

Random pointer

Okay, let's explain this even more simply, step by step with a tiny story.

✔ What's the situation?

We have two linked lists that eventually merge into one:

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List A: 4 1 8 4 5
List B: 5 6 1 8 4 5

They share the same tail starting at 8.

We want to find where they first meet (intersection).

✔ The trick: two people walking

Imagine two people walking:

- Person A walks List A first
- Person B walks List B first

When they reach the end of their list, they switch and walk the other list.

✔ How they move step by step

Start

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pA at 4 (List A start)
pB at 5 (List B start)

They move one step at a time.

Move forward

vbnet

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pA: 4 1 8 4 5 NULL then jump to List B (head 5)

pB: 5 6 1 8 4 5 NULL then jump to List A (head 4)

So after finishing their own list, they switch to the other list.

After switching

Now they continue:

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pA (now on List B): 5 6 1 8 4 5
pB (now on List A): 4 1 8 4 5

And they will meet at 8 because:

- pA walked List A + List B
- pB walked List B + List A
- Both covered the same total distance, so they meet at the intersection.

✔ Why does this always work?

Think of lengths:

- Unique part of List A = a
- Unique part of List B = b
- Common part (intersection) = c

So:

- pA travels a + c + b + c
- pB travels b + c + a + c

Both travel the same a + b + 2c ,
so they meet exactly at the start of the common part c .

If there's no intersection, both will end at NULL at the same time.

✔ Super simple analogy

- Two runners start on different tracks, but both tracks merge into one common path.
- When a runner finishes his track, he starts running the other person's track.
- After running the same total distance, they either:
 - Meet at the merge point, OR

- Both end up with no meeting (if no merge exists).

Would you like me to draw a simple diagram with arrows so you can visualize how they walk and meet?