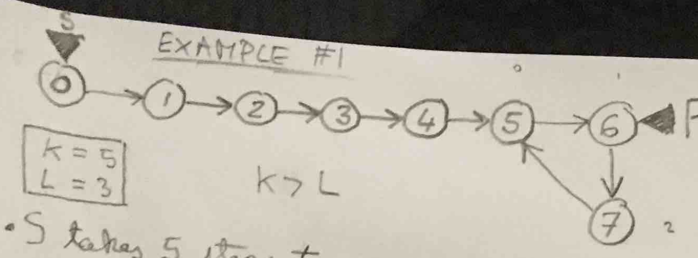


- S takes 5 steps to reach node 5
- F takes 10 = 2K steps to reach node #. . .

$$\boxed{K + K \bmod L = 5 + 2 = 7}$$

- when S is at position K, F is K mod L steps ahead along the circle.

- when will they meet along the circle? when their positions along the circle are equal

"S POSITION" "F POSITION"

$$0 + X\_S = K \bmod L + 2 \cdot X\_S$$

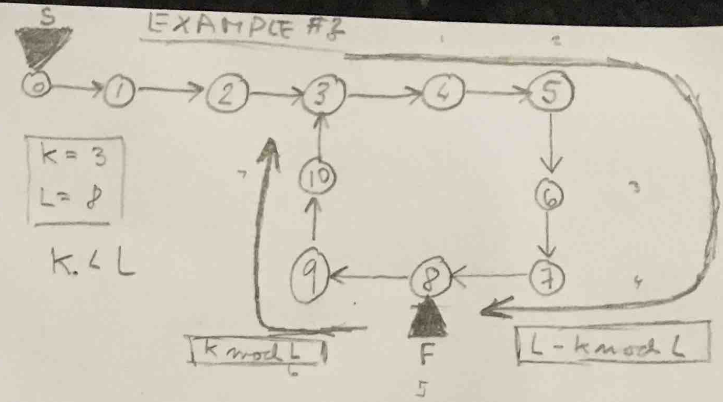
$$\boxed{X\_S = -(K \bmod L)}$$ FIRST MEETING

∴ The meeting point will be $\boxed{K \bmod L}$ steps behind of the start of the loop

- I.E. the meeting point will be $\boxed{L - K \bmod L}$ steps ahead the meeting point.

- S is moved to HEAD, and F remains at the first meeting point.

- S is now K steps away from the loop start while F is $\boxed{K \bmod L}$ steps away. If K < L, then K = K mod L and the two pointers advance simultaneously, 1 step at a time to the loop start. If K > L, then F must loop around the L-step loop after traveling $\boxed{K \bmod L}$ steps. For F and S to meet, F must do this loop an integral number of times. No fractional loops are possible.



SECOND MEETING:

$$\boxed{K = K \bmod L + L \cdot C}$$ CONST INT

EXAMPLE 1:

$$5 = 5 \bmod 3 + 3 \cdot C$$

$$5 = 2 + 3 \cdot C \Rightarrow C = 1 \Rightarrow$$

F loops around once after traveling 5 mod 3 steps.

EXAMPLE 2:

$$3 = 3 \bmod 8 + 8 \cdot C$$

$$3 = 3 + 8 \cdot C$$

$$\Rightarrow C = 0$$

⇒ F does not need to loop around at all before meeting S