LINKED LIST ADT

Linked List ADT

- A linked list is:
  1. a linear data structure
  2. a data structure where each node has a unique predecessor and a unique successor

- A data element can be inserted or removed anywhere in the list

Linked Lists

Singly Linked List

Singly Linked Circular List

Linked List ADT

```
typedef struct ListElement* ListElementPtr;
typedef struct List* ListPtr;

typedef struct ListElement {
   int data;
   ListElementPtr psNext;
} ListElement;

typedef struct List {
   ListElementPtr psHead;
   ListElementPtr psTail;      // optional
   ListElementPtr psCurrent;
} List;
```

Linked List ADT Operations

Allocation and Deallocation

1. lstCreate
2. lstDispose

Checking number of elements

3. lstSize
4. lstIsFull
5. lstIsEmpty

Linked List Operations

- Peek Operations
  6. lstPeek
  7. lstPeekPrev
  8. lstPeekNext
- Retrieving values
  9. lstFirst
  10. lstLast
  11. lstNext
  12. lstPrev

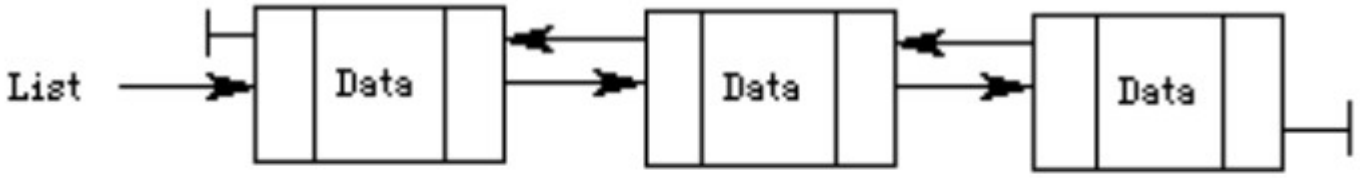
List Operations

- Retrieving values

13. lstDeleteCurrent
14. lstInsertAfter
15. lstInsertBefore
16. lstUpdateCurrent
17. lstHasNext
18. lstHasPrev

Linked Lists

Doubly Linked List



Doubly Linked Circular List