

The diagram illustrates the process of finding the intersection point of two linked lists, A and B.

Diagram 1: Shows two lists, A and B, represented by circles containing numbers. List A (m nodes) starts at node 5 and ends at node 8. List B (n nodes) starts at node 6 and ends at node 1. The lists are shown as separate chains.

Diagram 2: Shows the lists merged into a single chain. Nodes 5 and 6 are at distance 10 from the start. Node 1 is at distance 30 from the start. Node 8 is at distance 80 from the start. Node 4 is at distance 60 from the start. Node 5 is at distance 30 from node 4. The lists are merged at node 1.

Diagram 3: Shows the merged list with arrows indicating the next node. The lists are merged at node 1. The intersection point is highlighted in yellow and labeled a_3 .

Text: "find the intersection point."

Final Answer: $\text{ans} \rightarrow 8$

Approach ①

- Store all the address of nodes of linked list L1 in a set.
- $\rightarrow \left\langle \begin{array}{c} 200 \\ x \end{array}, \begin{array}{c} 100 \\ x \end{array}, \begin{array}{c} 120 \\ \text{circled} \end{array}, \begin{array}{c} 60 \\ x \end{array}, \begin{array}{c} 300 \\ x \end{array} \right\rangle$
- Iterate the second linked list L2 and check if any node address is present in the set.

TC $\rightarrow O(n+m)$

SC $\rightarrow O(n) / O(m)$

Approach 2 :

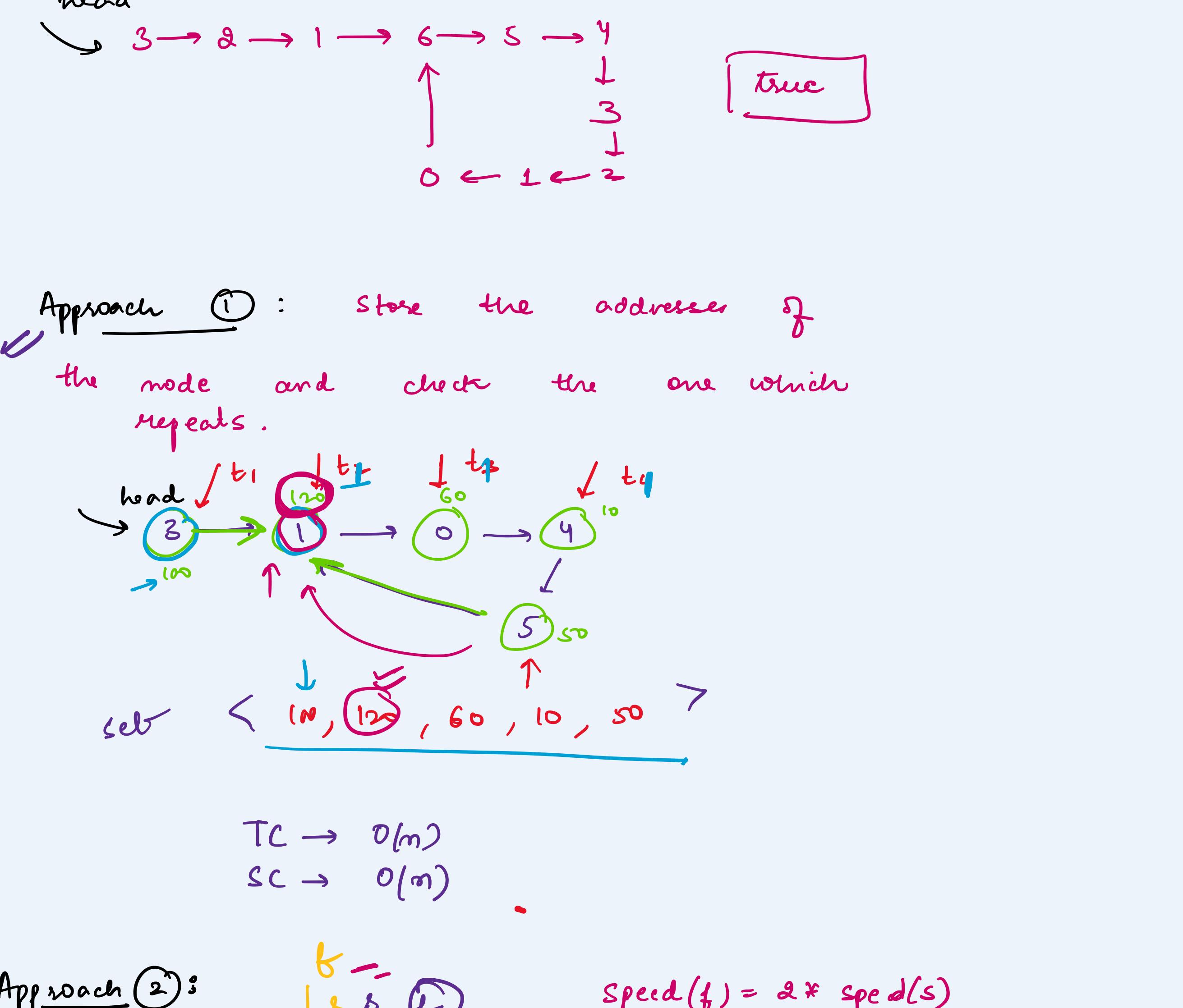
The diagram illustrates Approach 2 for finding the intersection of two linked lists, L1 and L2. List L1 is shown with a starting point (red vertical line) and a head pointer labeled x_1 . List L2 is shown with an ending point (red vertical line) labeled "ending point". The intersection point is indicated by a double-headed arrow between the two lists, labeled $\uparrow \text{L1 ad L2}$.

