Debugging SOEP

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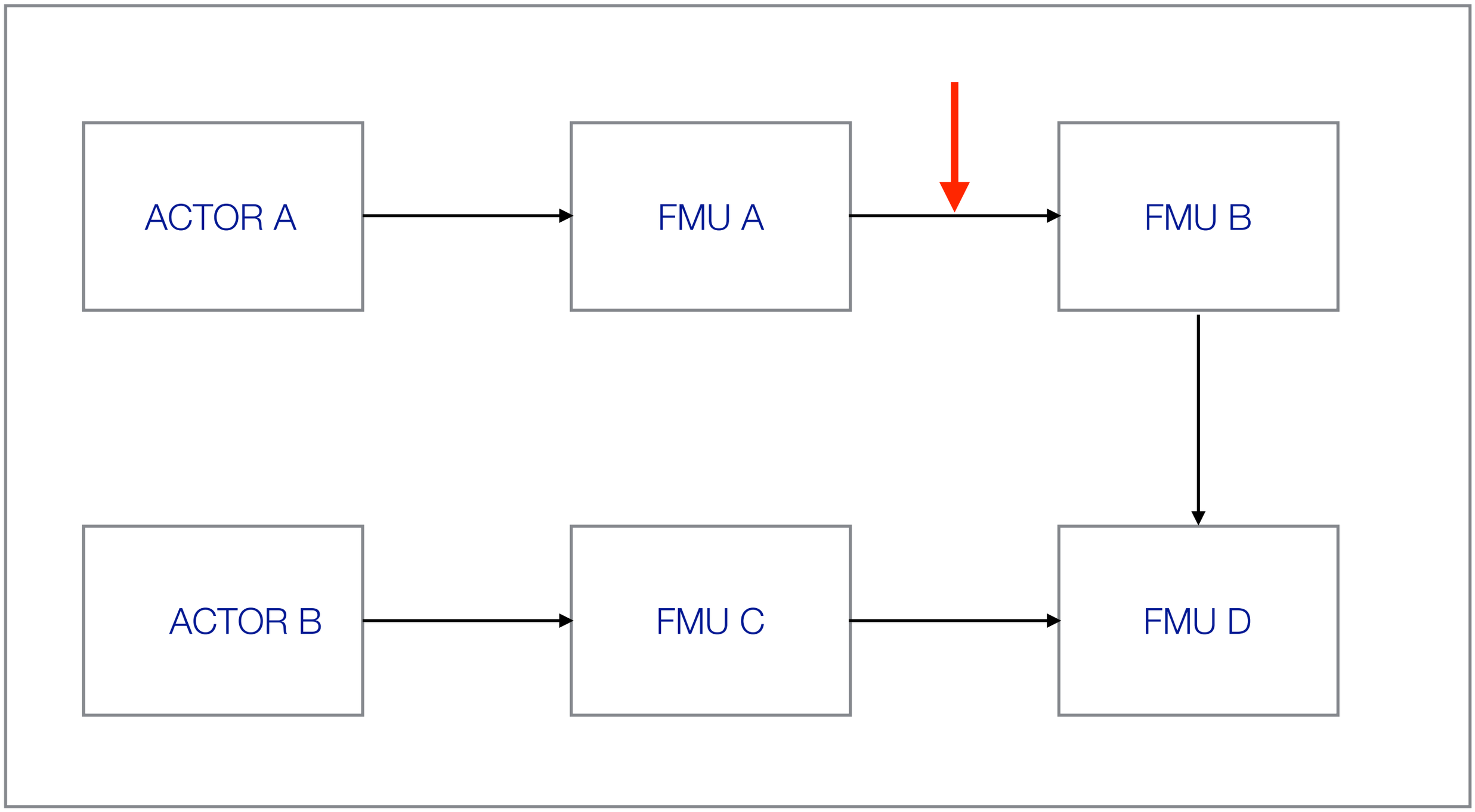
Overview

