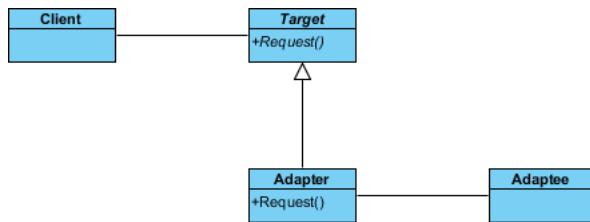
9. Move the mouse cursor over the *Target* class, and drag out **Generalization** > **Class** to create a subclass *Adapter*.



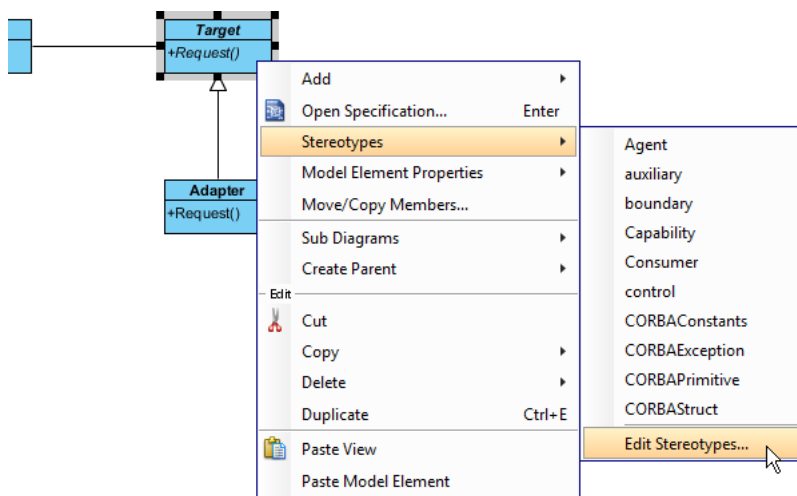
10. Adapter will inherit the operations from Target. Right-click on *Adapter* and select **Related Elements** > **Realize all Interfaces** from the popup menu.



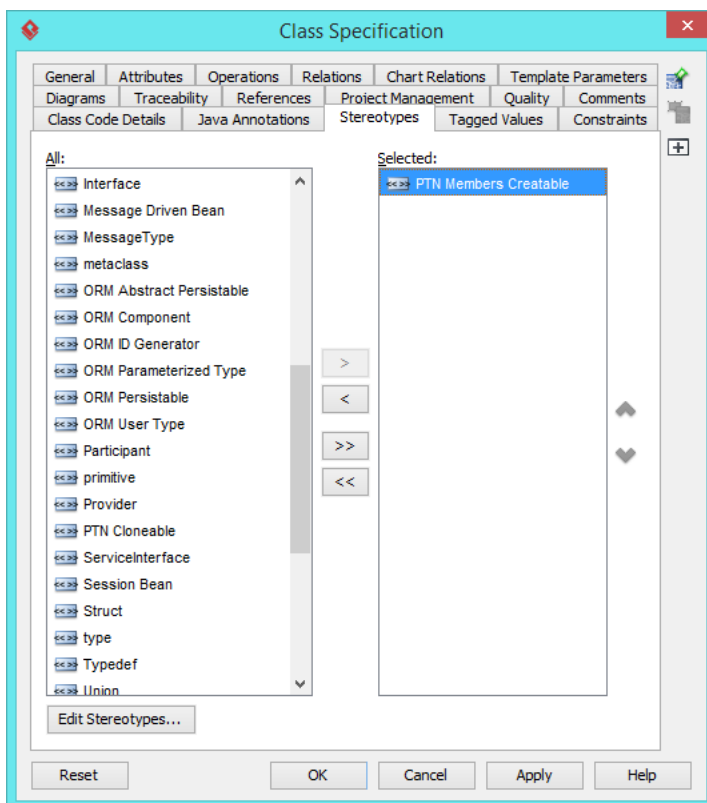
11. Move the mouse cursor over the *Adapter* class, and drag out **Association > Class** to create an associated class *Adaptee*.



