BRAC UNIVERSITY
Inspiring Excellence

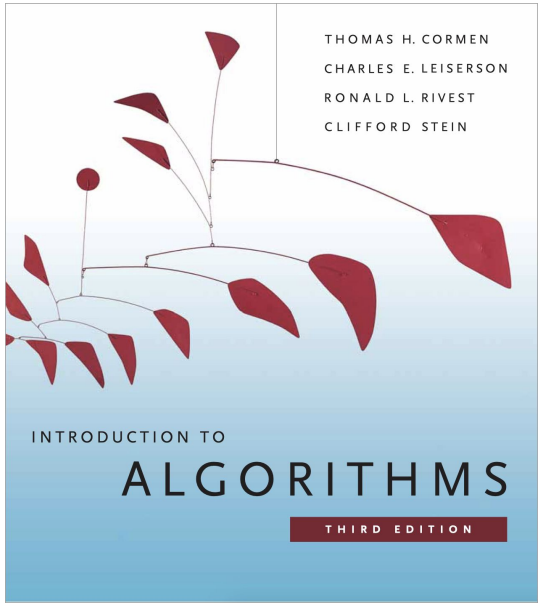
CSE 220
Data Structures

Lecture 00: Introduction

Reference Books

- **Algorithms, 4th Edition by Robert Sedgewick and Kevin Wayne**

- Introduction to Algorithms (Third Edition) by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein



Class Information

- This is a 3 credit course
- So, there will be 3+1 = 4 quizzes
- Out of these, best three will be selected

Mark Distribution (May Change Later)

Assessment Tools	Weightage (%)
Class Participation & Attendance	5%
Quizzes	15%
Midterm Exam	20%
Lab	25%
Final Exam	35%

Contact Information

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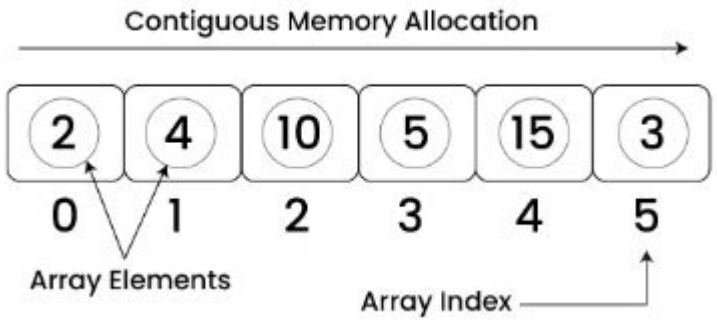
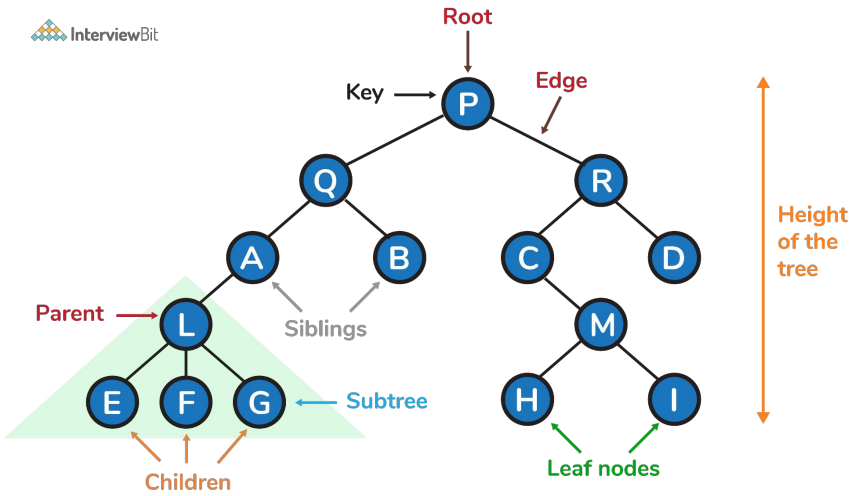
Prerequisites

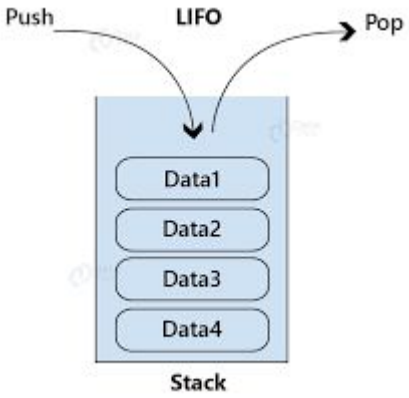
- Java concepts (start revising!)
  - Class, methods, fields, objects, public/private access modifiers, inheritance, interface
- Array creation, traversal, 1D & 2D arrays
- https://forms.gle/u1zvA7ezXAJod9eYA

Why Data Structures?

- As we write programs, we will need to store, retrieve, modify or delete data frequently.
- We want these operations to be as efficient and as fast as possible
- A data structure is a way of organizing and storing data so it can be used efficiently. Examples include arrays, lists, stacks, and trees.







Java Review

https://drive.google.com/file/d/1_g4HU6aAXMEssi_ALG0Uh7G9MfYlpo22/view?usp=sharing

- We will use **IntelliJ IDEA** for our Java IDE
- VSCode will work as well

Java Review

Concept	Description	Example
Class	Blueprint for objects	`class Car {}`
Fields	Variables inside a class	`int speed;`
Methods	Functions inside a class	`void displayInfo() {}`
Object	Instance of a class	`Car car1 = new Car();`
Public	Accessible anywhere	`public void show()`
Private	Accessible within class only	`private int age;`
Inheritance	One class acquires another's properties	`class Dog extends Animal {}`
Interface	Contract for classes to implement	`interface Vehicle {}`

Resources

- https://www.youtube.com/watch?v=Qmt0QwzEmh0&list=PLDV1Zeh2NRsB6SWUrDFW2RmDotAfPbeHu
  - Excellent explanation and visualization
  - Contains almost all the topics we will teach in this course
- https://www.youtube.com/@abdul_bari/videos
- You will find almost all the topics of this course (+algorithms) in these two channels

Resources

- https://algs4.cs.princeton.edu/home/
  - Created by the authors (Robert Sedgewick, Kevin Wayne)
- https://www.coursera.org/learn/algorithms-part1
- https://www.coursera.org/learn/algorithms-part2
  - Both are completely free!
  - Amazing lectures by the authors!

Java Resources

- https://www.w3schools.com/java/
- https://www.youtube.com/watch?v=23HFxAPyJ9U&list=PLZPZq0r_RZOOj_NOZYq_R2PECIMglLemc