ItsAWrap example, special considerations for loops

This example focusses on issues that arise in the consideration of loops. In particular, the introduction of "shadow rules" to imply the truth of automatically generated loop-exit conjectures. This example assumes you have already worked through the Hello World and CarRecall examples. If not, you might find the steps a little hard to follow. However, links have been provided to parallel steps in the earlier examples for your convenience.

Start by loading the ItsAWrap project, located inside the "rbi" folder.

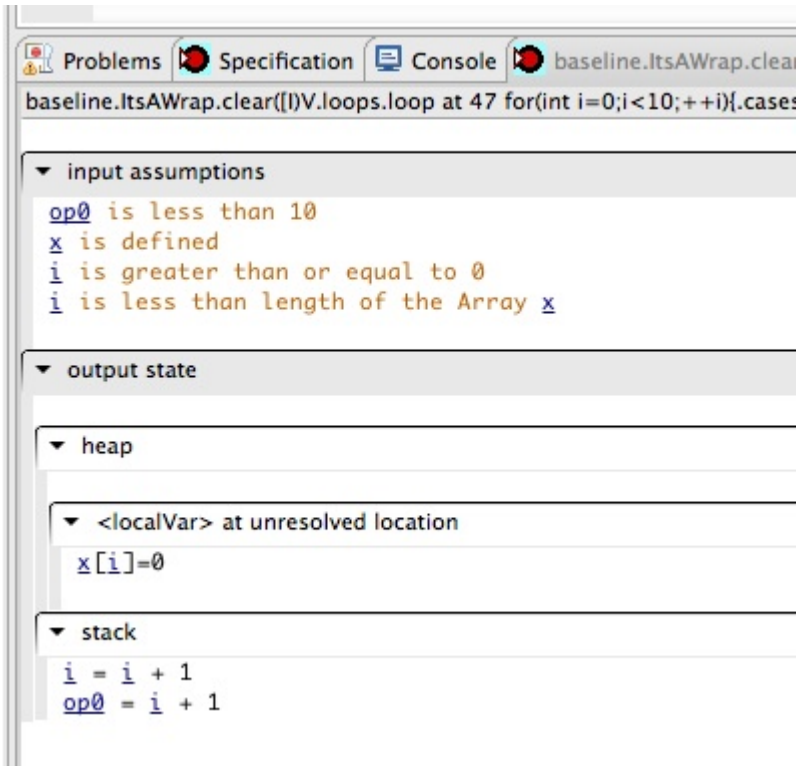
Restore the default preferences, then **check** preferences "Suppress advice dialogs" and "Do not pause for case-splits". Now **uncheck** "Suppress structural hypotheses".

Open the ItsAWrap class in an editor window.

Populate and run, using the ItsAWrap class as command target.

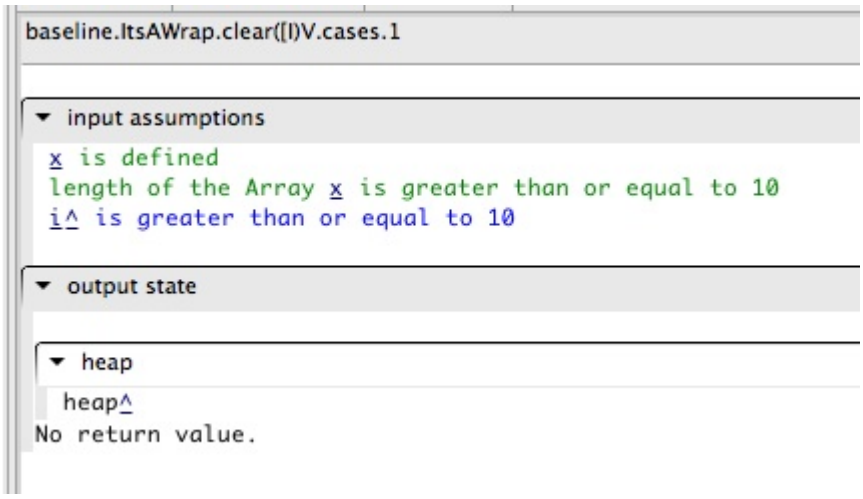
Observe that three specifications are generated,for the loop body of the clear method, for the clear method, and for the test method. We shall consider each of these in turn.

Open the loop specification (see figure).

