

A large pile of yellow cereal loops, likely cheerios, filling the entire frame.

BIG-O  
NOTATION

# OBJECTIVES

DESCRIBE WHAT BIG-O MEANS?

GIVE DIFFERENT EXAMPLES OF  
ALGORITHMS AND THEIR BIG-O.

A space shuttle is shown launching from a dark background, angled upwards towards the top right. It leaves a thick, bright white smoke trail that curves upwards and to the right. The shuttle has "USA" written on its side and a small American flag patch. The background is a deep black.

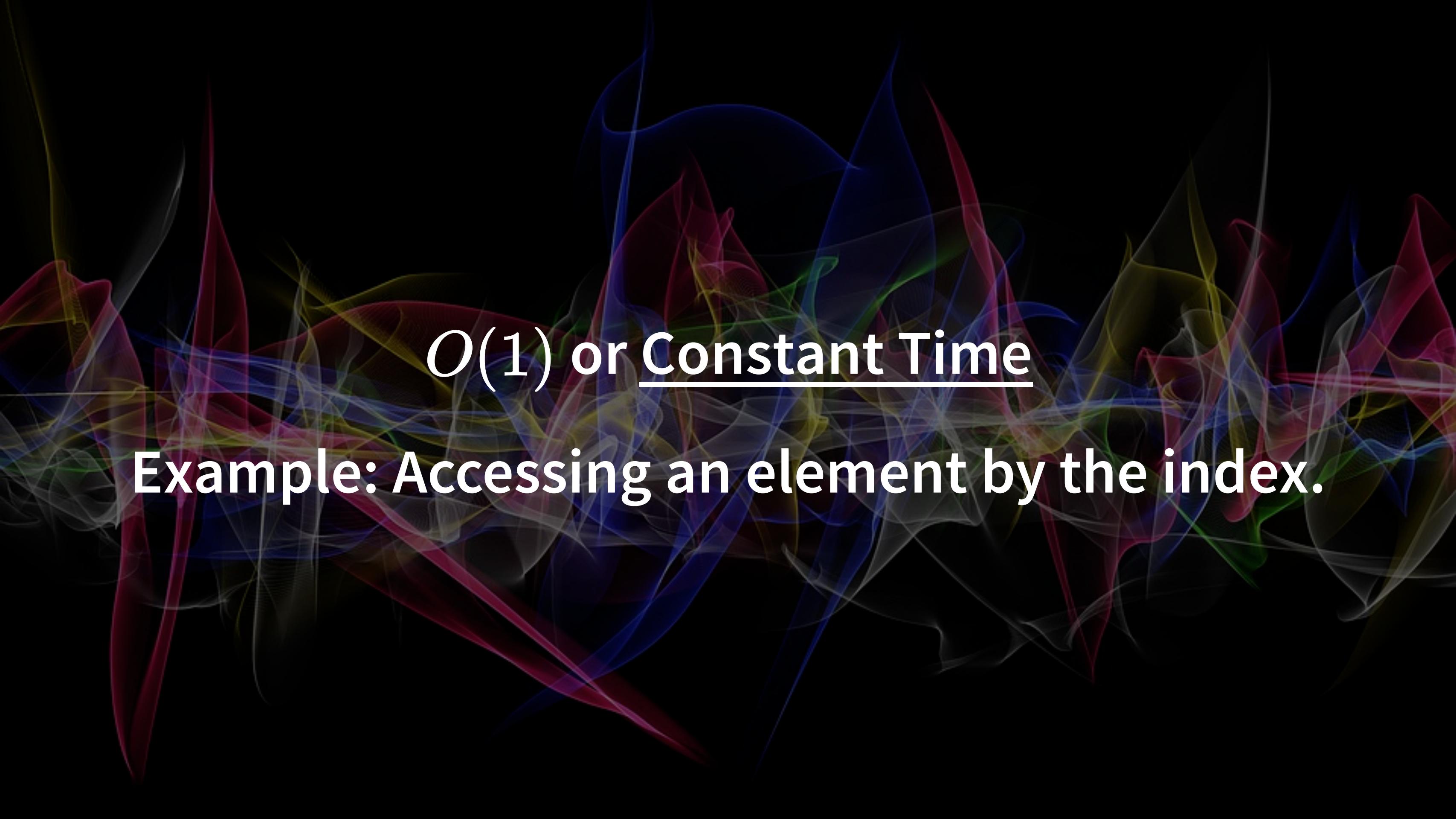
HOW FAST IS THE ALGORITHM?

