SYSC 3303 - Iteration 0 Group L1G3

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Elevator Name: Canal Building Elevators **Number of Floors:** 7

Floor Number	Door opening (s)	Elevator is idle (s)	Door closing (s)	Going up (s)	Going down (s)
1	2.53	5.87	4.05	6.71	-
2	1.94	6.09	3.90	7.05	6.53
3	2.77	5.95	4.05	7.06	6.91
4	2.20	4.91	4.02	7.55	7.46
5	2.06	6.07	3.93	7.39	7.38
6	2.12	6.02	4.03	7.58	7.45
7	1.73	6.13	4.15	-	7.08
Mean ($\overline{X}$)	2.193	5.863	4.019	7.223	7.135
Sample Variance (S^2)	0.125	0.184	0.007	0.116	0.137
Standard Deviation (S)	0.353	0.429	0.083	0.341	0.370
Confidence Interval	1.87 <x< 2.19	5.47 <x< 5.86	3.94 <x<4.02	6.91 <x< 7.22	6.79 <x< 7.14

Maximum speed going up: $2.97\ m/s$ Maximum speed going down: $2.98\ m/s$

Maximum acceleration going up: $0.519\ m/s^2$ Maximum acceleration going down: $0.535\ m/s^2$

Measuring the distance between floors: number of steps * height of a step = 23 * 19.05cm = 4.38m

To measure the elevator doors opening, the timer would start as soon as the doors opened until they reached the fully open position. Measuring the doors idling, the timer started when the doors fully opened and stopped when the doors began to close. To get the time of doors closing, the timer would start when the doors stopped idling and would stop when the doors fully closed. Measuring the time it took for the elevator to go up started when the timer felt the movement of the elevator begin. The timer would stop when the movement of the elevator stopped. The same measurement technique was used for going down as well. No open door or close door buttons were used during the timing process. To measure the acceleration, we measured the elevator time for multiple floors. The maximum acceleration occurred between 2 floors and the maximum speed occurred between 6 floors.

We also measured the elevator idle time based on the number of people moving in/out the elevator. With 92% accuracy, these results can be represented in the following equation: $0.76x + 5.23$ where x is the number of people moving in/out. This means that we expect the idle time for the elevator to increase based on the number of people moving in and out of the elevator. To measure the extra delay added by the elevator after being interrupted another set of measurements were conducted. After being interrupted the elevator added between 2-3s of delay to idle time.

To ensure the accuracy of the measurements, the data was collected individually for each component to measure each step of the elevator data. This included the doors opening, idle time, door closing, going up and going down. Additionally, the data was considered for multiple floors of the elevator for additional data points. To ensure consistency, all the elevator idle times for the 7 floors were measured without anyone going in/out the elevator. Additional measurements for the idle time were conducted based on varying numbers of passengers entering or leaving the elevator. The time for going up and going down was measured to ensure the time was not impacted by gravity and the data for multiple floor travel times were collected.