

Program Structure

POUs

Program Operation Units (POUs) are a way of organising code into sections, making it easier to find where certain control functions are located.

Although there is a Search function in SoMachine Basic, grouping sections of code in this way can help to see how rungs interact with each other.

For example, the conveyor application has three POUs

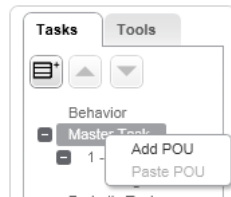
- Control
- Fault Handling
- Speed Monitoring

Thus if a programmer wanted to look at setpoints for the speed control, it makes sense for the program code handling that to be in the Speed Monitoring POU. If they wanted to find out why the running light wasn't coming on, they would look in the Control Section (although perhaps the first task would be to check the bulb).

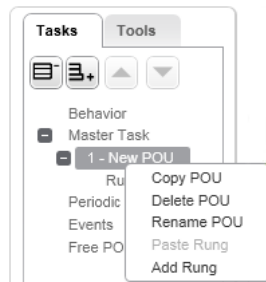
Program Structure (cont.)

Adding POUs and Rungs

To create a new POU, right click the Master Task and from the menu select **Add POU**.

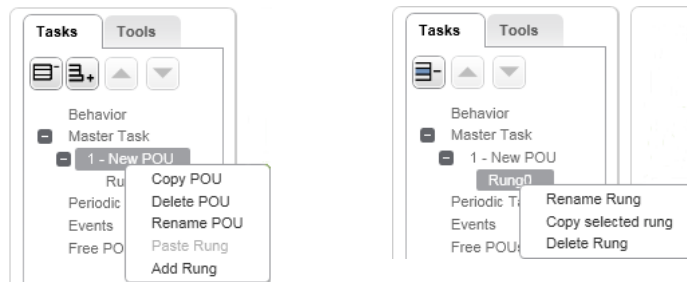


To create a new rung, right click the POU and from the menu select **Add Rung**.



Renaming POUs and Rungs

POUs and Rungs can also be renamed. Right click the POU or Rung and select **Rename POU** or **Rename Rung**.

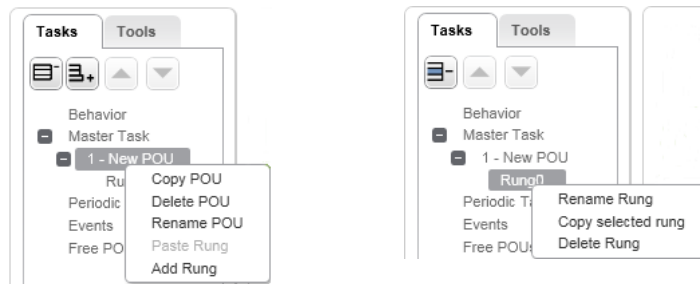


This renaming helps to self-document the program.

Program Structure (cont.)

Copying POU and Rungs

POUs and Rungs can also be copied. Right click the POU or Rung to be copied and select **Copy POU** or **Copy selected rung**.



When a POU has been copied it can be pasted into the Master Task. Right-click the Master Task and select Paste POU from the menu.



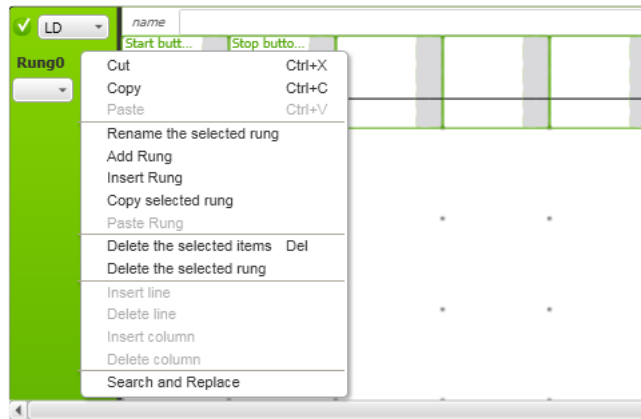
When a Rung has been copied it can be pasted into any POU. Right-click the required POU and select Paste Rung from the menu.

Program Structure (cont.)

Copying Objects in Rungs

Individual items within rungs can also be copied. Select the items to be copied. The Windows shortcut keys will allow multiple items to be selected - <Ctrl>click and <Shift>click. <Ctrl>a can also be used to select all items in the rung.

Right-click the green area to the left of the rung and select **Copy** from the menu.



Select the rung where the items are to be placed, right-click the green area to the left of the rung and select **Paste** from the menu.

The options to add, rename, copy and paste rungs are also here along with options to insert a rung and edit lines, columns and items within the rung.

Exercise - Create a Program Structure

Learning Outcomes

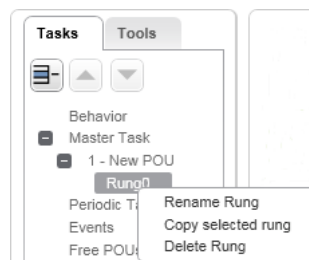
By the completion of this exercise you will:

- Create new ladder rungs and POU's
- Rename ladder rungs and POU's

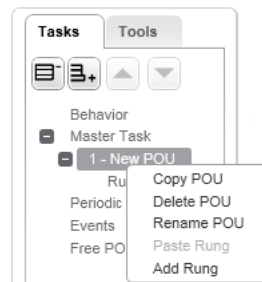
Skip this exercise if you have already completed the exercise in the eLearning - this is a repeat of that exercise.

1 Create new rungs for the program.

- Right-click the rung Rung_0 and from the menu select **Rename Rung**.



- Change the name of the rung to `Start Control`.
- Right-click the POU `POU_0` and from the menu select **Add Rung**.



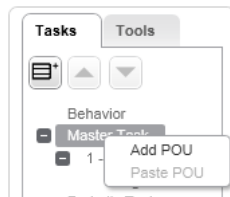
- Change the name of the rung to `Stop Control`.

Exercise - Create a Program Structure (cont.)

- v. Add new rungs to the program and give them the following names:
 - Conv 1
 - Conv 2
 - Conv 3
 - Running
 - Stop 1
 - Stop 2
 - Stop 3
 - i. Right-click the POU and rename it to `Control`.
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2 Create new POUs for the program

- i. Right-click the Master Task and from the menu select Add POU.



- ii. Rename this POU `Fault Handling`.
 - iii. Add another POU and call it `Speed Monitoring`.
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3 Save the application