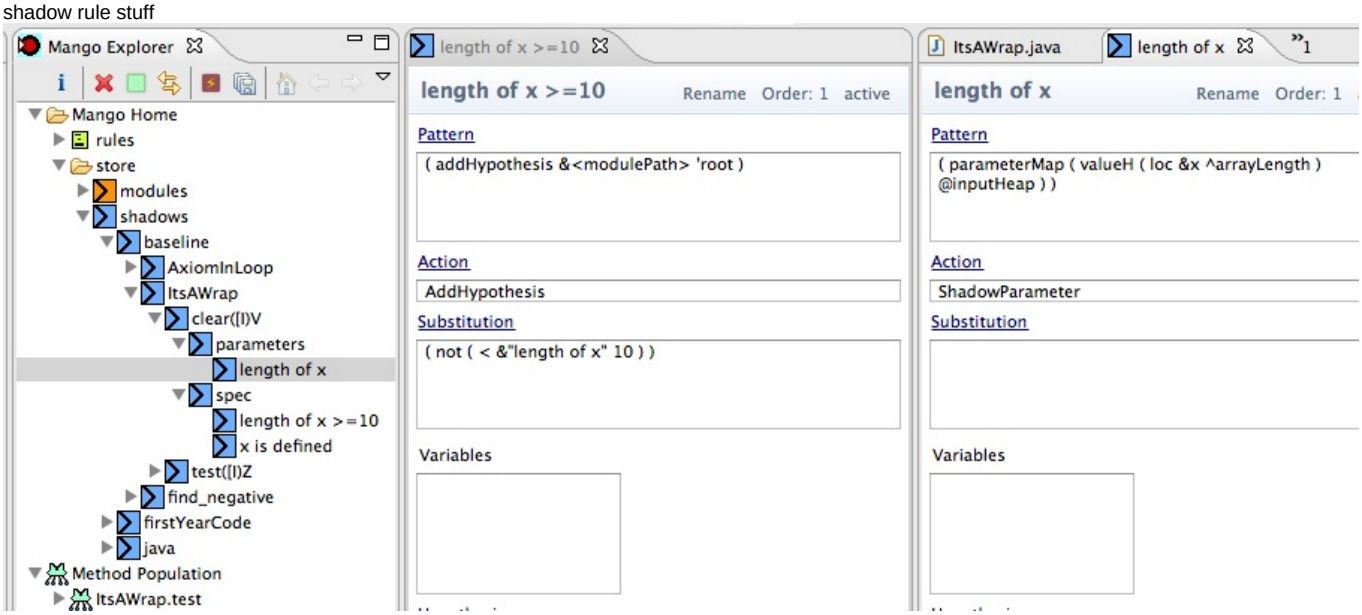


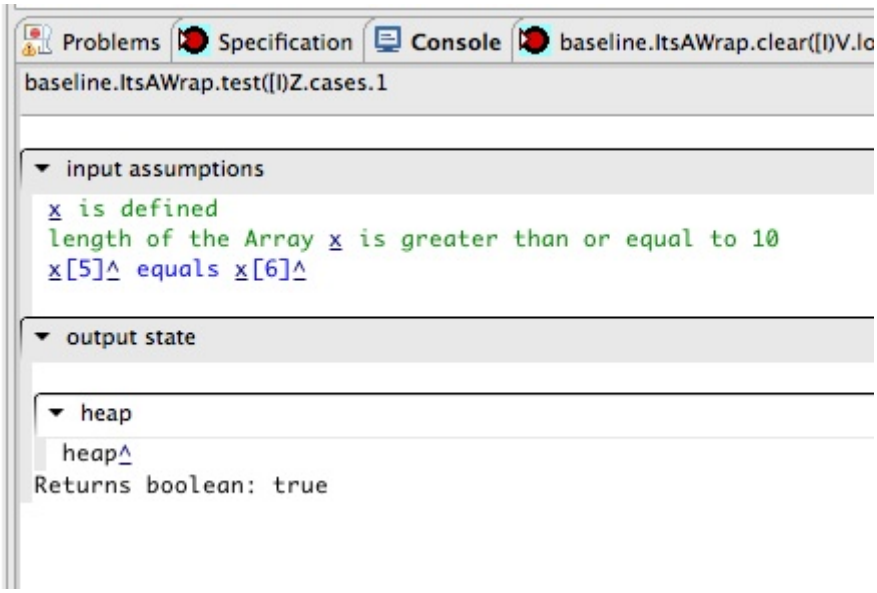
The specification describes the state transition of one pass through the loop. In order to remain in the loop, "i" must be within bounds. The output state sets x[i]=0 and increments "i". The rest of the specification concerns "op0". The point is that "i" is pushed onto the operand stack for a compare against 10, just prior to the pass through the loop. Likewise, the loop output state pushes "i+1" onto the operand stack.

Now consider the specification for the clear method.



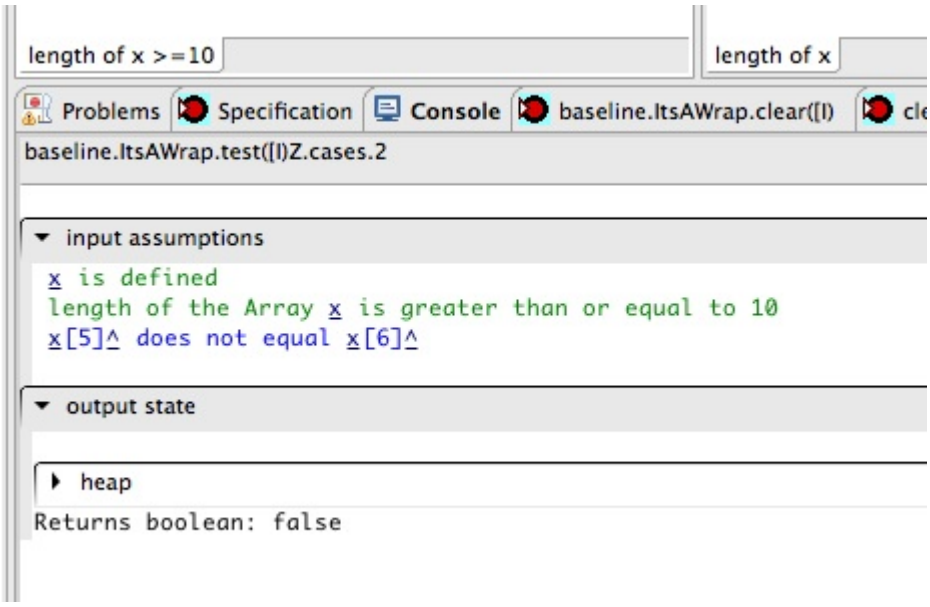
shadow rule stuff





main good case

main nonexistent case


length of x >=10
length of x
Problems
Specification
Console
baseline.ItsAWrap.clear([I)
baseline.ItsAWrap.test([I)Z.cases.2
input assumptions
x is defined
length of the Array x is greater than or equal to 10
x[5]^ does not equal x[6]^
output state
heap
Returns boolean: false