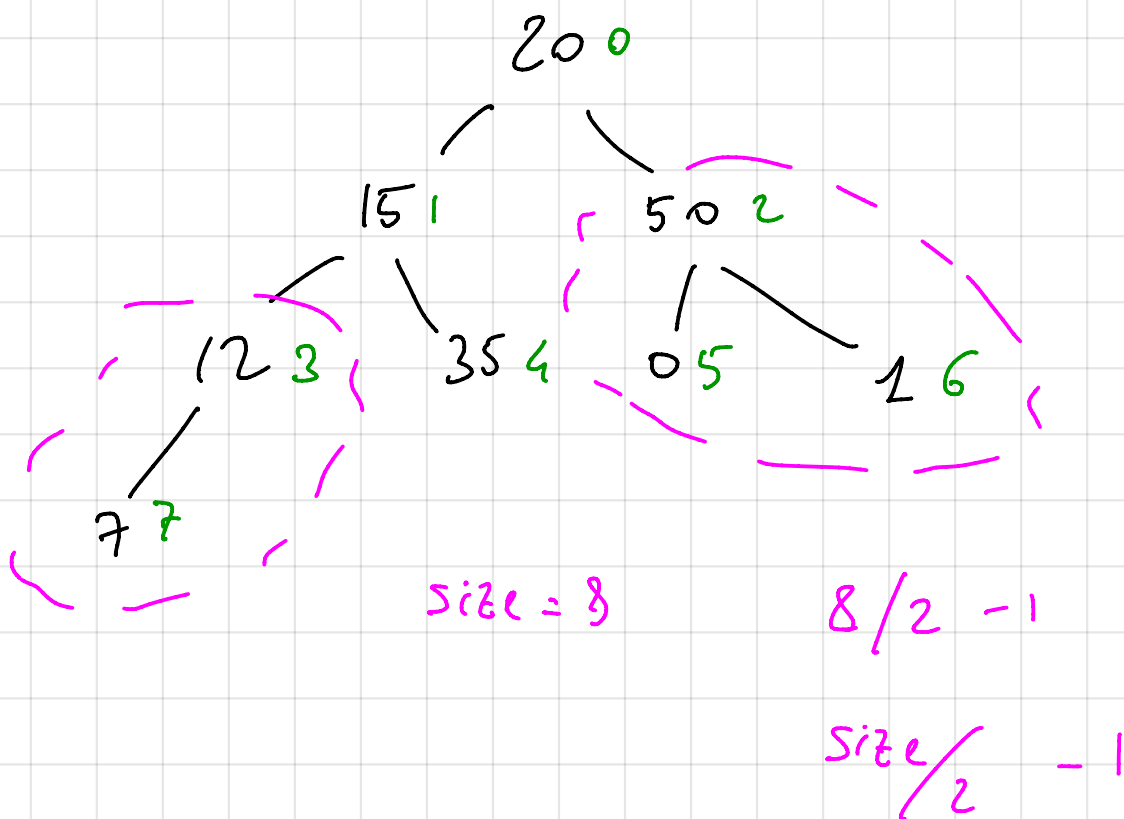
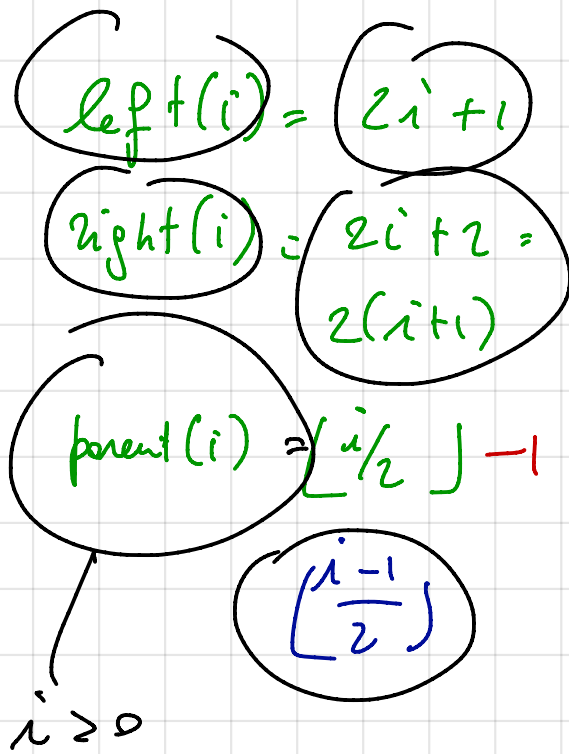
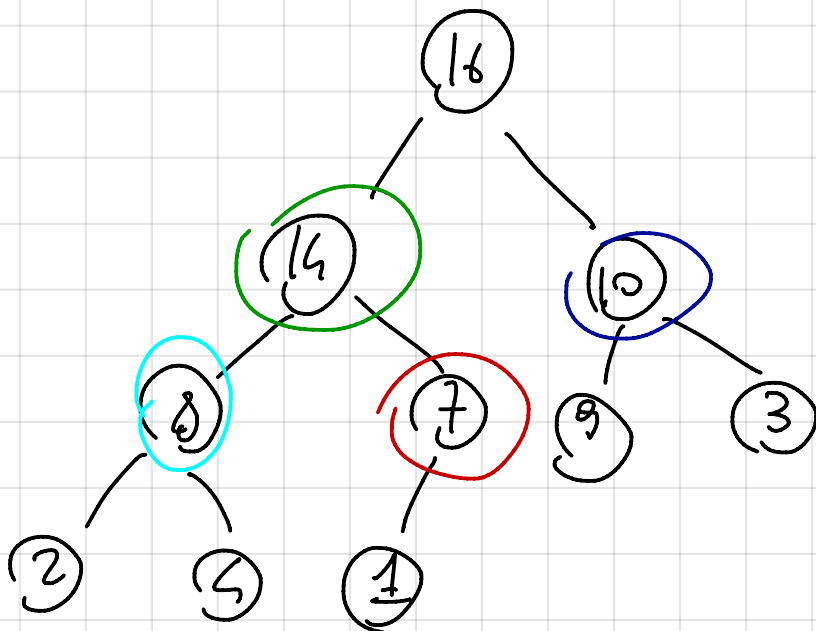
