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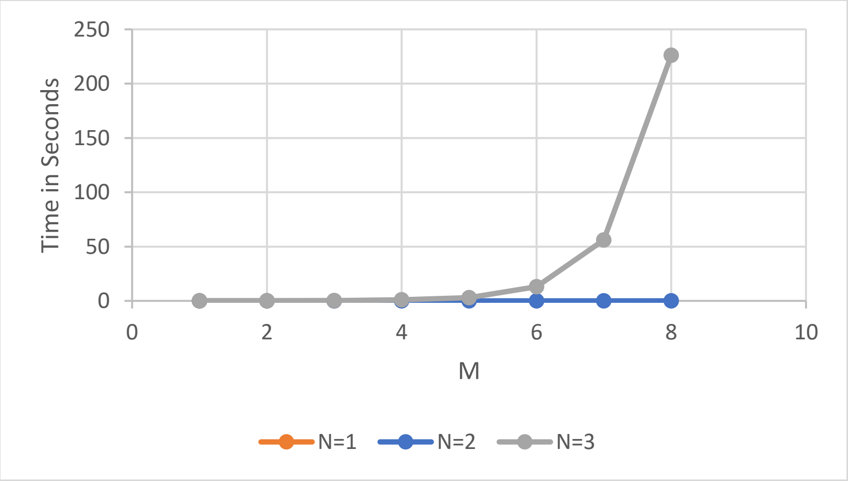
CSCE 313 Buddy Allocator

- The following run-times are in seconds (s) for the Ackerman function, where n ≤ 3 and m ≤ 8.

	m							
n	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
3	226	56	13	3	0.912912	0.239244	0.123238	0.006349
2	0.024420	0.009315	0.008461	0.006914	0.006759	0.005824	0.002712	0.003228
1	0.001564	0.000811	0.000822	0.000832	0.000221	0.000146	0.000271	0.000028



As you can see, with correctly running code, the Ackerman function takes exponentially longer to run as the sizes of n and m increase. For values of n equal to 1, one can look at the chart above to see how miniscule the values are even for larger values of m.

Currently, I can think of two bottlenecks where optimization either in the code I currently have, or another approach, could further decrease the times. One is in the split function, responsible for breaking up blocks of bigger sizes, and the merge function, responsible for combining free blocks of smaller sizes. Each gets called in the alloc and free functions, respectively. Because of the need to split and merge constantly in this type of allocator they are usually called multiple times in quick succession. Any optimizations, even small, could likely save hundreds to thousands of microseconds especially as the total memory gets larger.