Assignment 4

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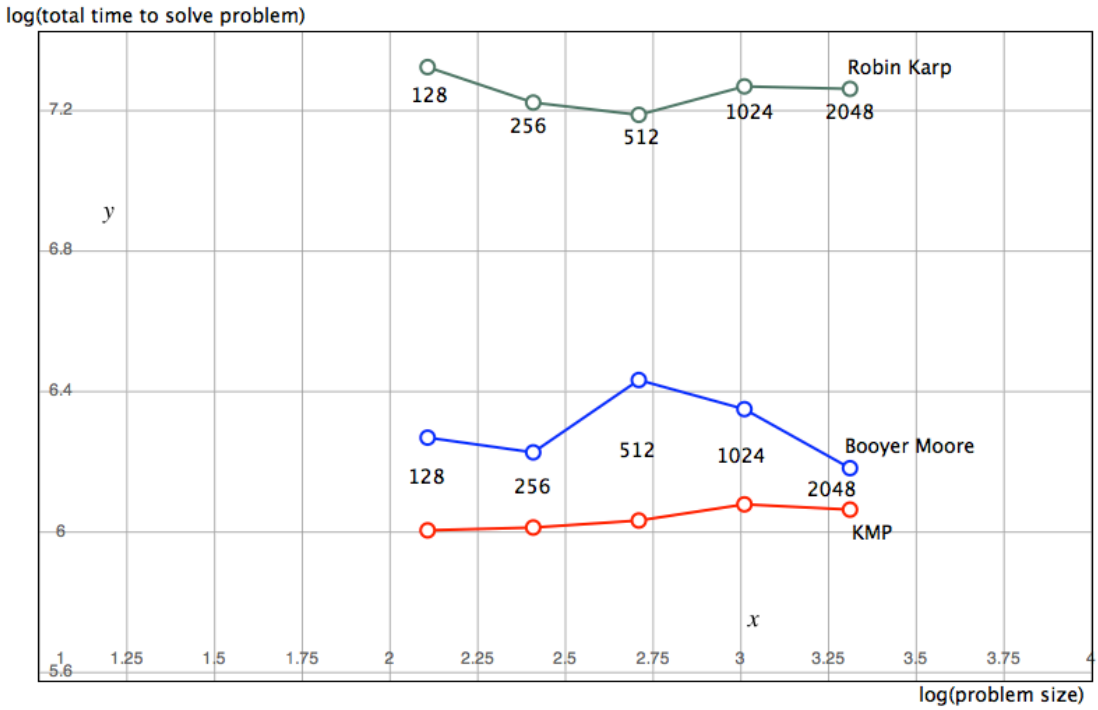
What is the run time as a function of problem size?

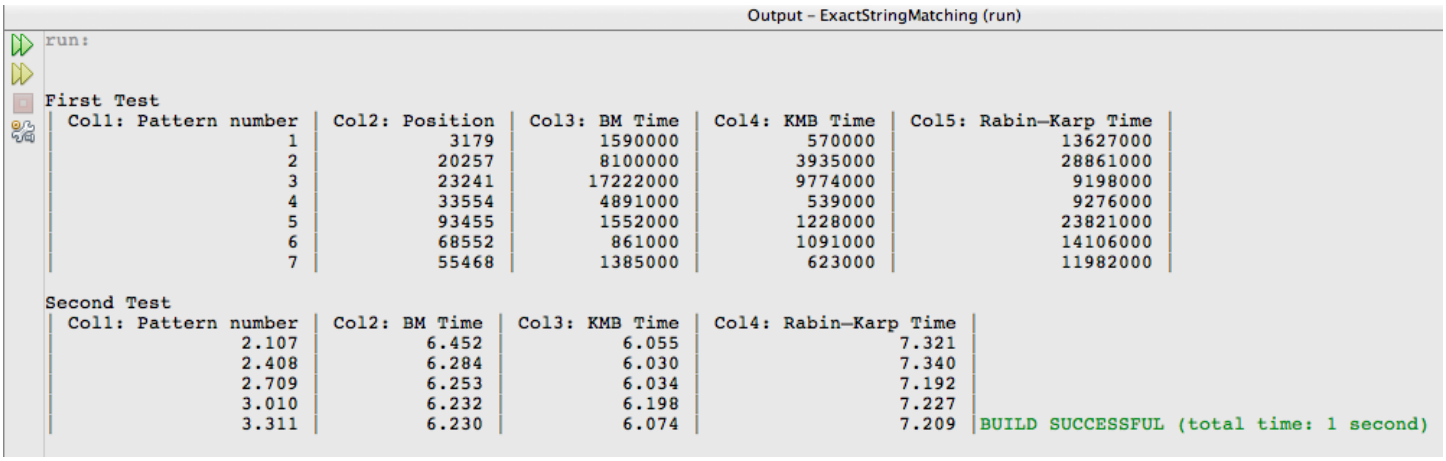
In my opinion, for the run times of these three algorithms slightly fluctuate but it is approximately the same for all problem sizes.

Provide you a short analysis for the result that explains any differences in performance between the algorithms.

First of all, KMP algorithm shows the best performance in comparison to the others. In addition, the total run time of the algorithm remains approximately constant when the problem size increases. On the other hand, Booyer Moore algorithm has worse throughput than KMP but still better than Robin Karp. It performs better for small and large patterns. Finally, Robin Karp has the longest run time. It shows a slightly worse performance for large and small patterns but approximately it remains the same for all lengths of patterns.

log/log Polt




Output – ExactStringMatching (run)
run:
First Test
Col1: Pattern number	Col2: Position	Col3: BM Time	Col4: KMB Time	Col5: Rabin–Karp Time
1	3179	1590000	570000	13627000
2	20257	8100000	3935000	28861000
3	23241	17222000	9774000	9198000
4	33554	4891000	539000	9276000
5	93455	1552000	1228000	23821000
6	68552	861000	1091000	14106000
7	55468	1385000	623000	11982000
Second Test
Col1: Pattern number	Col2: BM Time	Col3: KMB Time	Col4: Rabin–Karp Time
2.107	6.452	6.055	7.321
2.408	6.284	6.030	7.340
2.709	6.253	6.034	7.192
3.010	6.232	6.198	7.227
3.311	6.230	6.074	7.209
BUILD SUCCESSFUL (total time: 1 second)