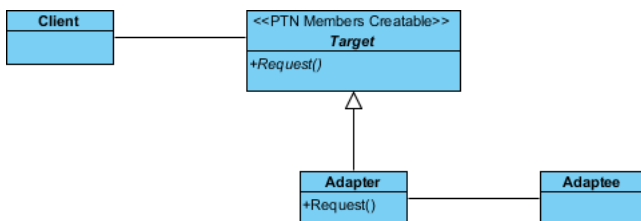
12. In practice, there may be multiple requests. To represent this, stereotype the class *Target* as **PTN Members Creatable**. Right-click on *Target* and select **Stereotypes > Stereotypes...** from the popup menu.



- In the **Stereotype** tab of the **Class Specification** dialog box, select **PTN Members Creatable** and click > to assign it to *Target* class. Click **OK** to confirm.

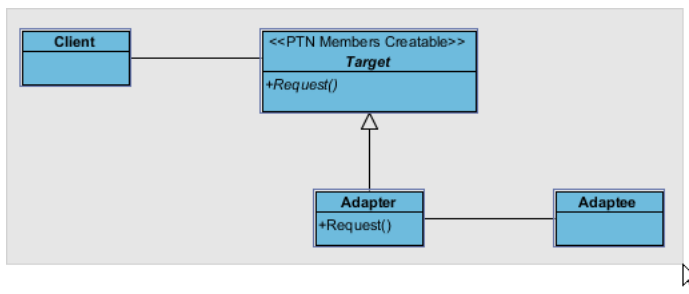


Up to now, the diagram should look like this:

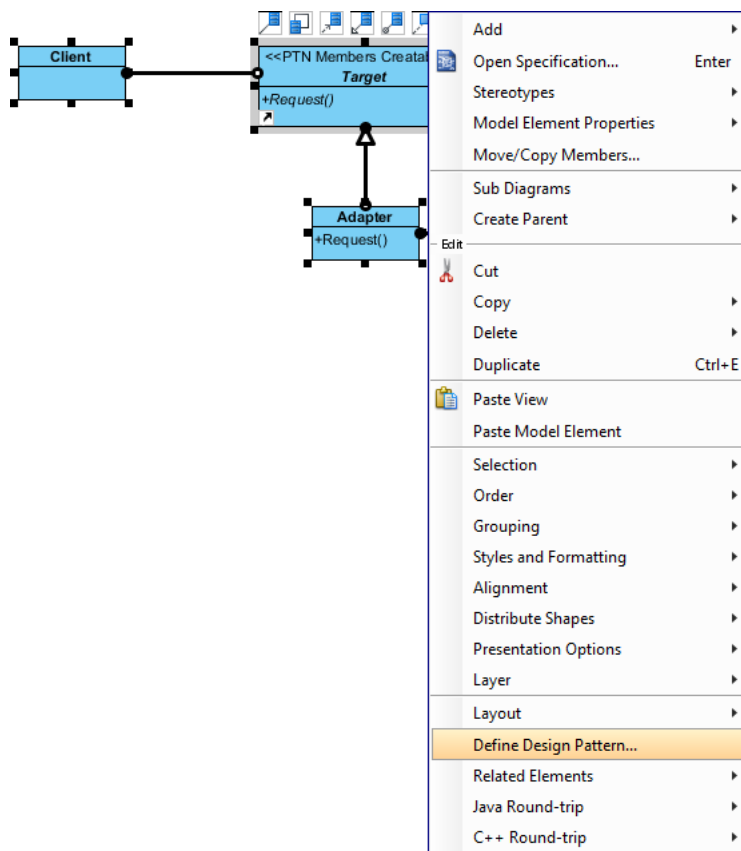


Defining Pattern

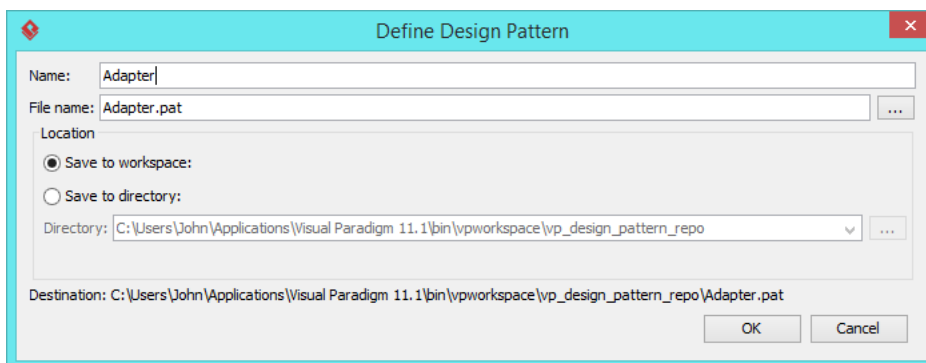
1. Select all classes on the class diagram.



2. Right-click on the selection and select **Define Design Pattern...** from the popup menu.



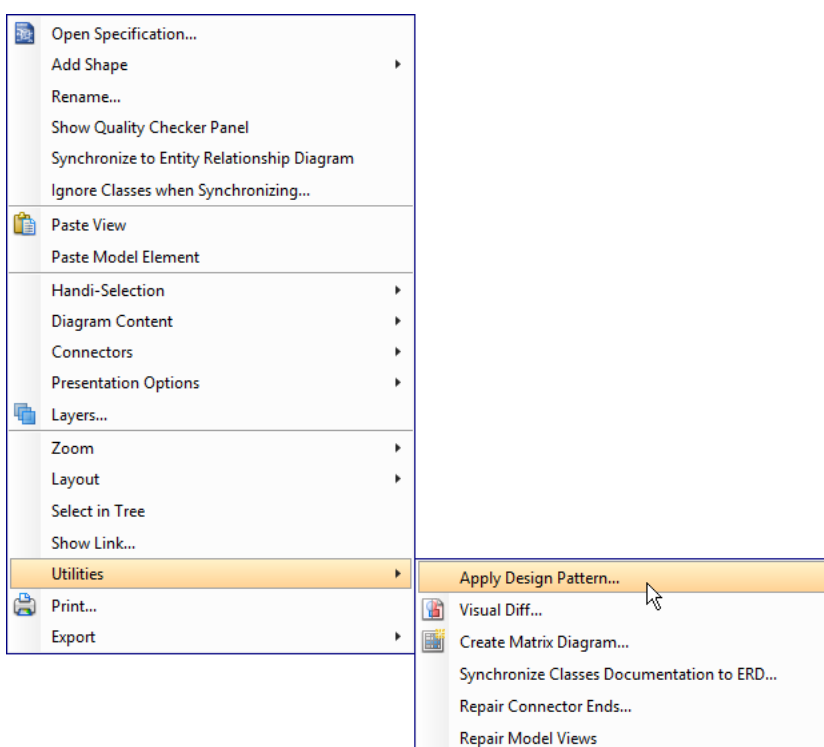
3. In the **Define Design Pattern** dialog box, specify the pattern name *Adapter*. Keep the file name as is. Click **OK** to proceed.



