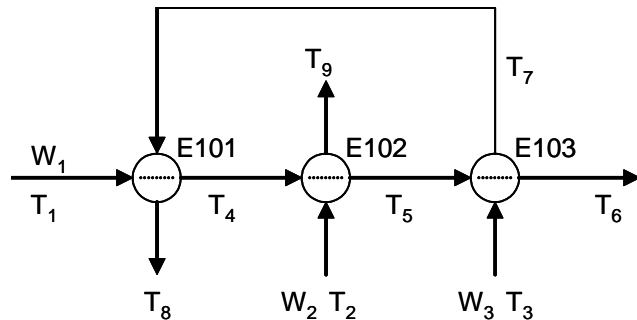For this problem set, each student should submit individual work.

Here's the network:

These are all unspecified organic liquid streams. Let all the heat capacities be simply 2500 J kg^{-1} K^{-1}, all the heat transfer coefficients 250 W m^{-2} K^{-1}, and all the heat exchangers 117 m^2. The inlet streams are

W1: 8.0 kg s^{-1}, 248°C
W2: 9.0 kg s^{-1}, 138°C
W3: 5.5 kg s^{-1}, 102°C

(1) Calculate the unknown temperatures and heat duties at steady-state.

(2) Imagine that you are employed in a process engineering group. You and your colleagues provide both design and technical support to plant operating departments. Each of you routinely writes a weekly summary of your activities; these are collected by the supervisor and circulated to the group. By this means, each of you is better acquainted with the overall mission, as well as informed where experience and expertise may be found within the group. Accompany your result in (1) with such a summary explanation of your method, suitable for colleagues in a technical group.