|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | T(n) ≈ 𝑎 𝑛𝒃, (a=1.0, b = 1.90)  Selection sort O(N2) | | | T(n) ≈ 𝑎 𝑛𝒃, (a=1.0, b = 1.05)  Quick sort O(N log N) | | |
| N | 10,000 | Million | Billion | 10,000 | Million | Billion |
| My computer | 0.129s | 813.934974s  ~= 14 mins | 407,933,818.163563s  ~=13 years | 0.001645s | 0.207093s | 292.526963s  ~=5 mins |

**Selection sort**

T(n) = a

T(10,000) = 1.0 = 0.129

T(20,000) = 1.0 = 0.482

=

=

b =

b = 1.9016620… 1.90

Check

T(10,000) = 1.0 = 0.129

T(50,000) = 1.0 = x

=

x = 0.129 2.745571

profilingS의 T(50,000) 2.852

반올림과 소수점 2자리까지 끊는 것들이 지수의 계산이다 보니까 결과에 영향을 적지 않게 주는 것 같다

T(10,000) = 1.0 = 0.129

T(1,000,000) = 1.0 0.129 813.943974

T(1,000,000,000) = 1.0 0.129 407,933,818.161721

**Quick sort**

T(n) = a n^b

T(10,000) = 1.0 = 0.001645

T(20,000) = 1.0 = 0.0034

=

b =

b = 1.047447162… 1.05

Check

T(10,000) = 1.0 = 0.001645

T(50,000) = 1.0 = x

=

x = 0.001645 0.008914

profilingQ의 T(50,000) = 0.010448

T(1,000,000) = 1.0 0.001645 0.207093

T(1,000,000,000) = 1.0 0.001645 292.526963

