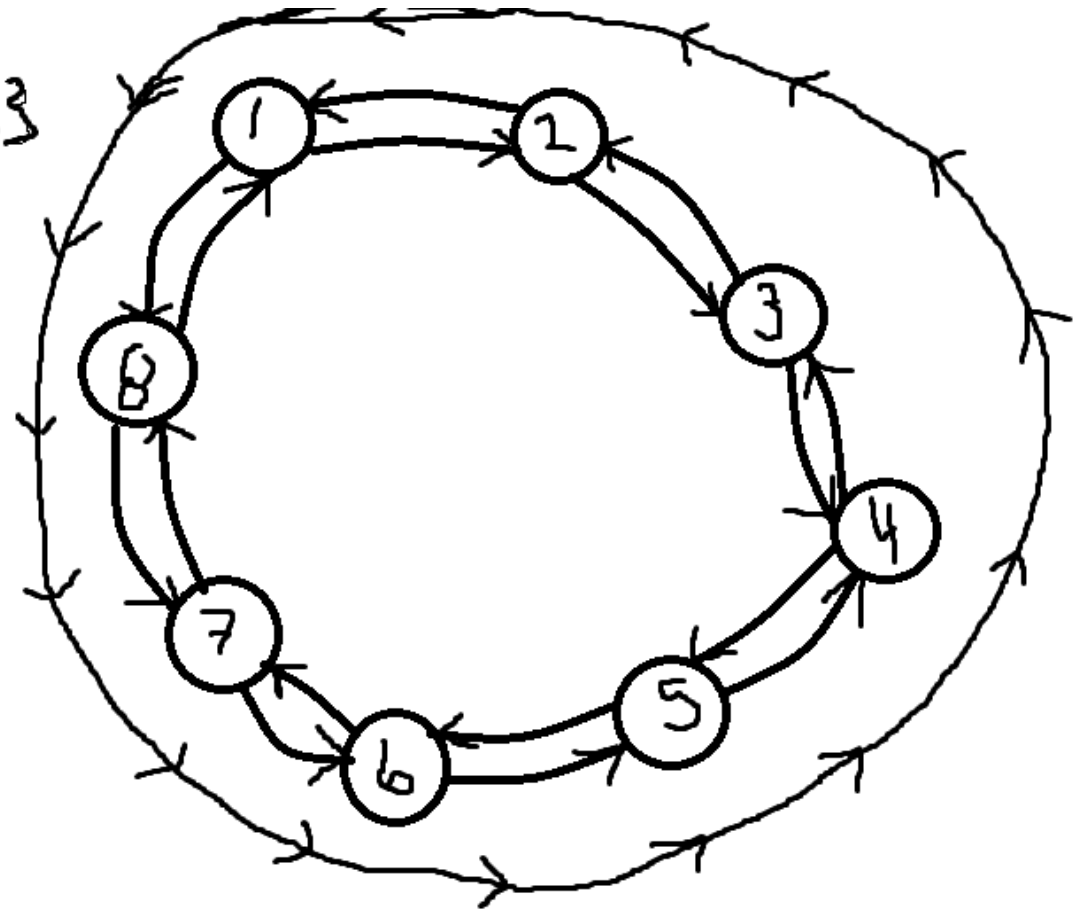
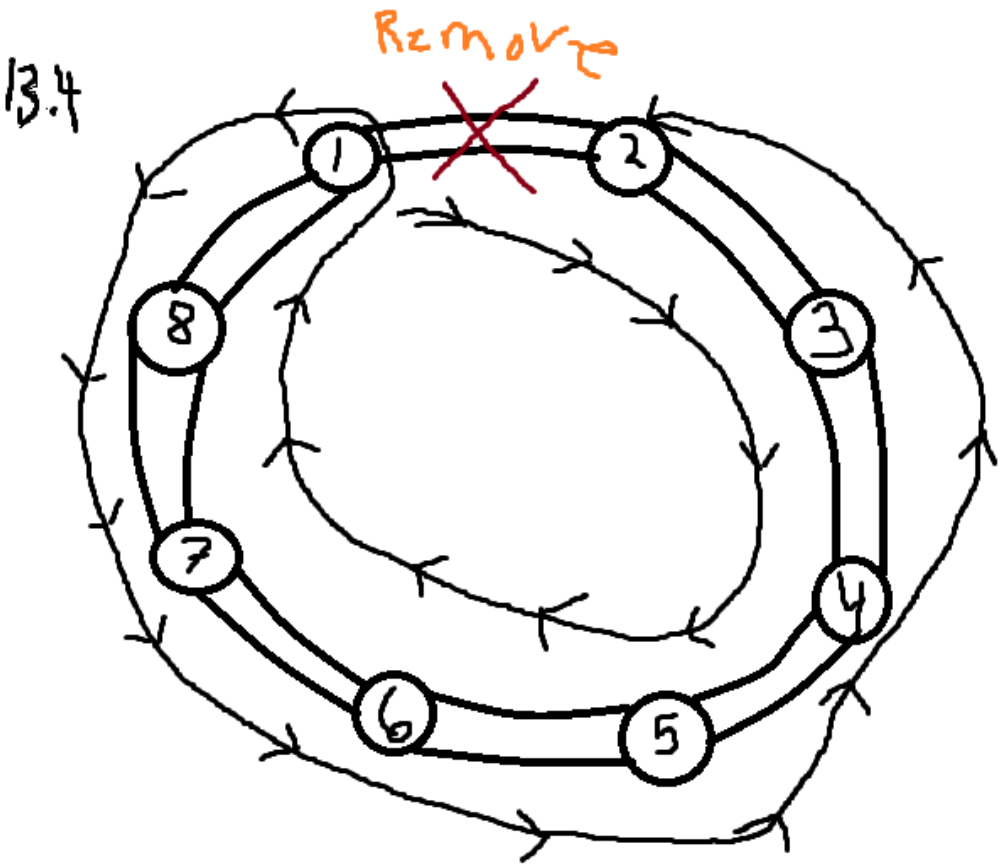
13.3



