

Big-O Notation

Objectives

Describe what Big-O means?

**Give different examples of
algorithms and their Big-O.**

How fast is the algorithm?



Big-O is the worst case.



$O(1)$ or Constant Time

Example: Accessing an element by the index.

Still $O(1)$

```
function print50nums() {  
    for (var i = 0; i < 50; i++) {  
        console.log(i);  
    }  
}
```

$O(n)$ or Linear Time

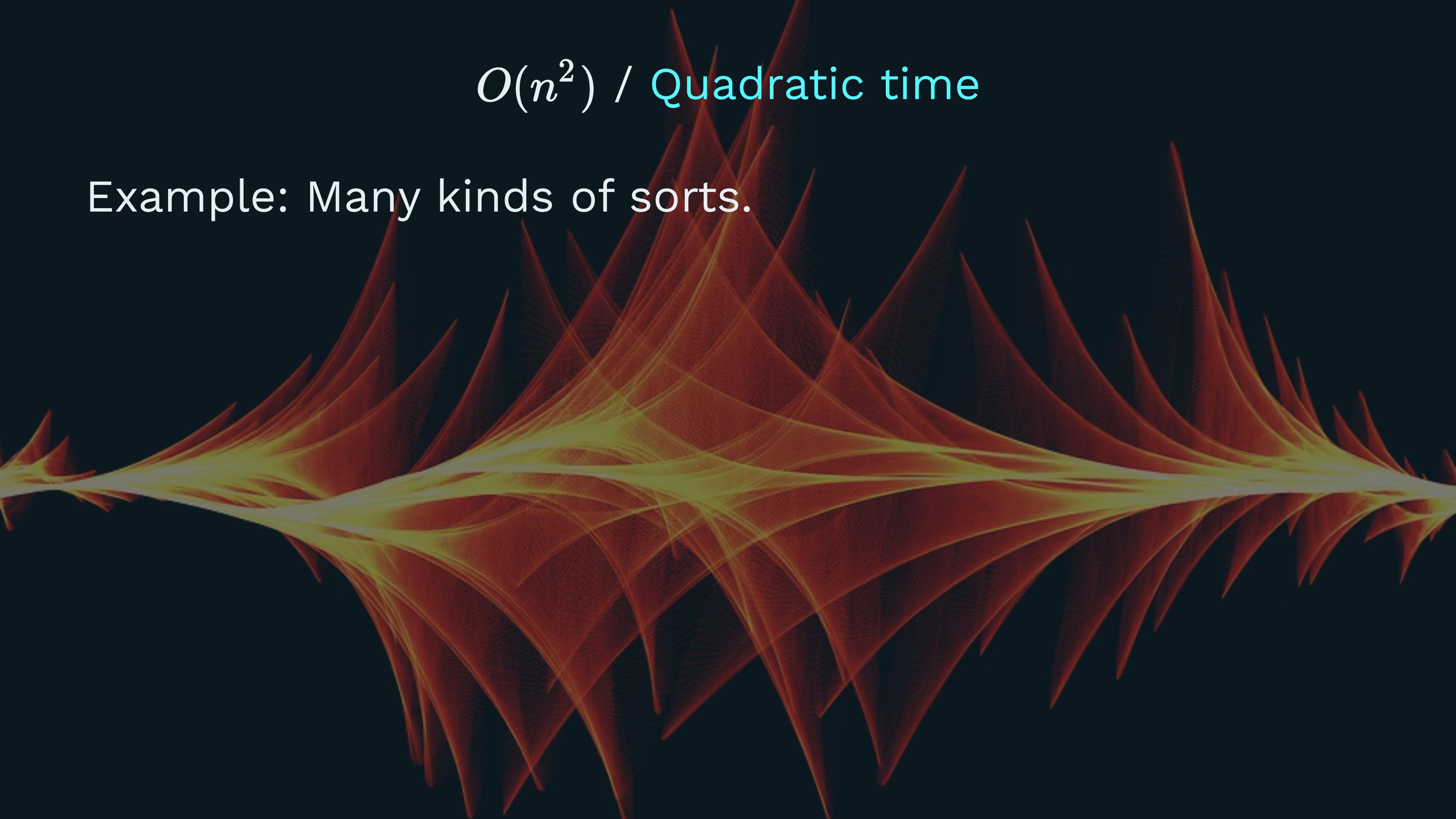
Example: Finding an item in an unsorted array.

