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# How to draw a Sequence Diagram in UML

A [sequence diagram](#) is a kind of [UML diagram](#) that is used primarily to show the interactions between objects that are represented as lifelines in a sequential order.

## Creating sequence diagram

Perform the steps below to create a UML sequence diagram Visual Paradigm uml diagram tools.

1. Select **Diagram > New** from the application toolbar.
2. In the **New Diagram** window, select **Sequence Diagram**.
3. Click **Next**.
4. Enter the diagram name and description. The **Location** field enables you to select a model to store the diagram.
5. Click **OK**.

## Creating actor

To create actor, click **Actor** on the diagram toolbar and then click on the diagram.

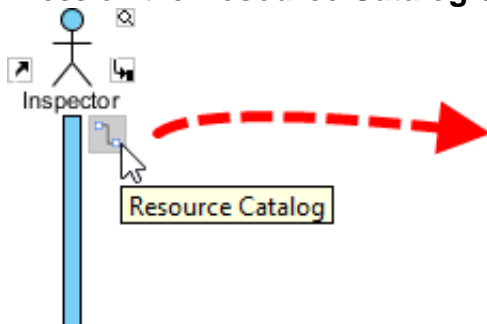


## Creating lifeline

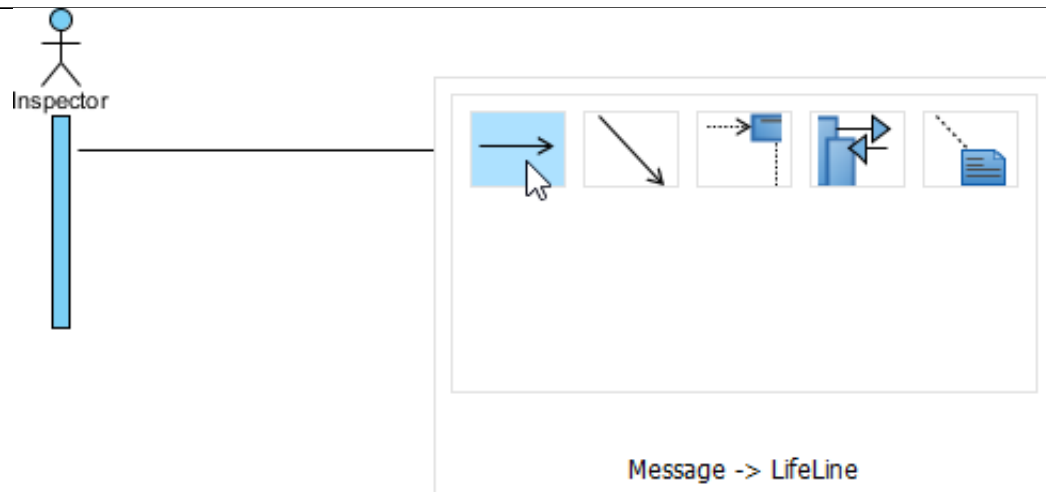
To create lifeline, you can click **LifeLine** on the diagram toolbar and then click on the diagram.

Alternatively, a much quicker and more efficient way is to use Resource Catalog:

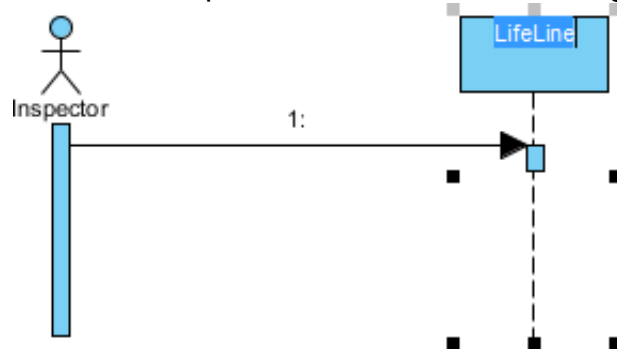
1. Move your mouse pointer over the source lifeline.
2. Press on the **Resource Catalog** button and drag it out.



3. Release the mouse button at the place where you want the lifeline to be created.
4. Select **Message -> LifeLine** from Resource Catalog.

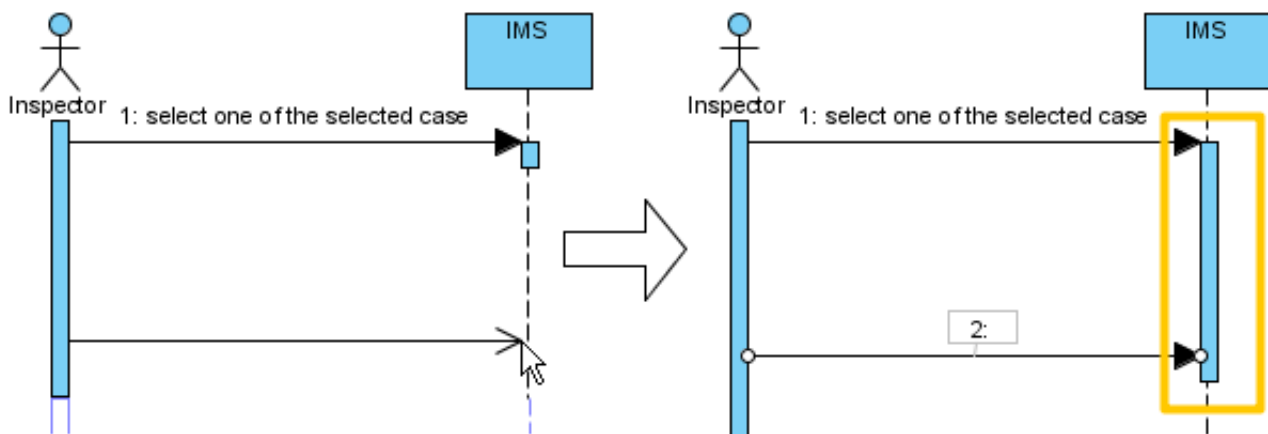


5. A new lifeline will be created and connected to the actor/lifeline with a message. Enter its name and press **Enter** to confirm editing.



