For each problem, develop the model according to the text and modifications stated below. Develop your report and homework packet as described in your previous handouts. Be sure to answer all the questions asked in the textbook.

In addition to the questions asked in the problems, answer the following or add to/change the model as described below.

#7: Model first with one queue feeding to the first available of the 4 agents. Then run for 1 APCID machine, then 2, etc. until the performance exceed that of the 4 agents in terms of average waiting time in the queue. Run each for 10 hours as specified. Run each configuration 3 times.

   Items to include in the table, in this order, Number of customers served, average wait time in queue, average length of queue, utilization of each server (human or APCID), average service time of each server (human or APCID). Include expected value, value from the 3 runs, and the average of the 3 runs. (Note: You will have a separate table for each different configuration of the model. Be sure each one is labeled clearly.)

#15-16-17: BANK:

- Problem 15 first assumes 4 queues, one for each of the 4 tellers, with customers choosing a queue at random (for their particular type of service).
- Problem 16 repeats the process with customers choosing the shortest line for their type of service.
- THEN Repeat #15 with only 2 queues – one queue for business customers and one for general customers. The person at the front of the queue is serviced by the first available teller of the appropriate type.

   Items to include in the table (in this order) for each configuration.
   Number of each type of customer served, Percent of total for each type of customer, Average IAT for each type of customer, Utilization of each server, average wait time in each queue, average length of each queue.
   Compare the average time in the queue for each of the 3 queue configurations. Which configuration works best in terms of waiting time? (Note: You will have a separate table for each different configuration of the model. Be sure each one is labeled clearly.)

#17 - Do not compute the number who wait more than 1 minute.