A close-up photograph of a sea turtle, likely a green turtle, swimming in clear blue water. The turtle's head and front flipper are visible, showing its patterned skin and the texture of its scales. The background is a deep, dark blue.

BIG-O IS THE WORST CASE.

$O(n)$  or Linear Time

Example: Finding an item in an unsorted array.

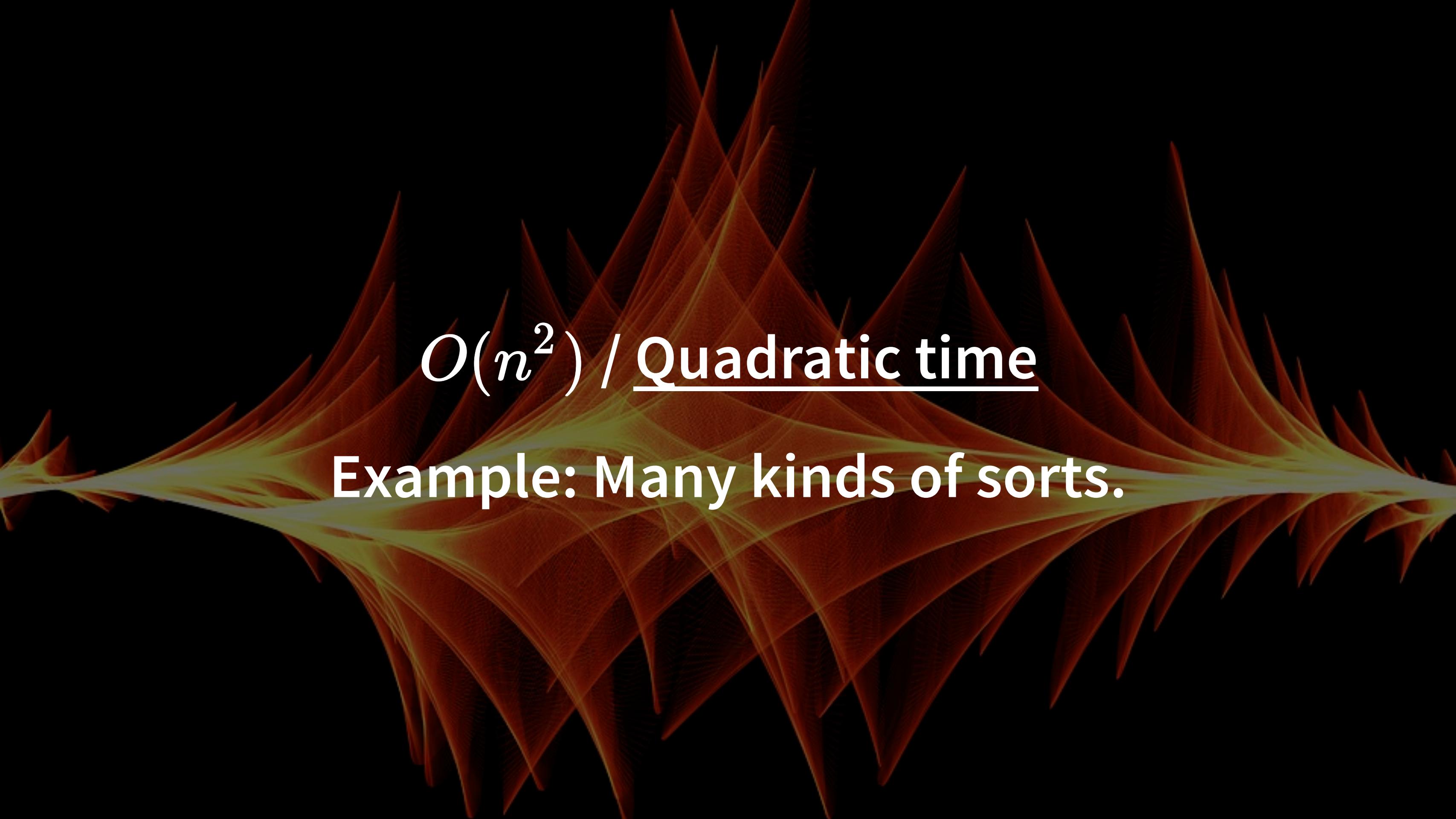


$O(1)$  or Constant Time

Example: Accessing an element by the index.

