

Loop, Sequence, and Conditional Nodes

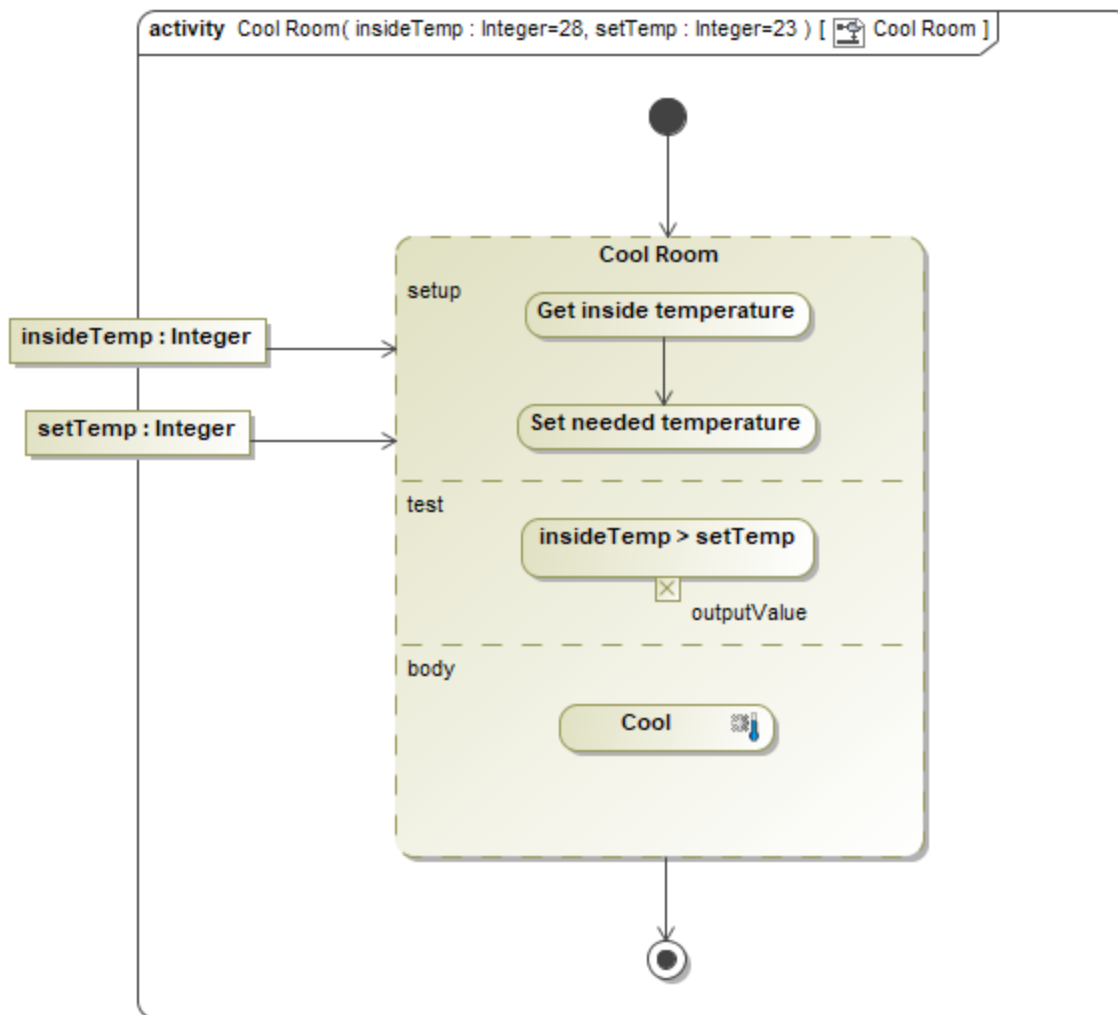
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Loop Node

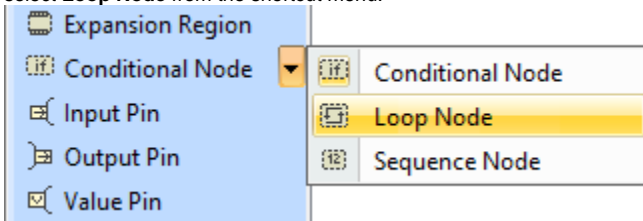
A Loop Node is a constructed activity node representing a loop with the **setup**, **test**, and **body** sections.