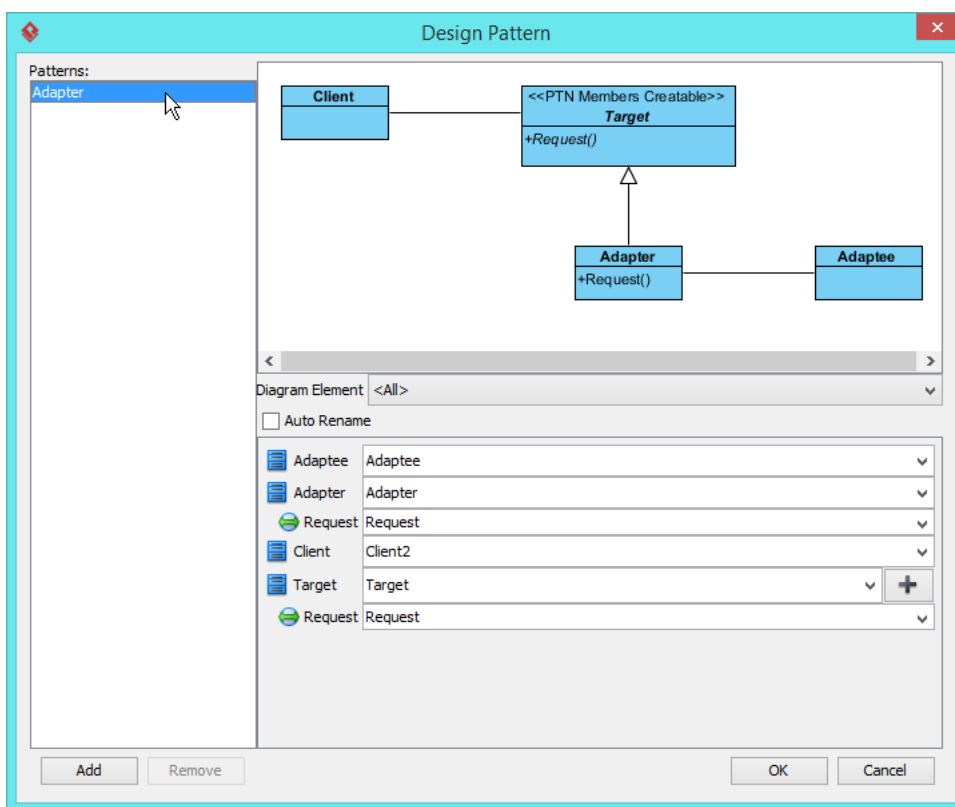
Applying Design Pattern on Class Diagram

In this section, we are going to apply the adapter pattern to wrap a legacy Shape class.

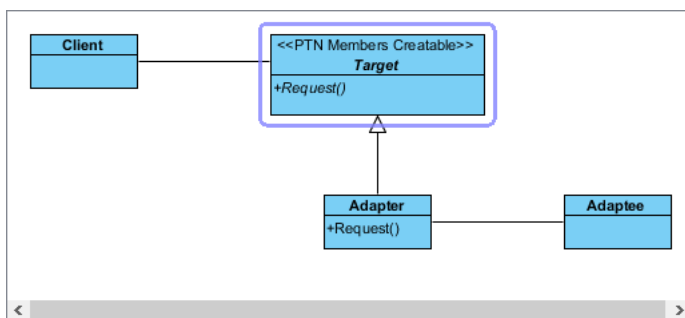
1. Create a new project *Diagram Editor*.
2. Create a class diagram *Domain Model*.
3. Right-click on the class diagram and select **Utilities > Apply Design Pattern...** from the popup menu.



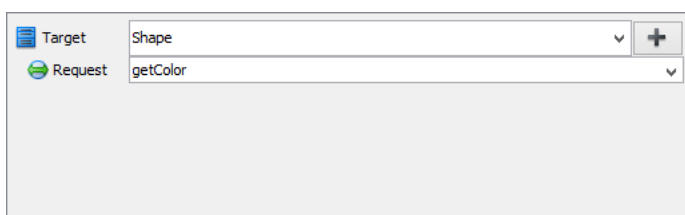
- In the **Design Pattern** dialog box, select *Adapter* from the list of patterns.