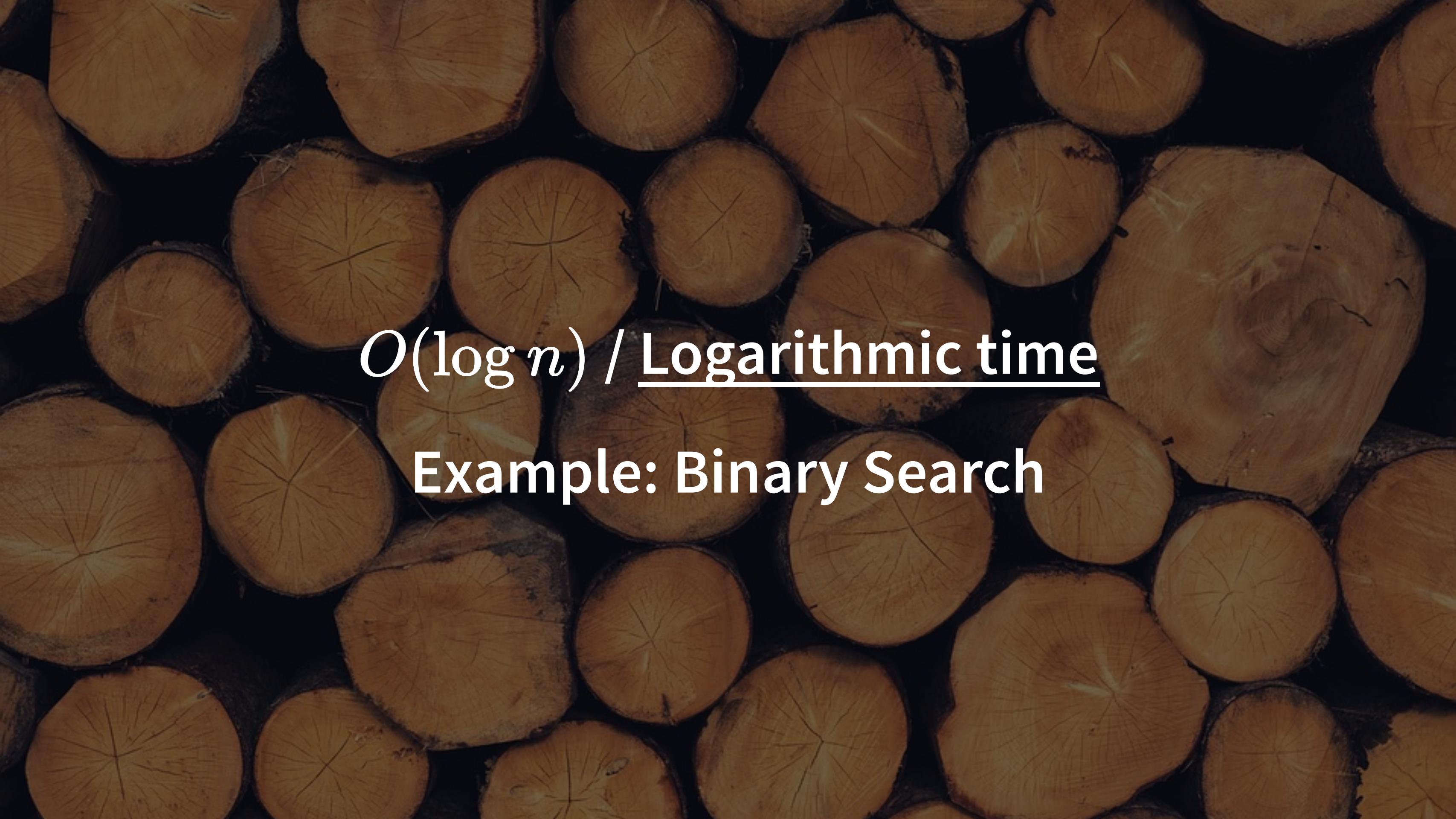
# Still $O(1)$

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

The background of the slide features a complex, abstract pattern of overlapping, curved bands in shades of orange, yellow, and red. These bands create a sense of depth and motion, resembling a stylized flower or a series of ripples. They are set against a solid black background.

