

# NAME

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# Sorting with merge sort

$$T(E) = 2 t(E/2) + O(E)$$

Using master theory:

$$a = 2, b = 2$$

$$X = \log_b a = 1$$

$$N = f(E) = E$$

Second case of master theory achieved


$$T(E) = \theta(E \log E);$$

## For loops in the code

- ▶ First for with auto-increment runs in  $O(V)$
- ▶ Second composite for loop  $l$  with  $j$ , each one runs in  $vc.size$  and  $vc.length$  and  $vc.size$  a lot greater than  $vc.length$  and equals  $n$
- ▶ So the loop runs in  $O(V)$ .
- ▶ Final loop runs in  $O(E)$ .
- ➔ ▶ So the result runs in  $O(V) + \theta(E \log E)$ .