

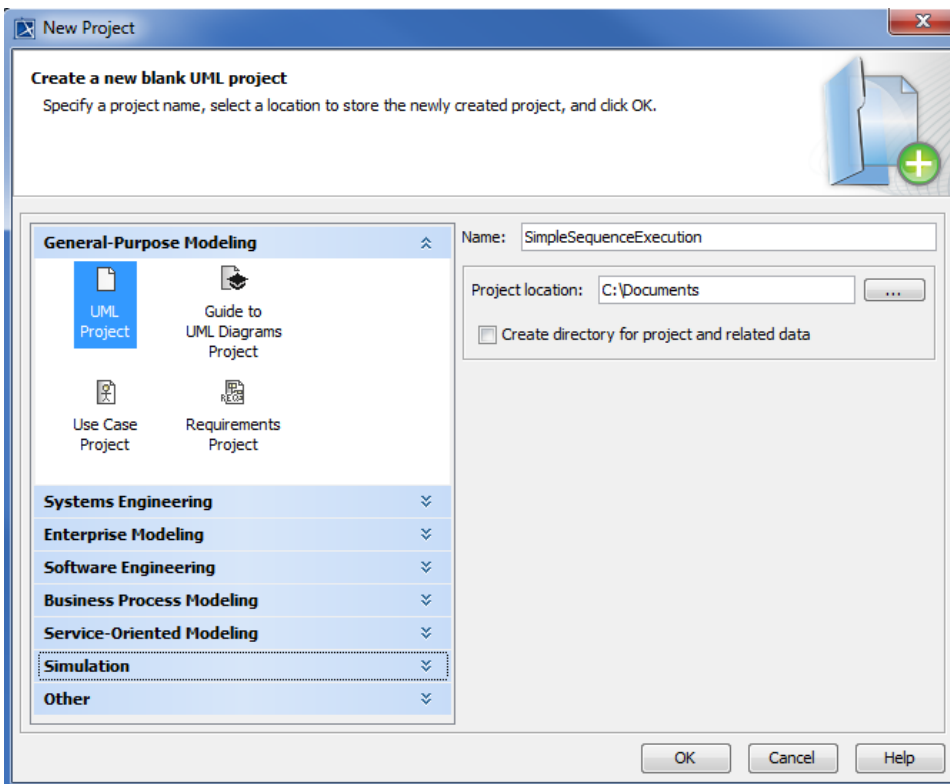
Creating a model for interaction simulation

You can simulate an Interaction element, a (UML or SysML) Sequence diagram, or a Classifier whose Classifier Behavior is defined by an Interaction. This section demonstrates how to create a simple executable Interaction model through the following steps

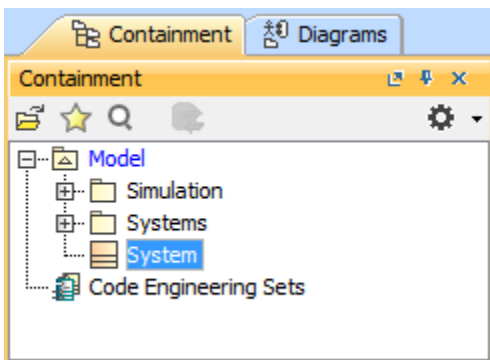
- Create a Class containing two properties typed by different Classes.
- Create an opaque Behavior, owned by one of the two properties of the Class specified in (i), for printing the summation of two Integer input parameters.
- Write a script to print the summation of the two input parameters.
- Create an operation, owned by the properties specified in (i), and specify the opaque Behavior in (ii) as its method.
- Create an Interaction as the Classifier Behavior of the Class specified in (i).
- Create call message to call operation specified in (iv) by another property.

To create a Class containing two properties typed by different Classes

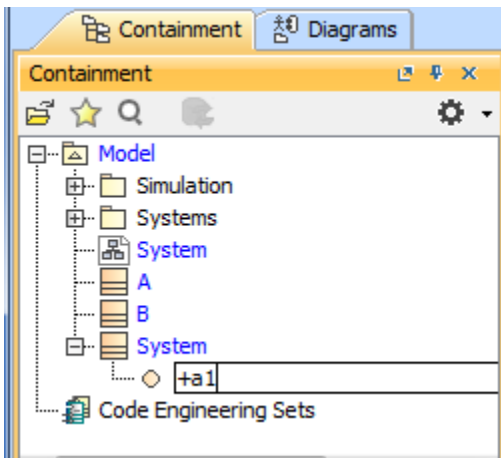
1. To create a new UML project, click **File > New Project** on the main menu. The **New Project** dialog will open.



