CMPG322

|  |  |  |
| --- | --- | --- |
| Prakties 7.1 – Simulasiemodelle (opsioneel) | *Practical 7.1 – Simulation models (optional)* |  |
| Indieningsdatum: 18/11/2020 | ***Submission date****: 18/11/2020* |  |
| Instruksies  1. Maak die Excel lêer oop om toegang tot jou eie unieke datastel te verkry. 2. Kies ‘*enable content’.* 3. **NB:** Stoor die lêer as ‘n **.xlsx** lêer (<studenteno>prac7.1.xlsx) – dit sal keer dat jou waardes later weer verander. 4. Jy moet addisionele sigblaaie by die Excel-lêer voeg vir berekeninge. 5. Vul jou antwoorde in op die blad *‘Practical 7.1 Answer sheet’,* **verduidelik** jou antwoorde en toon jou bewerkings. 6. Wanneer jy klaar is, stoor jou werk en dien die Excel-lêer in op eFundi onder ‘*Assignments’*. | *Instructions*  1. *Open the Excel file to get access to your unique data set.* 2. *Select ‘enable content’.* 3. ***NB:*** *Save the file as an* ***.xlsx*** *file (*<studentno>prac7.1.xlsx*)– this will prevent your values from being changed at a later stage.* 4. *You must add additional Excel sheets for your calculations.* 5. *Enter your answers on the sheet ‘Practical 7.1 Answer sheet’,* ***explain*** *your answers and show your calculations.* 6. *When you are done, save your work and submit the Excel file on eFundi under ‘Assignments’.* |  |
| Opdrag  1. In spitstye voor die verhoging van die petrol- en dieselpryse kom motors by Peak Performance vulstasie aan teen varierende tempo’s tussen 40 en 45 per uur. Beskou die intervalle van ewekansige getalle wat in die Excel-lêer aangebied word. Die volgende ewekansige nommers is gegenereer: 99, 98, 26, 09, 50, 52, 33, 89, 21 en 37. Simuleer tien spitstyd aankomste vir hierdie vulstasie. | *Assignment*  1. *In peak times before the increase of the petrol- and diesel prices, cars arrive at Peak Performance gas station at rates varying between 40 and 45 per hour. Consider the intervals of random numbers presented in the Excel file. The following random numbers have been generated: 99, 98, 26, 09, 50, 52, 33, 89, 21, and 37. Simulate 10 peak time hours of arrivals at this gas station.* |  |

|  |  |  |
| --- | --- | --- |
| 1. Wat is die 10 gesimuleerde aankomste? | 1. *What are the 10 simulated arrivals?* | (5) |
| 45,45,40,40,41,41,40,43,40,40 | | |
| 1. Wat is die gemiddelde hoeveelheid aankomste in hierdie tyd? | 1. *What is the average number of arrivals during this period?* | (1) |
| 41,5 | | |
| 1. Gebruik ŉ nuwe sigblad en genereer jou eie ewekansige getalle vir 1000 proewe. Om die kans op ŉ syfer 0 te elimineer, pas die “RAND” funksie aan deur die waarde 1 by al die syfers te tel. herbereken die blad vyf kere (F9). Sal jy sê dat 1000 proewe voldoende is om hierdie scenario te simuleer? | 1. *Use a new sheet and generate your own random numbers for 1000 trials. To eliminate the chance that a random number of 0 is generated, modify the “RAND” function by adding the value 1 to all generated numbers. Recalculate the sheet five times (F9). Would you say that 1000 trials is adequate to simulate this scenario?* | (3) |
| The first average value of 1000 trials was 41,211. After refreshing 5 times the average changes as follows: 41.09, 41.119, 41.144, 41.174, 41.114.  1000 trials is adequate because you can get a closer more accurate average value. 1000 trials average are more around 41,1 than 10 trials are with a average of 41,5. | | |
| 1. Met inagneming van jou antwoord in c), is 10 proewe vir hierdie probleem voldoende? | 1. *Considering your answer in c), is 10 trials of this problem adequate?* | (2) |
| 10 trials are adequate but if you want a more accurate value the more trials you use the closer you will come. | | |
| 1. Slouw Café by die pas geopende Mooirivier Junction verkoop 'n verskeidenheid koffieprodukte. Die besturende direkteur, mnr. Verri Slouw, wil vasstel of die staking van 'n eksklusiewe Etiopiese mengsel hom lojale klante sal kos. Die waarskynlikheid van daaglikse verkope vir hierdie mengsel word in die Excel-lêer getoon. Die leityd vir aflewering kan wissel, en waarskynlikhede word ook in die Excel-lêer aangedui. Slouw plaas bestellings wanneer die voorraadvlak daal tot 32 eenhede (gebaseer op die gemiddelde aanvraag en gemiddelde leityd). Gebruik die ewekansige nommers en simuleer twee bestelperiodes en bepaal die gemiddelde aanvraag en totale verlore verkope vir hierdie periodes. Neem aan 32 eenhede is in voorraad en 'n bestelling (van 32 eenhede) is pas geplaas. Hierdie vraag sal slegs in Excel gemerk word. | 1. *Slouw Café at the newly opened Mooirivier Junction sells a variety of coffee products. The managing director, Mr. Verri Slouw, wants to determine whether it discontinuation of an exclusive Ethiopian blend will cost him loyal customers. The probabilities of daily sales for this blend are shown in the Excel file. The lead time for delivery may vary, with probabilities also indicated in the Excel file. Slouw places an order when the inventory level drops to 32 units (based on the average demand and average lead time). Use the random numbers supplied and simulate two ordering periods and determine the average demand and total lost sales for these periods. Assume 32 units on-hand and an order (of 32 units) was just placed. This question will be graded in Excel only.* | (8) |
| **TOTAAL/*TOTAL:* [20]** | | |