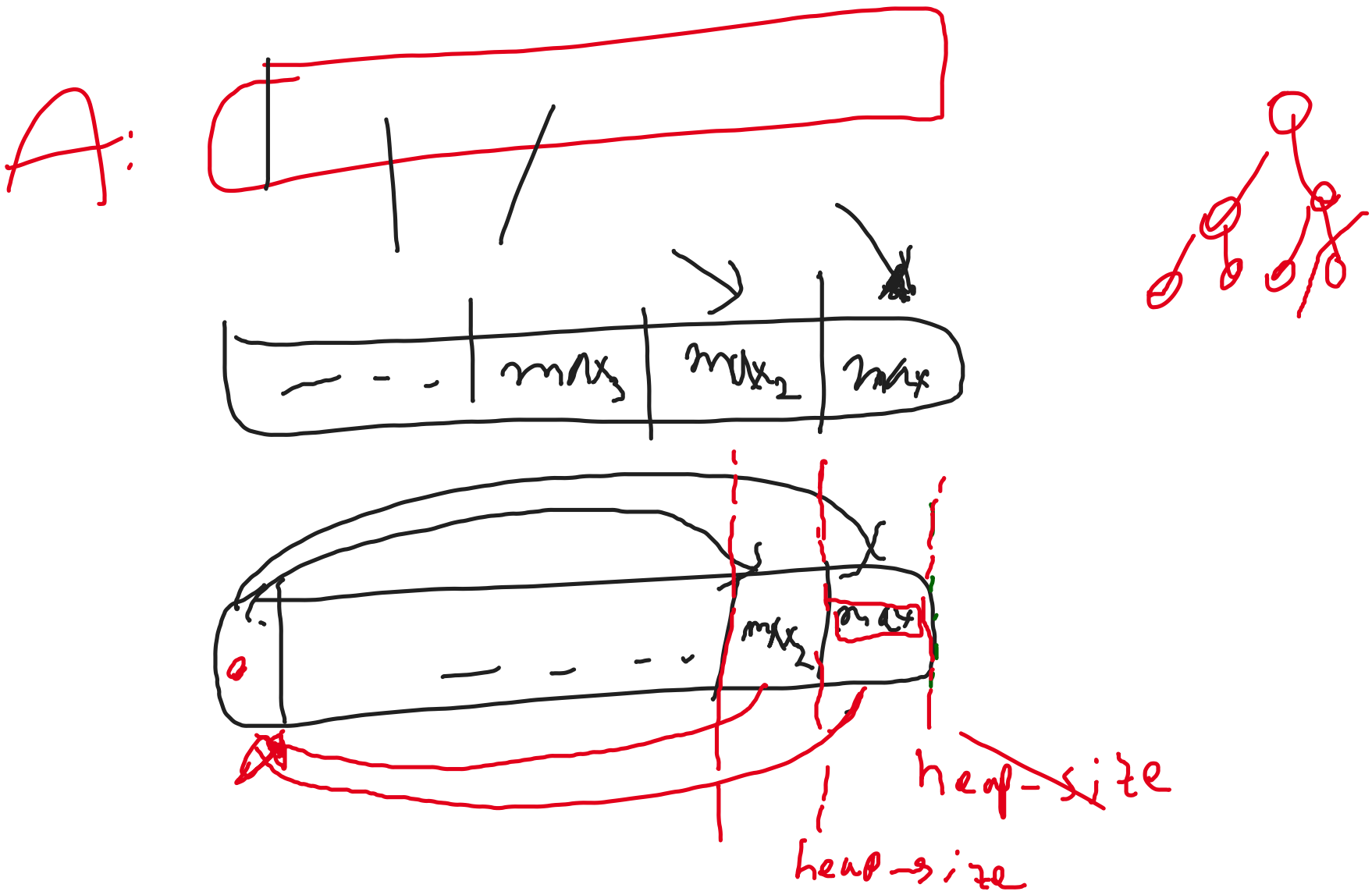
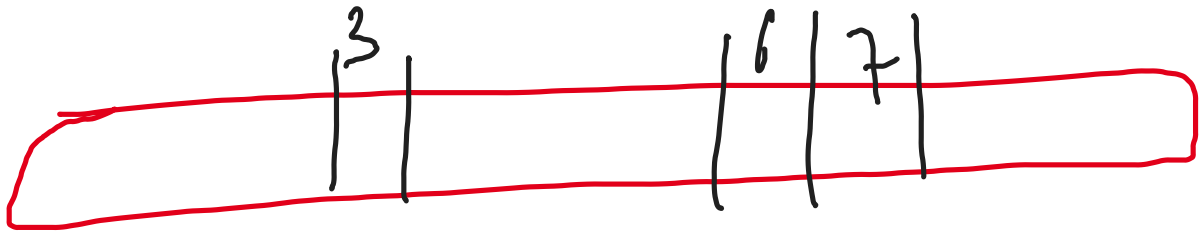
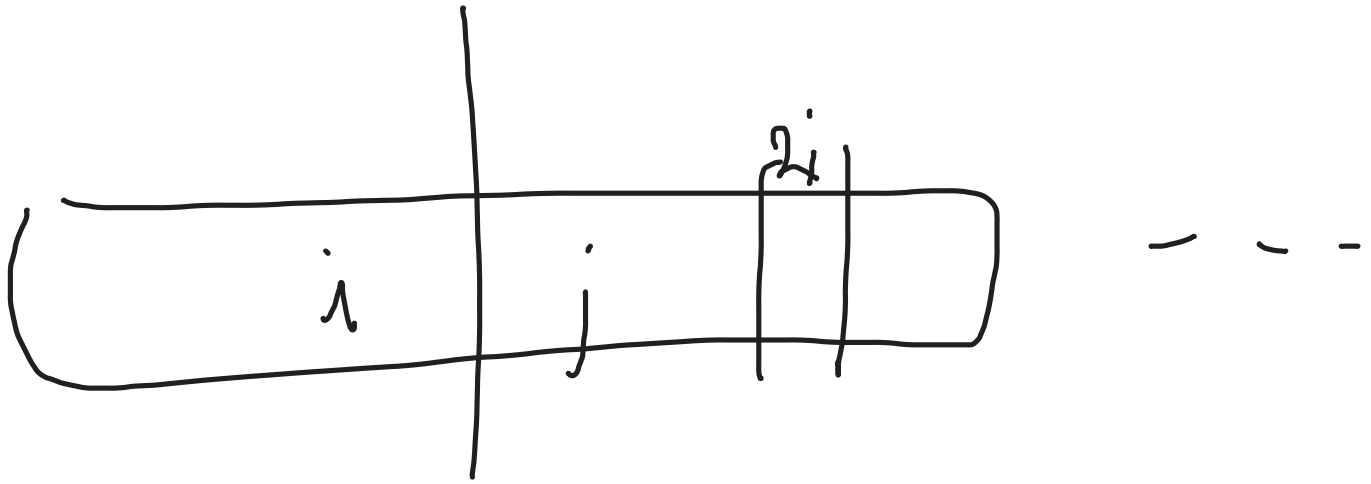

