

Code Fragment	Sample Size 10	Sample Size 20	Sample Size 30	Sample Size 50	Sample Size 75	Sample Size 100	BigO Analysis				
#1	0.0208012	0.0389645	0.047162	0.0996694	0.1351637	0.1922823	O(n)				
#2	0.0102737	0.0184771	0.0178878	0.0492804	0.0676336	0.0912669	O(n)				
#3	0.2041555	0.7265698	1.5255256	4.7615733	10.7561997	18.5982977	O(n^2)				
#4	0.0409988	0.1232257	0.118517	0.1150625	0.2839366	0.3674944	O(n)				
#5	1.713896	14.0767852	42.1595383	232.2062567	797.6001764	1291.342342	O(n^3)				
#6	0.0831964	0.3080266	0.8080384	2.3129707	5.4556581	5.4571587	O(n^2)				
#7	0.0071773	0.0102748	0.0101659	0.0098695	0.0138162	0.0073459	O(log(n))				

Observations regarding actual running time and BigO analysis:

The BigO analysis holds true as the linears are all slower than the logarithmic algorithm. There is some variation within the linear algorithms however, this can be attributed to the differences between them.

All of the linear functions are faster than the polynomial algorithms which is expected. Overall, the BigO analysis appears to hold true across all sample sizes at least for this test.

Based off the results we can assume that an logarithmic algorithm would be faster in most usecases when compared to other algorithms except for a constant runtime which was not tested in this lab.