$\downarrow p \alpha$

- The diagram shows two linked lists, l_1 and l_2 , represented by nodes. Node 1 is the head of l_1 . Node 3 is the head of l_2 . Node 6 is the tail of l_1 . Node 4 is the tail of l_2 and the meeting point of both lists. Pointers p_1 and p_2 point to nodes 1 and 3 respectively. The length of l_1 is 6, and the length of l_2 is 4.
- ①
- $$\text{Find } \text{len}(l_1) = 6$$

$$\text{Find } \text{len}(l_2) = 4$$
-
- while ($p_1 \neq p_2$) {
- $p_1 = p_1 \rightarrow \text{next};$
 $p_2 = p_2 \rightarrow \text{next};$
- }
- $SC \rightarrow O(1)$
- $TC \rightarrow O(n+m)$
- Given a a LL, determine if it has a cycle or not.
- head

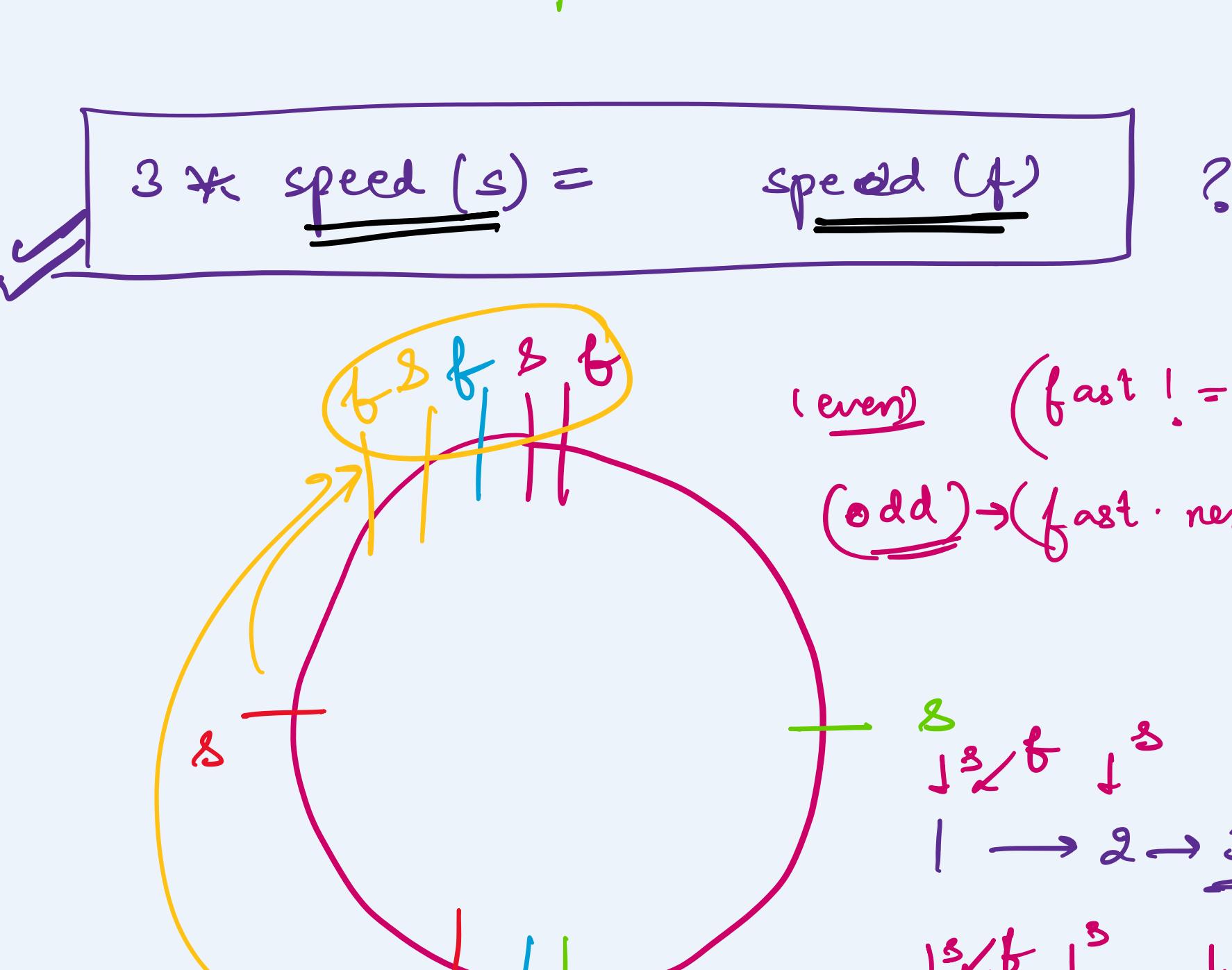
A diagram illustrating a linked list. At the top, the word "head" is written in black cursive. A black curved arrow points from the "head" label down to the number "3". To the right of "3" is a pink arrow pointing to the number "2".



A hand-drawn diagram featuring a large blue circle. On the right side of the circle, a red arrow points to the right. Inside the circle, there are three vertical tick marks at the bottom: a green tick mark on the left, a pink tick mark in the middle, and a purple tick mark on the right. To the left of the green tick mark is the number '1'. To the left of the pink tick mark is the number '2'. To the left of the purple tick mark is the number '3'. A yellow curved line is visible on the far left edge of the circle.

