A-3 Q3

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HashTables

TASK 1) FINDING THE AVERAGE AMMOUNT OF OPERATIONS

The table below demonstrates the number of operations for each bucket size from [2, 5, 10, 20].

	2	5	10	20	
Search	516.334	207.676	104.499	52.975	TC1
Insert	450.4559	180.9629	91.2039	46.2907	TC1
Search	510.117	204.432	102.843	52.133	TC2
Insert	455.1032	182.9677	92.1766	46.7954	TC2
Search	517.037	207.621	104.63	53.14	TC3
Insert	450.099	180.8685	91.0709	46.2148	TC3
Search, Insert	501.500000 500.501000	201.500000 200.502500	101.500000 100.505000	51.500000 50.510000	TC4
Search, Insert	251.250000 500.501000	151.250000 100.505000	51.250000 100.505000	26.250000 50.510000	TC5
Search, Insert	6.500000 6.544500	3.500000 3.512000	2.500000 2.506000	2.000000 2.000000	TC6
Search, Insert	3.100000 2.805000	2.000000 2.000000	1.500000 2.000000	1.500000 2.000000	TC7
Search, Insert	493.840436 493.606581	198.473287 198.292598	99.882493 99.844728	50.683415 50.671071	TC8
Search, Insert	26.684116 26.504272	11.554676 11.494831	6.524943 6.501938	4.016895 4.001938	TC9
Search, Insert	1.998047 2.000000	1.998047 2.000000	1.998047 2.000000	1.998047 2.000000	TC10

We can clearly observe that the number of operations decrease as we increase the number of buckets, this is because the number of collisions decrease!

FINDING THE CHANGE OBSERVED WRT THE VALES “A” & “B”

Not much change is observed by changing the values of a & b, but it was seen that when a & b both are prime there was a better even distribution, i.e. less number of average operations for a given input!

(as the moodle post mentioned deletion was optionary, this report does not contain data for it, though similar results were observed for it)