NANYANG
TECHNOLOGICAL
UNIVERSITY
SINGAPORE

SC1007: DATA STRUCTURES AND ALGORITHMS

Course Introduction

College of Engineering
School of Computer Science and Engineering

- Owen Noel **Newton Fernando**

- Email: ofernando@ntu.edu.sg

- Office: NTU, N4-02c-80

- Office hours:
  - Thursday **10.30 AM-12.30 PM** (no appointment needed)
  - Other times by appointment (Email)

Week	Monday (Online) 15.30-16.30	Wednesday (Online) 15.30-16.30
1	Introduction to Dynamic Data Structures	Introduction to Dynamic Data Structures
2	Introduction to Linked Lists	Linked Lists
3	**No Lecture (CNY)**	Linked Lists – Linear Search
4	Stack and Queues	Stack and Queues – Arithmetic Operations
5	Binary Trees – Binary Search	Binary Trees – Binary Search
6	Binary Search Trees	AVL Trees

ROADMAP (LABS AND TUTORIALS): FIRST HALF

Week	Tutorial	Lab
1	**No Tutorial**	**No Labs**
2	**No Tutorial**	**No Labs**
3	Linked Lists	**No Labs**
4	**Makeup T1(LL)**	Linked Lists
5	Stack and Queues	Stack and Queues
6	**No Tutorial**	Binary Trees
7	Binary Tree and Binary Search Trees	Binary Search Trees

ROADMAP (ASSIGNMENTS): FIRST HALF

NO	Assignment	Release date	Deadline (11.59 PM)
1	Linked Lists	27/1/2023	10/2/2023
2	Stack and Queues	03/2/2023	17/2/2023
3	Binary Tree and Binary Search Trees	10/2/2023	24/2/2023

www.hackerearth.com online platform will be used for the assignments submission.

Week	Lab Test 1
Recess Week	02/03/2023

Lab Test information will be released two weeks before the deadline.

www.hackerearth.com online platform will be used for the lab test.

- Lectures focus on introduction to concepts

- Tutorials focus on understanding the concepts

- Lab Sessions focus on practice and realization

- Assignments and Lab Tests are assessments

- Select appropriate data structures and Algorithm

- Implement algorithms to solver real world problems using C Language

- Conduct complexity analysis of algorithms

- **Data Structures**:
  - Concepts of pointers and structures (aggregates)
  - Introduce some classical data structures
    - Linear: Linked list, stack, queue
    - Nonlinear: tree
  - Implement these data structures

- **Algorithms**:
  - Analysis of Algorithm time complexity and space complexity
  - Introduce to some typical algorithms and their applications
  - Introduce to some algorithm design strategies

- **Implementation**:
  - C programming

"I will, in fact, claim that the difference between a bad programmer and a good one is whether he considers his code or his data structures more important. Bad programmers worry about the code. Good programmers worry about data structures and their relationships."

Linus Torvalds, 2006

(Creator of the Linux kernel)