

~~PAGE~~ ~~MAPPE~~

VASE 10

VALOGA 1:

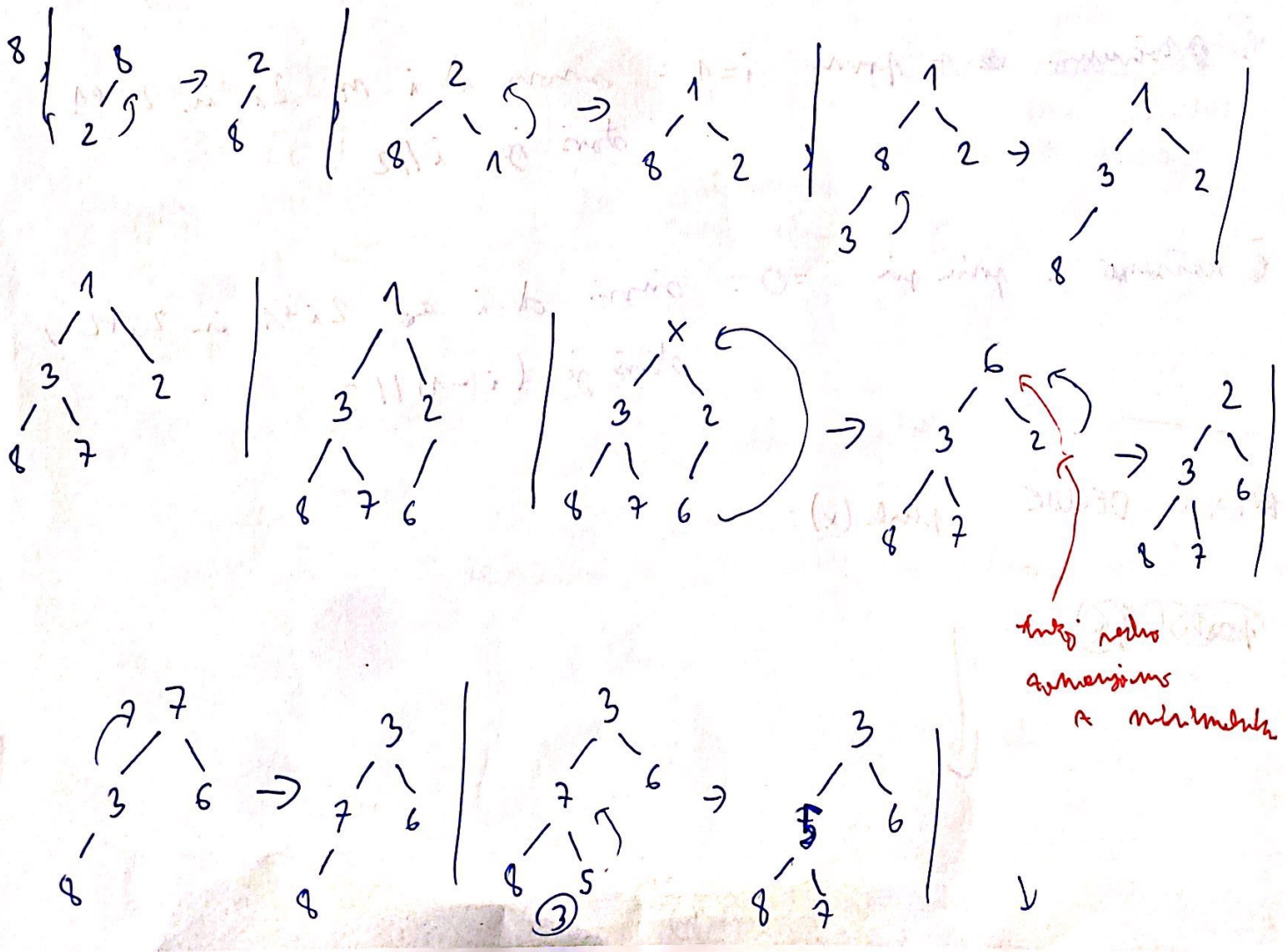
(MIN) BINARNA KOPIKA:

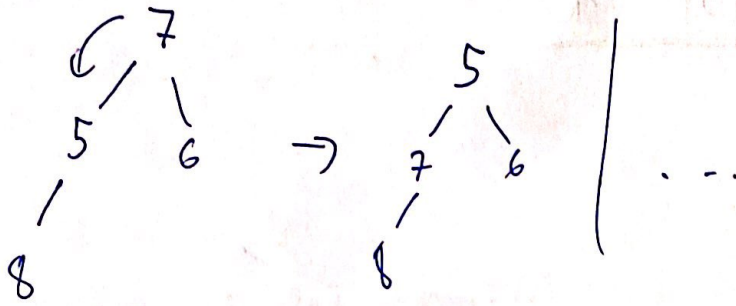
- Dva posrednika

- Instrukcija:

