Bonus Assignment 2:
Based on the problem described below, formulate the problem as an integer program with linear constraints (you do not need to solve). Completely describe your decision variables, objective, and constraints. You must use correct notation (i.e., if you call a variable x_1, then you should always call it x_1). You may use summation notation. It is suggested that you type this formulation for final submission. You may complete this work as a small group.

Maximum bonus points: 50

PROBLEM DESCRIPTION
Three different items are to be routed through three machines. Each item must be processed first on machine 1, then on machine 2, and finally on machine 3. The sequence of items may differ for each machine. Assume that the times t_{ij} required to perform the work on item *i* by machine *j* are known and are integers. Our objective is to minimize the total time necessary to process all the items. Formulate the problem as an integer programming problem. Your model must prevent two items from occupying the same machine at the same time; also, an item may not start processing on machine $(j+1)$ unless it has completed processing on machine *j*.