It630 computer simulation and modeling

IT630 — Computer Simulation & Modeling In-Class Portion of Final Exam (50 points) Dr. Seidman June 10, 2010 DIRECTIONS - READ THIS FIRST INTRODUCTION Exam is from 6: 00 pm to 9: 15 pm. Answer both questions. Total of 50 points. This is an open book, open notes, and open computers exam. This is an individual exam. No collaboration of any kind is permitted. No network connections until you post your answer files to Blackboard when you are done with the exam. You are on the honor system. You have your instructor's implicit trust. But, you must still hear the consequences of any cheating: immediate failure of the course and a report to the School of Business Dean for possible expulsion from the university. DELIVERY OF ANSWER FILES Put all of your answer files into one folder named: yourNameIT630InClassFinalExam located on your computer desktop. Zip this file. Zip file name should be: yourNameIT630InClassFinalExam. Post to Bb Deliver Here in folder named: WEEK 11: IN-CLASS PORTION OF FINAL EXAM. Check with instructor to see that zip file is posted correctly. After this, you may leave the exam room. QUESTIONS: If you have any questions during the exam - ask your instructor. DIRECTIONS - READ THIS FIRST INTRODUCTION Exam is from 6: 00 pm to 9: 15 pm. Answer both questions. Total of 50 points. This is an open book, open notes, and open computers exam. This is an individual exam. No collaboration of any kind is permitted. No network connections until you post your answer files to Blackboard when you are done with the exam. You are on the honor system. You have your instructor's implicit trust. But, you must still hear the consequences of any cheating: immediate failure of the course and a report to the School of Business Dean for possible expulsion from the university. DELIVERY OF ANSWER FILES Put all of your answer files into one folder named:

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1, 1. 5). After checking in, these automated check-in passengers take Unif(1, 3) to walk to the security area. Notice that all types of passengers eventually go to the security area where there are 6 check-in pods fed by a single first-come-first-serve queue. Security check-in times are Triangular(1, 2, 6). This time covers the many security activities in a pod like: x-ray, metal detector, bag search, etc. Once through security, passengers head to their gates and leave the model. Simulate this system for 8 hours and 1 replication. The performance metric of interest is the average total time in the system of passengers (for all types combined). Place this average somewhere on the model in a text-box. Arena file name: YournameIT630Q1BASE. doe. Place file into folder: yourNameIT630InClassFinalExam. Warning: It is your responsibility to make sure that your files are present in your yourNameIT630InClassFinalExam folder and that they open properly.

Question #1 (continued) PART II: ALTERNATIVE MODEL (5 points) In PART I, the airline noticed that a lot of people who opt for the manual check-in really don't need the extra services there and could have used the automated check-in. Instead of the original 33% manual check-in and 57% automated check-in, suppose that the airline is able to encourage only 15% of the arriving passengers to go to the manual check-in and 70% to go to the automated check-in. The other 15% of the arriving passengers go right to security. Nothing else in the Part I model changes. * Revise your Part I Arena model to reflect these changes and name it YournameIT630Q1ALT. doe. Simulate this system for 8 hours and 1 replication. The performance metric of interest is the average total time in the system of passengers (for all types combined). Place this average somewhere on the model in a text-box. PART III: ARENA OUTPUT ANALYZER (10 points) You will need to run the both

models for 100 replications. Using the Arena Output Analyzer, compare the average total time in the system of the BASE model against the ALT model to determine whether or not the changes you made actually made a statistically significant difference. Hint: Use the Statistics module. [You may want to turn off the animation to speed things up. Run/Run Control/Batch Run (no animation).] Place a screen shot of the Output Analyzer comparison results on the YournameIT630Q1ALT. doe model. In a text-box on the same model, say whether the changes made make a statistically significant difference. * Save the Output Analyzer file as: OutAnalyzCompareQ1BASE&ALTdrg. --- ALL PARTS OF Q1 Arena file names: yournameIT630Q1BASE. doe & yournameIT630Q1ALT. doe & yournameOutAnalyzCompareBASE&ALT. dgr Place these three files into folder named: yourNameIT630InClassFinalExam. Warning: It is your responsibility to make sure that your files are present in your yourNameIT630InClassFinalExam folder and that they open properly. Question #2. Restaurant Arena model (25 points) -- --- One customer at a time enters a restaurant according to an Exp(3) minutes distribution. [All time is in minutes.] This is the lunchtime crowd that eats here between 11: 30 am and 2: 30 pm. -- -- Each customer waits Exp(5) for a table. At the table, the customer places an order which is sent from the customer to the kitchen. The kitchen takes Uniform(5. 5, 9. 5) to prepare the food and then it takes Exp(1. 5) for the lunch food to be sent from the kitchen to the customer's table. Of course, the food must match up with the particular customer who sent the order. Hint: Use a Separate module (and other

associated modules) to accomplish this. --- -- When the order arrives to the customer who sent it, it takes the customer Uniform(12, 17) minutes to eat the meal. Then, the customer leaves the table and queues up at the single cashier where it takes the customer Expo(2. 5) to pay for the meal. The customer then leaves the restaurant. -- * -- The performance metrics of interest are the 95% Confidence Interval of the average length of time a customer spends in the system and the 95% Confidence Interval of the average number of customers leaving the system after they eat lunch. --- --- Run the model for 3 hours and make 20 replications. Report the performance metrics in a text-box on the model. Also, if necessary, note any assumptions you made on a text-box on the model. -- Arena file name: yournameIT630Q2. doe. Place file into folder: yourNameIT630InClassFinalExam. Warning: It is your responsibility to make sure that your file is present in your yourNameIT630InClassFinalExam folder and that it opens properly. -- --- --- --- --- --- --- ---------- --- -- END OF IN-CLASS PORTION OF FINAL EXAM -- You may leave when done. ---