

**UNIVERSITY OF THE FREE STATE
DEPARTMENT OF MATHEMATICAL STATISTICS AND
ACTUARIAL SCIENCE
STSM 2634**

Tutorial 2

Full marks: 100 (All 7 tutorials together)

Date: 10 April, 2025

Deadline: 11 April, 2025

**FOLLOW THESE INSTRUCTIONS METICULOUSLY, OTHERWISE MARKS
WILL BE SUBTRACTED:**

- Name the answer file as **'Tutorial2_student number'** as the file name. Your **programming (code), and the output must be included in your answers.**
- **Submit the MS-Word file generated by R-markdown.** Any other form of submission will not be accepted.
- You have freedom to write the code in your own way.
- You are allowed to use the class notes, or any other help from the internet.
- **All computations must be done with the help of suitable R functions. Manual or calculator-based answers will not be accepted.**
- 0 marks for no submission.

Q1. Assume the dataset is a vector of daily temperatures in Celsius for a month, provided in the following format:

Temp: 13.01, 11.05, 35.38, 28.61, 0.64, 18.31, 2.65, 0.98, 23.31, 17.76, 33.92, 4.42, 6.81, 12.76, 22.24, 78.08, 16.89, 13.51, 32.80, 5.56, 20.93, 0.86, 17.25, 36.23, 11.55, 25.54, 1.50, 4.77, 6.89, 21.62.

Calculate the Average Temperature:

Use a while() loop to add all the temperatures in the dataset. Do not use the mean() or sum() function. Then find the average temperature for the month.

Count Days Above Average Temperature:

Using a for() loop, count the number of days where the temperature was above the calculated average.

Find the Maximum Temperature Swing:

Using a repeat() loop, calculate the temperature swing (absolute difference) between each day and the previous day. Keep track of the maximum swing observed throughout the month. This means when the maximum swing on any day overtakes the previous maximum swing, we store the swing value. Else, we continue with the previous maximum swing.

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