nucamp

# Introduction to Linked Lists

# What is a Linked List?



Abstract data type, optimized for quick insert/delete operations

Stores data in sequential order

Python does not have a built-in implementation

Unlike a Python List, a Linked List is not indexed

Instead, a Linked List is ordered using links from Node to Node

Ok... what's a Node?

# What is a Node?



A Node has two parts: Value and Next

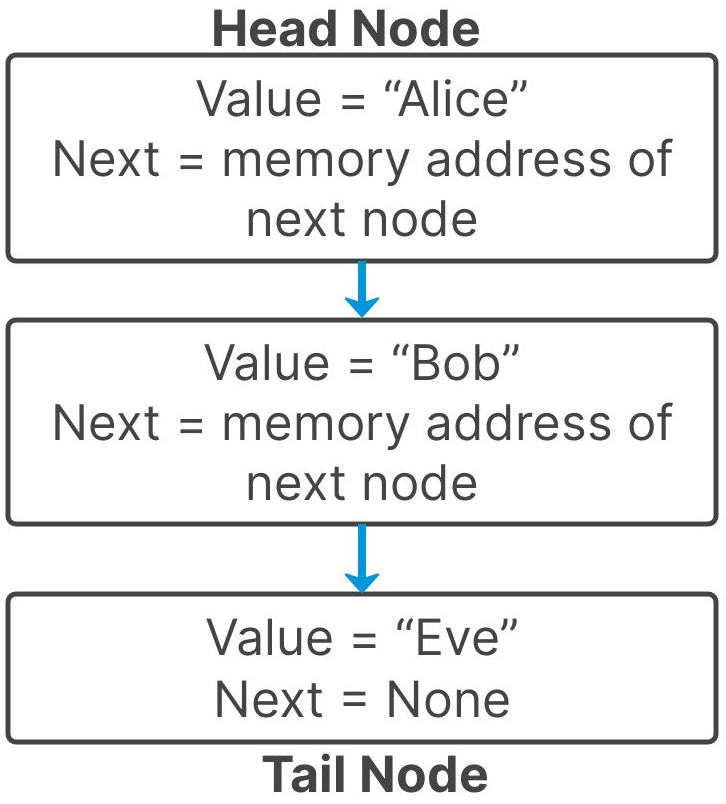
Value: Data stored in this Node

Next: Reference to next Node (memory address)

Like a scavenger hunt where each location has treasure (Value) & directions to next location (Next)

Must start at first Node (head)

Final (tail) node has null value for Next instead of memory address



# Linked List vs Indexed (Python) List



SHOWDOWN: Data Retrieval

To get to value in 4th position:

Python List: my_list[3]

Linked List: No index, must go from 1st node → 2nd node → 3rd node → 4th node

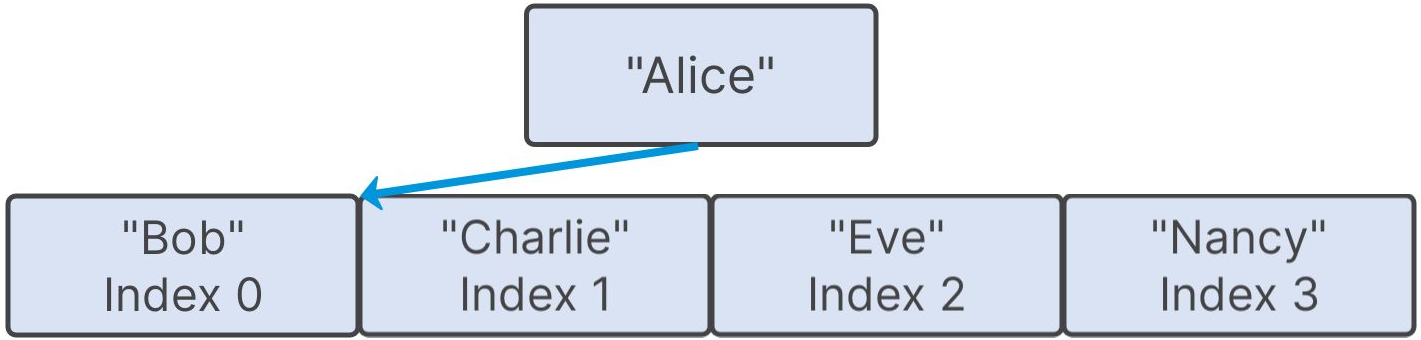
WINNER: Python List is more efficient at retrieving data

# Linked List vs Indexed (Python) List



SHOWDOWN: Inserting and Deleting Data

Python List: Must shift index for all following list items



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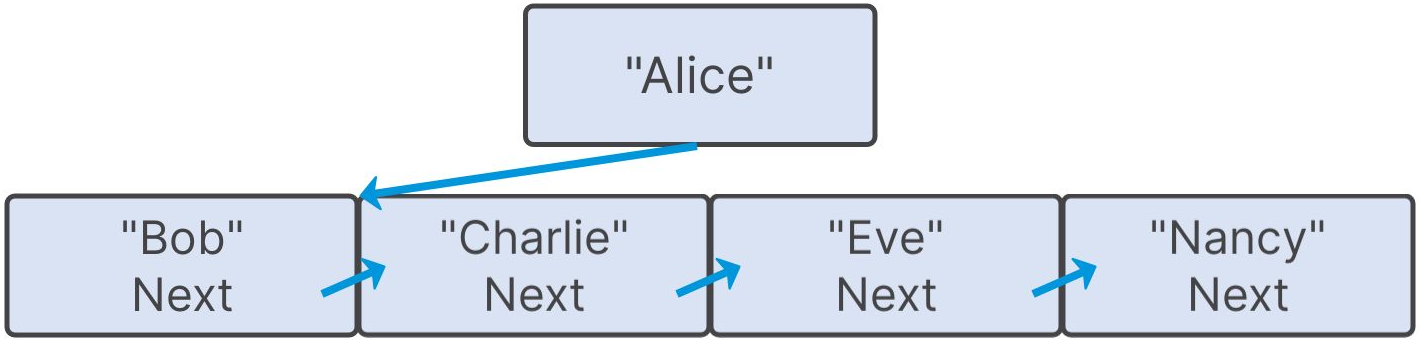
Linked List: Only need to update Next reference for previous Node



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Different data structures are better for different uses