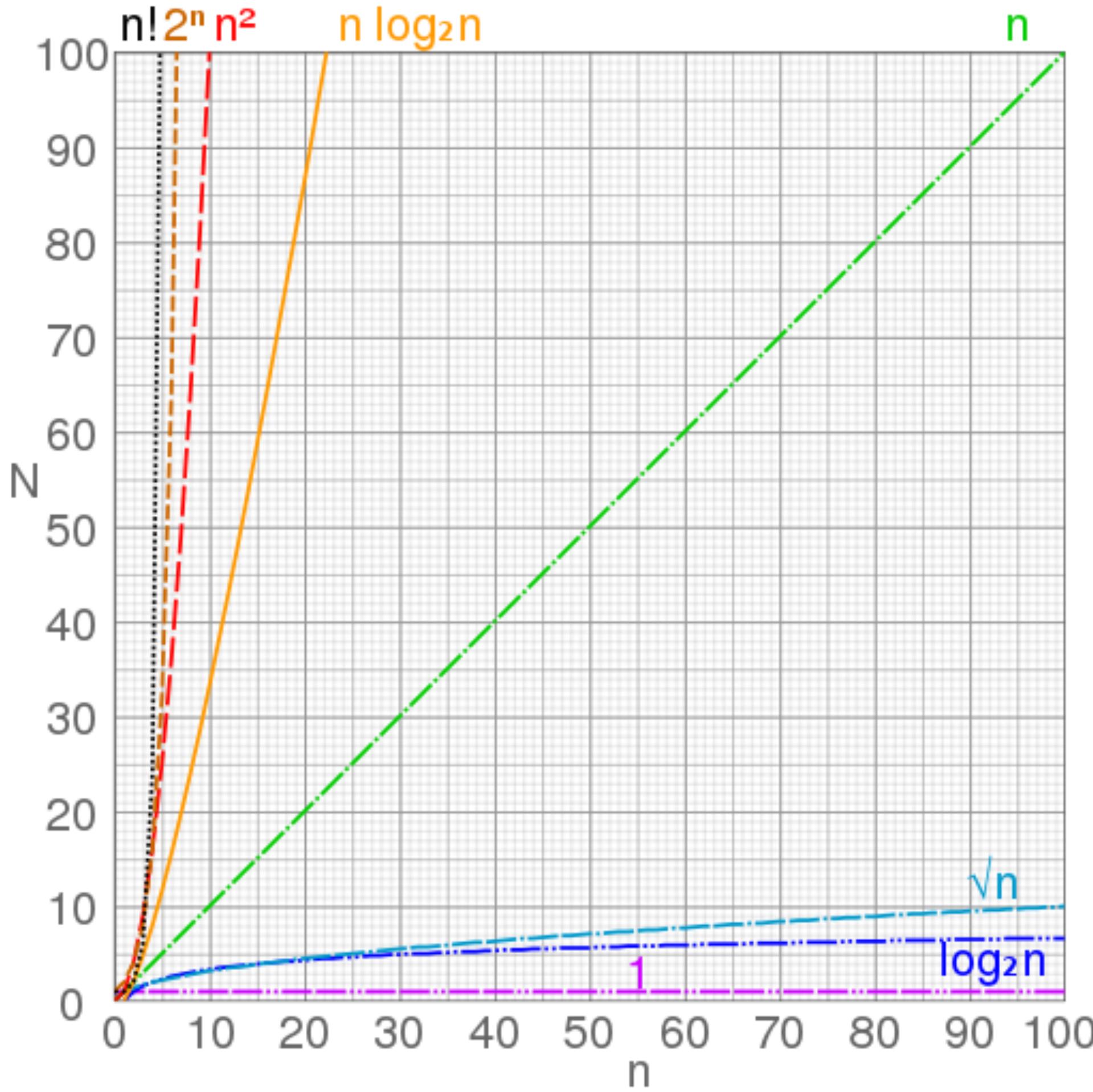
$O(n^2)$  / Quadratic time

Example: Many kinds of sorts.

The background of the slide features a close-up photograph of a large stack of cut logs. The logs are piled in several rows, showing their circular cross-sections. The wood has a warm, golden-brown color with visible grain patterns and some darker, charred areas from the cutting process.

$O(\log n)$  / Logarithmic time

Example: Binary Search



LOTS OF GREAT RESOURCES IN THE ARTICLE.



