Assignment 2 - GGS366 Spatial Computing

Due February 18th 2024

Please find the 5 assignment questions enclosed, totaling 100 available points.

Remember, if you just rely on genAI, you will not learn the fundamental basics, and thus fail the graded closed-book test/exam planned for later in the semester. So, the important thing here is to really make a good attempt at solving these problems without any assistive tools, based on the materials you have learnt in the first few weeks of the class.

To submit the work, you need to write your answers in a colab .ipynb notebook and then:

1. Print the .ipynb notebook to a .pdf and submit for review on blackboard.
2. Submit also the actual .ipynb notebook on blackboard allowing your code to be easily run.

Without submitting both of these files like this, you will receive a 20-point penalty to your overall grade.

Submitted work may be checked for plagiarism, including for GenAI usage. The Mason honor code applies.

```
# Q1A (5 points)
# Write a loop to iterate over the numbers 15 to 35.

# Q1B (5 points)
# Using this loop, now print only odd numbers.

# Q1C (5 points)
# Reusing Q1B, add in loop control logic which skips the numbers 17, 21
# and 29.

# Q1D (5 points)
# Reusing Q1C, stop the loop prematurely via loop control logic if the number
# 31 is reached.

# Q2 (20 points)
# You already know how to write a for loop, e.g., for the numbers 1-10.
# Now try write a nested for loop (e.g., two loops), for the numbers 1-10.
# The second for loop will need to be indented within the first loop.
# Print the multiplication of the two iterators for these two loops, and
# add the result to a list which you print at the end.

# Q3 (20 points)
# Create a list of dictionaries. Each dictionary should represent a player
# name, team and total points scored, for 3 unique players from Superbowl
# LVIII (so you should have 3 dictionaries max).
# Iterate over this data structure printing the contents on each loop.
```

[Do not forget the next questions below]

```
# Q4 (20 points)
# Create two triangular Shapely polygons, which slightly overlap.
# Find the union, intersection and difference. Now add a 0.5 meter
# buffer to each polygon. Print.

# Q5 (20 points)
# Research the following Shapely functions from the documentation: area,
# contains, bounds and length. Write up a thorough description explaining
# each one.
```