

Data Structures & Algorithms

(PCC-CS 301)

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Topics Covered

1. Application of Linked List
 - a. Polynomial Representation
 - b. Polynomial Addition
 - c. Stack and Queue Representation

Application of Linked List

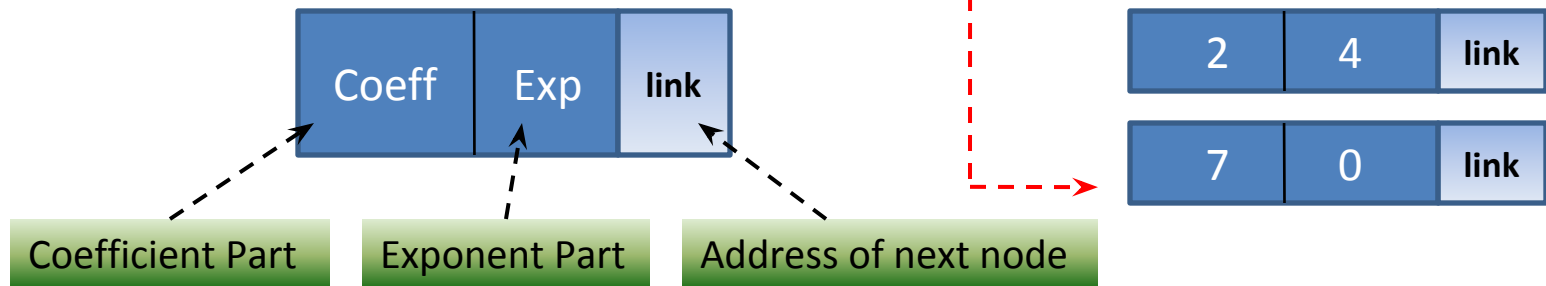
- Polynomial Representation

- Polynomial

$$Y = 2x^4 + x^3 + 3x^2 + 5x + 7$$

- Node definition

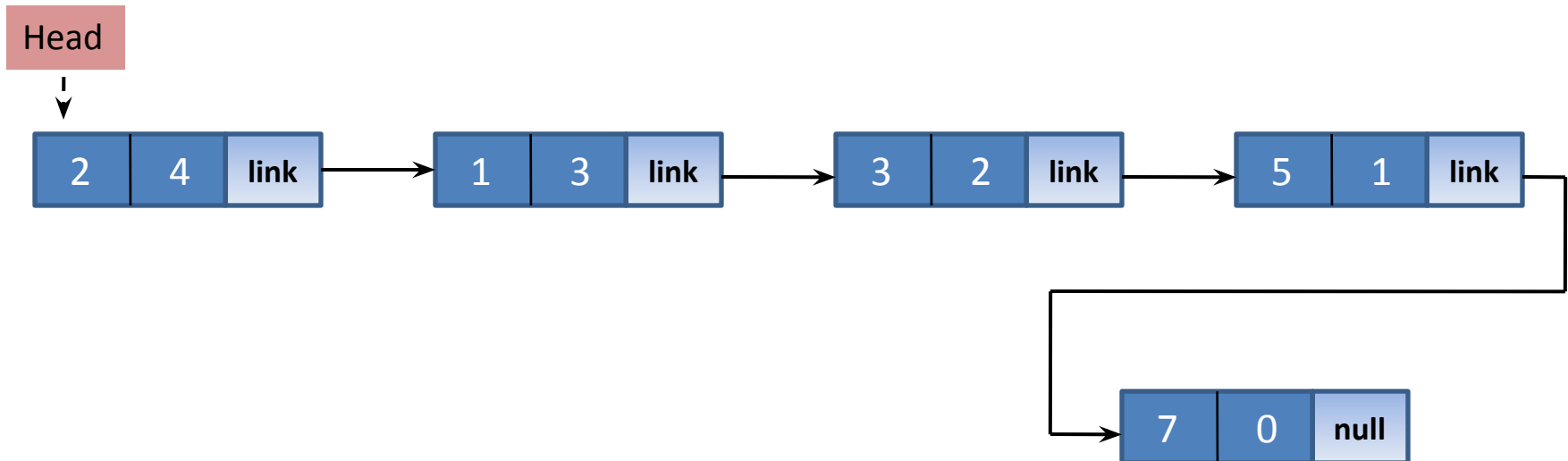
- Each component is stored in a single node
 - Any single node is defined with 2 data field and an address field



