Assignment 2
Due 9/19/2023

Short Answer Problems

1. Calculate the hydraulic diameter of the following:
   a. A circular pipe with diameter of 0.8m
   b. An octagonal duct with side length of 0.12m
   c. 178 triangular pipes with side lengths of 0.56m

2. Describe the difference between a pipe, annulus and pressurizer.

3. Describe the difference between a branch and a separator.

4. Explain the difference between a variable trip and logical trip and give an example of each. (You do not need to code as you would in the input deck, just describe the trip).

Application Problem

Model a 9-volume vertical pipe where the upper one-third of the pipe is filled with water and the bottom two thirds is filled with air. The pipe should be 4.16448 m long and have a cross-sectional area of 1.0 m^2. The water should be at 101325 Pa and the air at 101325 Pa. Run the model for 10 seconds. Submit your input deck along with the following:

Plot 1: Liquid Void Fractions of volumes 1, 5, and 9

Plot 2: Vapor Void Fractions of volumes 1, 5, and 9

Describe what is shown by each of these plots. Explain any troubles you may have encountered during this problem.