BAN403

Simulation of Business Processes

Spring 2024

Project 2 (100 points total)

Consider the Case—Miller Pain Treatment Center that comes attached. Dr Keith Weems is requesting an analysis of the different scenarios discussed. He wants to provide evidence to his colleagues that his approaches in his private practice are worth trying. He has decided to hire you to develop the research and provide recommendations using discrete-event simulation models to provide scientific arguments. Read the case carefully, and use the data provided to build the models you consider necessary for the analysis.

Your final submission must contain the following:

- (18 pts) Introduction: must clearly and explicitly explain your understanding of the problem, assumptions, goals, and desired outputs. Here the understanding of the problem must go beyond rephrasing the statements in the case. It is important that this description allows the reader to understand the scope and process that you are modeling. Those choices must be justified.

- (18 pts) Input data analysis. Must come supported with the files used for the analysis, python, excel or R files. The analysis must provide clear and explicit evidence for the conclusions obtained for deciding the probabilistic models. It is expected to see histograms and the results of statistical tests.

- (23 pts) Simulation models. You must provide the cfg files. However, the models must be documented in your report. It must provide the flows that are used in the models and comments about the main features to pay attention to. We will check that all the elements discussed in the case are included and properly considered in the simulations.

- (18 pts) Output data analysis. Must come supported with the files used for the analysis, python, excel or R files. A proper and clear statistical analysis must be provided. For example, if a change of a process is being considered, a conclusion pointing to and improvement or not of a performance measure must be statistically supported. Additionally, the time horizon and the number of replications must be properly supported.

- (13 pts) Conclusions and recommendations. This must be rooted in your findings.

Conclusions that speculate rather than interpret and explain the results will be disregarded.

For example, if one is comparing two different Processes, the models for those processes must be built. You cannot provide meaningful insights for this case with a single model. It is important to note that any statement about the good or bad performance of any process must be justified with simulation here.

Writing assessment: (10 points) The assessment of your submission will include a writing component. The report must be written in English. We will assess clarity (3 points), the use of proper English (3 points), and organization (4 points). For example, a careless report full of typos will be affect your English use assessment. Sentences difficult to read or redundant and confusing conclusions will affect your clarity assessment. Leaving implicit assumptions will affect your clarity assessment. Messy presentation of graphs and tables, and figures without any reference in the text will affect your organization assessment. This list is not exhaustive, the aim is to provide examples of what will be considered in the assessment.

Format: The main report must be a pdf file named [group]-proj2-BAN403.pdf. All the attachments must come in a zip file and have the prefix att-, for example "[group]-att-proj2.zip". The pdf report must be limited to a maximum of 10 pages. Failing to comply will be penalized, and 5 points will be deducted by extra page. The limit includes the references page. The page limit does not include the front page. Appendices are allowed but keep in mind that they come as support; the first ten pages must be clear and self-contained. In other words, the ten pages must be enough to understand your work and support your conclusions.

The font size must be at least 12 pt and the margins should be min 2.5 cm. Use at least 1.25 line spacing, this document is an example of how that line spacing looks.