

**Assignment 2**  
Due 9/14/2021

*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<sup>2</sup>. 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.