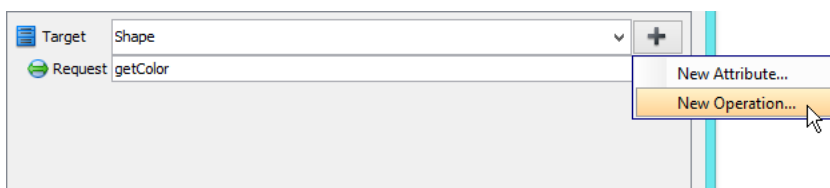
- Click on *Target* in the overview.



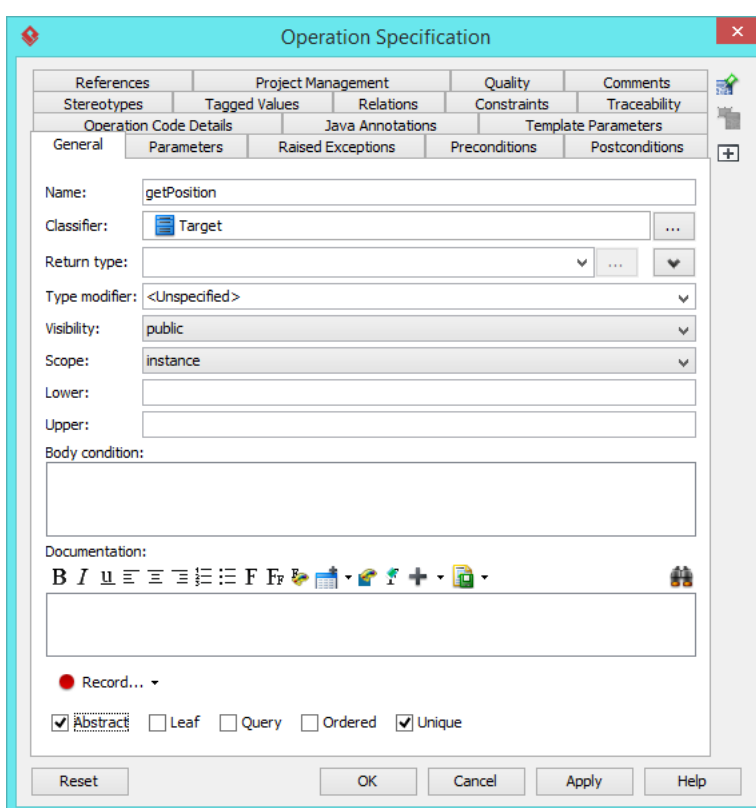
- Rename *Target* to *Shape*, and operation *Request* to *getColor* at the bottom pane.



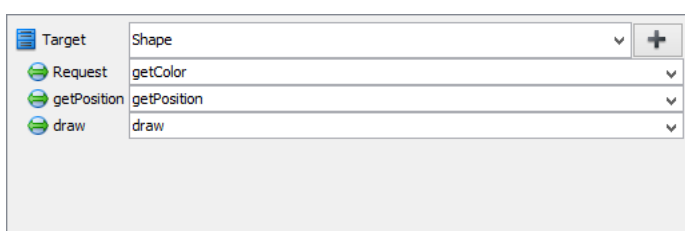
- Besides the operation *getColor*, we also need two more operations for *getPosition* and *draw*. Keep *Target* selected, click on the + button at the bottom pane, and select **New Operation...** from the popup menu.



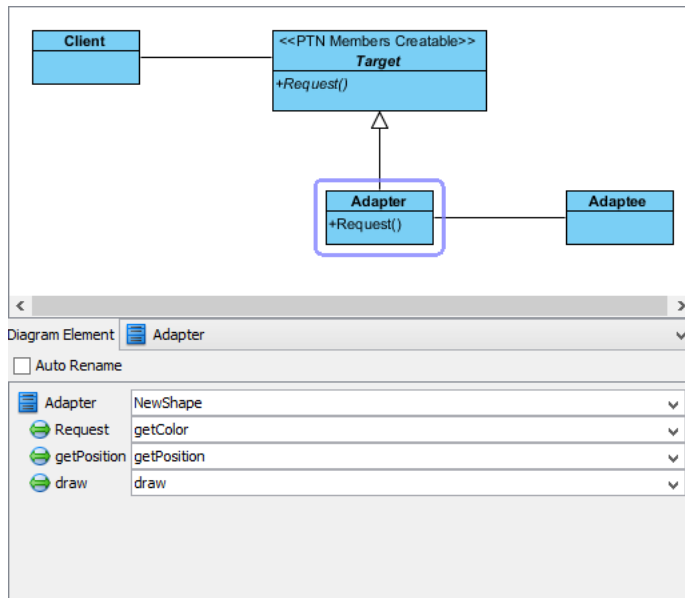
- In the **Operation Specification** dialog box, name the operation *getPosition*. Check **Abstract** at the bottom of dialog box.