"STARŠ \in SIN"

Vrednosti: 8, 2, 1, 3, 7, 6, x, x, 5, x, -3, x

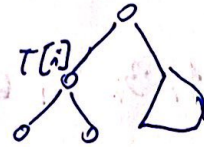




NALOGA 2:

T ... poznana dubina n (KOPICA)

$T[i]$... nodovi



Ė otvorenje a počin $i=1$: sinovi od i su $2i$ i $2i+1$,
stav je $i//2$

Ė zatvorenje a počin pri $i=0$: sinovi od i su $2i+1$ i $2i+2$,
stav je $(i-1)//2$

Ė KAKO DELUJE $\text{push}(x)$:



def push (T, x):

T.append(x)

i = len(T) - 1

oče = i // 2

while T[oče] > T[i]:

T[oče], T[i] = T[i], T[oče]

i = oče

oče = i // 2

KAKO DELUJE pop():

def pop():

← ODSTRANIMO KOREN

koren = T[1]

T[1] = T[-1]

~~T~~

T.pop()

← da odstranimo
sledi element v T

i = 1

levi - sin = 2i

desni - sin = 2i + 1

← koren na indeksu

while T[i] > T[levi - sin] or T[i] > T[desni - sin]:

if T[levi - sin] > T[desni - sin]:

T[desni - sin], T[i] = T[i], T[desni - sin]

i = desni - sin

levi - sin = 2i

desni - sin = 2i + 1

else:

5

← TAKO KOT
SMO DELALI
PRI HALOGI 1

else:

$$T[levi - sin], T[i] = T[i], T[levi - sin]$$

$$i = levi - sin$$

$$levi - sin = 2i$$

$$levi - sin = 2i + 1$$

return logn

ČZ popl in push():
OBSJE JE $O(\log n)$

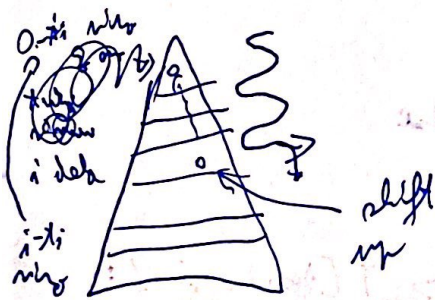
NALOGA 3:

"heapify": iz pomene \sim $\mathcal{O}(\log n)$

1.) Pomene tretinamo $\mathcal{O}(\log n)$

- Low pomene dvojšč $\checkmark \leftarrow$ to j

- Lastnost $\mathcal{O}(\log n) \times \leftarrow$ ne nima

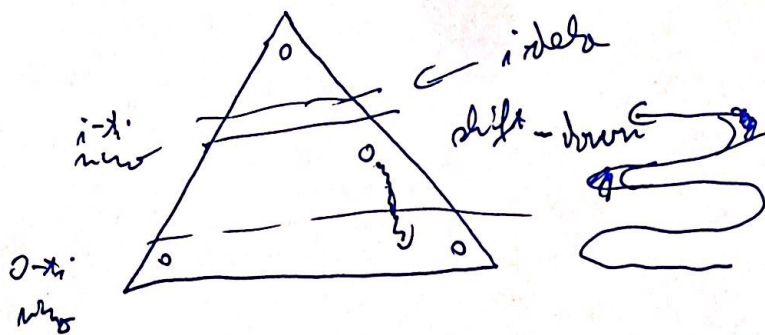


ČASOVNA ZAHTEVNOST:

$$\sum_{i=0}^{\lfloor \log n \rfloor} 2^i \cdot i = \sum_{i=0}^{n-1} i \cdot \log(i) = O(n \cdot \log(n))$$

⑥

Let's try merge sort by analyzing shift down
 operation \leftarrow how many shifts



$$\frac{n}{2} \cdot 0 + \frac{n}{4} \cdot 1 + \frac{n}{8} \cdot 2 + \dots \leq$$

$$\leq \sum_{i=1}^{\log n} \frac{n}{2^i} \cdot (i-1) = \sum_{i=0}^{\lfloor \log n \rfloor} \frac{n}{2^{i+1}} \cdot i =$$

$$\leq \frac{n}{2} \sum_{i=1}^{\infty} i \cdot 2^{-i} = \frac{1}{2} + \frac{1}{4} + \frac{1}{4}$$

$$\leq \frac{n}{2} \cdot 2 = n \leftarrow \underline{\underline{\epsilon = 2}}$$