A:
heap-size
heap-size

A: 

$A[i] \geq A[2i]$

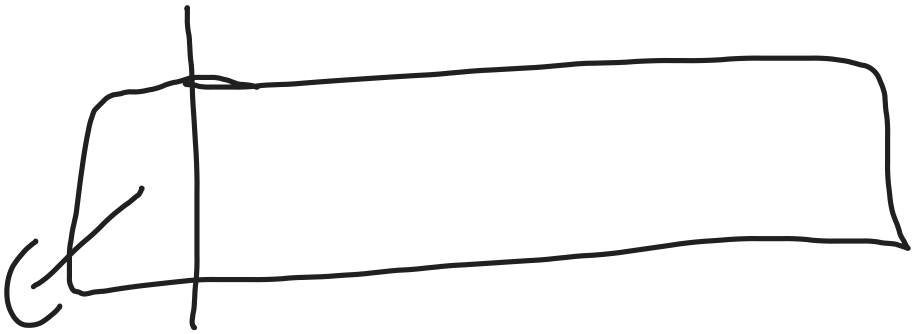
$A[i] \geq A[2i+1]$

$parent(7) = \left\lfloor \frac{7}{2} \right\rfloor = 3$

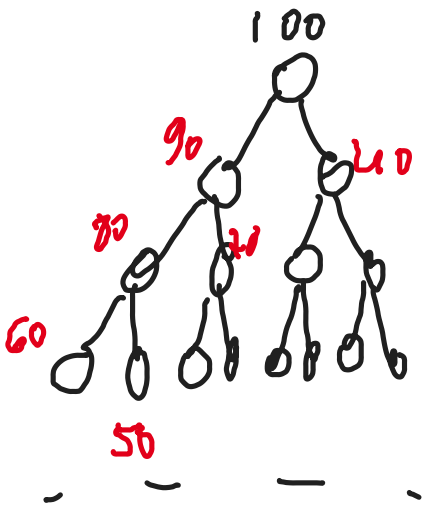


$i < \frac{n}{2} \Rightarrow 2i < n$

$j > \frac{n}{2} \Rightarrow 2j > n$



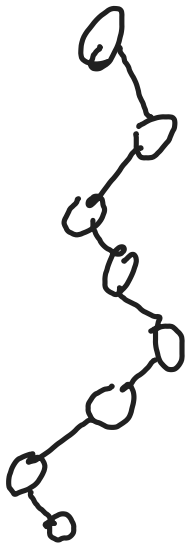
max



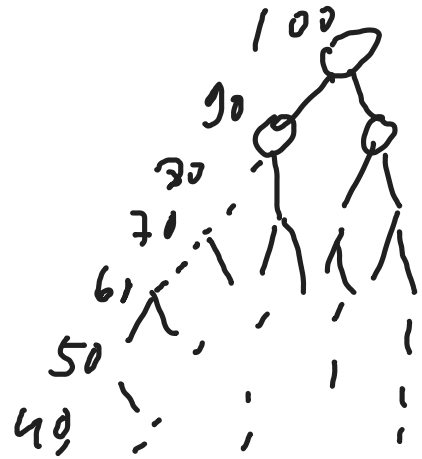
הגליה השמעי הכי גדול?

