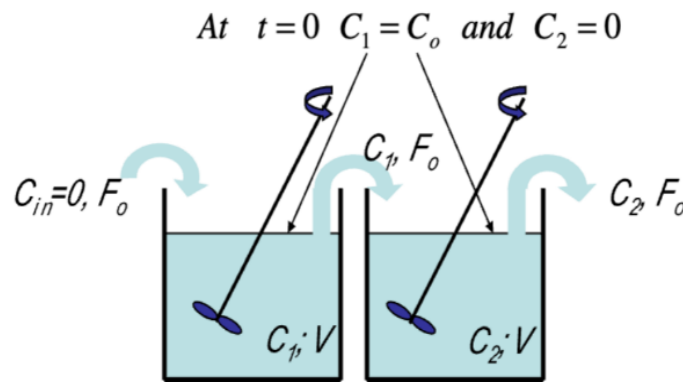


2. (40 points) Two tanks are connected as shown in the illustration below. Initially, the first tank is filled with salty water at concentration C_1 , $t = 0 = C_0$, while the second tank (initially) filled does not contain any salt, i.e. C_2 , $t = 0$

At time $t = 0$, a constant volumetric flow rate of freshwater, F_0 , starts flowing into the first tank. The constant liquid level in each vessel is maintained by withdrawing liquid from the tank. The liquid in each vessel is well mixed; therefore, a uniform (but not constant) concentration of salt is maintained through the tank's volume.



a) Develop a mathematical model to predict the concentration of salt in the second tank at any time after $t = 0$.

b) Solve the model from part a.