The purpose is to learn how to debug SOEP

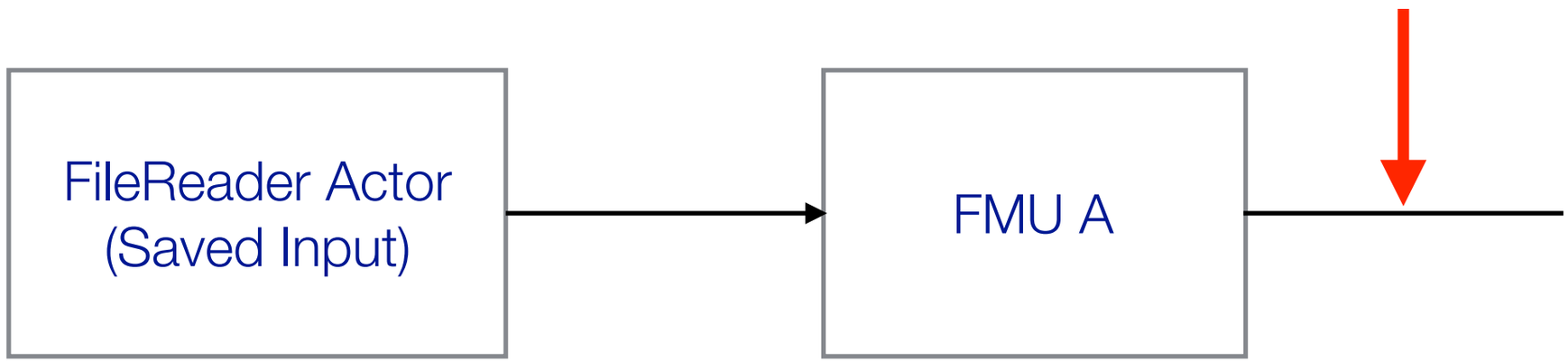
Use Case 1: Results are unreasonable



Use Case 1: Results are unreasonable

a) Run a simulation and save the inputs of FMU A in a text file

b) Isolate FMU A and re-run with the saved inputs*

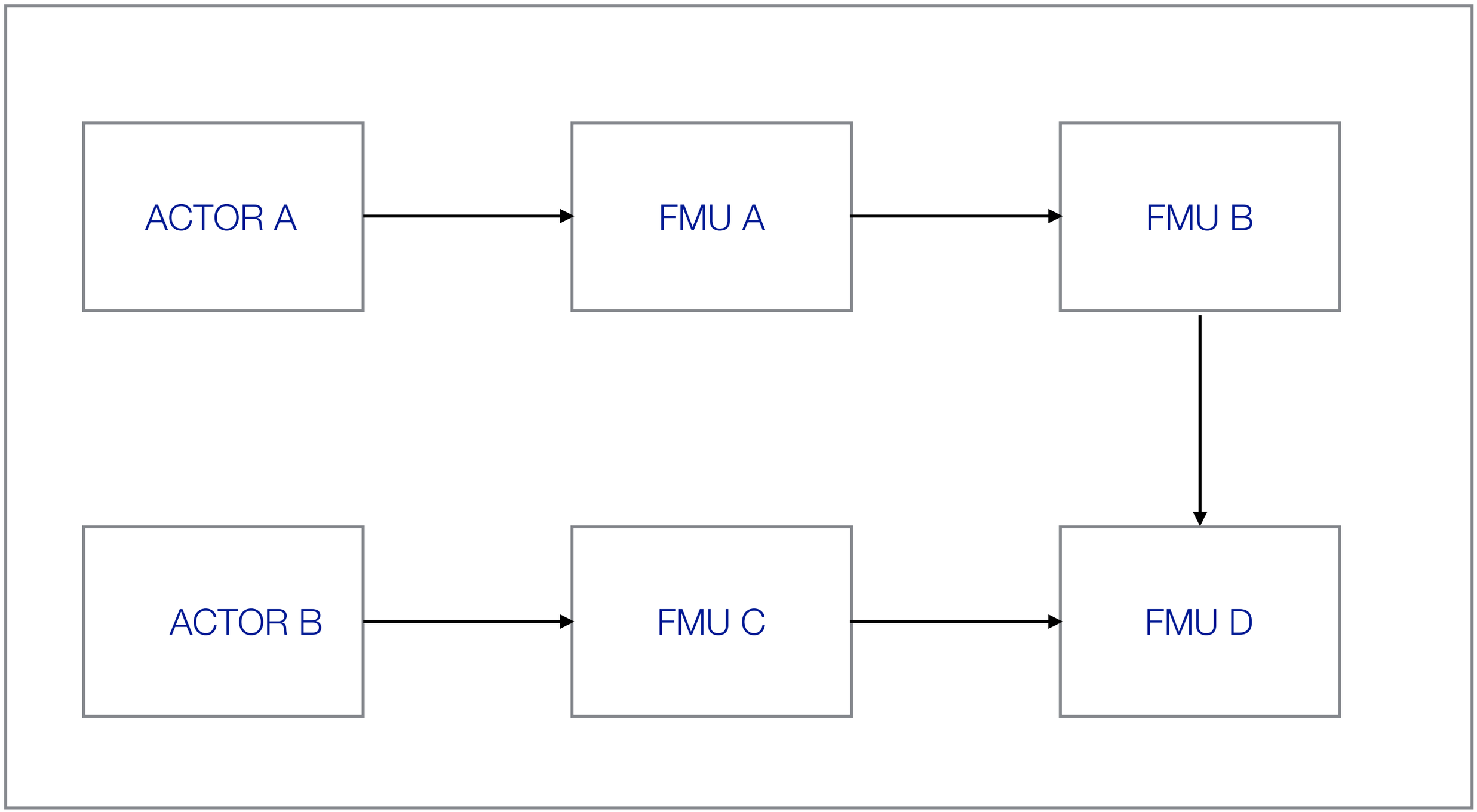


c) If results are reproducible then verify physics in the Modelica model

d) Debug the Modelica model with the saved inputs

*Simulation can be re-run in any tool that can read a text file
and interface with FMUs, e.g. Dymola, OpenModelica, PyFMI.

Use Case 2: SOEP crashes because of memory violation



Use Case 2: SOEP crashes because of memory violation

a) Look at the Ptolemy II log file

Register to memory mapping:

RAX=0x0000000000000000 is an unknown value
RBX={method} {0x0000000026651a78} 'runNativeFMU'
'(IILjava/lang/String;Ljava/lang/String;Ljava/lang/String;DDDIDIILjava/lang/String;[D[D[D[D[J[D[JJ[D[J[D[J[D)I' in
'ptolemy/actor/lib/fmi/FMUQSS'
RCX=0x0000000015000000 is an unknown value

R13={method} {0x0000000026651a78} 'runNativeFMU' '(IILjava/lang/String;Ljava/lang/String;Ljava/lang/String;DDDIDIILjava/lang/String;