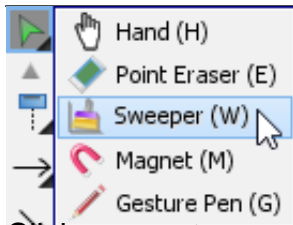
## Auto extending activation

When create message between lifelines/actors, activation will be automatically extended.



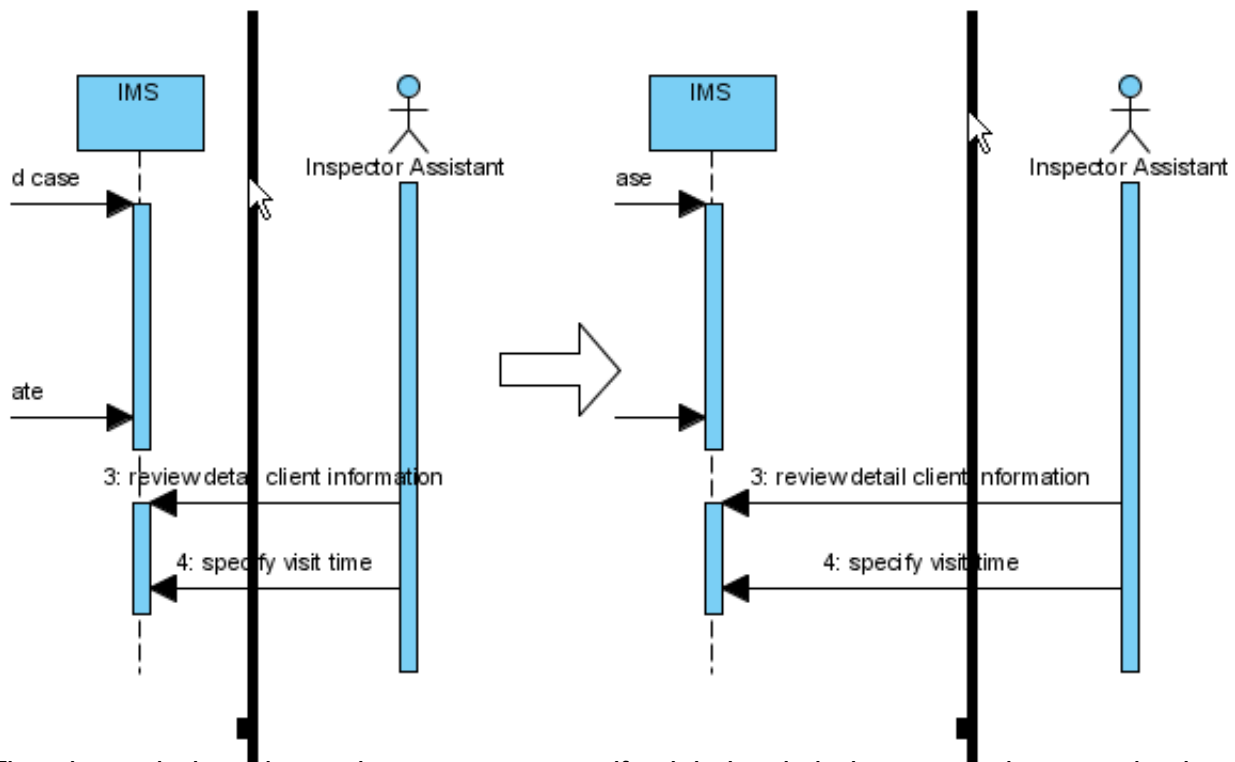
## Using sweeper and magnet to manage sequence diagram

Sweeper helps you to move shapes aside to make room for new shapes or connectors. To use sweeper, click the **Selector** on the toolbar, then select **Sweeper**.

