Assignment 7
Due 10/24/2023

Short Answer Problems

1. DVD section 64-77 recap information on each of 14 component types covered previously. Please write 1 sentence on each component about something new that you learned through these sections of the DVDs.

2. List 5 different control variable component types, their respective equations, and a brief description of the component type.

Application Problem 1

In this problem you will be creating a table and control variables to add to your most recent iteration of the shell and tube heat exchanger. Please refer to DVDs and the appendix for specifics of how to format these inputs and how to implement them into your deck.

Part 1

Assume that the tube walls are made from Stainless Steel. Rather than using the built-in data for stainless steel on the thermal property cards, create tables for the thermal conductivity and volumetric heat capacity for the heat structure to use in the calculations. Evaluate the difference in heat transfer rates when using your data versus RELAPs.

Part 2

Create the following control variables:

Calculate the total mass of water in the tubes
Calculate the total mass of water in the shell
Calculate the water level inside the shell
Tell whether your break has initiated

Project Problem 1

Please add monitoring control variables to your loop to monitor key parameters such as core heat deposited in the primary fluid, primary heat exchanger Q, secondary heat exchanger Q, liquid levels, cumulative flows, etc.