LP-5 Report

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This report collates and evaluates the run time of our implementation of Range Minimum Query using Hybrid One approach and Fischer-Heun algorithm.

The table below shows the space and time complexity for RMQ for Hybrid methods based on randomly generated input array.

Tests for Hybrid method - N = 100000000

Range Size	Preprocessing Time		Query Time	
	Time	Memory	Time	Memory
1M	884397 usec	9916 MB / 16696 MB	3328 usec	9916 MB / 16696 MB
10M	1075915 usec	9936 MB / 15752 MB	12071 usec	9936 MB / 15752 MB
20M	1117397 usec	9920 MB / 15896 MB	17107 usec	9920 MB / 15896 MB
50M	941279 usec	9888 MB / 16264 MB	28939 usec	9888 MB / 16264 MB
80M	1005420 usec	9904 MB / 16128 MB	61955 usec	9904 MB / 16128 MB

The table below shows the space and time complexity for RMQ for Fischer-Heun methods based on randomly generated input array.

Tests for Fischer-Heun - N = 100000000

Range Size	Preprocessing Time		Query Time	
	Time	Memory	Time	Memory
1M	1061733 usec	10020 MB / 15816 MB	4282 usec	10024 MB / 15816 MB
10M	1064754 usec	9976 MB / 17976 MB	29715 usec	9984 MB / 17976 MB
20M	1331952 usec	10016 MB / 16376 MB	41595 usec	10020 MB / 16376 MB
50M	1226993 usec	9972 MB / 15168 MB	62976 usec	9980 MB / 16632 MB
80M	1332692 usec	9519 MB / 14720 MB	89146 usec	10016 MB / 16696 MB

The above complexity values shows us that how RMQ decreases the query time when using preprocessing with both, Hybrid One approach and Fischer-Heun Algorithm.