

REORDER LINKED LIST

INPUT: $N_1 \rightarrow N_2 \rightarrow N_3 \rightarrow \dots \rightarrow N_{n-1} \rightarrow N_n$
 "n" NODES
 HEAD

OUTPUT: $N_1 \rightarrow N_n \rightarrow N_2 \rightarrow N_{n-1} \rightarrow N_3 \rightarrow \dots$
 HEAD

Reverse

IDEA: LET'S OBSERVE

LOOKS LIKE ZIPPED VERSION OF:

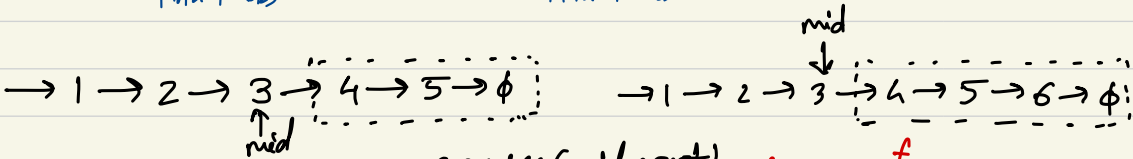
HEAD $\rightarrow N_1 \rightarrow N_n \rightarrow N_2 \rightarrow N_{n-1} \rightarrow N_3 \rightarrow N_{n-2} \rightarrow \dots$

$N_1 \rightarrow N_2 \rightarrow N_3 \rightarrow \dots$

HALF NODES

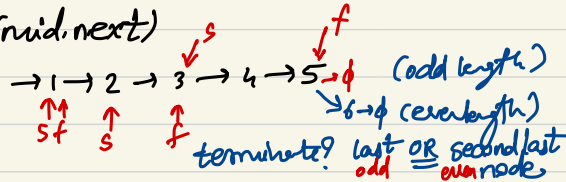
$N_n \rightarrow N_{n-1} \rightarrow N_{n-2} \rightarrow \dots$

HALF NODES



reverse(mid.next)

How to find mid? slow 1x fast 2x;



IDEA: REVERSE SECOND HALF AND THEN ZIP THEM UP.

HEAD $\rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow \text{NULL}$
 mid

HEAD1 $\rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow \phi$

$\Rightarrow 1 \ 8 \ 2 \ 7 \ 3 \ 6 \ 4 \ 5 \ \text{NULL}$

HEAD2 $\rightarrow 8 \rightarrow 7 \rightarrow 6 \rightarrow 5 \rightarrow \phi$