Assignment Due
9:00 am EST
Tuesday, February 26, 2019

Calculate $S_N = \sum_{i=1}^{N} [\pi]$.

You should use math.pi for the value of π.

Calculate S_N using the two methods we discussed in class, naive summation and compensated summation. Perform the summations for N = 10^6, 10^7, and 10^8, and 10^9.

Calculate the time of each summation using code such as

start_time = time.time()

end_time = time.time()

elapsed time = end_time – start.time

Calculate the "exact" value of the sum using the expression

$$\tilde{S}_N = \left(N * \pi \right)$$

For each of the S_N that you calculate, determine the absolute and relative errors of the results. Present your results (including the timing of your calculations) in a table.

Discuss your results. Are these errors consistent with the expressions for errors that we discussed in class and that are in the posted classroom presentations?

Include all of your analysis and discussion in your .ipynb file and submit the file thorugh Blackboard. The nume of the file you submit should be

firstname_lastname_AS02.ipynb.

Do not clear your results after your last run so that I will be able to see your results without rerunning your file.