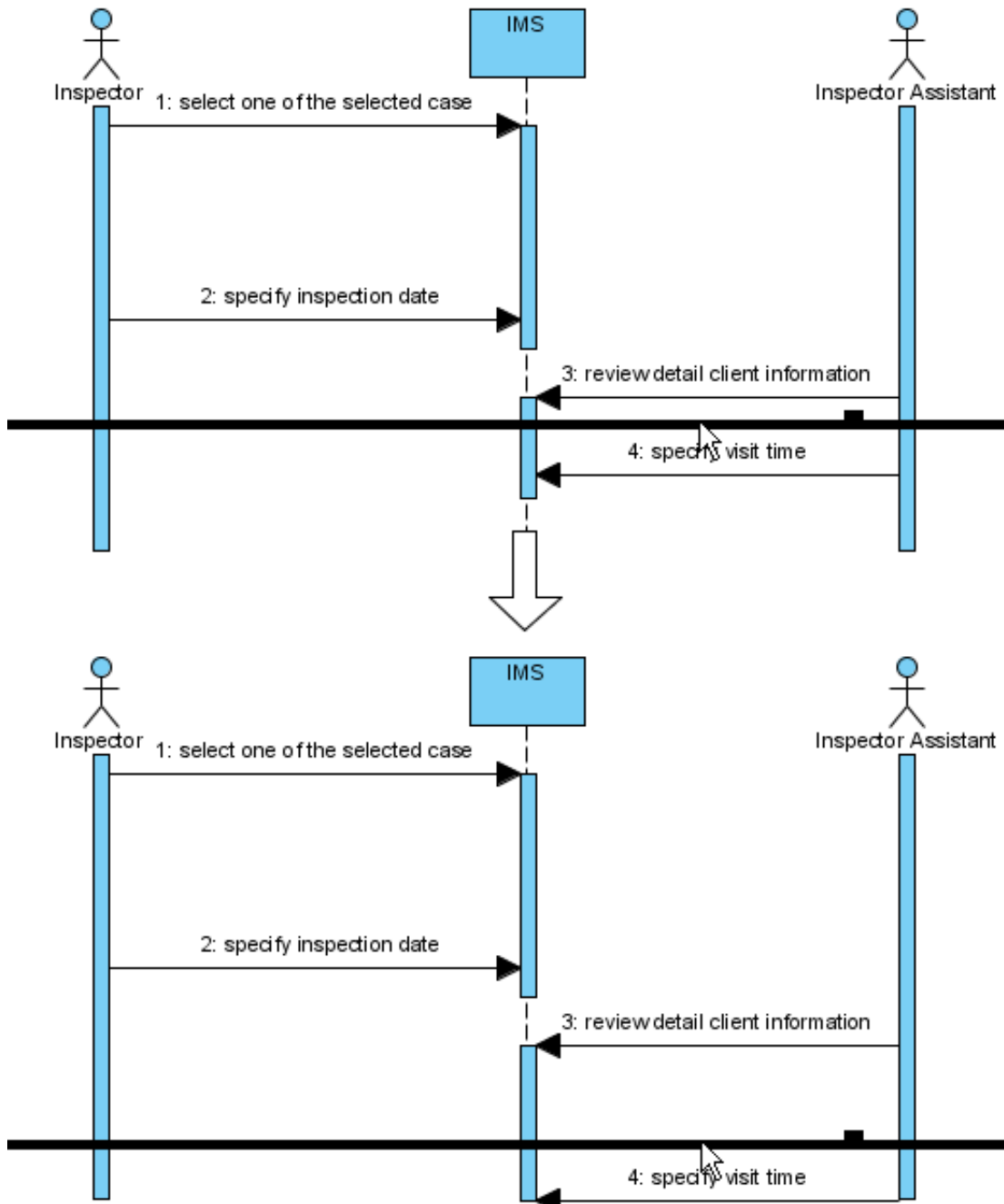


Click on empty space of the diagram and drag towards top, right, bottom or left. Shapes affected will be swept to the direction you dragged.

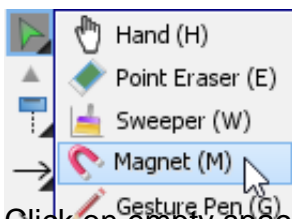
The picture below shows the actor *Inspector Assistant* is being swept towards right, thus new room is made for new lifelines.



The picture below shows the message *specify visit time* is being swept downwards, thus new room is made for new messages.

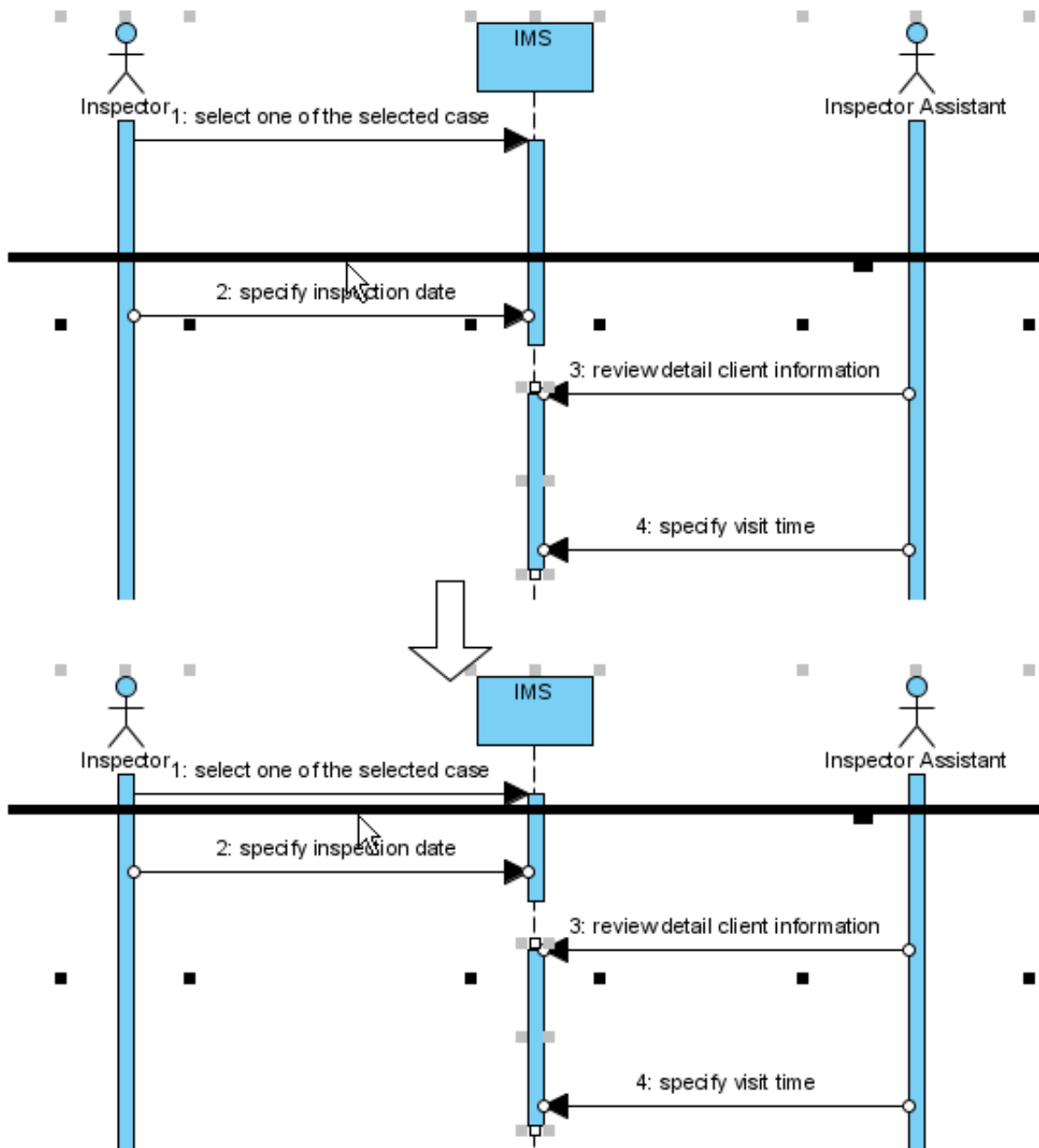


You can also use magnet to pull shapes together. To use magnet, click the **Selector** on the toolbar, then select **Magnet**.



