

**Rating:** Intermediate

**Prerequisites:** None Required; Recommended: “A First Encounter with Anylogic: Modifying a Simple Sample Model”, “Building A Minimalist Two-Population Model Framework”

**Estimated Time Required:** 45 minutes

This model will confront you with a real-world debugging challenge. While very simple, this exercise can help demonstrate some of the sleuthing process involved in debugging.

1. Enter AnyLogic
2. Open the provided model entitled “  
TestTwoAgentPopulationsOneEnvironmentExampleToIllustrateDebuggingProcess  
”
3. Right click on the experiment (entitled “Simulation:Main”) and choose “Run”
4. Observe that the model network contains two sorts of objects, but is disconnected.

Step 4 identified a model “failure” during simulation – an observable divergence between the model and what is expected. In this case, the failure occurred during simulation (i.e. at “run time” or “execution time”), but sometimes failures occur at other times – for example, when building the model.

Given the observation of the failure, your job is now to “debug” this model. This will involve 2 steps –

- A. Locating the underlying “fault” that has given rise to this failure cause. This is the hidden “problem” that has led to the aberrant behaviour.
- B. Fixing the fault

As is frequently – but not always – the case, for this example Step A in this process will likely require more time and effort than step B. In some cases, Step A also requires more careful thinking than step B, but there are many exceptions to that rule.

A few suggestions:

- Try to come up with clear hypotheses, and investigate them in turn to see if you can disconfirm or confirm them. This investigation will generally involve performing *experiments* (in a general sense) using the model.
- Do not hesitate to undertake experiments that entail modifying the model. However, if you do so, be sure to either save away a copy of the model (or model subpieces such as the Main or person class). so you can come back to the original that exhibits the problem. Alternatively, for quick experiments, you may wish to simply avoid saving the project while it is modified, and discard the experiment once you are finished with it – being sure to take (mental or – better yet – physical) notes on the outcome.

Try to simplify the situation as much as possible while still reproducing the error. Often this process will focus your efforts, and simplify the experimentation process.