Task1

|  |  |  |
| --- | --- | --- |
|  | Time (seconds) | |
| n | Merge Sort | Quick Sort |
| 10000 | 0.02819109 | 0.03145003 |
| 20000 | 0.07273102 | 0.07678580 |
| 50000 | 0.16363263 | 0.13595414 |
| 100000 | 0.38811517 | 0.34822416 |
| 200000 | 0.75879979 | 0.75690055 |
| 500000 | 1.99123311 | 2.38335943 |
| 1000000 | 4.85009551 | 4.60331011 |
| 2000000 | 9.80773830 | 10.39763403 |
| 5000000 | 24.07270074 | 28.89921093 |
| 10000000 | 50.80759454 | 66.28904057 |
| 20000000 | 103.61846042 | 144.63130212 |
| 50000000 | 264.43835258 | 409.03151798 |
| 100000000 | 572.87524867 | Over 600 |
| 200000000 |  |  |
| 500000000 |  |  |
| 1000000000 |  |  |
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this calculates the real time though (including time used by other programs) so it will seem to take more time when your computer is busy doing other stuff

Task2

|  |  |
| --- | --- |
| n | Time (seconds) |
| 2 | 0.00005841 |
| 4 | 0.00018287 |
| 8 | 0.00238442 |
| 16 | 0.86192369 |

Task3

|  |  |  |
| --- | --- | --- |
|  | Time (seconds) | |
| n | Classical | Strassen’s Matrix Multiplication |
| 2 | 0.00004220 | 0.00001621 |
| 4 | 0.00021482 | 0.00034332 |
| 8 | 0.00075316 | 0.00245953 |
| 16 | 0.00498009 | 0.01063561 |
| 32 | 0.04343510 | 0.06177974 |
| 64 | 0.36756277 | 0.47788692 |
| 128 | 2.80645299 | 2.77945447 |
| 256 | 23.38873553 | 20.74669933 |
| 512 | 189.44615912 | 138.55049610 |
| 1024 | Over 600 | Over 600 |
| 2048 |  |  |
| 4096 |  |  |
| 8192 |  |  |
| 16384 |  |  |
| 32768 |  |  |
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