STAT2001A/B

Details about Individual Project

General guidance:

1. Your work should be in English. Your work can be typed or done by hand. If you choose to do it by hand, please scan (or take very clear photos of) your work for submission and you have the responsibility to ensure that your hand writing is clear enough for us to read.
2. Please upload your work on Blackboard before the deadline of **18th December, 2019 at 4:00p.m.** No late submission will be accepted. I highly recommend you to upload it earlier (better to be a few days before the deadline to avoid technical problems) and double check after submission to confirm the success of submission.
3. Students should pay attention to the academic honesty and plagiarism policy of the University. Case with sufficient evidence of plagiarism will be forwarded to the Disciplinary Committee of the Science Faculty.

Below are the descriptions of each part of the project:

Part a.:

We have discussed Simpson's Paradox in this course. Please write a short report in your own words to summarize your understanding about Simpson's Paradox. Your summary should describe the paradox, explain why people perceive it as a paradox and explain how this paradox can cause problems in decision making in practice. You should provide simple examples to support your arguments.

Higher marks will be given to reports that are logical and clear, concise but adequate, and with new and inspiring examples. **The report should not exceed 1 page (A4 sized).**

Part b.:

We have discussed moment generating functions in this course. Please write a short report in your own words to summarize your understanding about moment generating functions. Your summary should demonstrate the techniques, usefulness and limitations, if any, of using moment generating functions. You should provide simple examples to support your arguments.

Higher marks will be given to reports that are logical and clear, concise but adequate, and with new and inspiring examples. **The report should not exceed 2 pages (A4 sized).**

Part c.:

Please write a short report after reading the following academic paper:

M. XIE AND T. N. GOH (1993) *SPC OF A NEAR ZERO-DEFECT PROCESS SUBJECT TO RANDOM SHOCKS*, QUALITY AND RELIABILITY ENGINEERING INTERNATIONAL, VOL. 9, 89-93.

This paper can be downloaded free of charge for CUHK students from the CUHK library electronic resources. For your convenience, I have already download it for you. **Please see the other attached file "Paper for part c.pdf".**

This paper is about applying a simple probability model in a quality control problem. The authors used a simple application with easy-to-understand numerical examples to demonstrate their method. You can ignore a few technical terms (like "Shewhart chart" and "u-chart") mentioned and all the mathematical details of maximum likelihood estimation in section 4 of the paper. This will not hurt your understanding of the problem, model and applications of this paper.

Your report should include the following:

1. Summarize in your own words about the problem, model and applications in this paper.
2. Indicate the materials you have learned in STAT2001 that helps you to understand this paper.
3. Describe the ideas and/or methods that you find interesting in this paper. Suggest some applications of these ideas and/or methods in other problems or settings.
4. Comment on the limitations of the model used in this paper.

Higher marks will be given to reports that are logical and clear, concise but adequate, and with new and inspiring examples. **The report should not exceed 3 pages (A4 sized).**