13.4



Homework question 7

Tree starts from 1

1 —(120)→ 8 {1, 8}

8 —(155)→ 2 {1, 8, 2}

8 —(170)→ 5 {1, 8, 2, 5}

5 —(115)→ 3 {1, 8, 2, 5, 3}

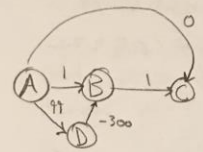
5 —(160)→ 4 {1, 8, 2, 5, 3, 4}

2 —(180)→ 6 {1, 8, 2, 5, 3, 4, 6}

6 —(175)→ 7 {1, 8, 2, 5, 3, 4, 6, 7}

12 HW3 Josh Zschiesche

a.)



b.) set $D(a) = 0$, everything else to ∞

c.) $D(B) = 1$, $D(C) = 0$, and $D(D) = 99$

d.) Expanding C, there is no change

e.) Expanding B, there is no change

f.) Expanding D, $D(B) = -300 + 99 = -201$

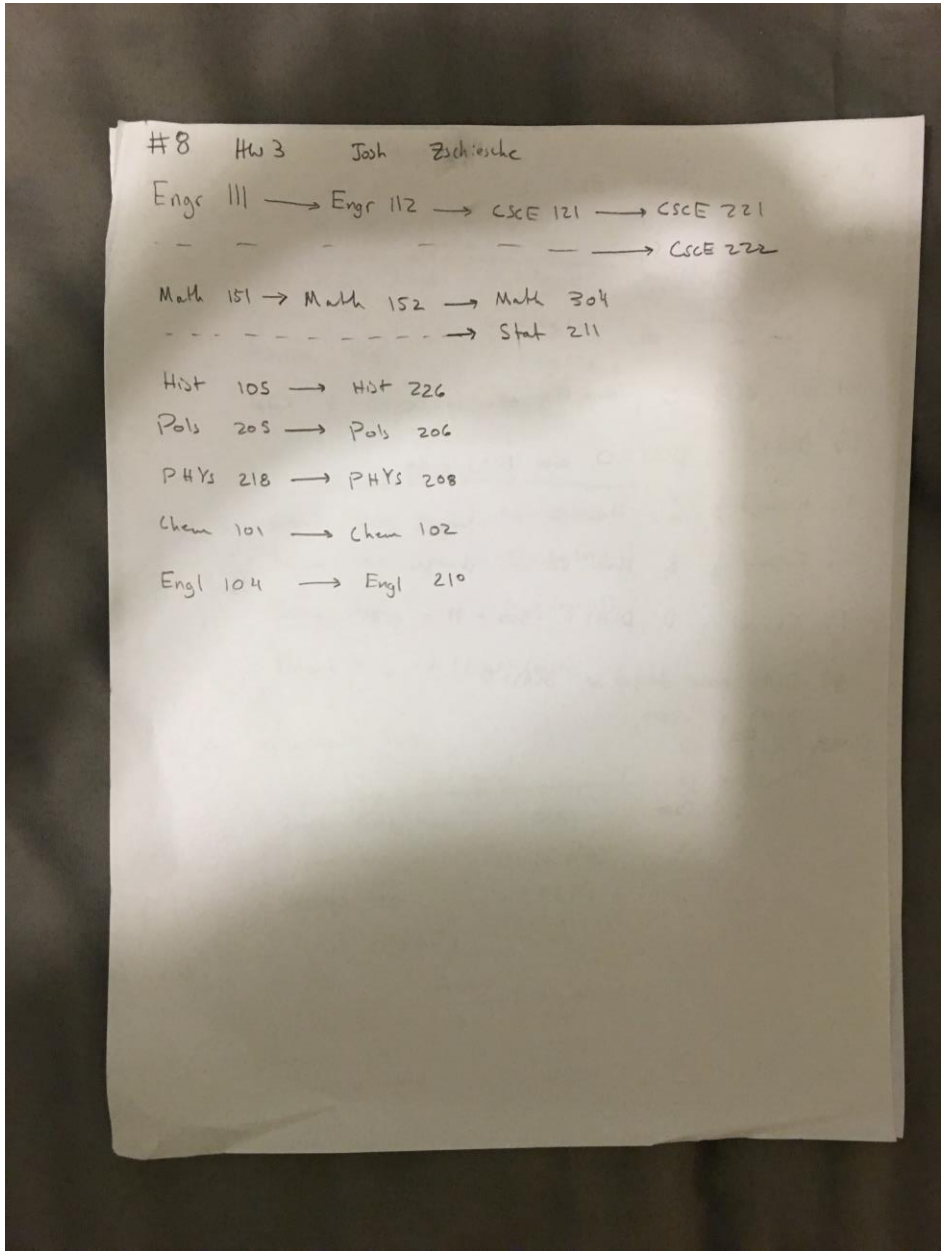
g.) D(A) never changed so, $D(A) = 0$

$D(B) = -201$,

$D(C) = 0$

$D(D) = 99$

$D(C) = -200$


#8 Hw 3 Josh Zschiesche
Engr 111 → Engr 112 → CSCE 121 → CSCE 221
