Strathmore University
Institute of Mathematical Sciences

Bachelor of Science in Statistics and Data Science

DAT 2102: INFORMATION SECURITY, GOVERNANCE & THE CLOUD

SEMESTER PROJECT PRELIMINARIES: PART 1

Group 2A Start Date: 15th May 2024 **Due Date:** 26th May 2025

Group 2B Start Date: 16th May 2024 **Due Date:** 27th May 2025

Objective: Set up code collaboration platform and refresh on Python programming.

Instructions:

1. Create an account on **GitHub** and sign up for the Student Developer Pack for the student subscription which needs verification using your student ID.

2. As the verification process continues, download Git to your machine, follow this tutorial step-by-step to achieve this.

3. Download Visual Studio Code as well together with the Python interpreter on your machine. **Follow this tutorial step-by-step to achieve this.** For the Python version install version 3.12.10. The installers are in the files section (see this guide on how to install Python)

4. After setting up the IDE and Python, attempt this programming exercise. This should be done in Python, each program can be done in its own Python file. Use the book 'Python for Data Science Handbook' provided on e-learning or any other online material to understand the syntax to use:

    a. Write a program that asks the user for a number of days. The program then prints out the number of seconds in the number of days given.

    b. Write a program that asks a user to input the radius then the program calculates the volume of a sphere (the formula for the volume is $\frac{4}{3}\pi r^3$). Use the exponential operator in python to compute (r^3).

    c. Using functions, write a program to compute the area and perimeter of a square. The program should ask the user to enter a number

corresponding to the side length of the square and display the area and perimeter of the square.

d. Write a program using functions that determines whether a character input by a user is uppercase or lower case.

e. The following is pseudocode for a program being designed. Write the Python program equivalent of the same.

```
BEGIN
      SET x TO 0, y TO 20
      REPEAT
            SUBTRACT 4 FROM y
            ADD 2/y TO x
      UNTIL
            y IS LESS THAN 6
      DISPLAY x
END
```

f. Write a Python program that does the following:
   i. Uses a loop for a user to continually input 5 values to populate an array.
   ii. Calculates and displays the average of the values input into the array.

5. Once done, you will push your programs to GitHub. Name your GitHub repository – *PythonRefresher*. See this resource on how to achieve this, follow this from step 2 to the final one.

Once done, submit the live link to your repository on Github to the e-learning portal before the due date.

Feel free to use any available resources for your work and **you are encouraged to collaborate on this exercise**. However the rules against plagiarism apply. **Do not directly use ChatGPT or any other AI-generative text applications to develop your work**, this will be penalised strictly when detected.