$$2 - 2^7 - 1$$

$(2^7 - 1)$ עד 2



7 אמר - - - - -



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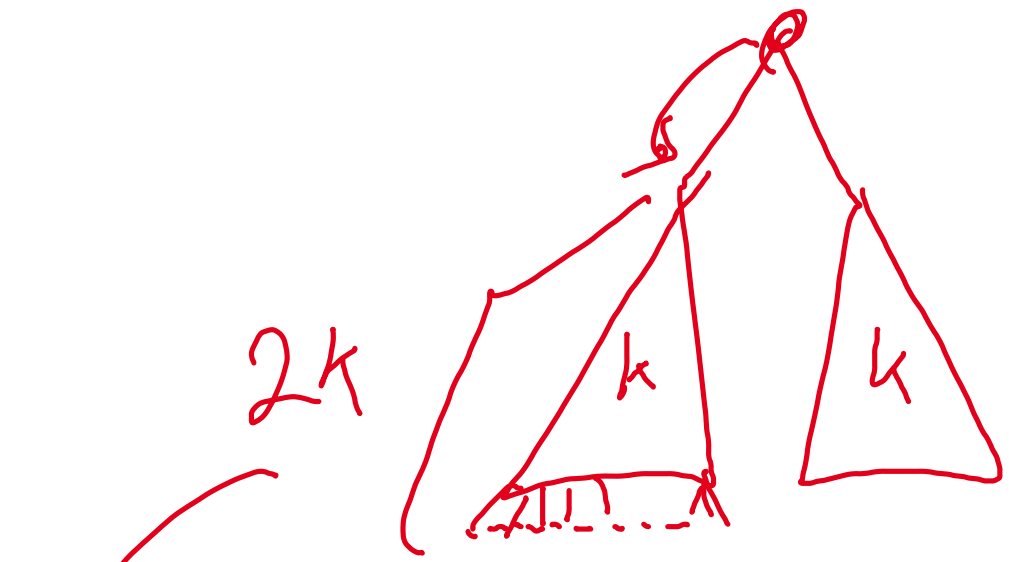
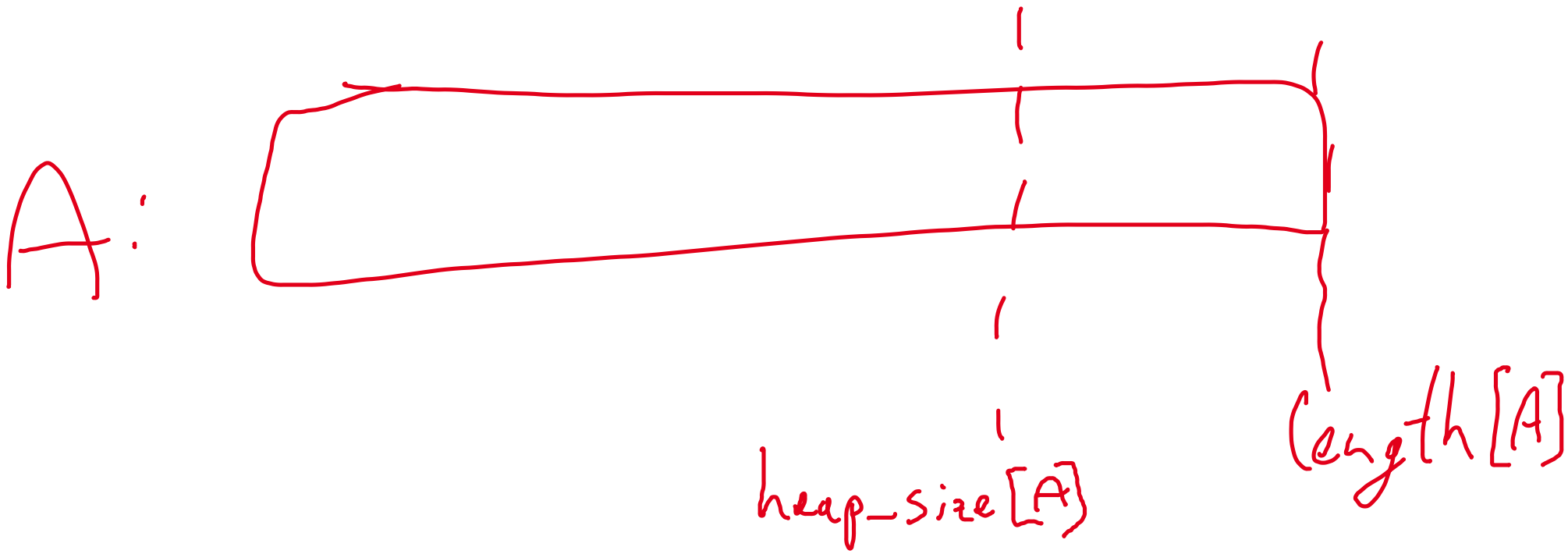
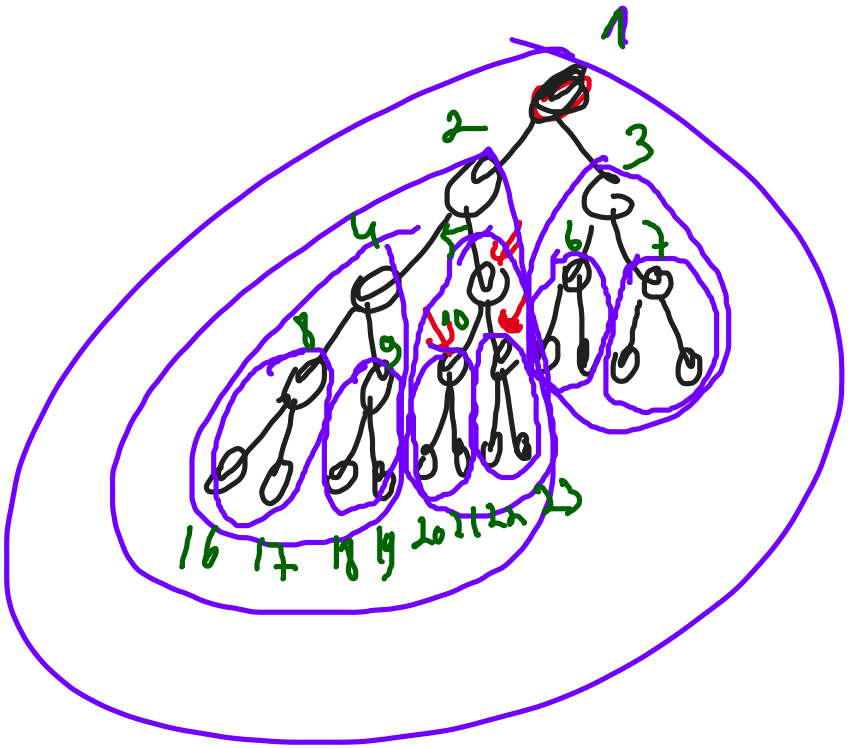


$$T(n) = T(n/2) + 1$$

$$T(n) = T(2n/3) + 1 \Rightarrow T(n) = \Theta(\log n)$$

$b = 1.5$


A:
heap_size[A]
length[A]



