Name: Yahia Ali sec: 2 B.N.: 32

Time for each Algorithm:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Algorithm** | **1000** | | **5000** | | **10000** | | **50000** | | **75000** | | **100000** | | **500000** | |
| **Selection sort** | 1 | 1 | 30 | 29 | 165 | 170 | 3049 | 3266 | 6789 | 6987 | 12015 | 12159 | 305825 | 300817 |
| **Insertion sort** | 0 | 0 | 17 | 0 | 113 | 0 | 1850 | 0 | 4083 | 0 | 7160 | 0 | 194180 | 1 |
| **Merge sort** | 0 | 1 | 0 | 0 | 1 | 3 | 9 | 14 | 15 | 23 | 29 | 25 | 151 | 94 |
| **Quick sort** | 0 | 0 | 0 | 0 | 4 | 0 | 13 | 10 | 20 | 13 | 28 | 16 | 125 | 64 |
| **Heap sort** | 0 | 0 | 1 | 1 | 3 | 2 | 18 | 20 | 28 | 46 | 53 | 117 | 345 | 202 |
| **Hybrid** | 0 | 0 | 0 | 0 | 2 | 0 | 14 | 4 | 22 | 8 | 25 | 16 | 112 | 29 |

I think graph by this way maybe don’t look clear (because most of them are so small compare to selection) so I take log for all values and represent it in another graph, Hoping it will be clearer.

|  |  |
| --- | --- |
| If data is unsorted | If data is sorted |