[D[D[D[D[J[D[JJ[D[J[D[J[D)I' in 'ptolemy/actor/lib/fmi/FMUQSS'
R14=0x000000001dbaeca0 is pointing into the stack for thread: 0x000000001e3b8800

Stack: [0x000000001dab0000,0x000000001dbb0000], sp=0x000000001dbae810, free space=1018k
Native frames: (J=compiled Java code, j=interpreted, Vv=VM code, C=native code)
C [**myFirstFMU**.dll+0x14a5]
C [jniTofmu.dll+0x2f86]
C [jniTofmu.dll+0x2497]
C 0x0000000002865b74

Java frames: (J=compiled Java code, j=interpreted, Vv=VM code)
j ptolemy.actor.lib.fmi.FMUQSS.runNativeFMU(IILjava/lang/String;Ljava/lang/String;Ljava/lang/String;DDDIDIILjava/lang/String;
[D[D[D[D[J[D[JJ[D[J[D[J[D)I+0
j ptolemy.actor.lib.fmi.FMUQSS._fmiSetRealJNI([D[JD)V+30
j ptolemy.actor.lib.fmi.FMUQSS.evaluateDerivatives(Lptolemy/actor/util/Time;[D[D[D)I+163
j org.ptolemy.qss.solver.QSS1._triggerRateEventWorker()V+127
j org.ptolemy.qss.solver.QSSBase.triggerRateEvent()V+24
j ptolemy.actor.lib.fmi.FMUQSS._initializeQSSIntegratorInputVariables(Lptolemy/actor/util/Time;)V+396
j ptolemy.actor.lib.fmi.FMUQSS.fire()V+84

b) Once problematic FMU is identified follow steps of Use Case 1

Summary

The purpose was to learn how to debug SOEP

Questions