4 - 7

8 - 15

16 - 23

$$\left\lfloor \frac{23}{2} \right\rfloor = 11$$

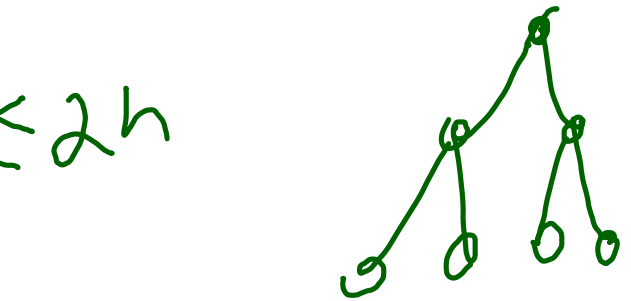
for $\frac{n}{2}$ downto 1

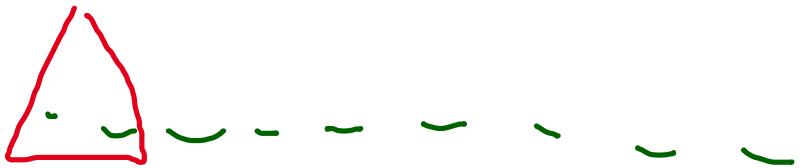
heapify(..)

$\frac{n}{2}$ קריאות לשברת התיקון (ערמוש).