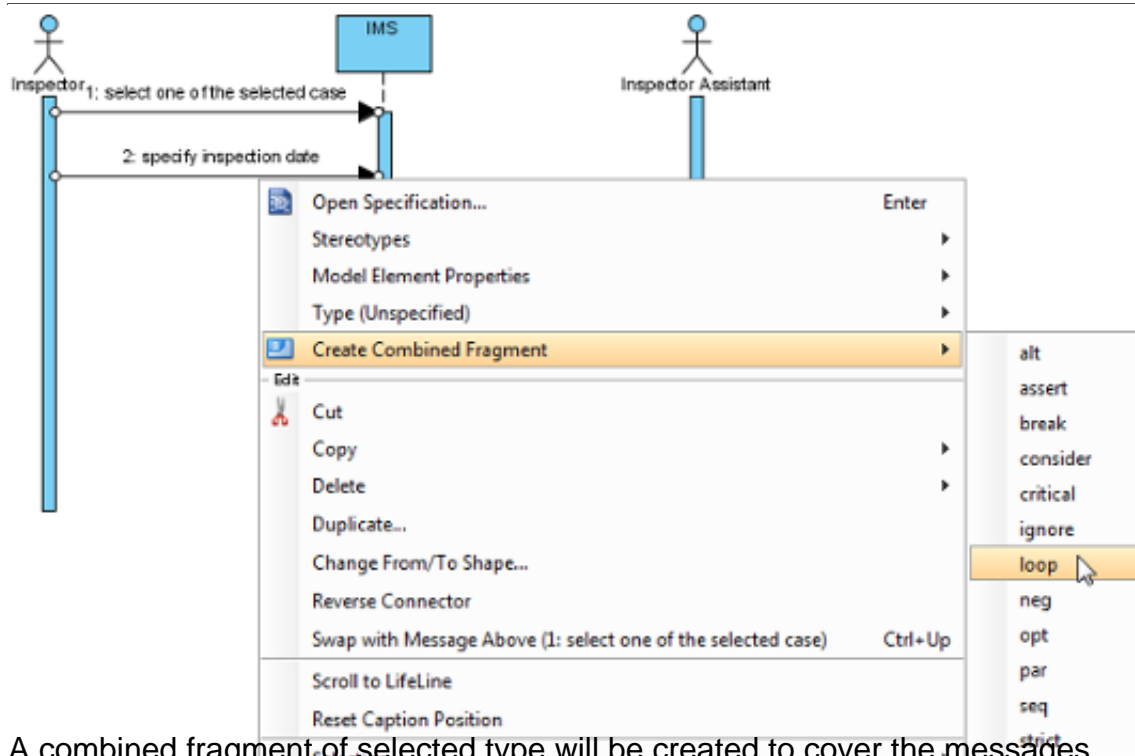
Click on empty space of the diagram and drag towards top, right, bottom or left. Shapes affected will be pulled to the direction you dragged.

The picture below shows when drag the magnet upwards, shapes below dragged position are pulled upwards.

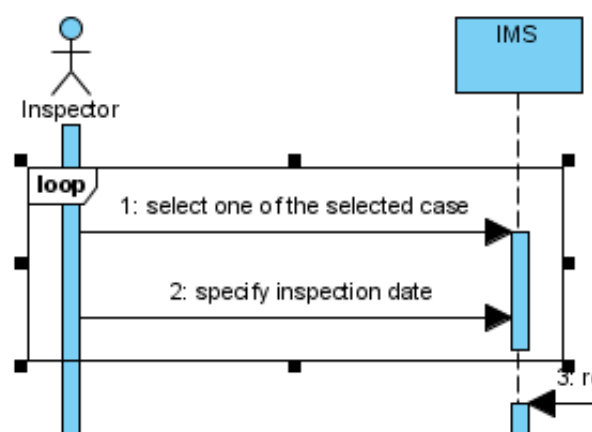


## Creating combined fragment for messages

To create combined fragment to cover messages, select the messages, right-click on the selection and select **Create Combined Fragment** and then select a combined fragment type (e.g. loop) from the popup menu.



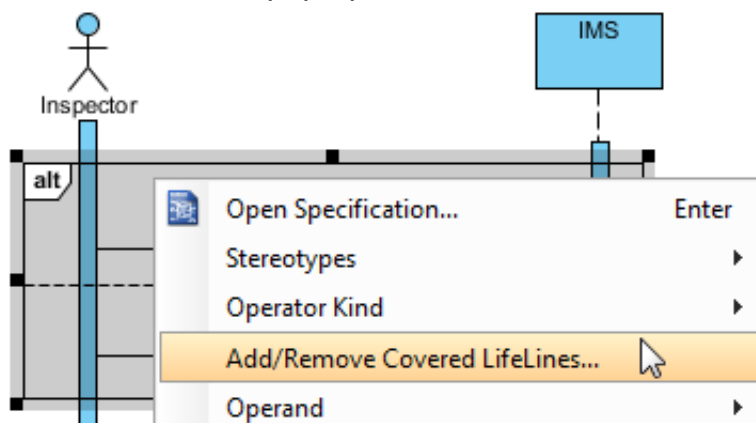
A combined fragment of selected type will be created to cover the messages.



