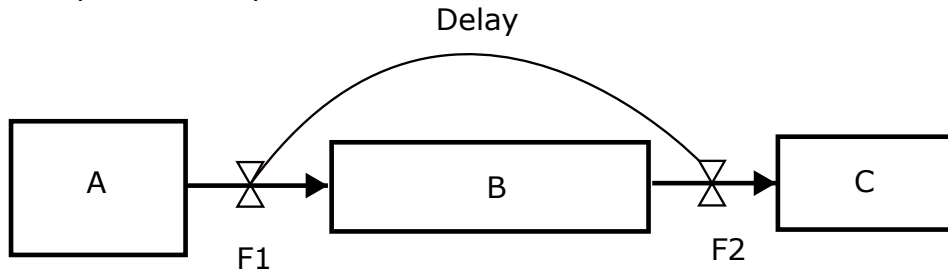As you are an expert in VENSIM you are way ahead of me in this problem. I am just trying to understand a simple model before tackling greater complexity.
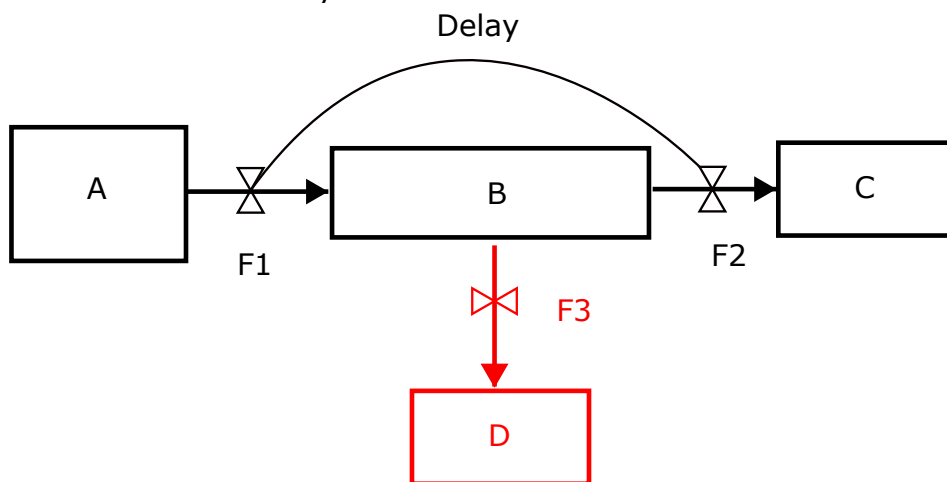Lets reduce the model even futher so we dont start building implicit assumptions.

make F2 = F1 after a delay
This simulates passage down a tube

Lets not get into further refinement like
1) diffusion processes
2) volume not constant
3) heterogeneous mixing processes

Next I want to draw some of the material off B DURING the time its in "delay"

As written this wont work because F2 will be the F1 back at the start of the delay. It will be reduced by the flow rate to D.
For arguments sake, lets say that F1 is a first order flow on A ($dA/dt = k1[A]$) and F3 is also first order on B ($dB/dt = k2[B]$)
Then F2 is the delay, so its equal to F1 but delayed by 4h.

But what I am struggling with is how to to get a correct F2 rate?
Because it will not be equal to F1 back at the start of the delay, presumably its proportionally less due to the drawoff from F3 flow which is not subjected to a delay.

Is there a right way to set this up?