



Lecture-14

Data Structures

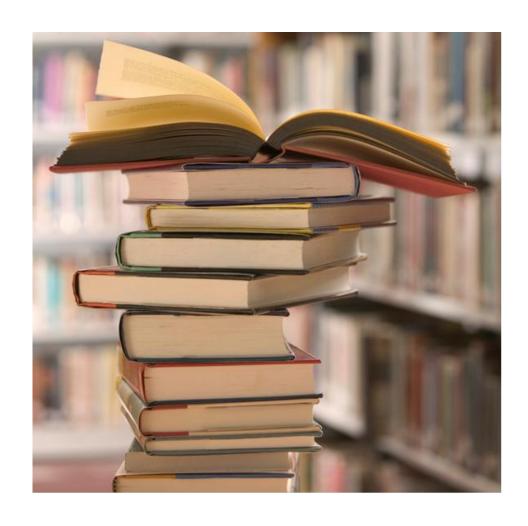
- Stacks
- Queues

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Header Files



Recursion and Pile of Books





Stacks



Templates



Stacks

```
class Stack{
  // accessor methods
  int size();
  bool isEmpty();
  int top();
  // update methods
  void push (int element);
  void pop();
}
```



How to implement Stack Class?

- Arrays
- 2. Linked List



Dynamic Arrays



Lets Implement Our Own Stack Class Using a Dynamic Array



Your Turn: Implement Stack Class Using Linked List



Lets solve few problems

- Given an expression check if brackets are balanced e.g. { a + [b+ (c + d)] + (e + f) }
- 2. Reverse a Stack with the help of another empty stack



Queues



Queue

```
class Queue{
  // accessor methods
  int size();
  bool isEmpty();
  int front();
  // update methods
  void enqueue(int element);
  int dequeue();
}
```



How to implement Queue Class?

- Linked List
- 2. Arrays



Lets Implement Our Own Queue Class Using Arrays



Your Turn: Implement Queue Class Using Linked List



Lets solve few problems

- Reverse a Queue
- Implement a Stack using Two Queues







Thank You!

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