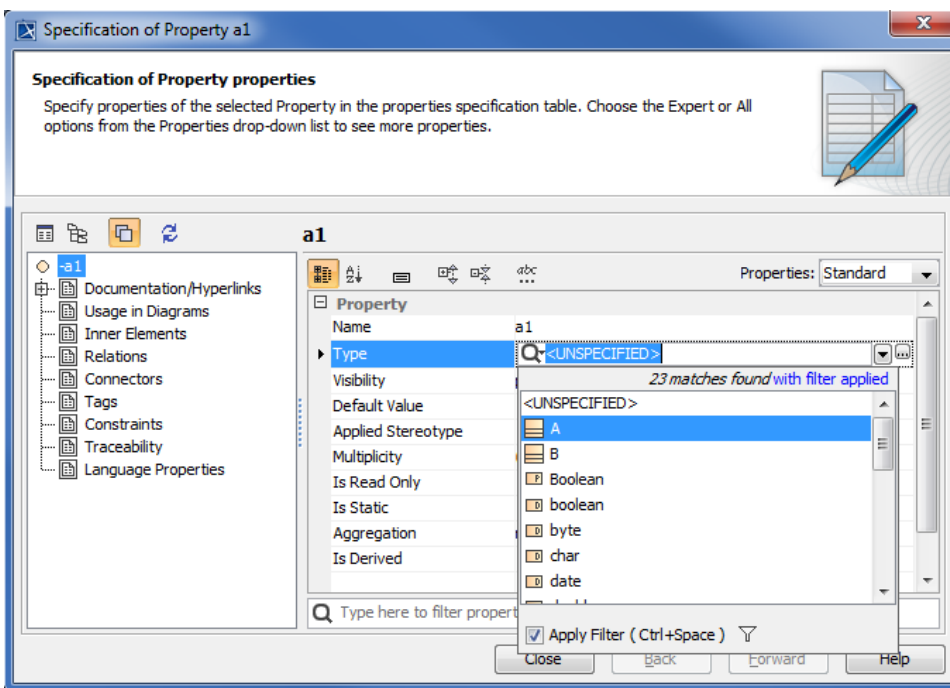
2. Select **UML Project** from the **General-Purpose Modeling** group and specify the project's name, e.g., 'SimpleSequenceExecution'.
3. Specify the location where you want to save your project file and click **OK**.
4. Right-click the **Model** node in the Containment tree and select **Create Element > Class**. A new Class element will be created. Name the created Class, e.g., 'System'.



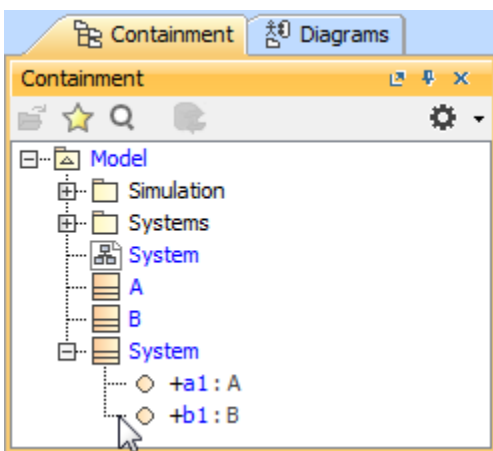
5. Create two more Classes and name them, e.g., 'a' and 'b'.
6. Right-click the **System** model in the Containment tree and select **Create Element > Property** to create property for the Class. Name the property, e.g., 'a1'.



7. Right-click **a1** and select the Specification window. Select **A** as the property type.

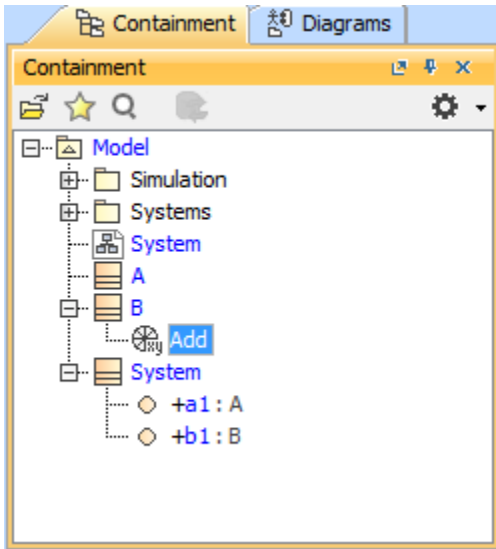


8. Repeat step 6 to create property **b1** of type **B** (see the following figure).

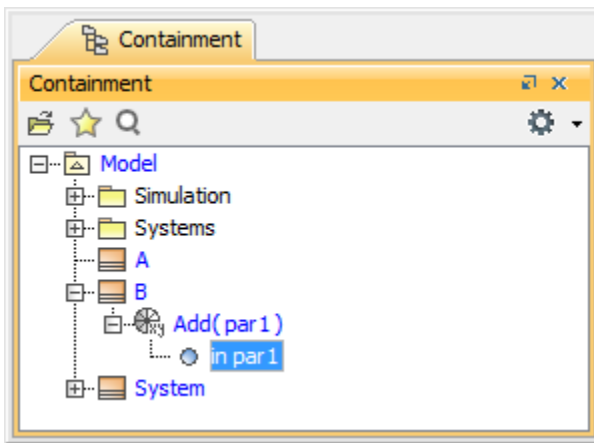


To create an opaque Behavior, owned by one of the two properties of the Class specified in (a Class containing two properties typed by different Classes), to print the summation of two Integer input parameters