## Adding/removing covered lifelines

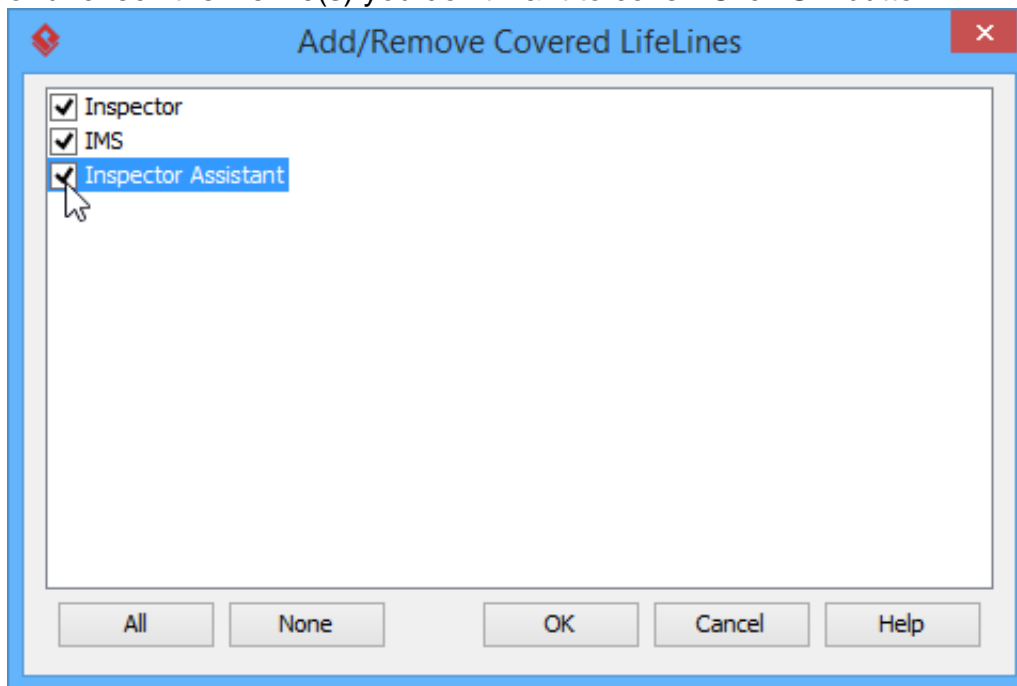
After you've created a combined fragment on the messages, you can add or remove the covered lifelines.

1. Move the mouse over the combined fragment and select **Add/Remove Covered Lifeline...** from the pop-up menu.

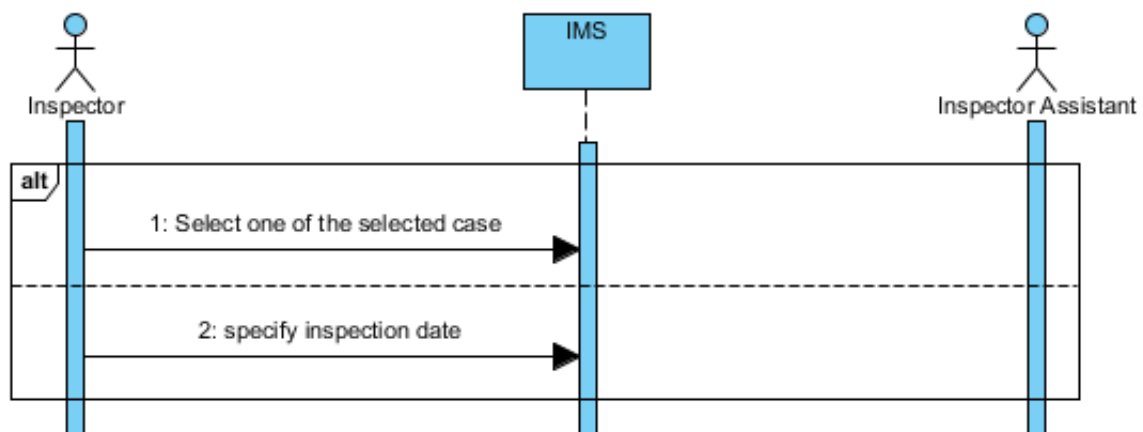


2. In the **Add/Remove Covered Lifelines** window, check the lifeline(s) you want to cover

or uncheck the lifeline(s) you don't want to cover. Click **OK** button.



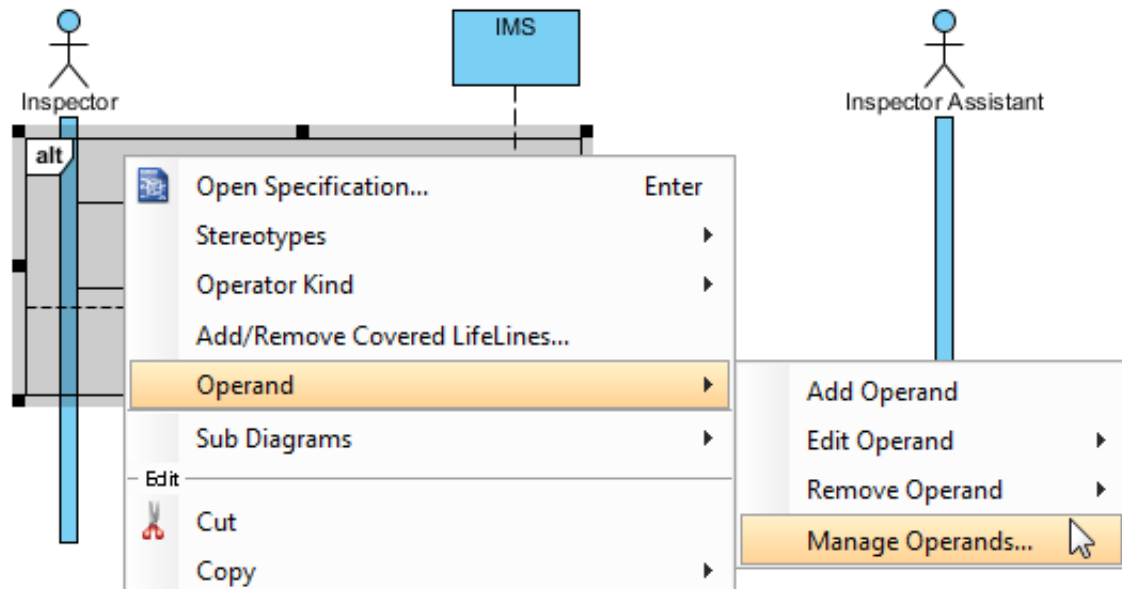
As a result, the area of covered lifelines is extended or narrowed down according to your selection.



