

Part 1: jUCMNav Static Slicing Feature Learning Documentation + Generic Example

Consider the example scenario in the Figure 1 below. The responsibilities are named with their embedded code statements. Responsibilities R0, R1, R2, and R3 do not contain any code.

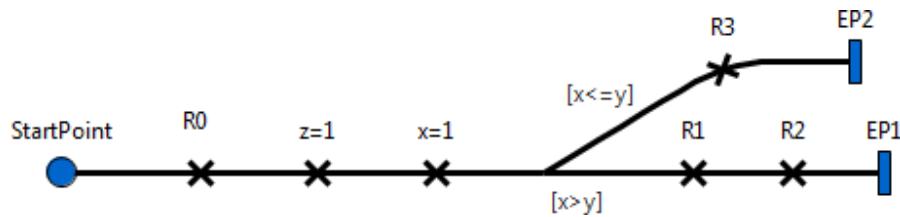


Figure 1: UCM Example

Suppose that we are interested in finding out which parts of the UCM contributed to choosing the Or-Fork branch with the condition $[x>y]$. To do so, the user may execute the slicing feature by:

- 1) Select the branch of interest (i.e., $[x>y]$), then right click on it.

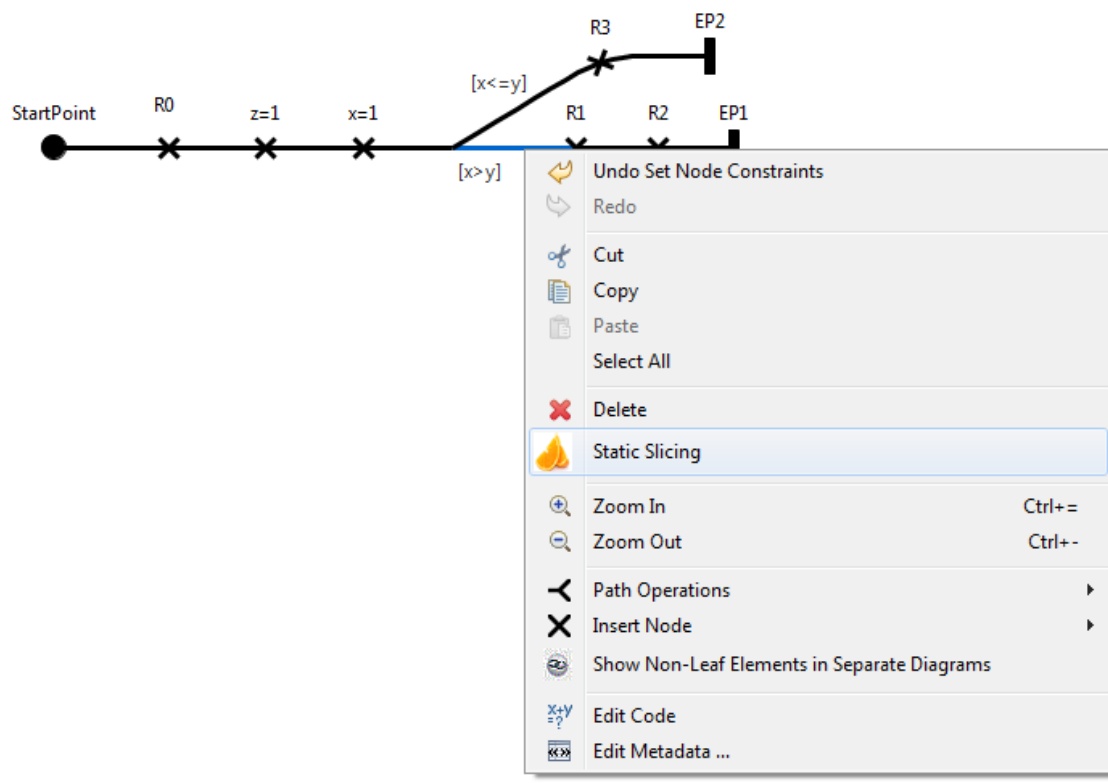


Figure 2: invoking the Static Slicing Feature

2) Figure 3 shows the GUI corresponding to the selection of slicing options.