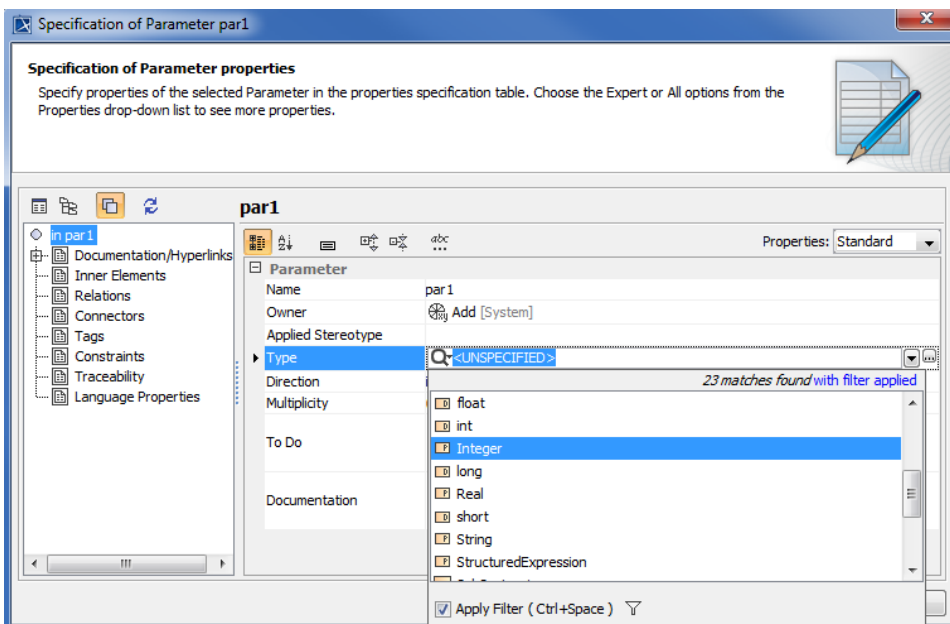
1. Right-click the Class **B** and select **Create Element > Opaque Behavior**. Name the opaque Behavior, e.g., 'Add'.



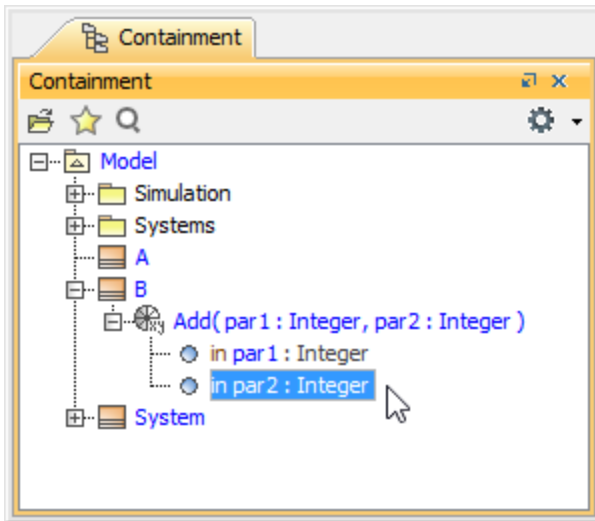
2. Right-click the opaque Behavior **Add** and select **Create Element > Parameter** to add a parameter element to the opaque Behavior. Name the parameter, e.g., 'par1'.



