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Lab 1 report
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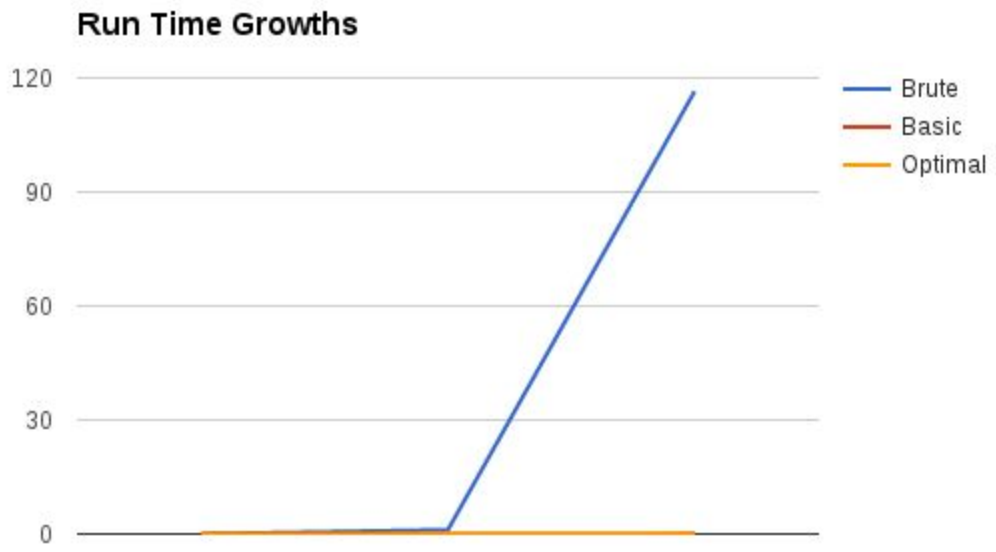
Lab 1 Scalability Report

Run time

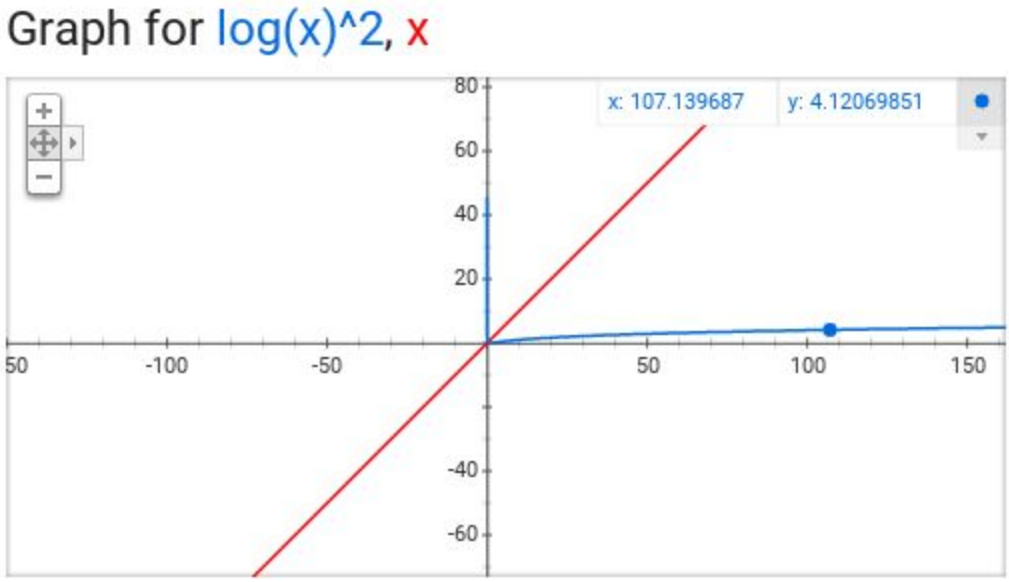
Data Size	Brute	Basic	Optimal
10^2	0.01481699944	0.0007419586182	0.0006711483002
10^3	1.107406855	0.006954908371	0.005559921265
10^4	116.4898551	0.06840991974	0.07798695564
10^5	Taking too long	0.9172208309	1.078680992



From the chart we can observe that the the run time for brute method grows significantly as the size of data grows

However, the growths of run time for basic and optimal methods grow a lot less significantly as the size of data grows.

This is due to that the basic method has a time complexity of n^2, compared to which, basic method has a time complexity of n*(logn)^2. (Logn)^2 has a significantly slower growth rate than n, as shown below:



From the run time comparison chart we can observe that optimal method is the fastest. This is because it has a time complexity of n*(logn). From the comparison below we can easily see that logn grows a lot slower than (logn)^2 does: