



Strathmore
UNIVERSITY

**INSTITUTE OF MATHEMATICAL SCIENCES
MASTER OF SCIENCE IN DATA SCIENCE AND ANALYTICS
CONTINUOUS ASSESSMENT 1
DSA8102: DATA MINING, DATA STORAGE AND RETRIEVAL**

DATE: 25th June 2022

Time: 24 Hours

TOTAL: 35 Marks

Instructions

1. This continuous assessment consists of two sections.
 2. Create an interactive notebook (with R or Jupyter).
 3. Answer all questions in your notebook.
 4. Save the notebook with your name and student number (**for example, John_Doe_123456.rmd**).
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Name:

Student Number:

Examiner(s): Dr Dickson Owuor

Section A

Theory

15 Marks

Question 1

What is a data stream? Using examples, discuss 5 application areas of data streams. (15 Marks)

End of Section A

Section B

PRACTICAL

20 Marks

Table 1: 2021 mean foreign exchange rates of Kenyan shilling

Currency	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 US Dollar	107.95	107.43	107.81	108.14	109.24	110.13	110.86	1119.2	112.91
1 Pound Sterling	149.3	151.06	151.45	149.37	150.87	151.51	151.58	150.97	150.15
1 Euro	129.13	130.41	130.07	12.789	128.59	129.8	128.6	127.94	127.64
100 Japanese Yen	99.03	98.43	97.99	98	99.47	100.04	98.03	98.12	99.2
1 SA Rand	7.49	7.63	7.76	7.45	7.39	7.57	7.44	7.23	7.1
USHS/KES	33.59	33.09	32.84	32.84	32.39	32.07	32.28	31.74	31.49
TSHS/KES	21.48	21.59	21.51	21.44	21.23	21.04	20.78		20.4

According to a statistic taken by the KNBS. In 2021, the mean foreign exchange rates of Kenyan shilling against selected major currencies at the end of each month is shown in Table 1.

Question 2

- Store the information in the table above in a DataFrame. Add your name and student number at the beginning of your Notebook. (3 Marks)
- Perform an exploratory data analysis, briefly describe your impression of the data set. (5 Marks)
- Clean the data set above, explain the reasons for the techniques you selected. (7 Marks)
- Using your cleaned data, plot line graphs that show how the KES fluctuates every month for every currency. For each currency, which month is the KES strongest? (5 Marks)