3. Right-click the parameter **par1** and select the Specification window. Select **Integer** as the parameter type.

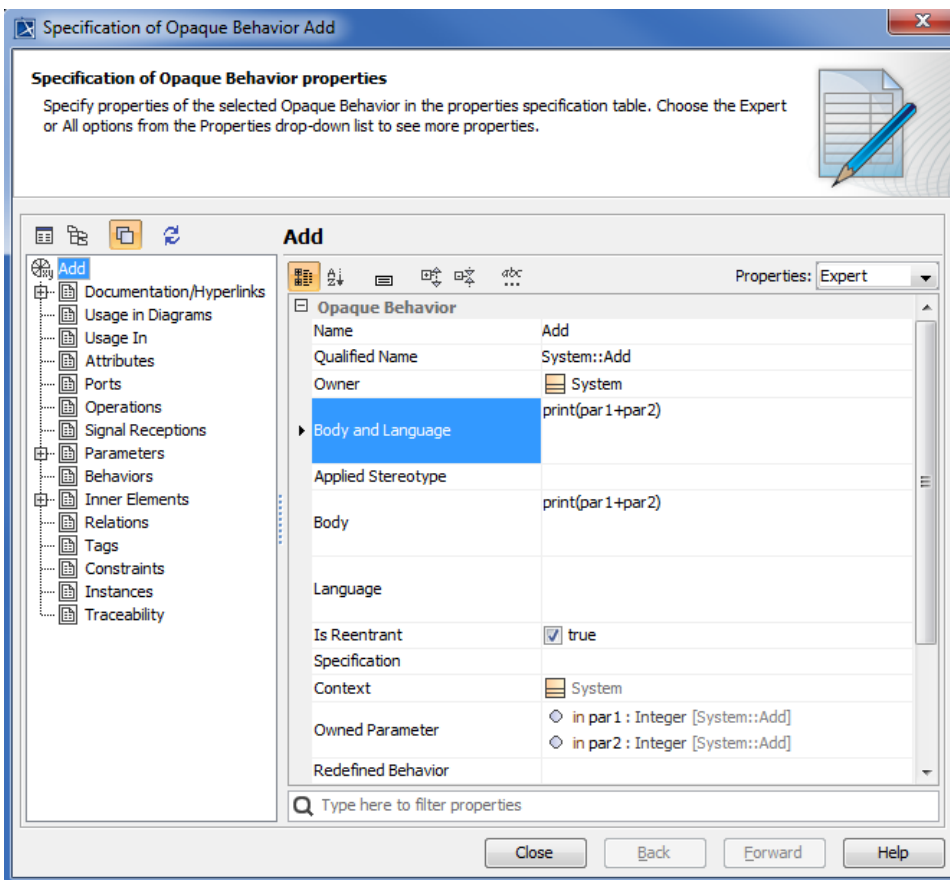


4. Repeat Step 2 to create another parameter and name it, e.g., 'par2' of type **Integer**.



To write a script to print the summation of the two input parameters

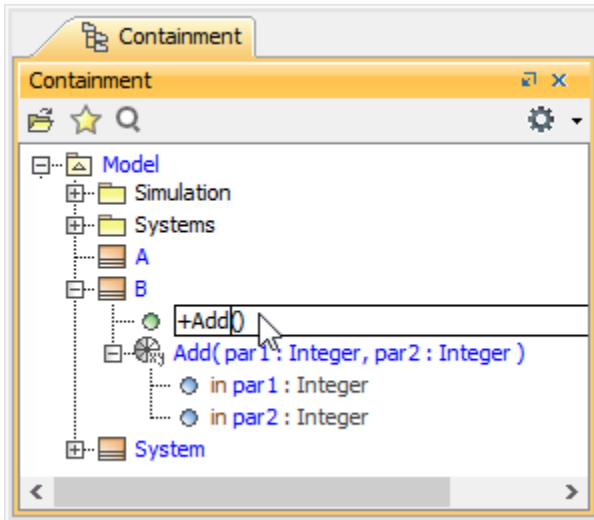
- Open the Specification window of the opaque Behavior **Add** and write a script in the **Body** field (you can use any scripting language that is supported by MagicDraw Macro Engine, e.g., BeanShell, Groovy, JavaScript, Python, or Ruby). In this example, JavaScript is used: `print (par1+par2)`; to print the summation of the two Integer parameters **par1** and **par2**.



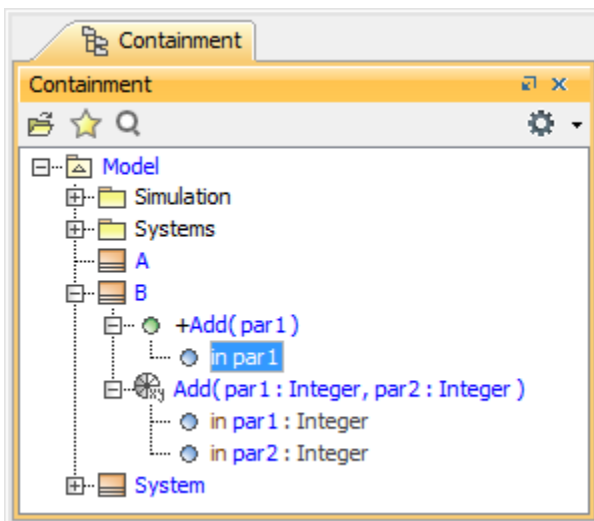
The Specification window of an Opaque Behavior.

To create an operation owned by the properties specified in (Class containing two properties typed by different Classes), and to specify the opaque Behavior as in (opaque Behavior owned by one of the two properties of the Class) as its method

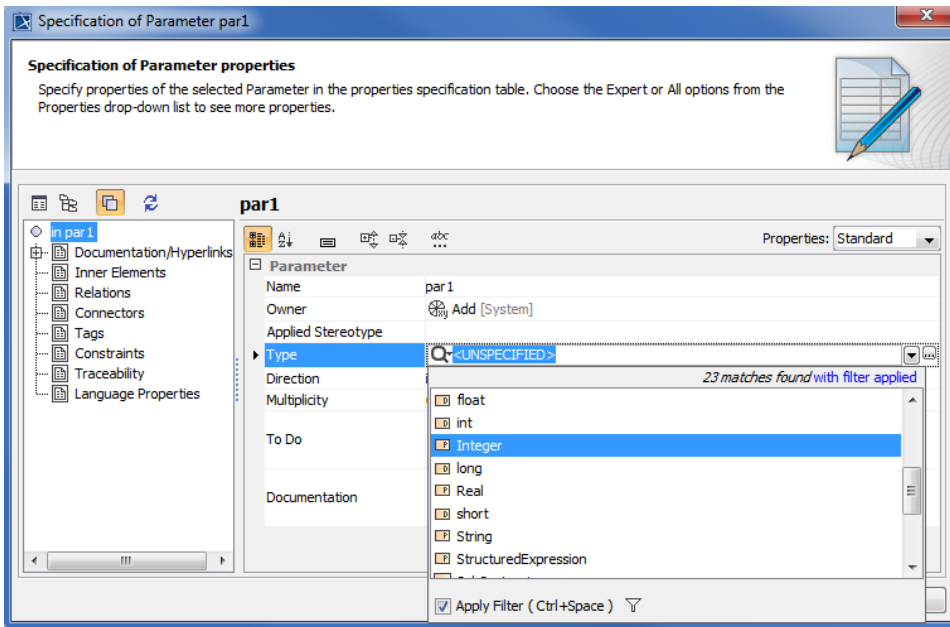
1. Right-click **B** and select **Create Element > Operation** to add an operation element to the Class. Name the operation, e.g., 'Add'.



