

Python Data Structures

Computing

Which built-in to reach for, with the cost of the operations you will do.

Average-case cost of the common operations.

Structure	Lookup	Use when
list	$O(n)$ by value	Order matters, you append
tuple	$O(n)$	Fixed record, hashable
dict	$O(1)$ by key	Mapping keys to values
set	$O(1)$ membership	Uniqueness, fast 'in'
deque	$O(1)$ both ends	Queue or sliding window
heapq	$O(\log n)$ push/pop	Priority queue
Counter	$O(1)$	Counting occurrences

``x in a_list`` scans the whole list. ``x in a_set`` is a single hash lookup. In a loop that is the difference between $O(n^2)$ and $O(n)$.