PGE 392K In Class Problem

Nov 12, 2020

1. Copy all of your files from your single phase project in a new folder (e.g. Multiphase\_Nov 12)
2. Open up your files from Sept 10
   1. Copy and paste the function files/subroutines you made for relative permeability and capillary pressure
   2. Open up your input file from Sept 10 and copy all the ”petrophysical properties” and paste into them into your exiting input file that is in Multiphase\_Nov 12 folder
   3. Also in your input file, add additional fluid properties that distinguish between water and oil, e.g.
      1. Fluid.viscw=1; Fluid.visco = 0.383
      2. Fluid.FVFw=1; Fluid.FVFo = 1.2
      3. Fluid.cw=1E-6; Fluid.co = 1E-5;
      4. Reservoir.cf = 1.0E-6
   4. Initialize your water saturations. For now you can make all water saturations = Swr =0.2
3. Open up your function/subroutine to calculate interblock transmissibilities (e.g. ‘Thalf”). We will adapt this code to compute both water (Tw) and oil (To) interblock transmissibilities
   1. The outputs should be Tw and To and we also need to add petrophysical properties, pressure vector, and saturations
   2. Adapt your code to use upwinding to compute interblock fluid properties (e.g. “fluidhalf” and then update the calculation for Tw and To. Note you can use pressures as a first pass but you will need to use potentials later on
4. Test your code by doing the following
   1. In the command window, call your input file
   2. In the command window call your rel perm function [krw,kro] = rel\_perm(petro,0.5)
      1. krw=0.1125
      2. kro=0.0625
   3. In the command window, call your function to compute interblock transmissibilities. Send it blocks i=1, j=2, and type =’x’ direction
      1. Tw=0
      2. To = 702.7888
   4. Repeat but manually change Sw(1)=0.3 and Sw(2)=0.4
      1. Tw=12.6502
      2. To=395.3187
5. Adapt your “myarrays” function/subroutine file to now generate Tw and To matrices, instead of just a T matrix and make sure that both are outputs of the function file. Your inputs will need to include petrophysical properties,