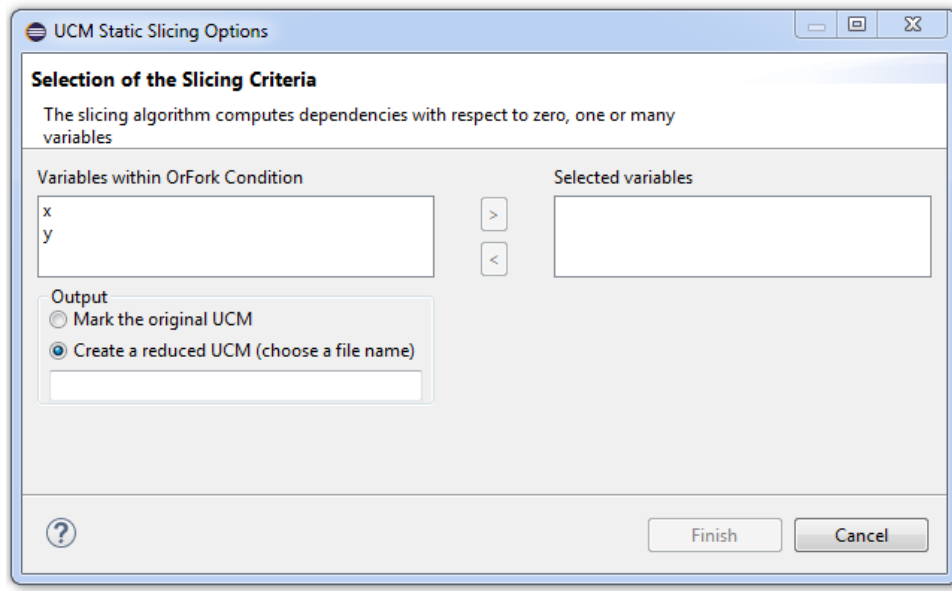


Figure 3: Selection of slicing options

3) Select both variables x and y and move them to the “selected variables” box. Change the output to be “Mark the original UCM”. You may choose “Create a reduced UCM”, if you want to generate a reduced UCM.