→ CSCE 222
Math 151 → Math 152 → Math 304
→ Stat 211
Hist 105 → Hist 226
Pols 205 → Pols 206
PHYS 218 → PHYS 208
Chem 101 → Chem 102
Engl 104 → Engl 210

10 Hw 3 Josh Zschiesche

a.) a binary heap

Sparse

create binary heap	$O(n \log(n))$
Remove min	$O(n \log(n))$
Decrease key	$O(n \log(n))$

Total = $O((n+x)\log(n))$

Dense

Create binary Heap	$O(n \log(n))$
Remove min	$O(n \log(n))$
Decrease key	$O(x \log(n))$

Total = $O((n+x)\log(n))$

b) An unsorted list

Sparse

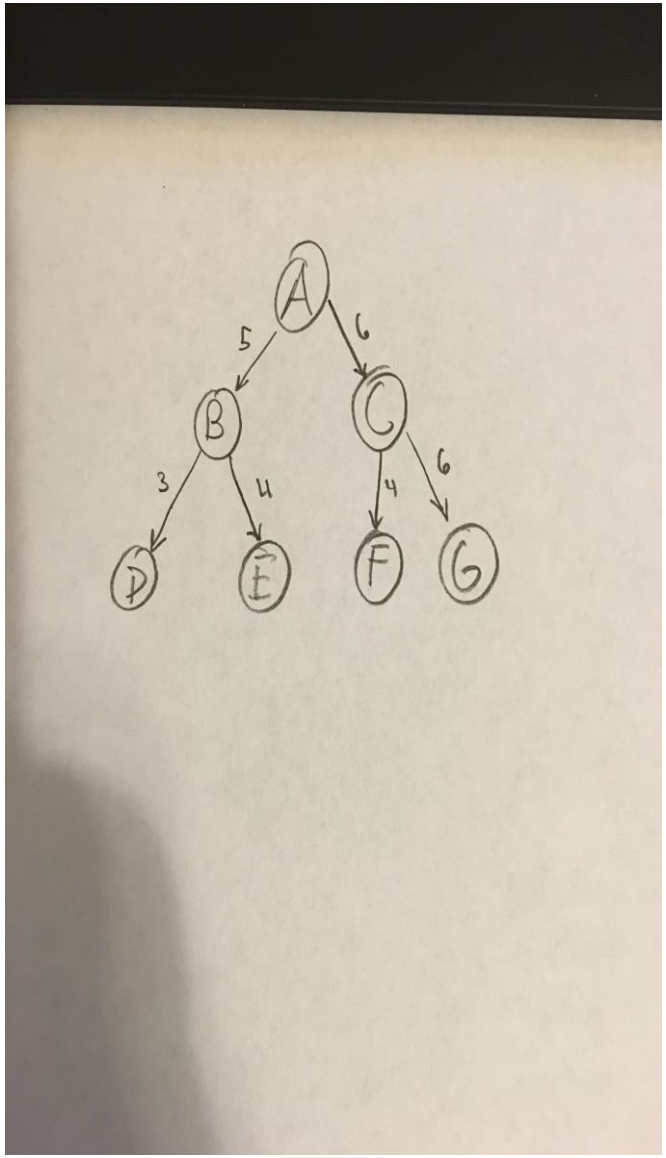
Create Binary Heap	$O(n)$
Remove Min	$O(n^2)$
Decrease key	$O(x)$ or $O(n)$

Total = $O(x+n^2)$

Dense

Create Binary Heap	$O(n)$
Remove Min	$O(n^2)$
Decrease key	$O(n^2)$

Total = $O(n^2)$



Picture to see in problem 6: