**Lab 3**

1)

Part 1) 500 + 5logn = Θ(logn)

Part 2) 5000 = Θ(1)

Part 3) 500n + n+5logn+50n = Θ(n)

Part 4) 5nlogn + 2n + 300n50 = Θ(2n)

4)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Array length | 10 | 100 | 1,000 | 10,000 | 100,000 | 106 |  |  |
| Sorting time (sec) | 0.0 | 0.0 | 0.06328392028808594 | 3.9203052520751953 | 422.46339559555054 | timeout | timeout | timeout |

5)

selection sort

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Array length | 10 | 100 | 1,000 | 10,000 | 100,000 | 106 |  |  |
| Sorting time (sec) | 0.0 | 0.0 | 0.06328392028808594 | 3.9203052520751953 | 422.46339559555054 | timeout | timeout | timeout |

insertion sort

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Array length | 10 | 100 | 1,000 | 10,000 | 100,000 | 106 |  |  |
| Sorting time (sec) | 0.0 | 0.0 | 0.026964664459228516 | 2.477370500564575 |  | timeout | timeout | timeout |