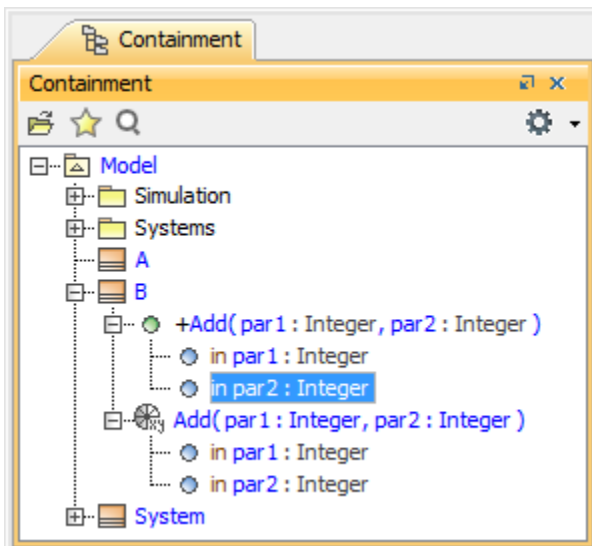
2. Right-click the operation **Add** and select **Create Element > Parameter** to add a parameter to the operation element. Name the parameter, e.g., 'par1'.



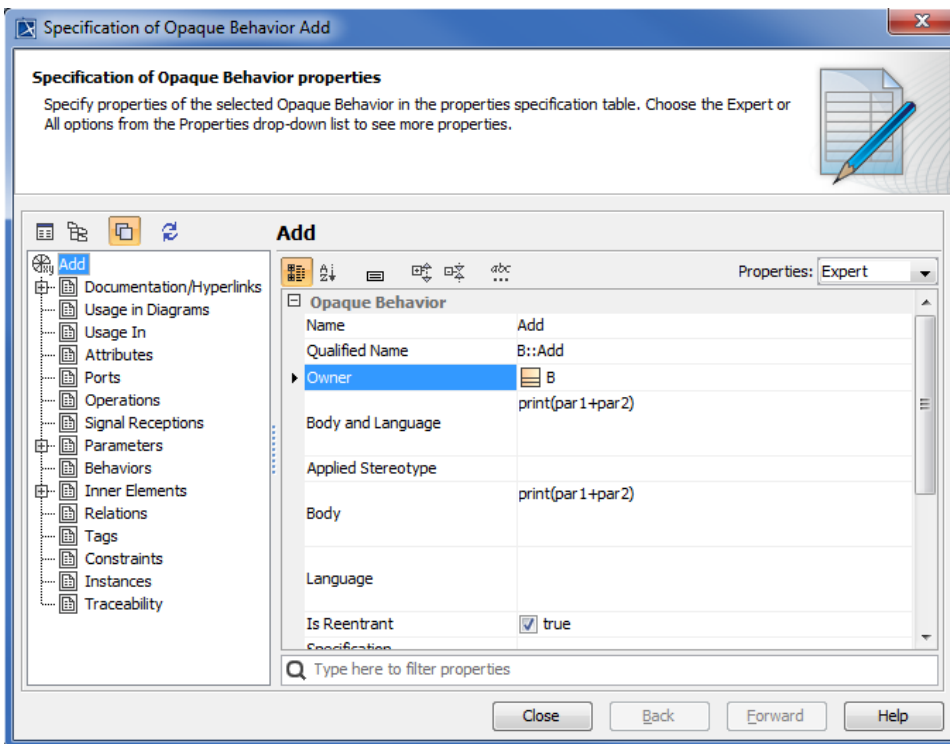
3. Right-click the parameter **par1** and select **Specification**. Select **Integer** as the parameter type and **in** as the parameter direction. The Specification window of parameter par1 will be as follows