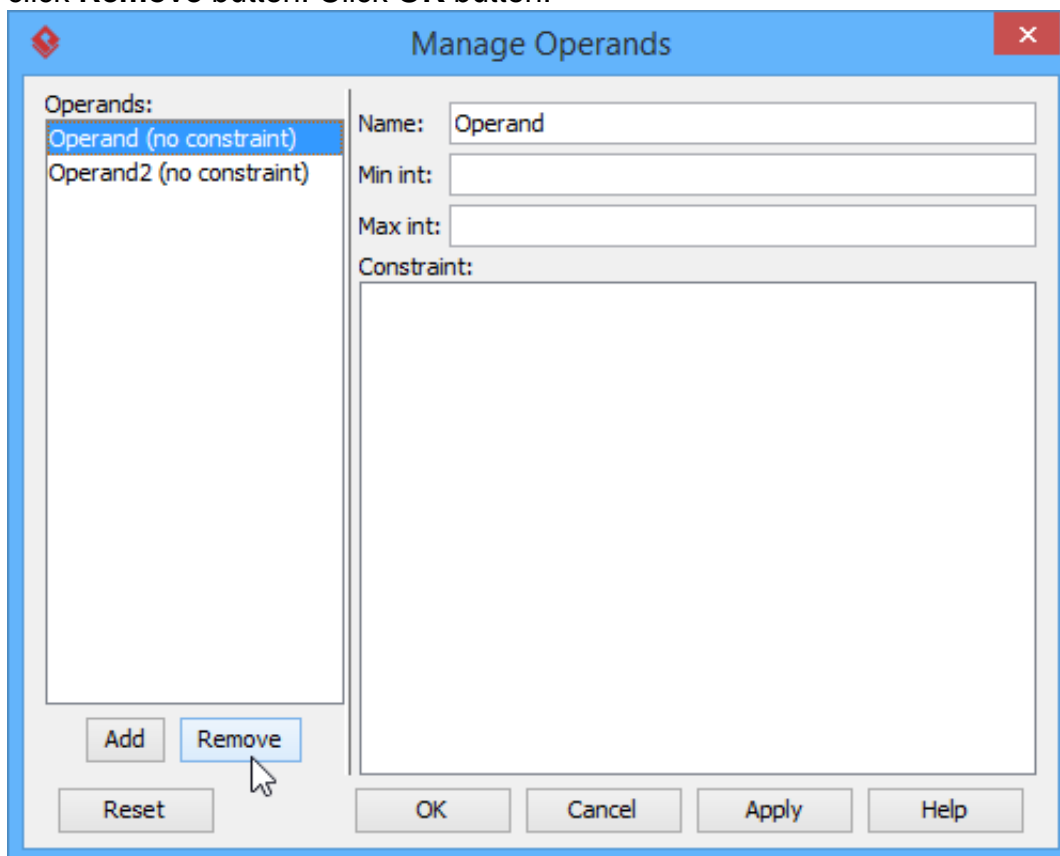
## Managing Operands

After you've created a combined fragment on the messages, you can also add or remove operand(s).

1. Move the mouse over the combined fragment and select **Operand > Manage Operands...** from the pop-up menu.



2. To remove an operand, select the target operand from **Operands** and click **Remove** button. Click **OK** button.

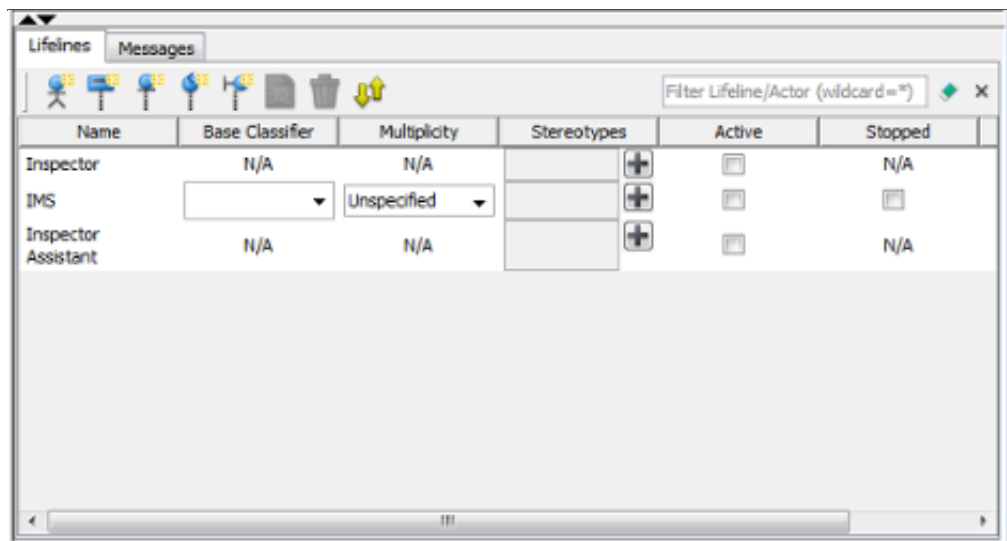


Otherwise, click **Add** button to add a new operand and then name it. Click **OK** button.

