

Lecture 3 Data Structure

▼ Stacks

- Last-in, First-out (LIFO) data structure

▼ Methods

- push(obj)
- ▼ pop()
 - Remove and return the object from the top; Error if stack is empty
- Initialize()
- isEmpty()
- isFull()

▼ Applications

- Reverse Array
- Reverse Polish notation (postfix notation)
- Maze Problem

▼ Queues

- First-in, First-out (FIFO) data structure

▼ Methods

- enqueue(obj)
- ▼ dequeue()
 - Remove and return the object from the front; Error if queue is empty
- size()
- isEmpty()
- isFull()
- ▼ front()
 - Return but not remove the object from the front; Error if the queue is empty

▼ Application

- Multiprogramming -- Parallelism
- Multiple tasks/threads
- CPU thread allocation: Round Robin (RR)

▼ List

- A collection of items, with each item being stored in a node which contains a data field and a pointer to the next element in a list

▼ Referring Methods

- first()
- last()
- isFirst(p)
- isLast(p)
- before(p)
- after(p)

▼ Update Methods

- replaceElement(p, e)
- swapElements(p, q)
- insertFirst(e)

- insertLast(e)
- insertBefore(p, e)
- insertAfter(p, e)
- remove(p)

▼ Double Linked List

▼ Node

- elem
- prev
- next