- Each section is a well-nested subregion of an activity whose nodes follow any predecessors of the loop and precede any successors of the loop.
- The **setup** section usually initiates variables that are used in the loop's exit-condition. It is executed once on entry to the loop, and the **test** and **body** sections are executed repeatedly until the test produces a *false* value.
- The **test** section defines the loop exit-condition, it may precede or follow the **body** section.
- The **body** can contain actions to be executed repeatedly until the **test** produces a *false* value.
- The results of the final execution of the **test** or **body** are available once the execution of the loop is completed.



To create a Loop Node

1. Expand the Activity diagram palette, click the downward arrow button next to the **Conditional Node/Loop Node/Sequence Node** icon, and select **Loop Node** from the shortcut menu.



2. Click on the Activity diagram pane. The Loop Node is created.

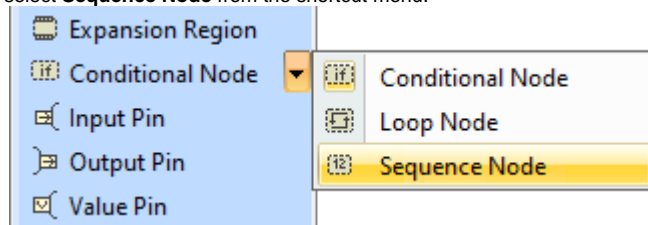
Sequence Node

A Sequence Node is a structured activity node that executes its actions in order.

When the Sequence Node is enabled, its executable nodes are executed in the specified order. When combined with flows, actions must also satisfy their control and data flow inputs before starting execution.

To create a Sequence Node

1. Expand the Activity diagram palette, click the downward arrow button next to the **Conditional Node/Loop Node/Sequence Node** icon, and select **Sequence Node** from the shortcut menu.



2. Click on the Activity diagram pane. The Sequence Node is created.

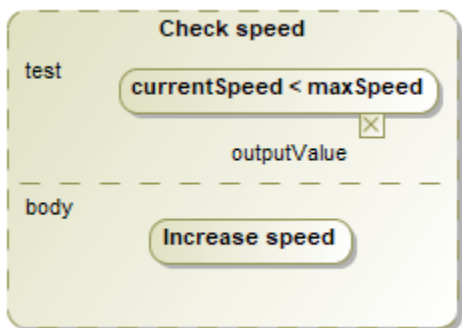
Conditional Node

A Conditional Node is a structured activity node representing an exclusive choice among a number of alternatives.

A Conditional Node consists of one or more clauses, each consisting of a test section and a body section. When the Conditional Node begins execution, the test sections of the clauses are executed.

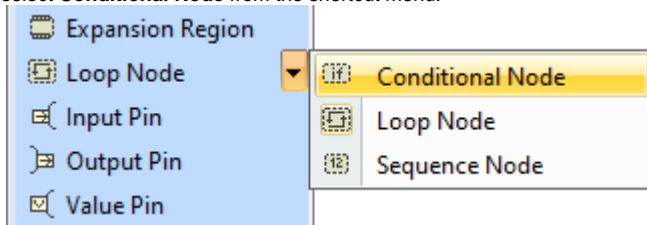
- If one or more test sections yield a *true* value, one of the corresponding body sections will be executed.
- If more than one test section yields a *true* value, only one body section will be executed.
- The choice is nondeterministic unless the test sequence of clauses is specified. If no test section yields a *true* value, then no body section is executed; this may be a semantic error if output values are expected from a Conditional Node.

In general, a test section may be executed in any order, including simultaneously if the underlying execution architecture supports it. Therefore, the result may be nondeterministic if more than one test section can be true concurrently. To enforce the ordering of an evaluation, sequencing constraints may be specified among clauses.



To create a Conditional Node

1. Expand the Activity diagram palette, click the downward arrow button next to the **Conditional Node/Loop Node/Sequence Node** icon, and select **Conditional Node** from the shortcut menu.



2. Click on the Activity diagram pane. The Conditional Node is created.