HW1

1) a) $i = 2, 4, 16, 256 \cdots 2^{2^k}$

→ $O(\log(\log(n)))$

b) outer: n times

↳ if → only when i is multiple $\sqrt{n}$

↳ inner loop → $k = 0$ to $i^3 - 1 \sim i^3$

$i_j = j \cdot \sqrt{n} \rightarrow i^3 j = (j\sqrt{n})^3 = j^3 n^{3/2}$

↳ $\sum_{j=1}^{\sqrt{n}} j^3 n^{3/2} \rightarrow \frac{(\sqrt{n})^4}{2} \cdot n^{3/2} = n^2 \cdot n^{3/2} = n^{7/2}$

→ $O(n^{7/2})$

c) outer: n, middle: n } n^2 → dominant term:

→ $O(n^2)$

if → at most true 1x per le

inner: $O(\log n)$ ×

d) if: i=size → grow ×1.5 ~ $O(\log n)$

cost to copy sizes ~ $O(n)$

for loop: $O(n)$

$O(n) + O(n) \rightarrow O(n)$

2) a) llrec(1→2→3→4, 5→6)

↳ else: in1→next = llrec(in2, in1→next)

retrn in1;

↳ llrec(5→6, 2→3→4)

↳ else: 5→next = llrec(2→3→4, 6)

return 5

↳ llrec(2→3→4, 6→NULL)

↳ else: 2→next = llrec(6, 3→4)

retrn 2

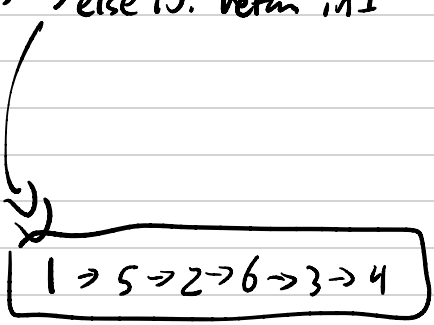
llrec(6→null, 3→4)

↳ else: 6→next = llrec(3→4, null)

retrn 6

llrec(3→4, Null)

↳ else if: retrn in1



b) llrec (NULL, 2 → NULL)

↳ if: retm in 2

↳ return(2 → NULL) / return 2