**School of Business**

**MIS710 Process Innovation and Management**

**Simulation Homework**

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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**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.

Ans: From the given worksheet we can be effectively observed that work things have entered this section. Likewise, line (Wq) and framework (W) are both increment alongside the expanding of the usage (Rho). Also, reproduction gauges are near the hypothesis. Contrasting the arrangement of hypothesis and reenactment gauges, the change go less than 5 for every datum, and a large portion of them even same or less than 2. Like when hypothesis Rho is 50.0%, the reenactment gauges is likewise 50.0%.

b. Use SIMUL8 to conduct three experiments as defined in the **second, “**Additional Experiments” worksheet. Focus on the accuracy of the total time in the system, W. For each experiment, record in the space provided in the spreadsheet: the waiting time(s) in the queue(s) Wq, the utilization rate(s) of the server(s), the average time in the system, W, and the total number of executions in your experiment, N.

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, 199x use 105 as the random number seed.

vi. Conduct the experiment using the “Multiple Runs” facility (chose the number of runs in each experiment yourself

Use the following formulas to calculate process:

MM1

Graphical user interface, text

Description automatically generated with medium confidence

Graphical user interface, text, application

Description automatically generated

Parrallel

Graphical user interface, diagram, application

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Series

Text

Description automatically generated with medium confidence

Graphical user interface, text, application

Description automatically generated

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

Ans: As indicated by the outcomes being referred to b, contrasting the arrangement of hypothesis and reproduction gauges, we can discover that the reenactment assesses near the hypothesis, which implies the recreation demonstrate performing great. The change extend is less than 5 for each thing information. From the given simulation diagram, we can see that w1:8.6918 for series and for w1: 30.37 for parallel circuit. For server utilization for series the value is 62.691 and for parallel series the value is 25.03 as server load is distributed in the case for parallel distribution and not for series model.