

Efficiency

"best of
CS"

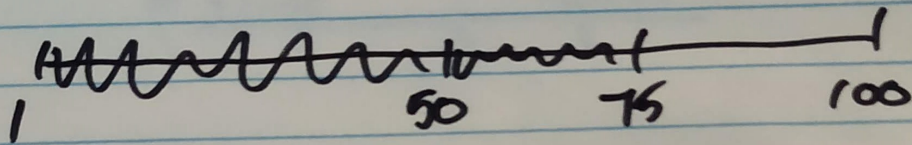
"best of
OOP"

"premature optimization is the
root of all evil"

- Don Knuth

670,000 lbs
- 50

Binary Search



linear search

50, 75, 88, 94, 97, 99, 100

$$\log_2(100) \approx 7$$

$$100 / 2 / 2 / 2 / 2 / 2 / 2 / 2 \leq 1$$

$$\log_2(n)$$

$$n \rightarrow \log_2(n)$$

1,000 → 10

1,000,000 → 20

1,000,000,000 → 30

1,000,000,000,000 → 40

Complexity

* time Δ space

Big - Oh Notation

$n \rightarrow \#$ of operations

n \rightarrow ~~$0.00063n^2 + 38n + 1$~~
 $\rightarrow O(n^2)$

```
public static void main(String[] args) {
```

```
int n = 10;
```

```
int[] arr = new int[n];
```

```
}
```

Complexity Classes