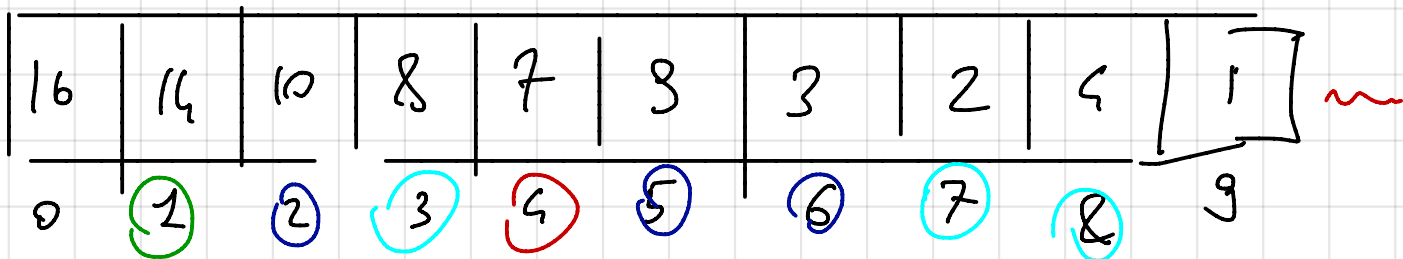
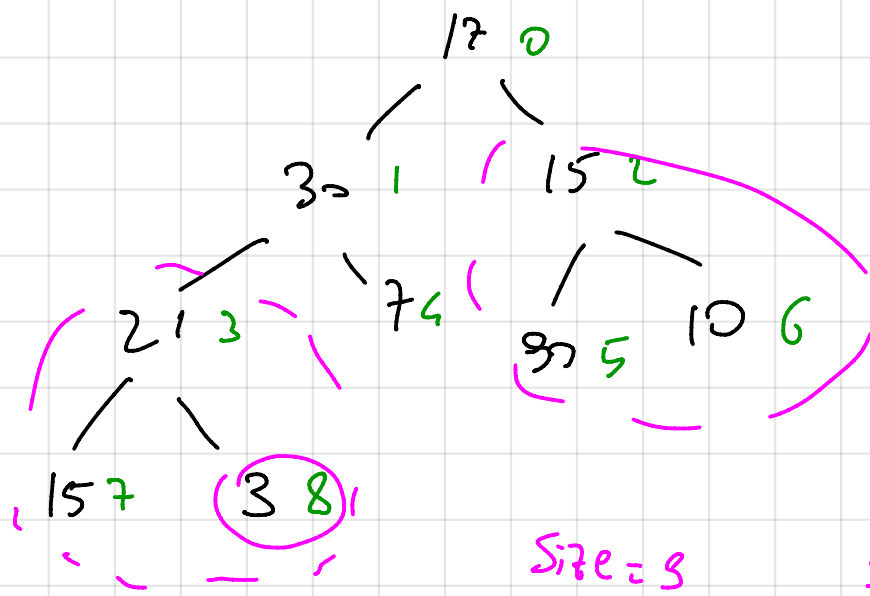


# HEAP





$$\frac{6}{2} = 1 \times 2 = 2, 5$$

$$\left\lfloor \frac{5}{2} \right\rfloor - 1$$

$$\left\lfloor \frac{\text{size}}{2} \right\rfloor - 1$$

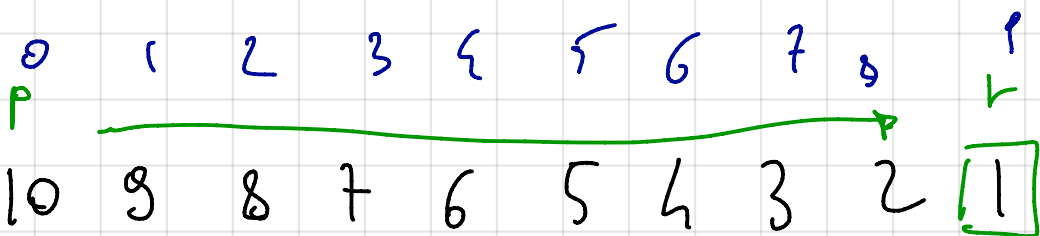
size = 5

$$5/2 \left\lfloor \frac{4, 5}{2} \right\rfloor - 1$$

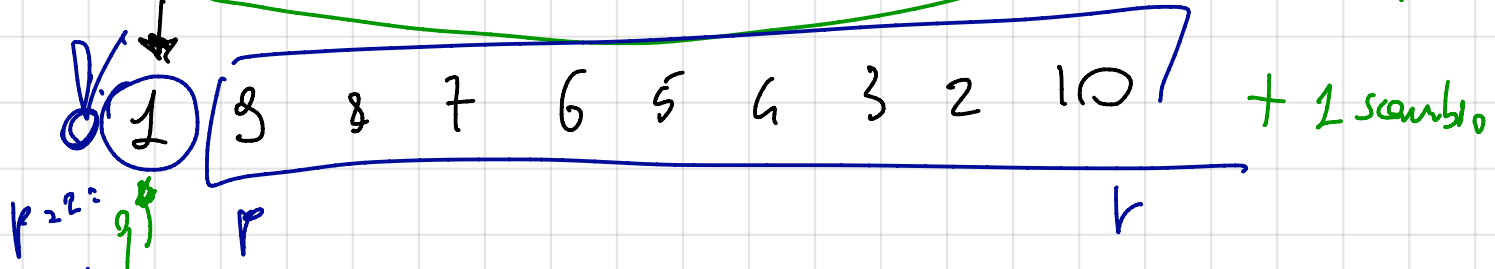
$$\left\lfloor \frac{(\text{size} - 1) - 1}{2} \right\rfloor = \left\lfloor \frac{\text{size} - 2}{2} \right\rfloor$$

$$\left\lfloor \frac{6 - 2}{2} \right\rfloor = \frac{4}{2} = 2$$

$$\left\lfloor \frac{5 - 2}{2} \right\rfloor = \left\lfloor \frac{3}{2} \right\rfloor = 1$$



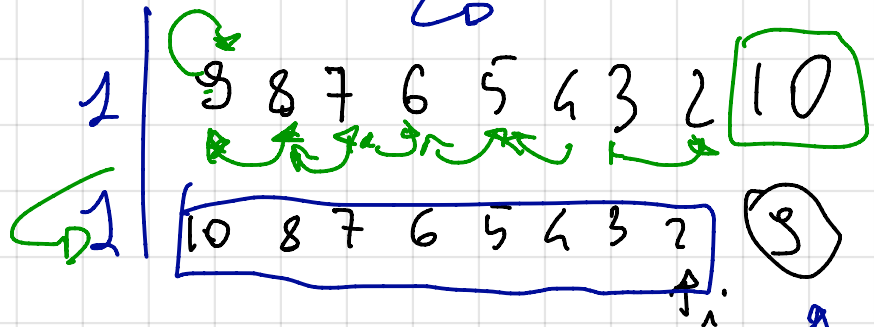
3 confronti  
0 scambi



+ 1 scambio

$quicksort(a, 0, -1) \leftarrow$  caso base della ricorsione

$quicksort(a, 1, 9) \leftarrow$

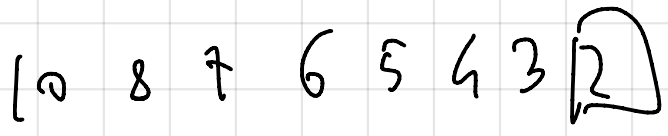


8 conf  
8 scambi

$q = 9$  + 1 scambio

$quicksort(a, 1, 8)$

$quicksort(a, 0, 9) \leftarrow$  vuoto caso base



7 Conf.

? scambi:

$9 + 8 + 7 + 6 + \dots + 1$

$\sum_{i=1}^n i = \frac{n(n+1)}{2}$

45

$\frac{n^2 + n}{2}$