CS 3360 Programming Assignment 1

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Submitted Files:

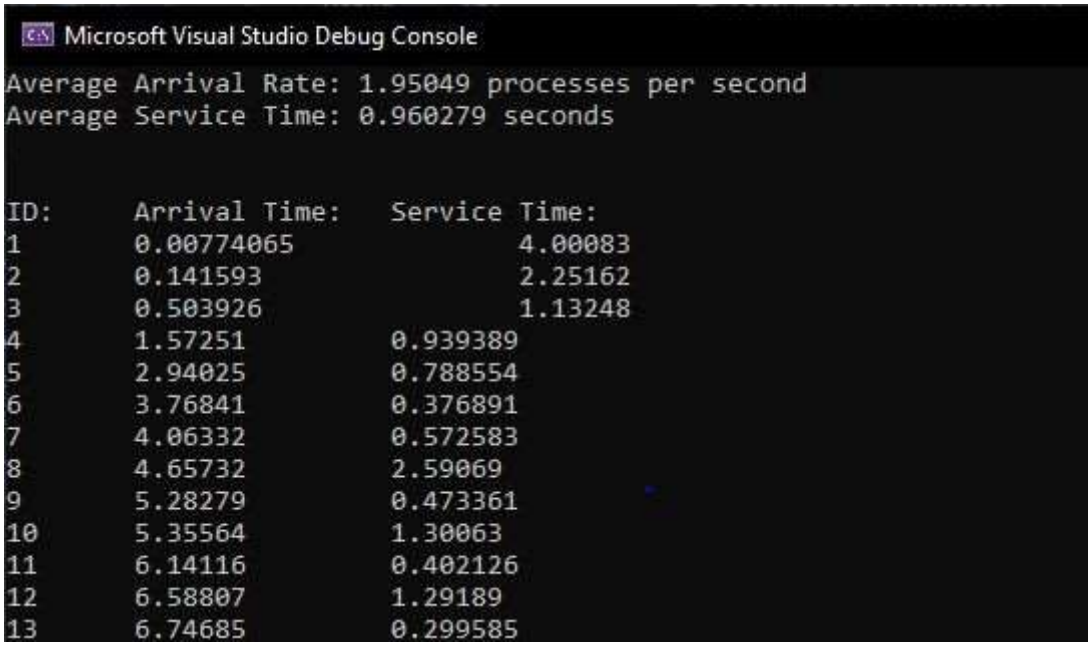
- Source Code:
  - Problem_1.cpp
  - Problem_2.cpp
- README text file

Problem 1: Problem_1.cpp

For this problem, I wrote a C++ program to simulate a system's arrival and service of processes using random arrival rates, following a Poisson-distribution, and exponentially distributed service times. Additionally, the program calculates the actual average arrival rate and service time of the simulated system.

Average Arrival Rate: 1.95049 processes per second
Average Service Time: 0.960279

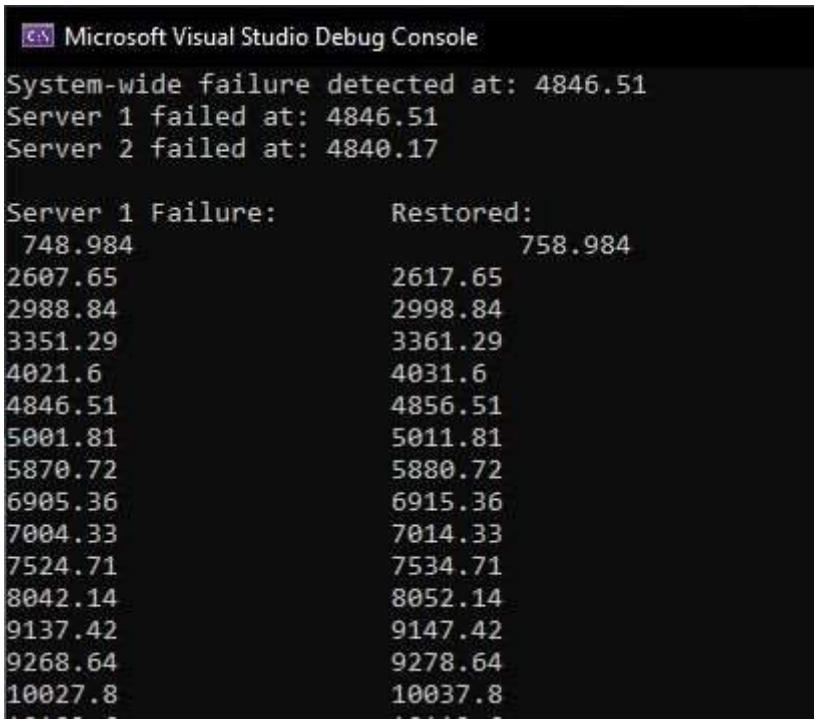
Sample Output: Small section of the program's output.

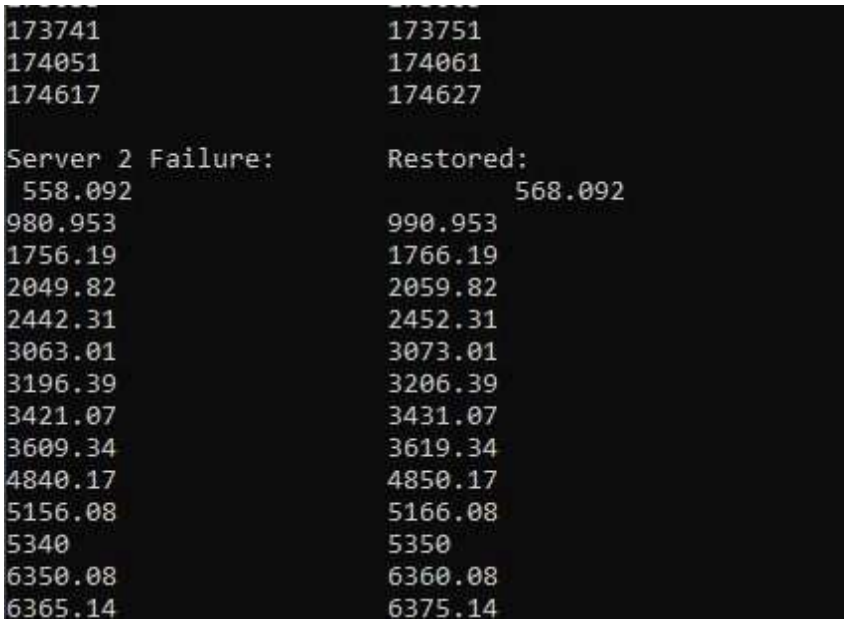


Problem2: Problem_2.cpp

For this problem, I wrote a C++ program to generate synthetic data for the servers failure and restoration times over a twenty year period, using randomly generated uptimes based on an MTBF of 500 hours and following an exponential distribution.

Sample Output:





To find an average time until a system-wide failure occurred, I ran the program 10 times and computed a rough average below:

(4846.5 + 3443.05 + 6538.94 + 7631.19 + 1454.68 + 3119.81 + 2089.06 + 1644.42 + 4368.79 + 8465.22) / 10 = system wide failure every 4,333.166 hours