Worst-Case Time Complexity: The Big Picture

- On a computer running one billion operations per second ...

Input Size (n)	Time Complexity				
	n	$n \log_2 n$	n^2	n^3	2^n
10	$<.001$ second	$<.001$ second	$<.001$ second	$<.001$ second	$<.001$ second
20	$<.001$ second	$<.001$ second	$<.001$ second	$<.001$ second	.001 second
30	$<.001$ second	$<.001$ second	$<.001$ second	$<.001$ second	1 second
50	$<.001$ second	$<.001$ second	$<.001$ second	$<.001$ second	13 days
100	$<.001$ second	$<.001$ second	$<.001$ second	.001 second	4×10^{11} centuries
1000	$<.001$ second	$<.001$ second	.001 second	1 second	4×10^{282} centuries
100,000	$<.001$ second	.002 second	10 seconds	11.57 days	–
one million	.001 second	.02 second	1.67 minutes	32 years	–
ten million	.01 second	0.24 second	1.2 days	317 centuries	–
one billion	1 second	30 seconds	32 years	4×10^8 centuries	–
100 billion	1.67 minutes	1 hour	3171 centuries	4×10^{14} centuries	–

Worst-Case Space Complexity: The Big Picture

Input Size (n)	Space Complexity				
	n	$n \log_2 n$	n^2	n^3	2^n
10	< 1 kB	< 1 kB	< 1 kB	1 kB	1 kB
20	< 1 kB	< 1 kB	< 1 kB	8 kB	1 mB
30	< 1 kB	< 1 kB	< 1 kB	27 kB	1 gB
50	< 1 kB	< 1 kB	2.5 kB	120 kB	1100 tB
100	< 1 kB	< 1 kB	10 kB	1 mB	2×10^{18} tB
1000	1 kB	10 kB	1 mB	1 gB	2×10^{289} tB
100,000	100 kB	1.7 mB	10 gB	1000 tB	–
one million	1 mB	20 mB	1 tB	10^6 tB	–
ten million	10 mB	230 mB	100 tB	10^9 tB	–
one billion	1 gB	30 gB	10^6 tB	10^{15} tB	–
100 billion	100 gB	3.7 tB	10^{10} tB	10^{21} tB	–

kB = kilobyte (10^3), mB = megabyte (10^6),
gB = gigabyte (10^9), tB = terabyte (10^{12})

- Above holds if storing very small integers ($-127 \leq x \leq 127$ or $0 \leq x \leq 255$); otherwise, if storing large integers or very small / large real numbers, multiple all figures above by 4 and 8, respectively.