## Developing sequence diagram with quick editor or keyboard shortcuts

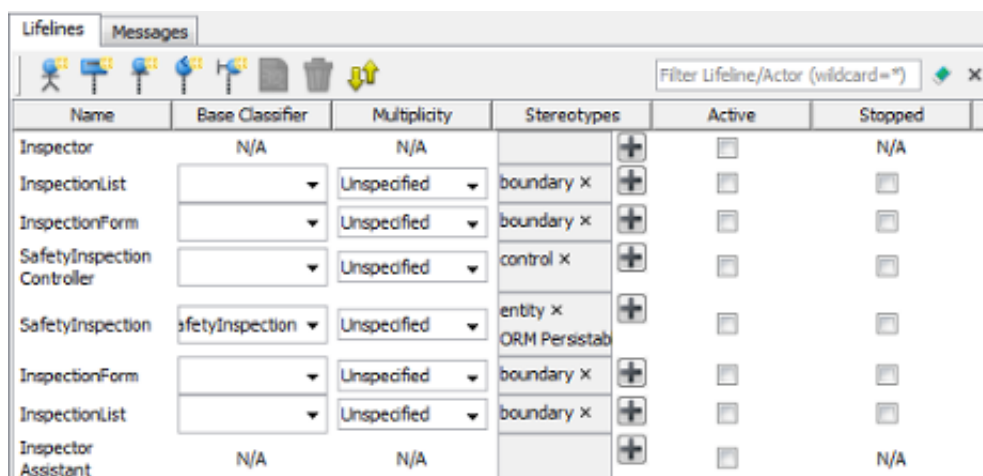
In sequence diagram, an editor appears at the bottom of diagram by default, which enables you to construct sequence diagram with the buttons there. The shortcut keys assigned to the buttons provide a way to construct diagram through keyboard. Besides constructing diagram, you can also access diagram elements listing in the editor.













## Editing lifelines

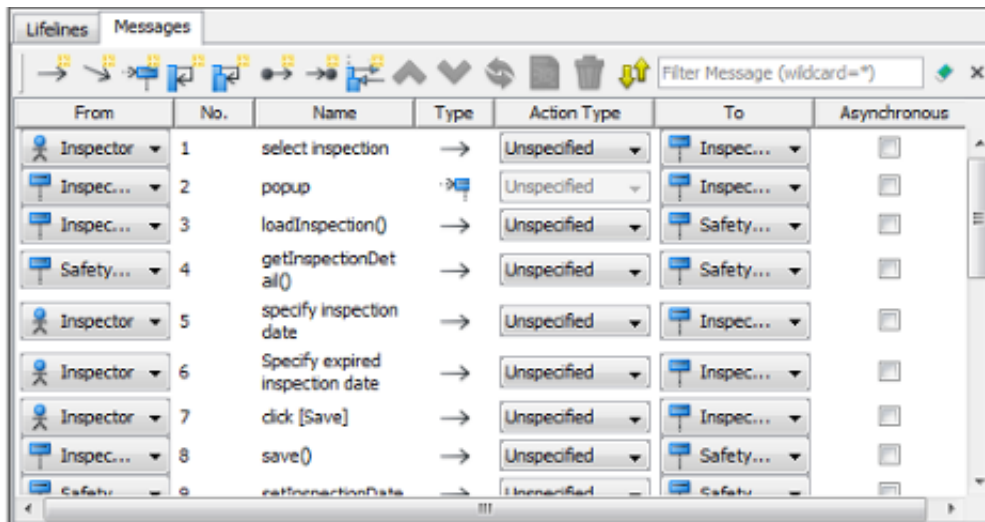
There are two panes, **Lifelines** and **Messages**. The **Lifelines** pane enables you to create different kinds of actors and lifelines.





| Button  | Shortcut    | Description  |
|---|-------------|--|
|  | Alt-Shift-A | To create an actor   |
|  | Alt-Shift-L | To create a general lifeline   |
|  | Alt-Shift-E | To create an lifeline  |
|  | Alt-Shift-C | To create a lifeline   |
|  | Alt-Shift-B | To create a lifeline   |
|  | Alt-Shift-O | To open the specification of the element chosen in quick editor  |
|  | Ctrl-Del    | To delete the element chosen in quick editor   |
|  | Ctrl-L      | To link with the diagram, which cause the diagram element to be selected when selecting an element in editor, and vice versa |

## Editing messages

The **Messages** pane enables you to connect lifelines with various kinds of messages.

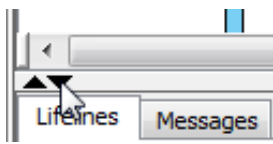


| Button  | Shortcut        | Description   |
|---|-----------------|---|
|    | Alt-Shift-M     | To create a message that connects actors/lifelines in diagram           |
|  | Alt-Shift-D     | To create a duration message that connects actors/lifelines in diagram  |
|  | Alt-Shift-C     | To create a create message that connects actors/lifelines in diagram    |
|  | Alt-Shift-S     | To create a self message on an actor/lifeline in diagram                |
|  | Alt-Shift-R     | To create a recursive message on an actor/lifeline in diagram           |
|  | Alt-Shift-F     | To create a found message that connects to an actor/lifeline            |
|  | Alt-Shift-L     | To create a lost message from an actor/lifeline                         |
|  | Alt-Shift-E     | To create a reentrant message that connects actors/lifelines in diagram |
|  | Ctrl-Shift-Up   | To swap the chosen message with the one above                           |
|  | Ctrl-Shift-Down | To swap the chosen message with the one below                           |
|  | Ctrl-R          | To revert the direction of chosen message                               |
|  | Alt-Shift-O     | To open the specification of the message chosen in quick editor         |

| Button  | Shortcut | Description   |
|---|----------|---|
|  | Ctrl-Del | To delete the message chosen in quick editor  |
|  | Ctrl-L   | To link with the diagram, which cause the message to be selected when selecting a message in editor, and vice versa |

## Expanding and collapsing the editor

To hide the editor, click on the down arrow button that appears at the bar on top of the quick editor. To expand, click on the up arrow button.

