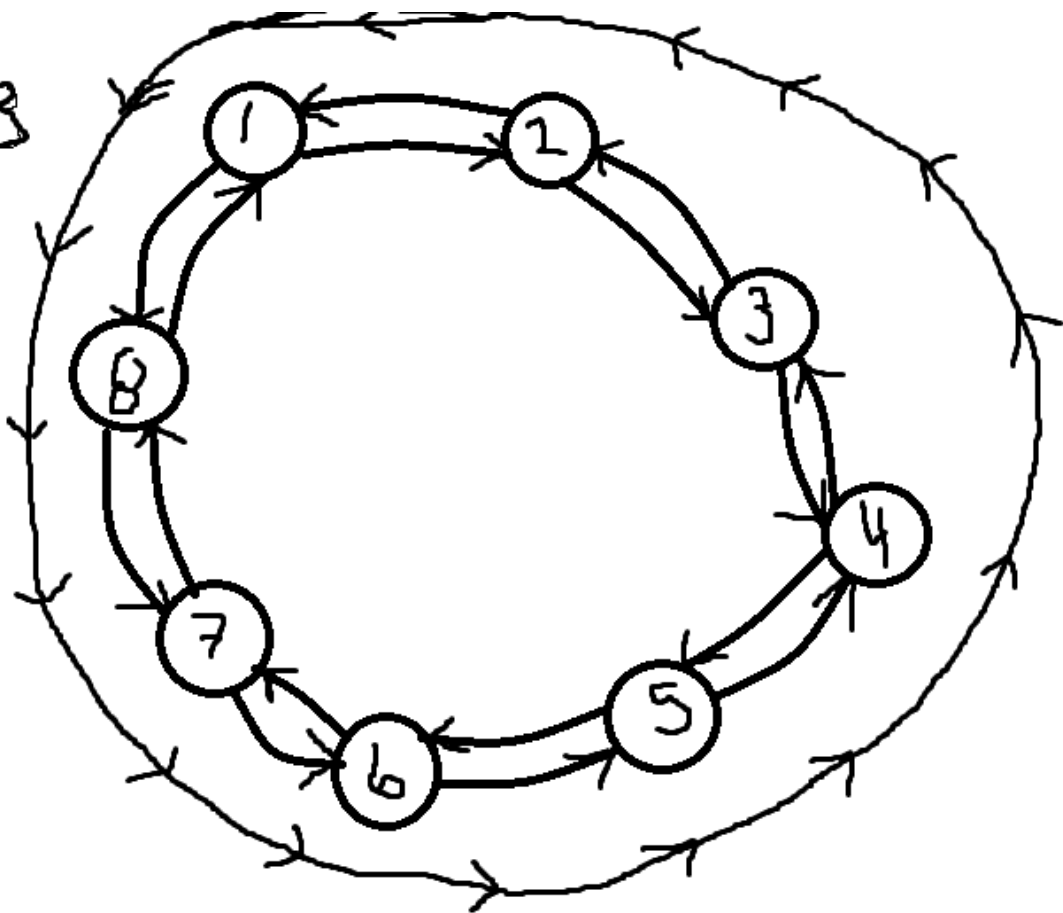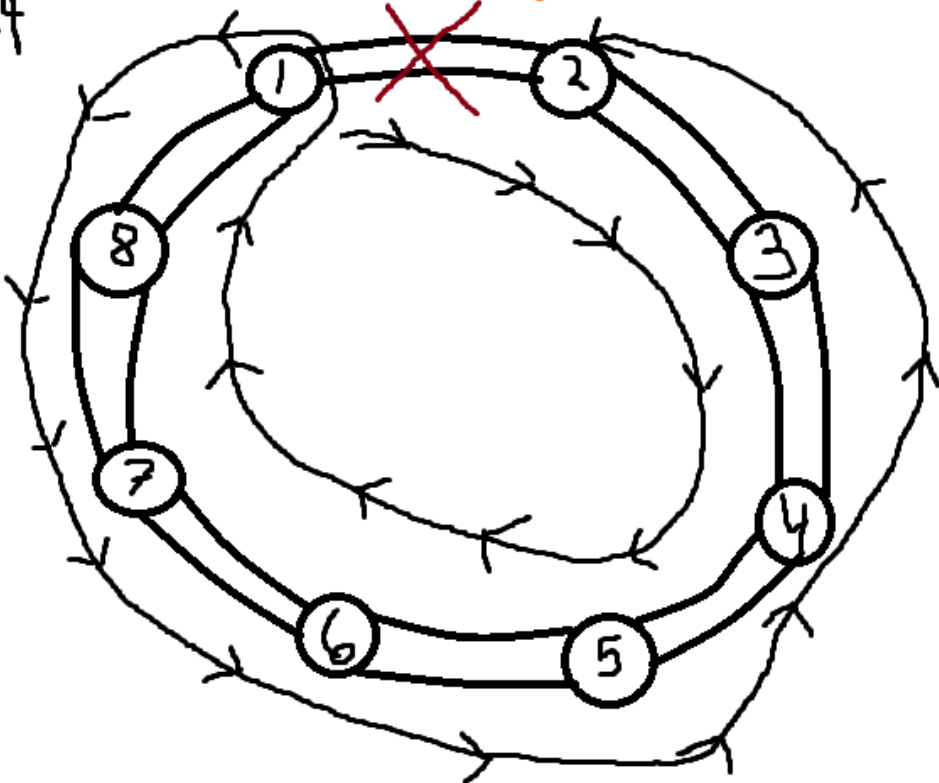13.3

13.4

Remove

Tree starts from 1

$1 - (120) \rightarrow 8 \{1, 8\}$

$8 - (155) \rightarrow 2 \{1, 8, 2\}$

$8 - (170) \rightarrow 5 \{1, 8, 2, 5\}$
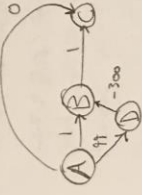
$5 - (115) \rightarrow 3 \{1, 8, 2, 5, 3\}$

$5 - (160) \rightarrow 4 \{1, 8, 2, 5, 3, 4\}$

$2 - (180) \rightarrow 6 \{1, 8, 2, 5, 3, 4, 6\}$

$6 - (175) \rightarrow 7 \{1, 8, 2, 5, 3, 4, 6, 7\}$

#12 Hw3   Josh Eschbach

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   Joh   Bahiside

Engr 111 ——→ Engr 112 ——→ CSCE 121 ——→ CSCE 222

Math 151 → Math 152 ——→ Math 304
                      ↘ PHYS 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 Eschiesule

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 $= O(n^2)$

ID   HW3   Josh Bishieru

c.) a sorted List

Sparse

Create Binary Heap : $O(n^2)$
Remove min   : $O(n)$
Decrease key   : $O(x)$
Total = $O(x + n^2)$

Dense

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