$O(\log n)$ / Logarithmic time

Example: Binary Search

$O(n^2)$ / Quadratic time

Example: Many kinds of sorts.



Bubble Sort Folk Dance Video



a[0] a[1] a[2] a[3] a[4] a[5] a[6] a[7] a[8] a[9]



$O(nlg(n))$ / What about $nlg(n)$?

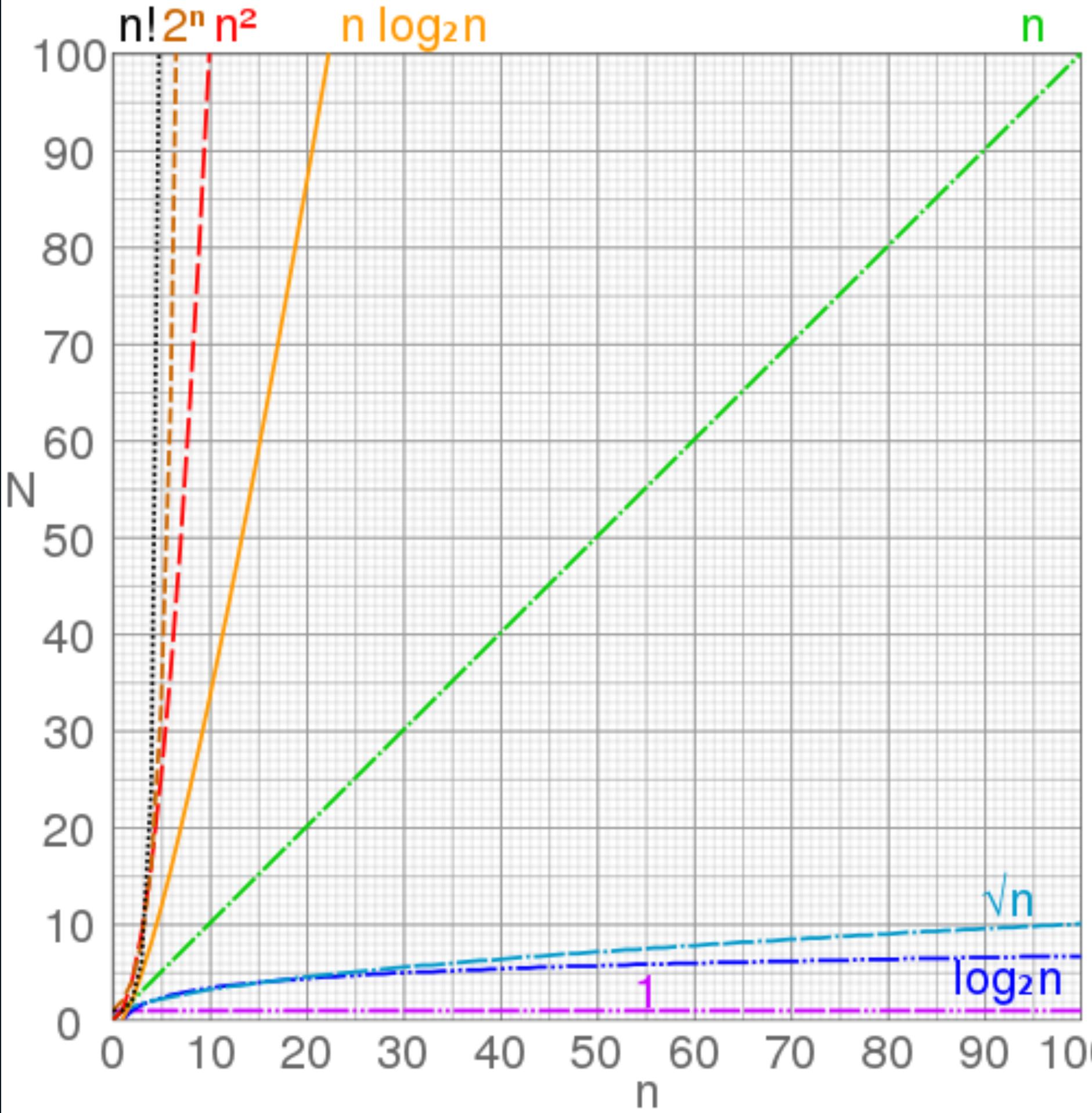
Example: Mergesort & Quicksort.



Mergesort Video







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