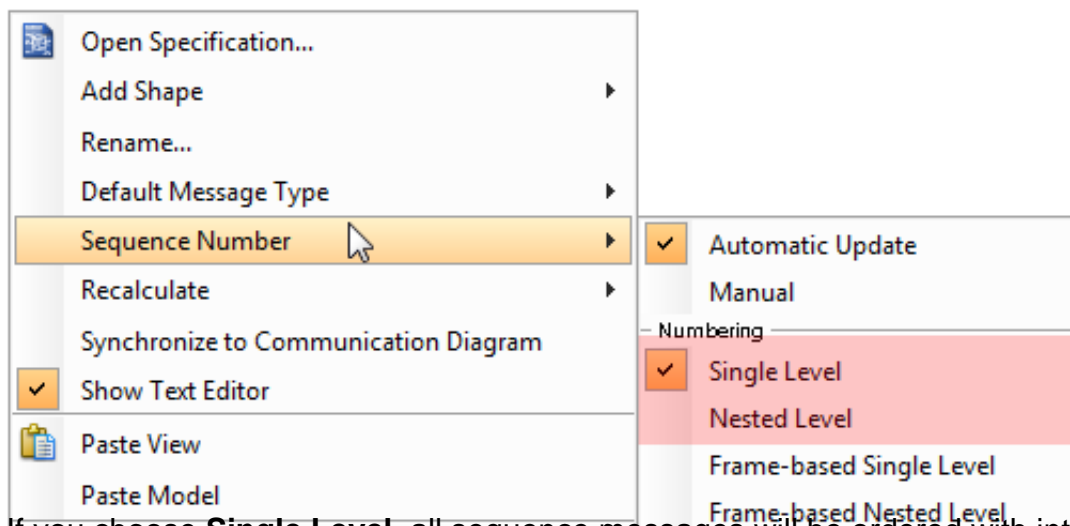


## Setting different ways of numbering sequence messages

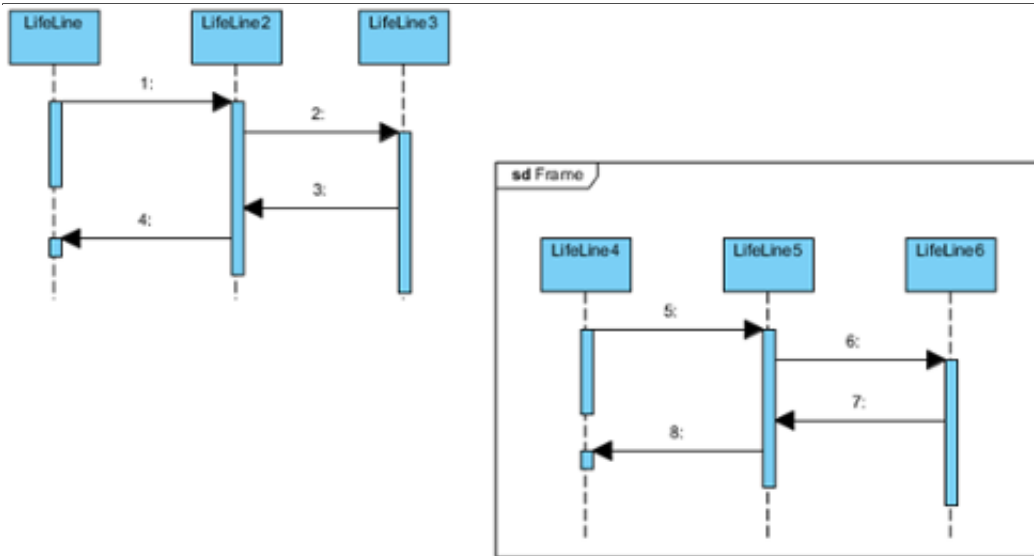
You are able to set the way of numbering sequence messages either on diagram base or frame base.

### Diagram-based sequence message

Right click on the diagram's background, select **Sequence Number** and then either **Single Level** or **Nested Level** from the pop-up menu.

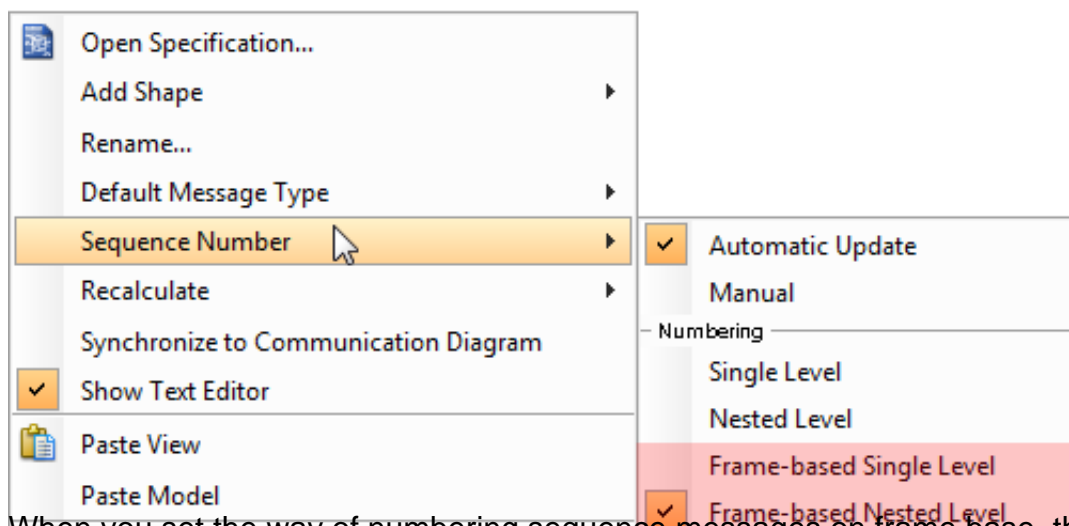


If you choose **Single Level**, all sequence messages will be ordered with integers on diagram base. On the other hand, if you choose **Nested Level**, all sequence messages will be ordered with decimal place on diagram base.



## Frame-based sequence message

Right click on the diagram's background, select **Sequence Number** and then either **Frame-based Single Level** or **Frame-based Nested Level** from the pop-up menu.



When you set the way of numbering sequence messages on frame base, the sequence messages in frame will restart numbering sequence message since they are independent and ignore the way of numbering sequence message outside the frame.

