Assignement5_Report

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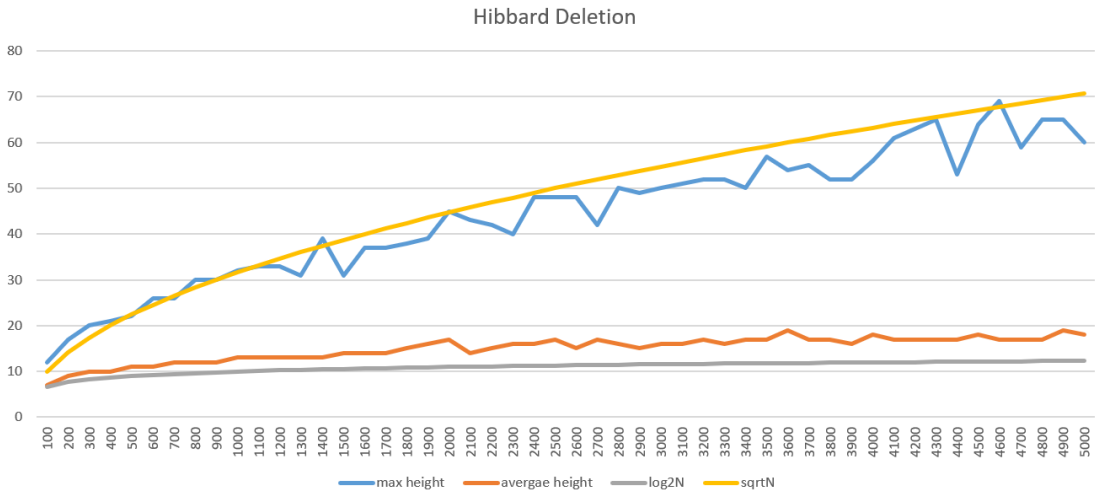
Observation

A. Data Result

Statistic of max tree height which is real height of Binary Search Tree and average tree height which is same meaning to average internal path length, based on node number N from 100 to 5000 with each gap of 100.

	N	Max	Average	log2N	sqrtN
2	100	12	7	6.64385619	10
3	200	17	9	7.64385619	14.14213562
4	300	20	10	8.22881869	17.32050808
5	400	21	10	8.64385619	20
6	500	22	11	8.965784285	22.36067977
7	600	26	11	9.22881869	24.49489743
8	700	26	12	9.451211112	26.45751311
9	800	30	12	9.64385619	28.28427125
10	900	30	12	9.813781191	30
11	1000	32	13	9.965784285	31.6227766
12	1100	33	13	10.10328781	33.1662479
13	1200	33	13	10.22881869	34.64101615
14	1300	31	13	10.34429591	36.05551275
15	1400	39	13	10.45121111	37.41657387
16	1500	31	14	10.55074679	38.72983346

B. Plot



With the increase of N, we can find that **the height of Binary Search Tree is clearly approaching to** $\sqrt{N}$ and **the average internal path length is approaching to** $log_2 N$.