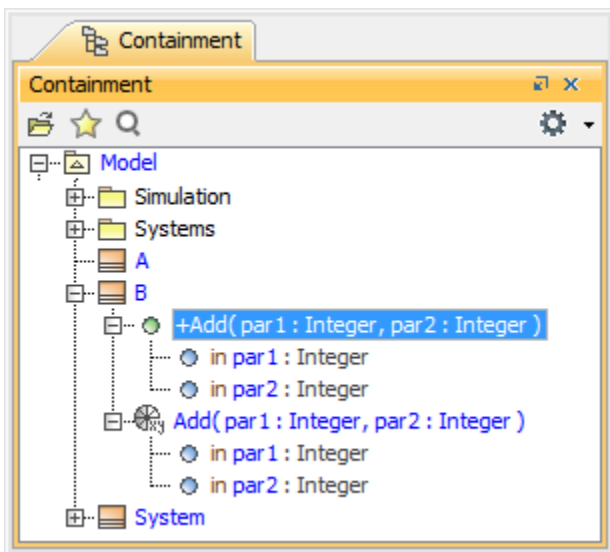
- Repeat Step 2 and 3 to create another parameter. Name it, e.g., **par2** of type **Integer**, having **in** as its direction. The parameters associated with the Operation will be as follows



- Right-click the operation **Add** and select **Specification**. The Specification window will open.
- Select the opaque Behavior **Add** as the **Method** of the operation. The Specification window of the Opaque Behavior will be as follows

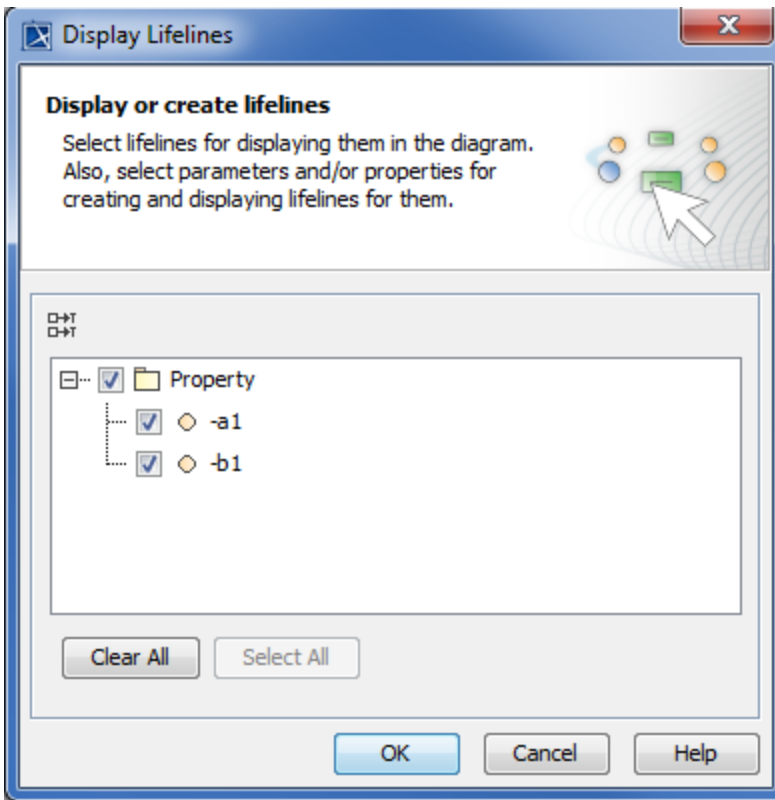


The parameters associated with an Operation in the Containment tree will be as follows.

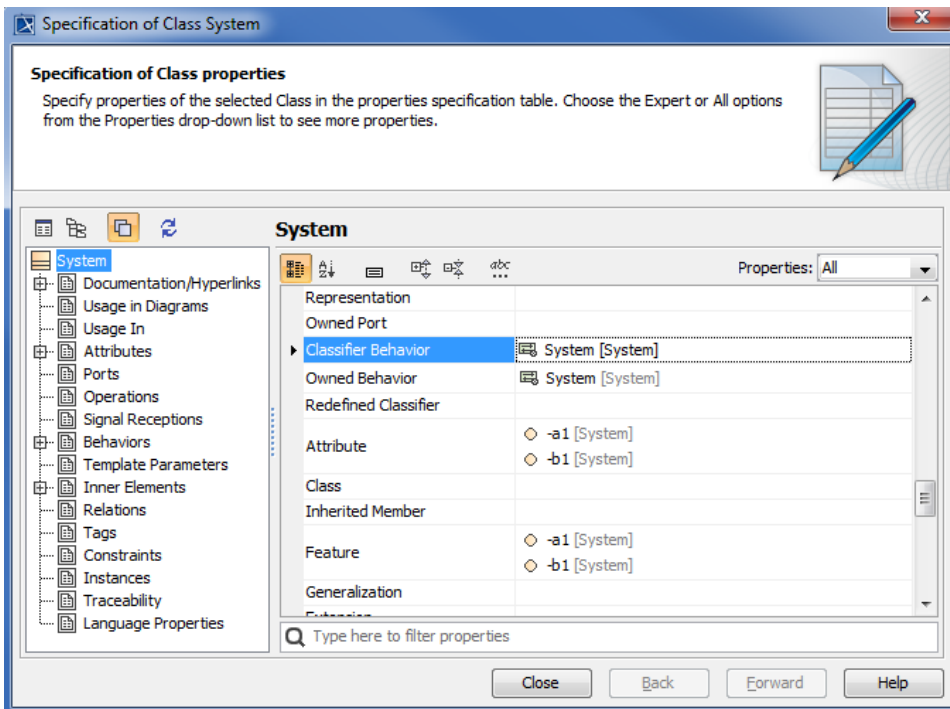


To create an Interaction as the Classifier Behavior of the Class specified in (the Class containing two properties typed by different Classes)

1. Right-click **System** and select **New Diagram > Sequence Diagram**. Select all properties in the **Display Lifelines** dialog and click **OK**.

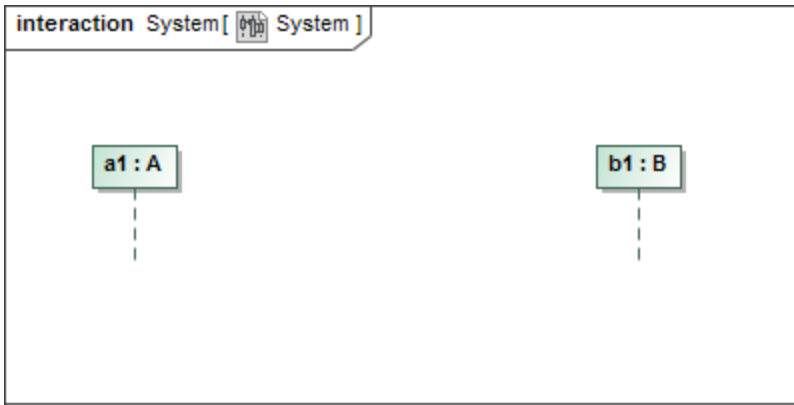


2. Right-click the Class **System** in the containment browser and select **Specification** to open its Specification window.
3. Make sure that the Interaction **System** is the Classifier Behavior of the Class **System**.

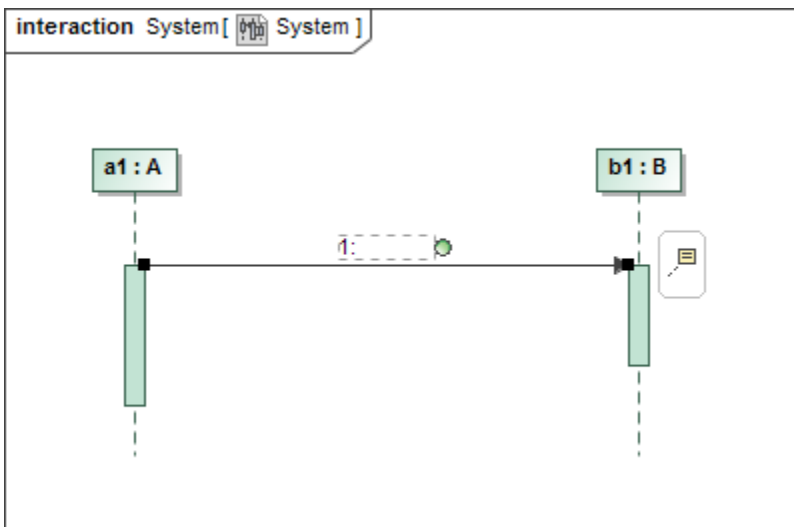


To create a call message to call the operation specified in ([operation owned by property](#)) by another property

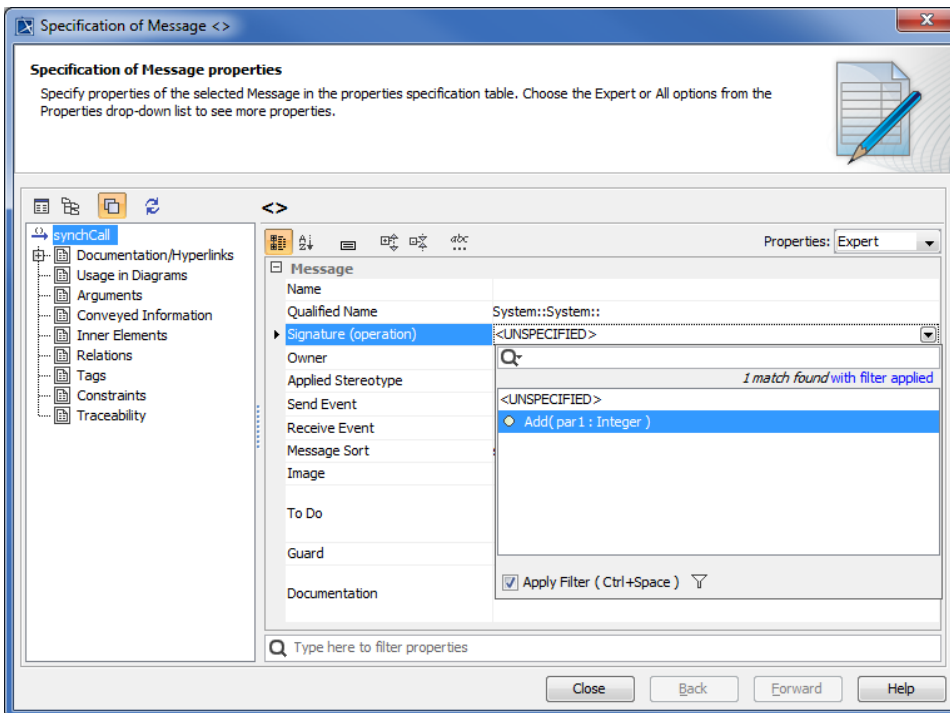
1. Double-click the Interaction **System** to open the Sequence diagram containing two lifelines: **a1** and **b1**.



