

## 11.4.5

# Running time of deterministic median selection

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A dance with recurrences

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From Lemma,

$$T(n) \leq T(\lceil n/5 \rceil) + T(\lfloor 7n/10 + 6 \rfloor) + O(n)$$

and

$$T(n) = O(1) \quad n < 10$$

**Exercise:** show that  $T(n) = O(n)$

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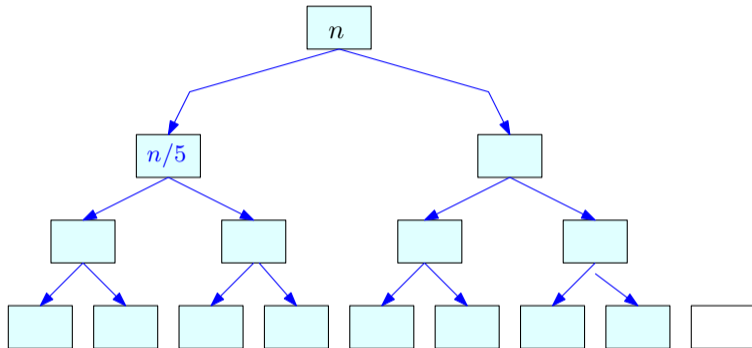
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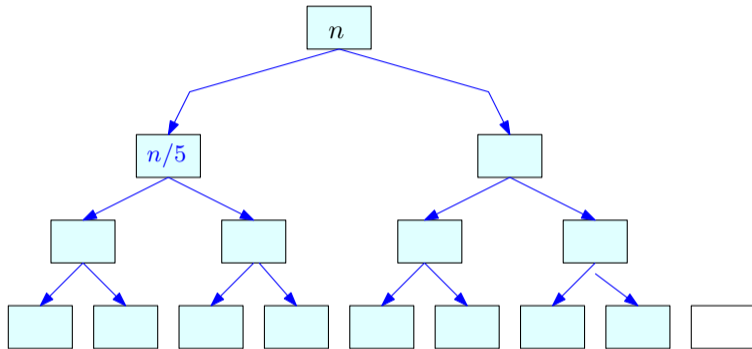
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# Recursion tree fill in



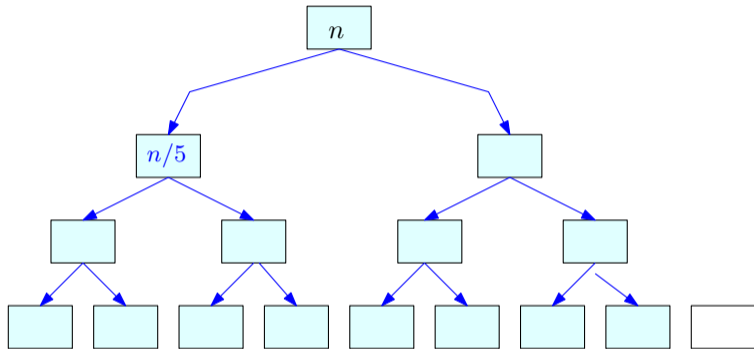


# Recursion tree fill in



$(1/25)n, (7/50)n, (7/50)n, (49/100)n$

# Recursion tree fill in



$(1/125)n, (7/250)n, (7/250)n, (49/500)n, (7/250)n, (49/500)n, (49/500)n,$   
 $(343/1000)n$



# THE END

...

# (for now)