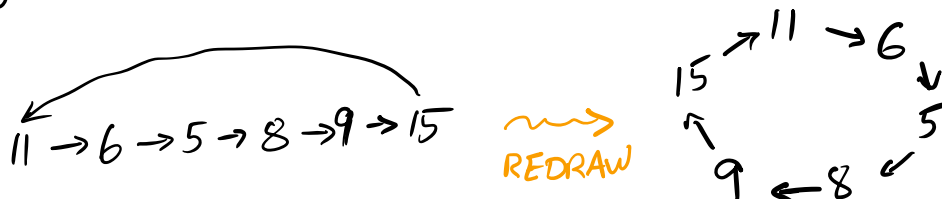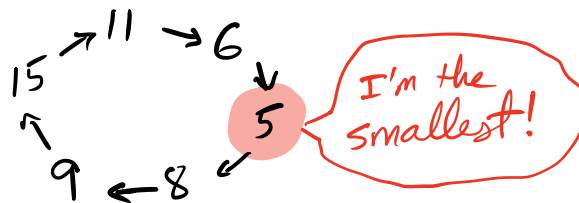If L = [11, 6, 5, 8, 9, 15]

Then smallest_first(L) should return [5, 8, 9, 15, 11, 6].

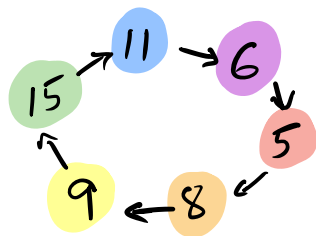why?   Think of L as a repeating cycle:

11 → 6 → 5 → 8 → 9 → 15

REDRAW

15 ↗ 11 → 6
                    ↓
                    5
9 ← 8 ↙

Locate the smallest number in the cycle:

15 ↗ 11 → 6
                    ↓
                    5   I'm the smallest!
9 ← 8 ↙

Now list out the values you see by going around this cycle starting at the smallest value:

15 ↗ 11 → 6
                    ↓
                    5
9 ← 8 ↙

[5, 8, 9, 15, 11, 6]