$$T(n) = O(n \lg n)$$

$$\sum_i \frac{n}{2^i}(i-1) \le 2n$$





1

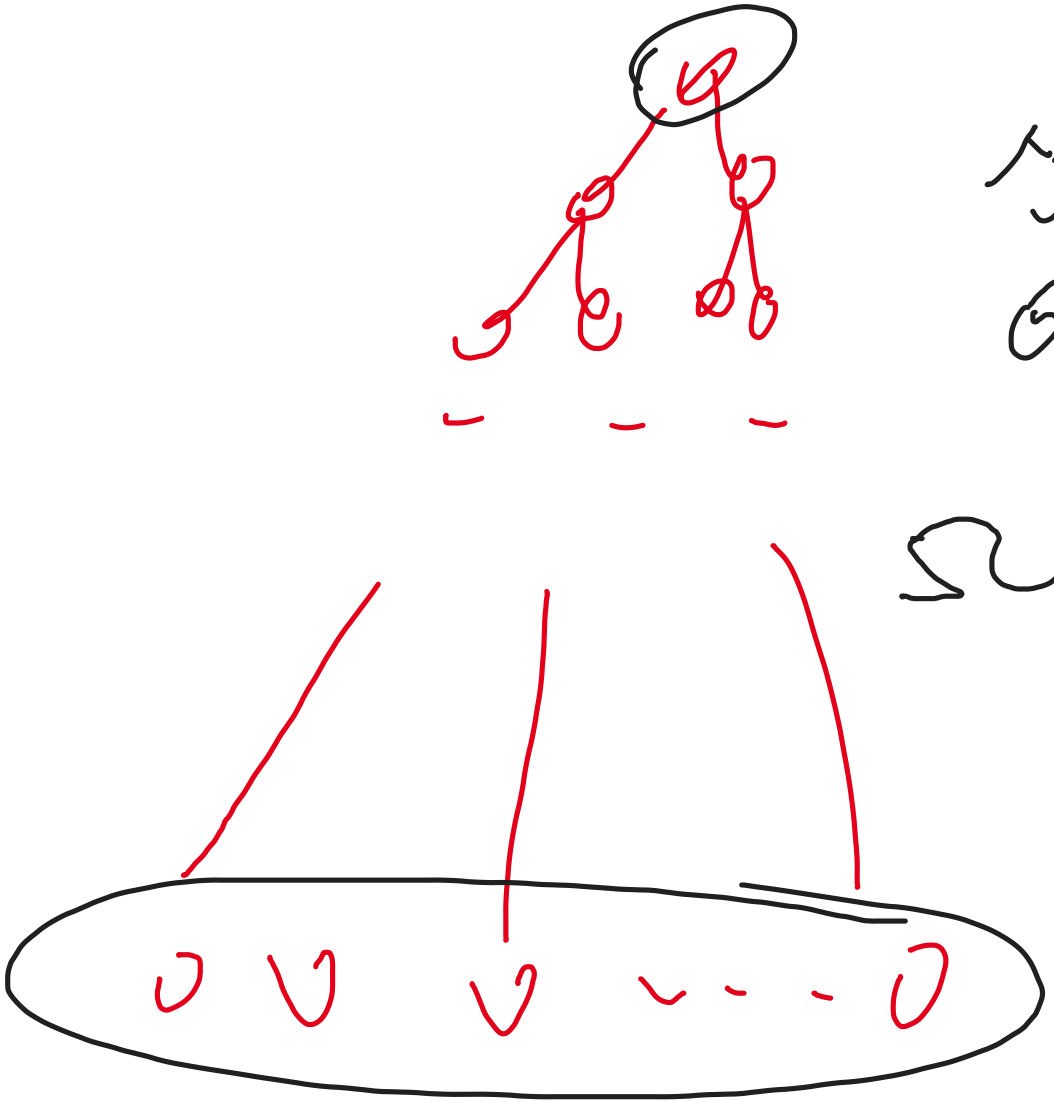
1

$\frac{n}{16} \cdot 3$

$\frac{n}{8} \cdot 2$

$\frac{n}{4} \cdot 1$

$\frac{n}{2} \cdot 0$

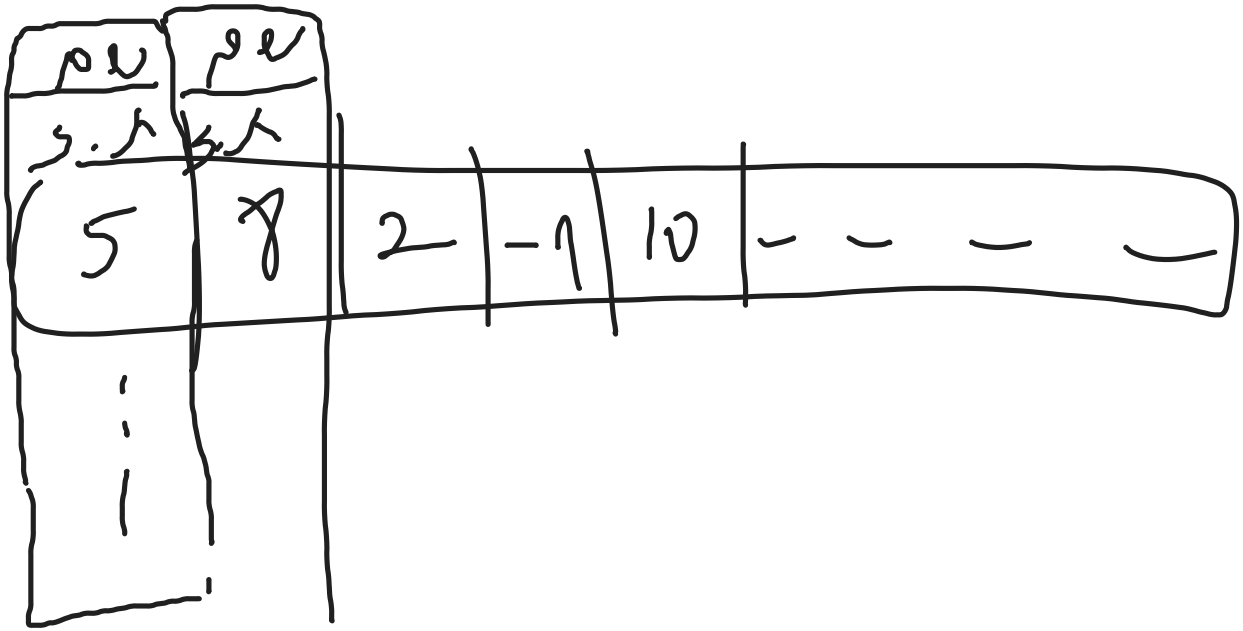


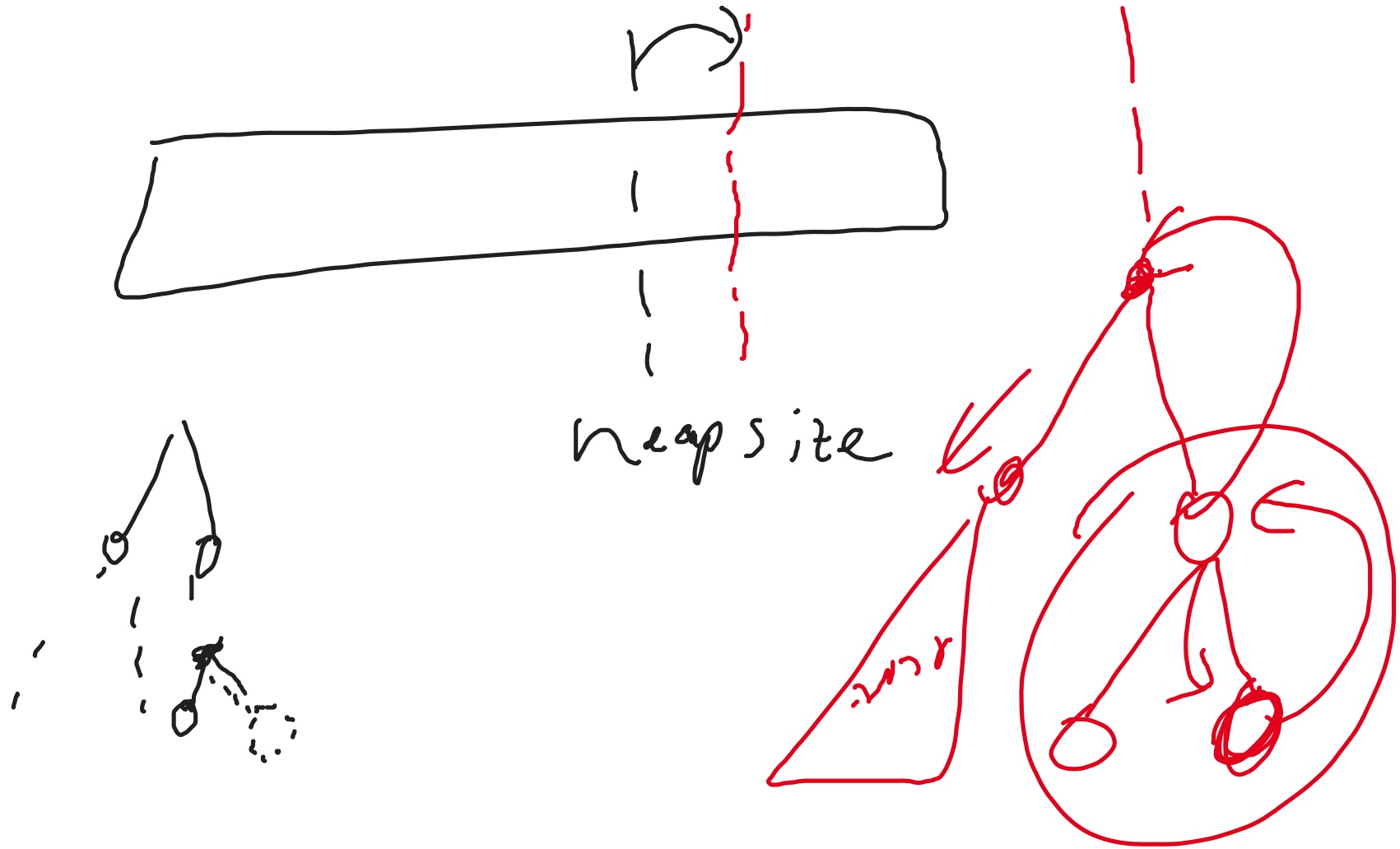
קריאות רשאונות $\frac{n}{2}$

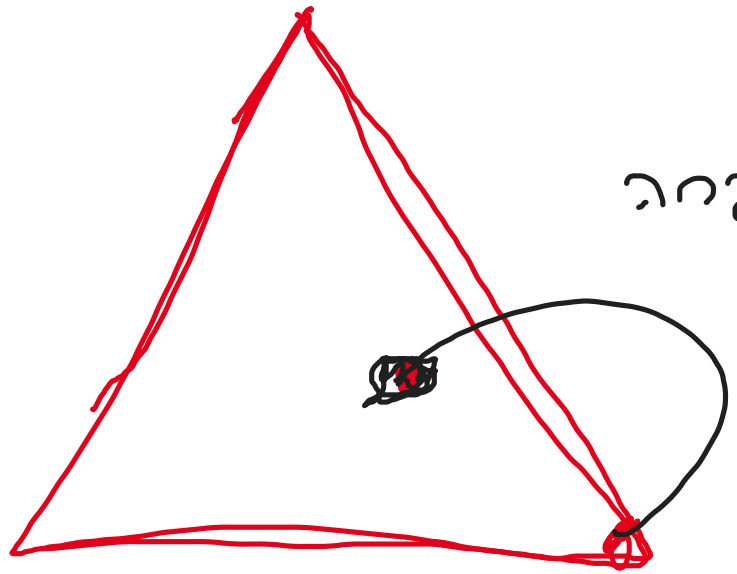
$\Theta(\lg n)$ עלו

$\Omega(n \lg n)$ כ"ל

סה"כ


5
8
2
-1
10


heap site



יכולה להיות הפרה

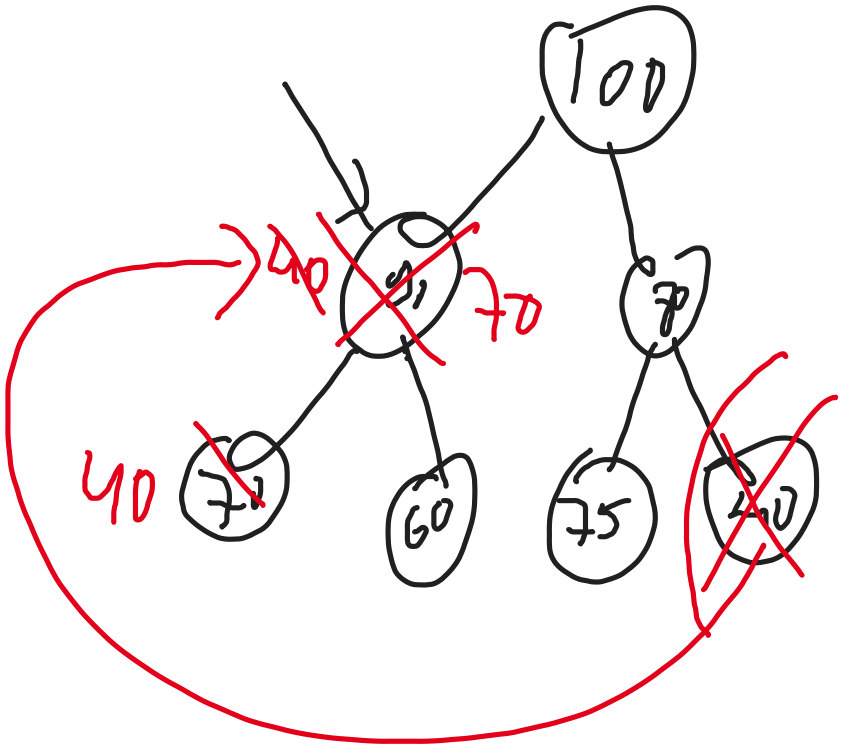
<u>שוו</u> כלפי מטה

<u>שוו</u> כלפי מעלה

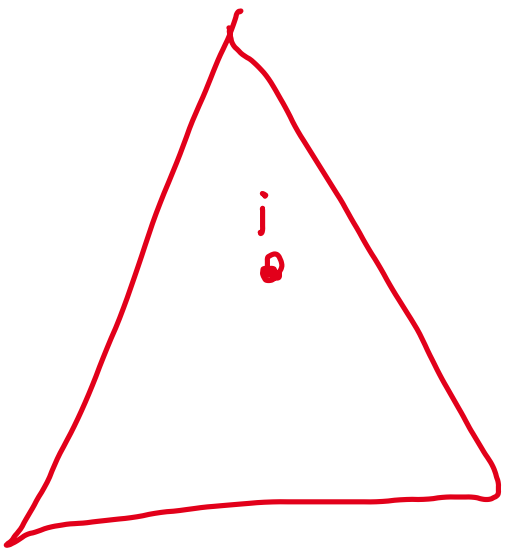
כלפי מטה - נתקן עם heapify

כלפי מעלה - דרומה להוספת אידר, נעלה דמקלל לכל היותר

עד לשורש ונמצאו מיקום מתאים.


100
40
70
40
60
75

Heap-Increase-key(A, i, key)



- מחזק שלא הגדיר דמקא i
- הכנס שלא הערך key

Heap Delete(A, i)

Increase(i, ∞)

Extract Max(..)

דניית ערמה — $\Theta(m)$

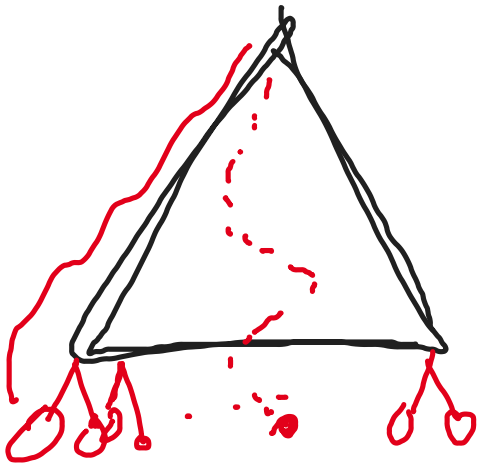
מדצעים ללטוב דלוק $n-m$:

$$\Theta\left[(n-m)\lg m\right]$$

בעיה 6.1

אל. לא (מצ"ל דוגמה נגדית)

ב. נניח שפפר הכנסנו $\frac{n}{2}$ אוכרות:



$n/2$ הגדשים

$\Theta(\lg n)$

$\Omega(n \lg n)$