**Project 8 - Numerical Integration**

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CST-305: Principles of Modeling and Simulation Lecture & Lab

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**Responsibilities and Completed Tasks**

This final project was comprised of two separate parts, in which part 1 involved partitioning a continuous function into subintervals of length . The formula using with *ck* a point in the *k*th subinterval was then used to approximate the solution. The second part involved a large download and monitoring the download rate and then plotting a graph based on that data.

**System Performance Context Description**

The python has a linear time complexity such that the program can be configured with values, primarily the number of subintervals to be calculated. As more subintervals are calculated, just as n goes towards infinity, the program produces more strain. The existing program uses an n value of 4 for part a as specified and a value of 30 for the rest because the instructions did not specify. For greater accuracy at a cost of more time and resources, more subintervals can be calculated for a more accurate answer.

**Specific Problem Solved**

***Part 1***

**Mathematical Approach for Solving it**

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**Approach for Implementation**

**Diagram

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**Screenshots Depicting Key Phases in the Program Execution**

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**Chart

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**https://github.com/asherShores5/Project-8---Numerical-Integration**

**References for Theory and Code Sources**

*Riemann Sums - Mathematical Python*. (n.d.). Mathematical Python. Retrieved December 14, 2021, from https://personal.math.ubc.ca/%7Epwalls/math-python/integration/riemann-sums/

*Riemanns Integral — Python Numerical Methods*. (n.d.). Python Numerical Methods. Retrieved December 16, 2021, from https://pythonnumericalmethods.berkeley.edu/notebooks/chapter21.02-Riemanns-Integral.html