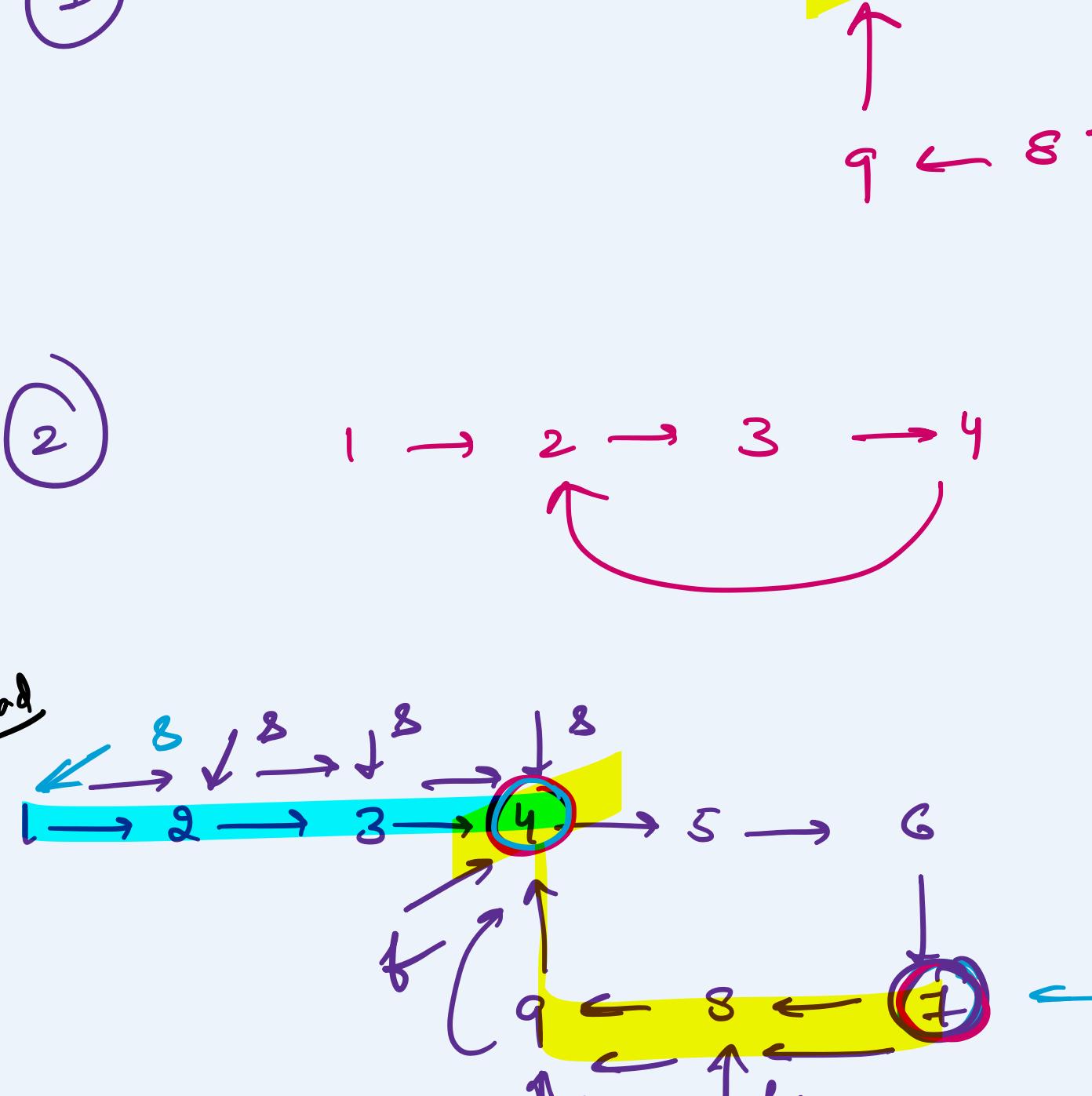
A diagram illustrating wave propagation. Two horizontal blue lines represent the boundaries of a medium. The top boundary features vertical tick marks labeled s (orange), s_f (yellow), and f (blue) from left to right. The bottom boundary features a single vertical tick mark labeled f (blue).

The diagram illustrates a neural network layer with 6 input nodes (labeled 1-6) and 3 output nodes (labeled 7-9). The forward pass is shown by purple arrows pointing right, and the backpropagation step is shown by red arrows pointing left. The output node 9 is highlighted with a green circle and labeled 'O9'.



Q If there is a cycle? Yes

Then, identify the starting point of the cycle.



e slow pointer at
e slow & fast p
by +1 step. wi

A hand-drawn diagram illustrating a particle scattering process. A green circle labeled 'y' represents an incoming particle moving from right to left. A purple circle represents an outgoing particle moving from left to right. A yellow circle labeled 'T' represents another outgoing particle moving from right to left. A red circle labeled 'x' represents an incoming particle moving from left to right. The particles interact at a central point, indicated by a small cross.

travelled by at =

$$\begin{aligned} \text{fact}] &= x + \\ &= x + \end{aligned}$$

$$S = \frac{D}{T}$$

$$T_s = T_f$$

$$\frac{D_s}{\cancel{s}s} = \frac{D_f}{2 \cancel{s}s}$$

$$D_f = \alpha D$$