Programming Technical Review Notes

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Contents

1 Data Structures

Comparison of common data structures:

	Linked List	Array	Dynamic Array	Balanced Tree	Hashed Array Table
Indexing					
Insert/Delete at Beginning					
Insert/Delete at End					
Insert/Delete at Middle					
Wasted Space (average)					

1.1 Linked Lists

1.1.1 Description

A linear collection of data elements (nodes) that contain contain a pointer to the next node. There are several sub-types of linked lists; singly-linked list, doubly-linked list, mulitiply-linked list, and circular-linked list among others.

1.1.2 Pros

- Dynamic, can be grown and pruned during run-time. Easy memory allocation/deallocation

- Node insertion and deletion are easily implemented

- Linear data structures are easily created using linked-lists

1.1.3 Cons

- Use more memory than arrays because of pointers needing to be stored

- Nodes must be read in order so are sequentially accessed

- Nodes are stored incontiguously so have longer access times

- Difficult to navigate backwards (doubly-linked lists are better but require an additional pointer)