UNIVERSITY OF CALOOCAN CITY
COMPUTER ENGINEERING DEPARTMENT

Data Structure and Algorithm

Seatwork

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Activity about Singly Linked List

1. What s a singly linked list, and how does it differ from an array?

A singly linked list is a type of data structure that stores elements in separate nodes. Each node contains two parts: the data and a link (called a pointer) to the next node in the list. Unlike arrays, where all elements are stored next to each other in memory and can be accessed directly by their index, the elements in a linked list are placed in different locations in memory and must be accessed one by one from the beginning. This makes arrays faster for accessing items, but linked lists are better when it comes to adding or removing elements, especially in the middle of the list.

2. When would you prefer a linked list over an array, and vice versa?

Linked lists are a better choice when the number of elements is not known ahead of time, or when you need to insert or delete items often. This is because you can easily add or remove items without moving other data around. On the other hand, arrays are more useful when you know how many elements you will need and when you need to quickly access items using their index. Arrays provide faster access, but they are harder to resize and can be less flexible for frequent changes.

3. How are linked lists used in real-world applications (e.g., browser history, undo functionality)?

Linked lists are used in many real-world systems. For example, a web browser uses a linked list to keep track of your browsing history, so you can go back and forth between pages. Applications like Microsoft Word or Photoshop use linked lists to store each change you make, allowing you to undo or redo actions. Linked lists are also used in creating playlists, managing memory in operating systems, and building other data structures like stacks, queues, and graphs.

References

[1] GeeksforGeeks. (n.d.). *Singly linked list*.
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