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COSC 2203

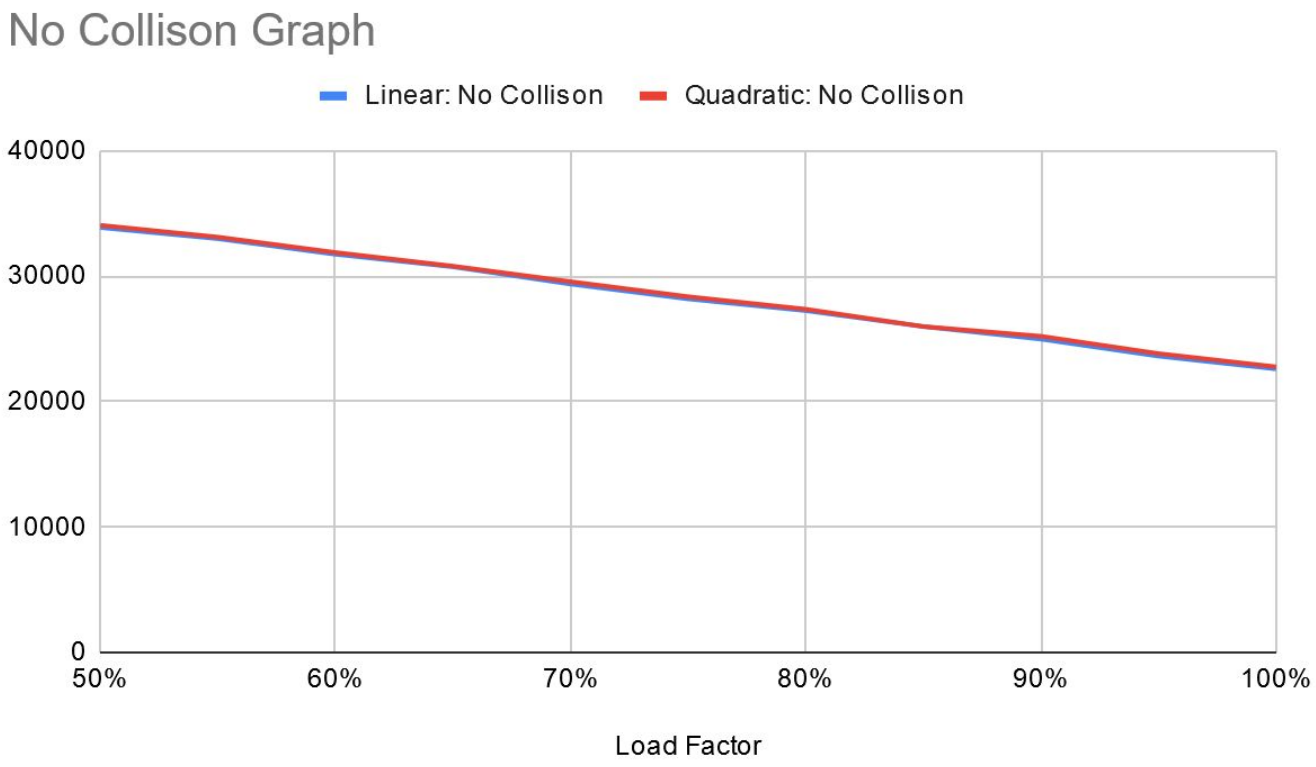
Open Addressing Hash Experiment Report

Introduction

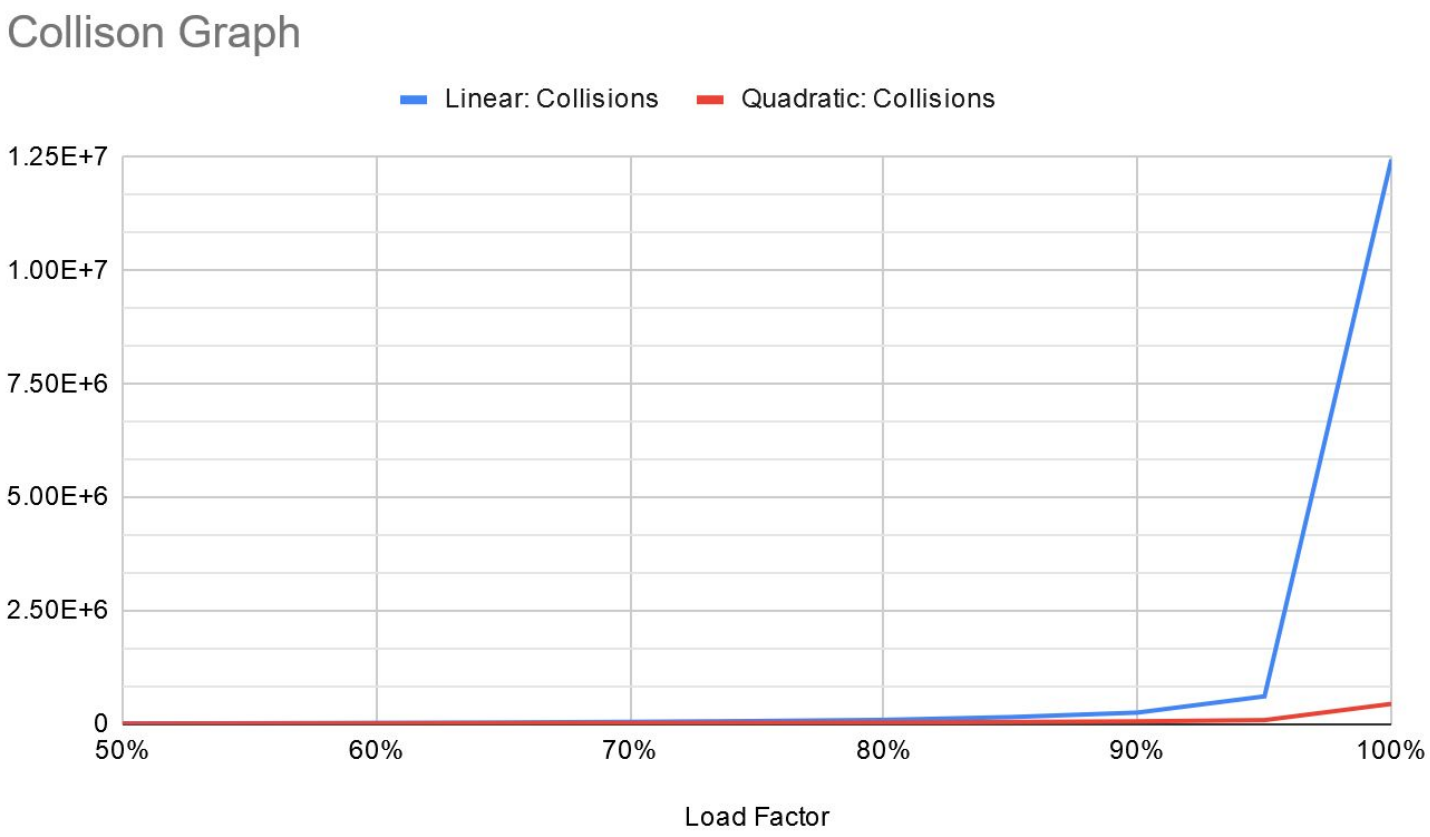
This report analyzes the effects of different load percentages on the number collisions that occur when inserting words into an open addressing hash table. In this report I used 45_403 from the given text file to record the number of times I can insert words into a hash table with and without collision using the Linear probing scheme and Quadratic probing scheme. The load percentages range from 50% to 100% in increments of 5%.

Load Factor	*Linear: No Collison*	*Linear: Collisions*	*Quadratic: No Collison*	*Quadratic: Collisions*
50%	33874	24331	34060	17630
55%	32984	29158	33117	20415
60%	31741	36852	31889	23849
65%	30741	44918	30799	27606
70%	29365	58399	29562	32735
75%	28182	76855	28365	37877
80%	27245	102298	27366	45240
85%	25980	163580	25982	56042
90%	24974	263083	25210	70410
95%	23618	620396	23826	97167
100%	22600	12444157	22771	454463

Line Graph for Insertions without Collision



Line Graph for Insertion with collisions



Analyzing the Line Graphs and the charts posted above it's evident that as the Load Factor increases the number of collisions when inserting words into the hash table increases for both Probing Schemes. This is mainly because as the load factor increases the number of 'open spots' available decreases, thus increasing the number of collisions. It's also evident that the number of collisions that occur at larger load factors is significantly larger for the Linear probing scheme compared to the quadratic scheme. This is because the quadratic probing scheme scatters the data sets when placing them in the hash table unlike the linear probing scheme which looks for the next available spot. And from the experiment we can conclude that having a bigger hash table can reduce the number of collisions that occur.