# Written Assignment 4

1. This problem is a variant of the multiple server queue for which there are two types of customers and two types of servers. Customers of type 0 prefer servers of type 0, but will accept service from servers of type 1 if they are the only ones available. Similarly, customers of type 1 prefer servers of type 1, but will accept service from servers of type 0 if they are the only ones available. Correspondingly, when a server of type 0 completes service, they will serve customers of type 0 if there is at least one in the queue, but serve a customer of type 1 if available and there are no waiting customers of type 0. Likewise, servers of type 1 prefer customers of type 1, but will serve customers of type 0 if available and no customers of type 1 are waiting. The service times depend on *both* the customer type and the server type. That is, service times should be specified as {tSij} where i is the customer type and j is the server type.

Formulate an Event Graph component for this situation. Your Event Graph should *not* use any arguments on events.

Be sure to define your parameters and state variables carefully and clearly and draw your Event Graph neatly. Indicate via a listener diagram how two distinct ArrivalProcess components can correctly trigger Arrival events in the server component.

1. Formulate an Event Graph for the preceding scenario using only *three* events (plus Run). Your events in this model *should* have arguments (In fact, one event should actually have *two* arguments). For this version, a customer arrives with interarrival times given by {*tA*}. That customer is type 0 with probability *p* and type 1 with probability . Write a component that will provide your server component with the correct Arrival, events corresponding to the arrival of a customer of a given type, and show the corresponding listener diagram.