**Howe School of Technology Management**

**MIS710 Process Innovation and Management**

**Fall 2019**

**Simulation Homework** Due: October 8

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination. I further pledge that I have not copied any material from a book, article, the Internet or any other source except where I have expressly cited the source.

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Signature NITHIN DAS Date: 05/12

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**Simulation (4 points)**

a. The first worksheet in the accompanying “Simul8 Experiment” Excel file uses some queuing theory to validate the SIMUL8 system. Briefly comment on the results.

Solution:

Though the utilization (proportion of time server were busy, Rho) percentage is almost similar for both simulation experiment and theory, there is an interesting pattern for Mean total time in the system (W). The mean total time in the system for simulation experiment is approximately 2 units more than theory values for all 5 experiments.

b. Use SIMUL8 to conduct three experiments as defined in the **second** worksheet. Focus on the total time in the system, W. For each experiment, record in the space provided in the spreadsheet: the utilization rate(s) of the server(s), the average time in the system, W, and the 95% confidence intervals for W.

i. Set travel time to zero!

Ii Run the simulation 24 hours per day; the parameters and results should be in minutes

iii. Run each experiment for 20 days.

iv. We are interested in long-run average performance so set a “Warm-up” time of 1440 minutes (one day) to eliminate any transients.

v. Before you run each experiment reset the random number seed to equal the mmdd digits in your birth date, for example if you were born on Jan 5, 1991 use 105 as the random number seed.

vi. Conduct the experiment using the “Multiple Runs” facility (use 10 runs in each experiment.)

c. Compare and comment on the solutions you obtain. Could these have been obtained by theory?