Application of Linked List

- Polynomial Representation
 - Linked List representation

$$Y = 2x^4 + x^3 + 3x^2 + 5x + 7$$



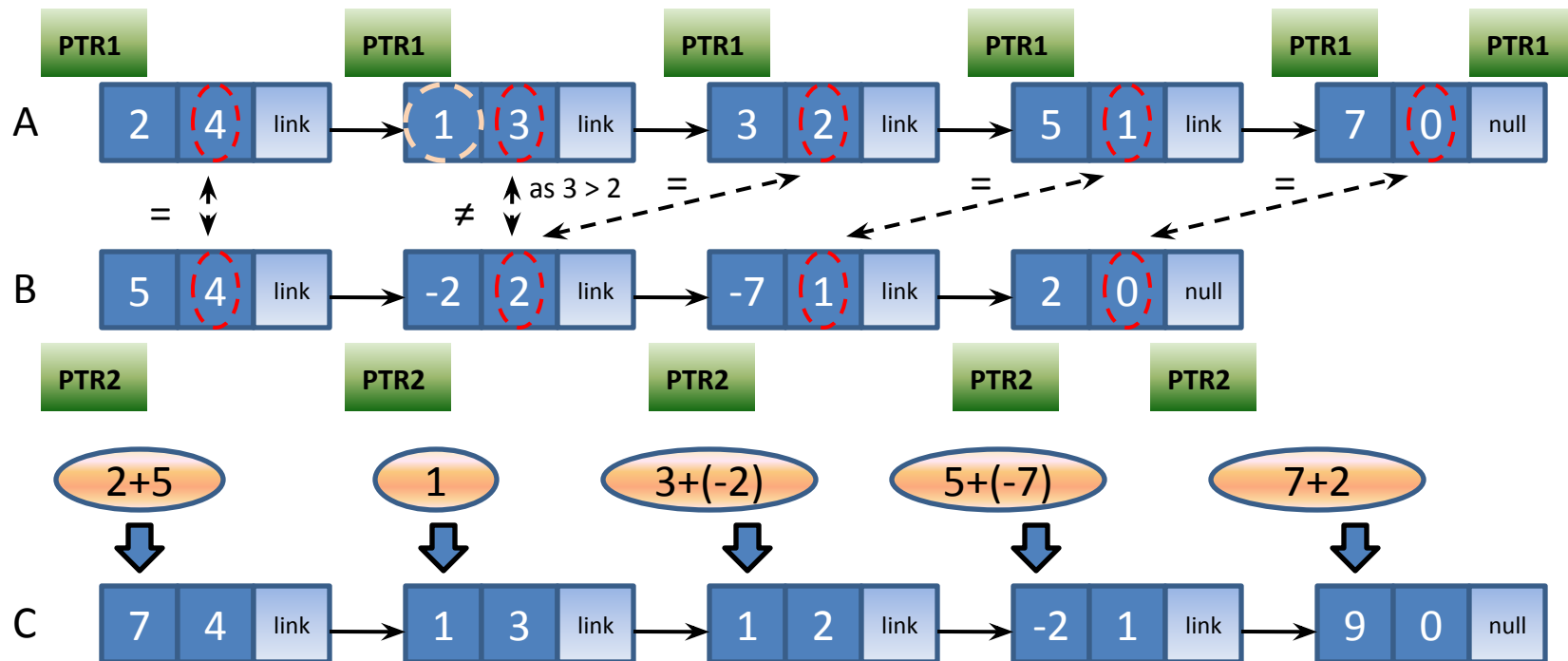
Application of Linked List

- Polynomial Addition

□ Add following polynomials using LL

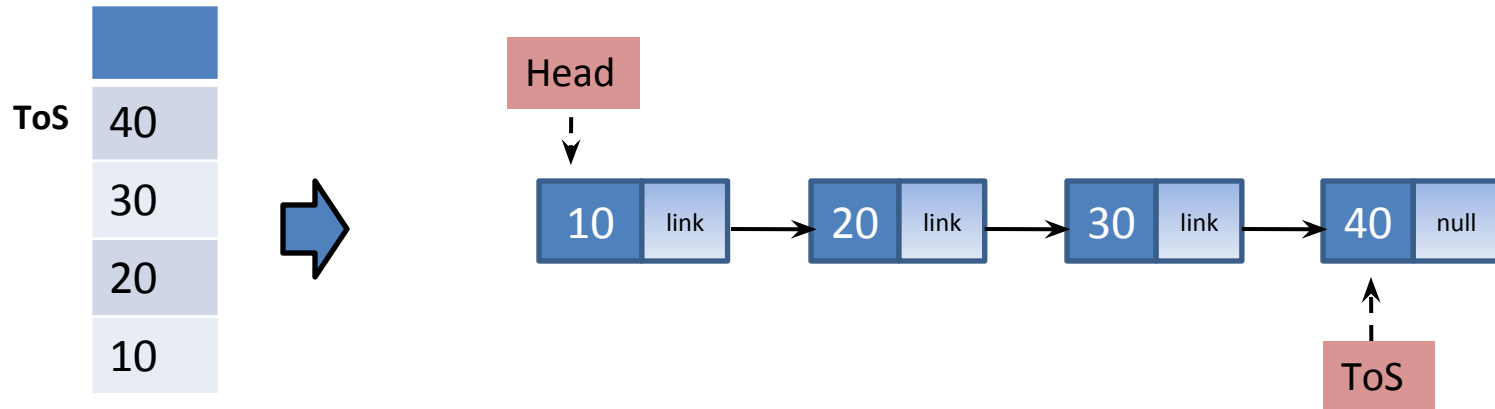
$$A = 2x^4 + x^3 + 3x^2 + 5x + 7$$

$$B = 5x^4 - 2x^2 - 7x + 2$$



Application of Linked List

- Stack Representation

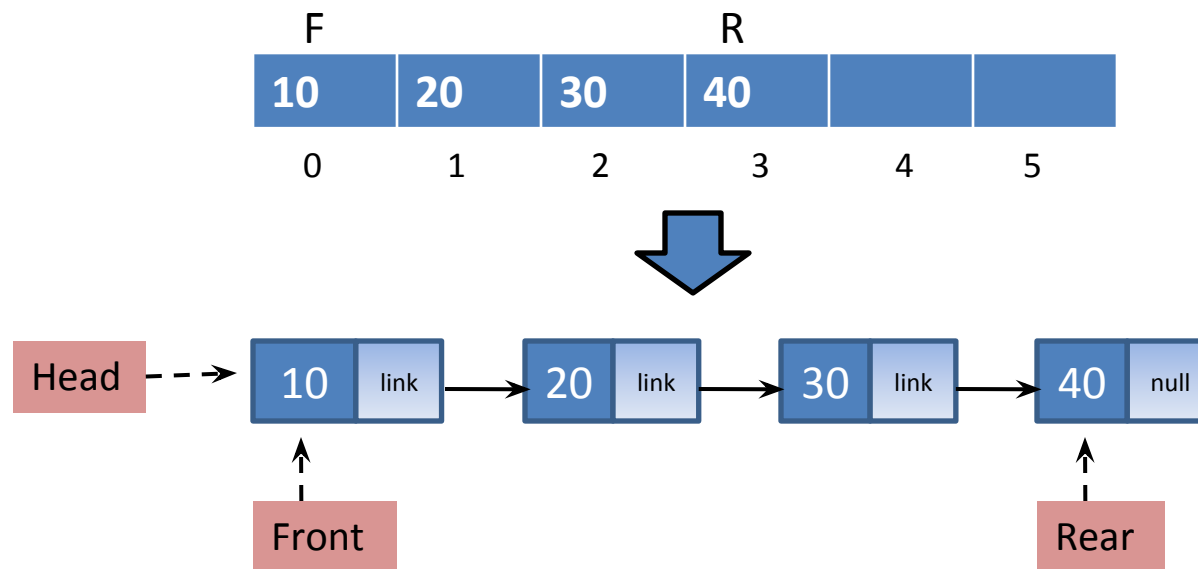


PUSH is performed by new node insertion at end in the singly Linked List using **ToS** pointer

POP is performed by last node deletion at singly Linked List using **ToS** pointer

Application of Linked List

- Queue Representation



ENQUEUE is performed by node insertion at end in the singly Linked List using **Rear** pointer

DEQUEUE is performed by first node deletion at singly Linked List using **Front** pointer

Queries?