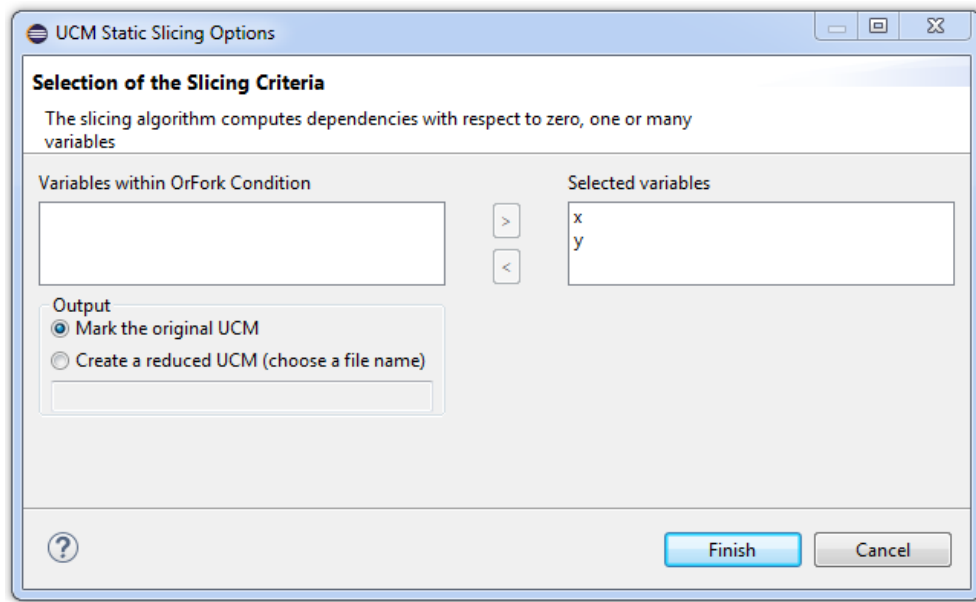


Figure 4: Variables and type of output selected

4) The marked slice is shown in Figure 5. The parts affecting the target are colored in green, the irrelevant responsibilities that do not impact the target are colored in red, and the responsibilities with no code are colored in gray.

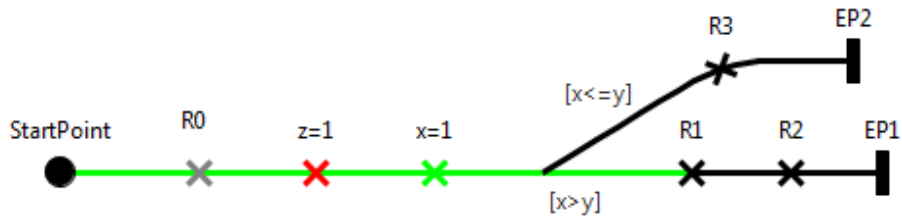
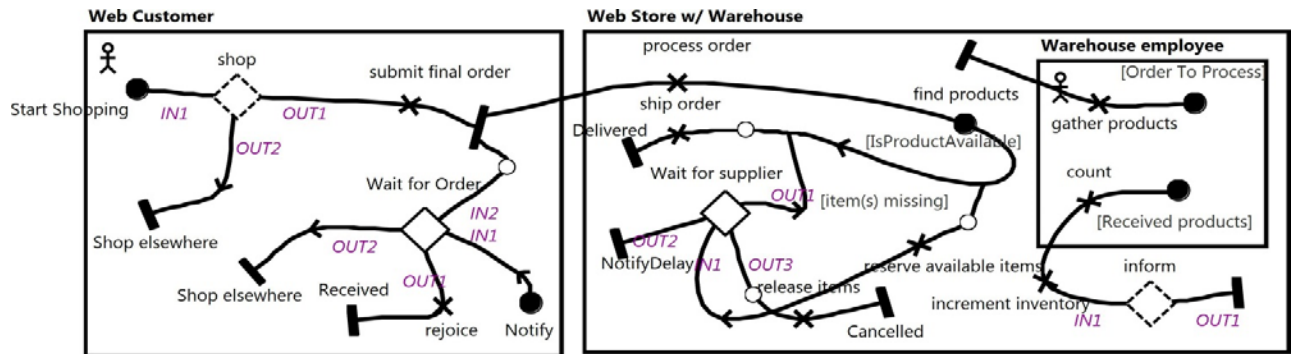


