

Problem 1 Results

When timing insertion and deletion in the hash table using various numbers of buckets, the “optimal” constant seemed to vary fairly often, tests never gravitated toward one better value. I believe this is because my hash function (the one in the text file) tends to hash strings fairly evenly among the buckets each time. Below are the results for one of the tests.

LOADING 10,000 WORDS INTO OPEN HASH TABLE AND TIMING INSERTION/DELETION WITH DIFFERENT BUCKET SIZES

OVERALL AVG TIME FOR B = 1000 : 11.7167
OVERALL AVG TIME FOR B = 2000 : 11.2094
OVERALL AVG TIME FOR B = 3000 : 11.3783
OVERALL AVG TIME FOR B = 4000 : 11.4706
OVERALL AVG TIME FOR B = 5000 : 11.2342
OVERALL AVG TIME FOR B = 6000 : 11.6425
OVERALL AVG TIME FOR B = 7000 : 12.3301
OVERALL AVG TIME FOR B = 8000 : 14.5132
OVERALL AVG TIME FOR B = 9000 : 12.13
OVERALL AVG TIME FOR B = 10000 : 11.545
OVERALL AVG TIME FOR B = 11000 : 11.3797
OVERALL AVG TIME FOR B = 12000 : 11.2784
OVERALL AVG TIME FOR B = 13000 : 11.5182
OVERALL AVG TIME FOR B = 14000 : 11.5301
OVERALL AVG TIME FOR B = 15000 : 11.4299
OVERALL AVG TIME FOR B = 16000 : 11.6549
OVERALL AVG TIME FOR B = 17000 : 11.5204
OVERALL AVG TIME FOR B = 18000 : 11.22
OVERALL AVG TIME FOR B = 19000 : 11.5674
OVERALL AVG TIME FOR B = 20000 : 11.6657
OVERALL AVG TIME FOR B = 21000 : 11.6239
OVERALL AVG TIME FOR B = 22000 : 11.6538
OVERALL AVG TIME FOR B = 23000 : 11.7173
OVERALL AVG TIME FOR B = 24000 : 11.699
OVERALL AVG TIME FOR B = 25000 : 11.3806
OVERALL AVG TIME FOR B = 26000 : 11.4969
OVERALL AVG TIME FOR B = 27000 : 11.7
OVERALL AVG TIME FOR B = 28000 : 11.7347
OVERALL AVG TIME FOR B = 29000 : 11.463
OVERALL AVG TIME FOR B = 30000 : 11.6779
OVERALL AVG TIME FOR B = 31000 : 12.4543
OVERALL AVG TIME FOR B = 32000 : 11.4905
OVERALL AVG TIME FOR B = 33000 : 11.762
OVERALL AVG TIME FOR B = 34000 : 11.6728
OVERALL AVG TIME FOR B = 35000 : 11.5483
OVERALL AVG TIME FOR B = 36000 : 11.6768
OVERALL AVG TIME FOR B = 37000 : 11.6528
OVERALL AVG TIME FOR B = 38000 : 11.577
OVERALL AVG TIME FOR B = 39000 : 11.5266

OVERALL AVG TIME FOR B = 40000 : 11.6389
OVERALL AVG TIME FOR B = 41000 : 12.2291
OVERALL AVG TIME FOR B = 42000 : 11.5682
OVERALL AVG TIME FOR B = 43000 : 12.3703
OVERALL AVG TIME FOR B = 44000 : 12.6029
OVERALL AVG TIME FOR B = 45000 : 11.5868
OVERALL AVG TIME FOR B = 46000 : 11.8927
OVERALL AVG TIME FOR B = 47000 : 12.373
OVERALL AVG TIME FOR B = 48000 : 12.1011
OVERALL AVG TIME FOR B = 49000 : 11.8161
OVERALL AVG TIME FOR B = 50000 : 12.1161
OVERALL AVG TIME FOR B = 51000 : 12.0457
OVERALL AVG TIME FOR B = 52000 : 11.8945
OVERALL AVG TIME FOR B = 53000 : 13.4324
OVERALL AVG TIME FOR B = 54000 : 11.7785
OVERALL AVG TIME FOR B = 55000 : 11.7114
OVERALL AVG TIME FOR B = 56000 : 12.0558
OVERALL AVG TIME FOR B = 57000 : 11.6267
OVERALL AVG TIME FOR B = 58000 : 11.9518
OVERALL AVG TIME FOR B = 59000 : 12.4524
OVERALL AVG TIME FOR B = 60000 : 12.4045
OVERALL AVG TIME FOR B = 61000 : 12.326
OVERALL AVG TIME FOR B = 62000 : 11.8266
OVERALL AVG TIME FOR B = 63000 : 11.8702
OVERALL AVG TIME FOR B = 64000 : 11.7621
OVERALL AVG TIME FOR B = 65000 : 12.0379
OVERALL AVG TIME FOR B = 66000 : 11.6487
OVERALL AVG TIME FOR B = 67000 : 12.31
OVERALL AVG TIME FOR B = 68000 : 12.4182
OVERALL AVG TIME FOR B = 69000 : 13.3228
OVERALL AVG TIME FOR B = 70000 : 11.6419
OVERALL AVG TIME FOR B = 71000 : 11.721
OVERALL AVG TIME FOR B = 72000 : 12.2027
OVERALL AVG TIME FOR B = 73000 : 11.6205
OVERALL AVG TIME FOR B = 74000 : 11.7926
OVERALL AVG TIME FOR B = 75000 : 12.3935
OVERALL AVG TIME FOR B = 76000 : 12.4375
OVERALL AVG TIME FOR B = 77000 : 11.8294
OVERALL AVG TIME FOR B = 78000 : 12.5362
OVERALL AVG TIME FOR B = 79000 : 12.5769
OVERALL AVG TIME FOR B = 80000 : 12.4402
OVERALL AVG TIME FOR B = 81000 : 11.8981
OVERALL AVG TIME FOR B = 82000 : 12.0209
OVERALL AVG TIME FOR B = 83000 : 11.8009
OVERALL AVG TIME FOR B = 84000 : 11.6722
OVERALL AVG TIME FOR B = 85000 : 11.94
OVERALL AVG TIME FOR B = 86000 : 11.6836
OVERALL AVG TIME FOR B = 87000 : 11.9152
OVERALL AVG TIME FOR B = 88000 : 11.8243

OVERALL AVG TIME FOR B = 89000 : 11.982
OVERALL AVG TIME FOR B = 90000 : 11.667
OVERALL AVG TIME FOR B = 91000 : 11.8057
OVERALL AVG TIME FOR B = 92000 : 11.8555
OVERALL AVG TIME FOR B = 93000 : 12.3331
OVERALL AVG TIME FOR B = 94000 : 11.8745
OVERALL AVG TIME FOR B = 95000 : 11.6442
OVERALL AVG TIME FOR B = 96000 : 11.6853
OVERALL AVG TIME FOR B = 97000 : 11.6766
OVERALL AVG TIME FOR B = 98000 : 11.9796
OVERALL AVG TIME FOR B = 99000 : 11.7041
OVERALL AVG TIME FOR B = 100000 : 11.9551
DETERMINED OPTIMAL BUCKET SIZE TO BE 2000
LOAD FACTOR 0.2