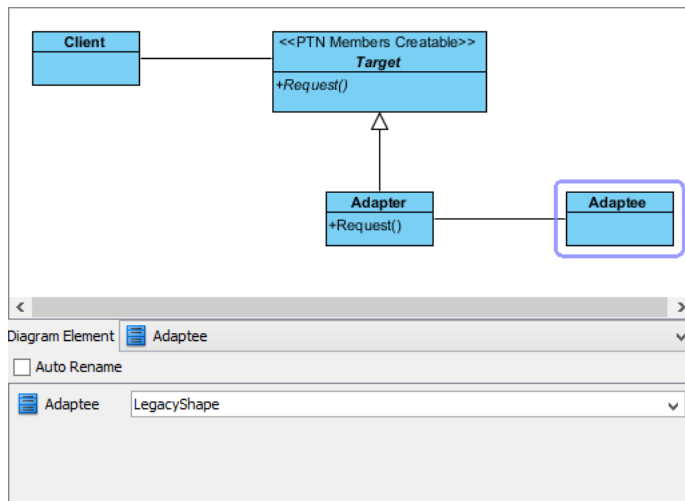
- Repeat steps 7 and 8 to create operation *draw*.



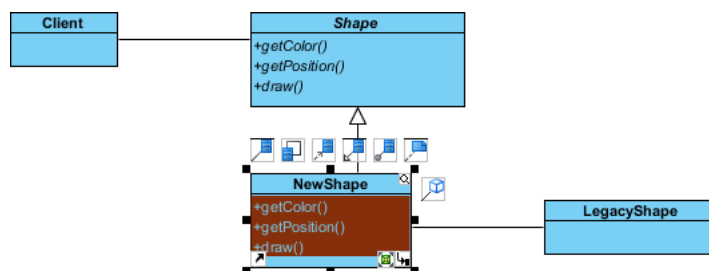
10. Select *Adapter* in overview, and rename it as *NewShape* at the bottom pane. Rename also the operation *Request* to *getColor*. Note that if the option **Auto Rename** is on, rename of operation is not needed as this will be done automatically.



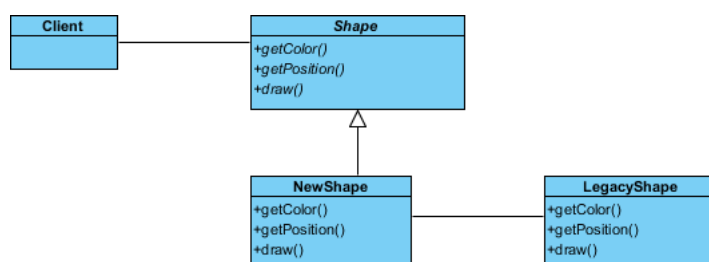
11. Select *Adaptee* in overview, and rename it as *LegacyShape* at the bottom pane. Click **OK** to apply the pattern to diagram.



12. We need to create the specific requests in *LegacyShape*. Select the operations in *NewShape*.



13. Press on the *Ctrl* key, and drag to *LegacyShape* to copy them.
This is the result:



Resources

1. [Adapter.pat](#)
2. [Design Patterns.vpp](#)

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/>)