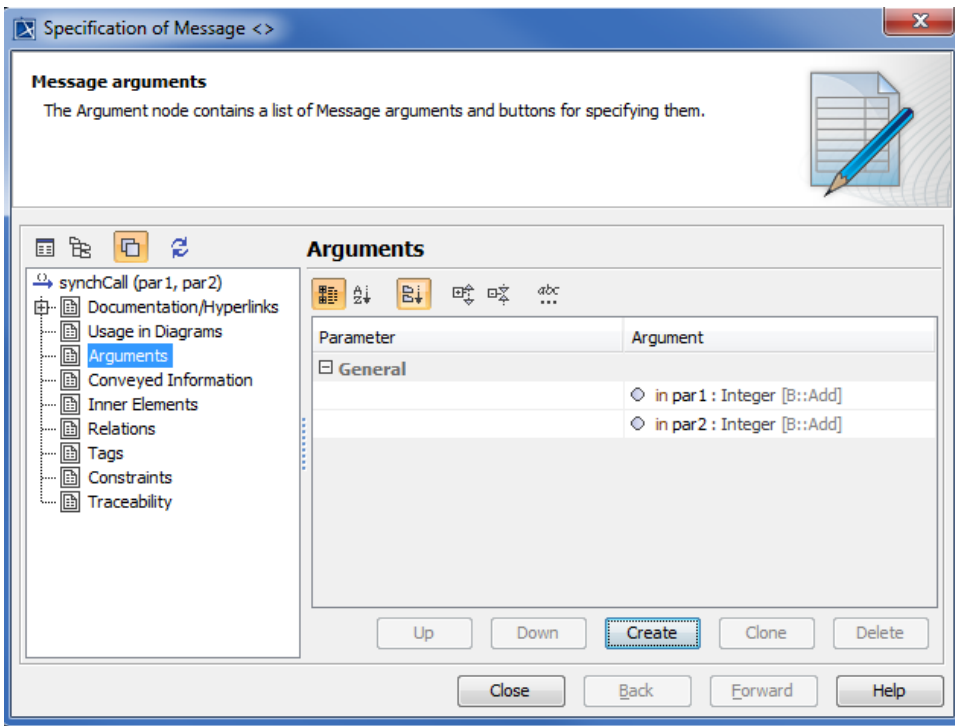
2. Select **Call Message** from the **Diagram Modeling Elements** toolbar and create a call message from **a1** to **b1**.



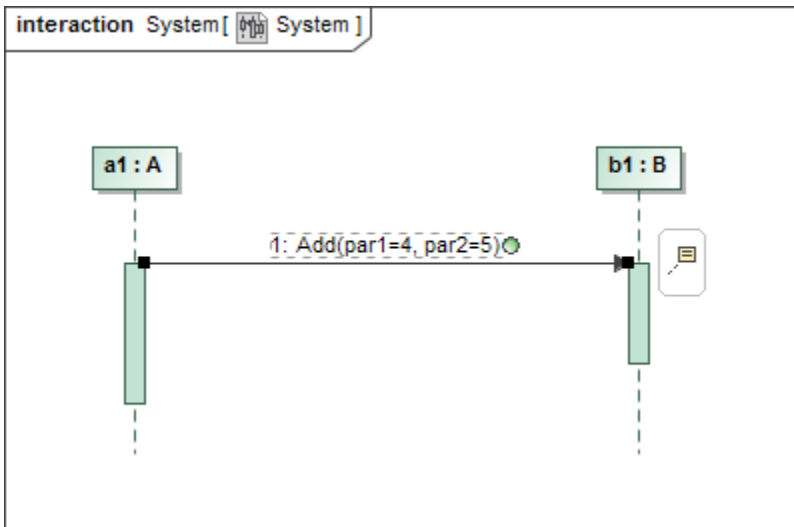
3. Double-click the call message created in Step 2 to open the Specification window and select the operation **Add** as the **Signature(operation)** of the call message.



4. Select **Argument** on the left-hand side of the dialog to specify a value of the element. Type, e.g., **4** and **5** as the values of parameters **par1** and **pa** r2 respectively. The Specification window of a call message showing its Arguments tags will be as follows



A Sequence diagram showing a call message between two lifelines will be as follows



Related pages

- [Class](#)
- [Supported elements in interaction simulation](#)