The following is the outputted as shown by the tester class.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Array size | 10,000 | 100,000 | 1,000,000 | 10,000,000 | 100,000,000 |
| Total time of QS1 (s) | .005 | .026 | .18 | 1.849 | 21.397 |
| Total time of QS2 (s) | .026 | .059 | .391 | 4.383 | 42.167 |
| Comparisons in QS1 | 152161 | 2047659 | 24219196 | 288115031 | 3391167852 |
| Comparisons in QS2 | 332336 | 4383513 | 55495225 | 682634694 | 7906442133 |

Other practical improvements I can make is to change the base case in qs2 so it's not n = 1 (start == end).

Instead, I can change it to a base case, for example, of (end - start) < 10.

This creates less recursive calls, improving the speed. That would help my qs2 run faster, because as the results above show, qs2 runs slower than qs1. I think this is because of my base case which is too low.

Additionally, although qs2 is in theory supposed to be faster, the constant for it is probably higher which causes it to run slower in actual implementation.