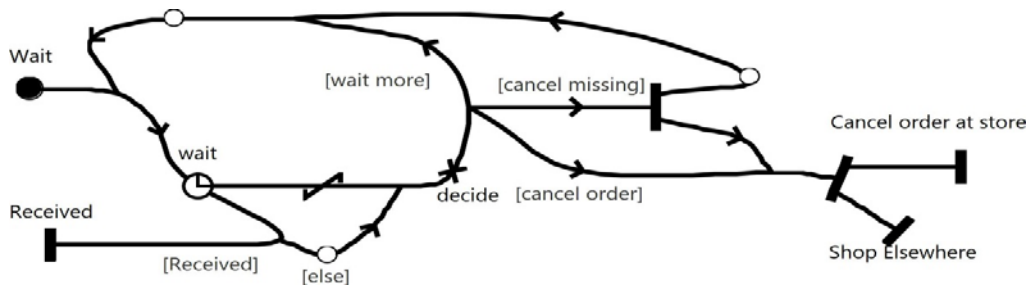
Figure 5: Marked Slice

Part 2: Comprehension of UCM without using slicing

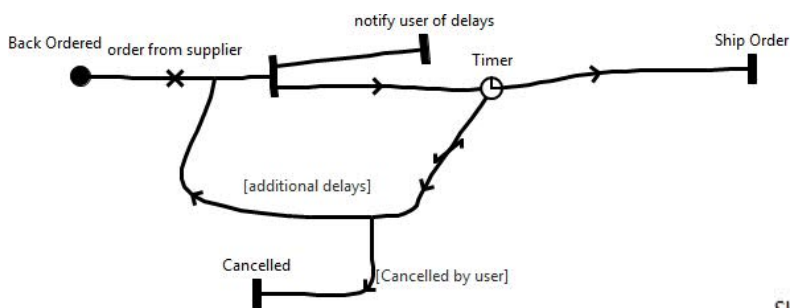
Consider the following UCM specification of an ordering system:



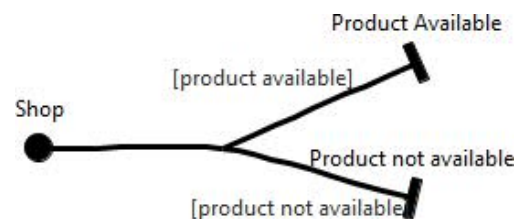
Order map



Wait for Order plugin



Wait for Supplier plugin



Shop plugin

Please answer the following three questions and note the time spent in answering each question:

Q1. Color the UCM paths as well as all responsibilities affecting/leading to the ***Cancelled*** end point in **Order Map**.

Please note down the start and end times: Start Time: End Time:

Please rate the difficulty of conducting the task on a scale from 1 to 5 (1 being very easy and 5 being very difficult):

Q2. Color (use a different color than the one in Q1) the UCM path as well as all responsibilities affecting/leading to ***ship order*** responsibility in **Order Map**.

Please note down the start and end times: Start Time: End Time:

Please rate the difficulty of conducting the task on a scale from 1 to 5 (1 being very easy and 5 being very difficult):

Q3. In the ***Wait for Order*** map, the responsibility ***decide*** resides within a path that leads to ***release items*** in **Order Map**, and it also affects the execution of responsibility ***release items***. True False

Please note down the start and end times: Start Time: End Time:

Please rate the difficulty of conducting the task on a scale from 1 to 5 (1 being very easy and 5 being very difficult):

Please use the slicing feature integrated within jUCMNav in order to answer the following questions.

Q1. Retrieve the UCM paths as well as all responsibilities affecting/leading to the *Event Not Ready* branch in **Process Map** (within the AEMS component).

Please note down the start and end times: Start Time: End Time:

Please rate the difficulty of conducting the task on a scale from 1 to 5 (1 being very easy and 5 being very difficult):

Q2. Retrieve the UCM paths as well as all responsibilities affecting/leading to *EditEventForVisit* responsibility in **Process Map** (within **Observer** component).

Please note down the start and end times: Start Time: End Time:

Please rate the difficulty of conducting the task on a scale from 1 to 5 (1 being very easy and 5 being very difficult):

Q3. Use the slice obtained in Q2. *AEMS-CreateEvent* responsibility in *Prepare Event* map is part of the flow that is leading to *EditEventForVisit*. True False
It is also relevant to *EditEventForVisit*: True False

Please note down the start and end times: Start Time: End Time:

Please rate the difficulty of conducting the task on a scale from 1 to 5 (1 being very easy and 5 being very difficult):

Q4. Retrieve the UCM paths affecting/leading to *WarnObserver* responsibility in **Process Map** (within the **AEMS** component). Note that there are two instances (you can select either one).

Please note down the start and end times: Start Time: End Time:

Please rate the difficulty of conducting the task on a scale from 1 to 5 (1 being very easy and 5 being very difficult):