**Report (SP5)**

**Group : g39**

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**Q1. Comparison of performance of the two versions of partition discussed in class on the running time of Quick sort.**

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| --- | --- | --- | --- |
| Array Type | n | Time to quicksort by Partition 1 | Time to quicksort by Partition 2 |
| Random | 300000 | 125 msec. | 78 msec. |
| Descending | 300000 | 47 msec | 62 msec |
| Random | 200000 | 109 msec. | 62 msec. |
| Descending | 200000 | 32 msec. | 46 msec. |
| Random | 1000000 | 360 msec. | 250 msec. |
| Descending | 1000000 | 187 msec. | 187 msec. |
| Random | 1500000 | 437 msec. | 359 msec. |
| Descending | 1500000 | 266 msec. | 266 msec. |

Observation:

Algorithm 2 gives significant performance improvement for arrays with randomly sorted numbers of any size.

However, when the array is sorted in descending order, it performs poorly for small sizes but gives comparable performance as algorithm 1 for larger sizes.