CSE205
Data Structures and Algorithms
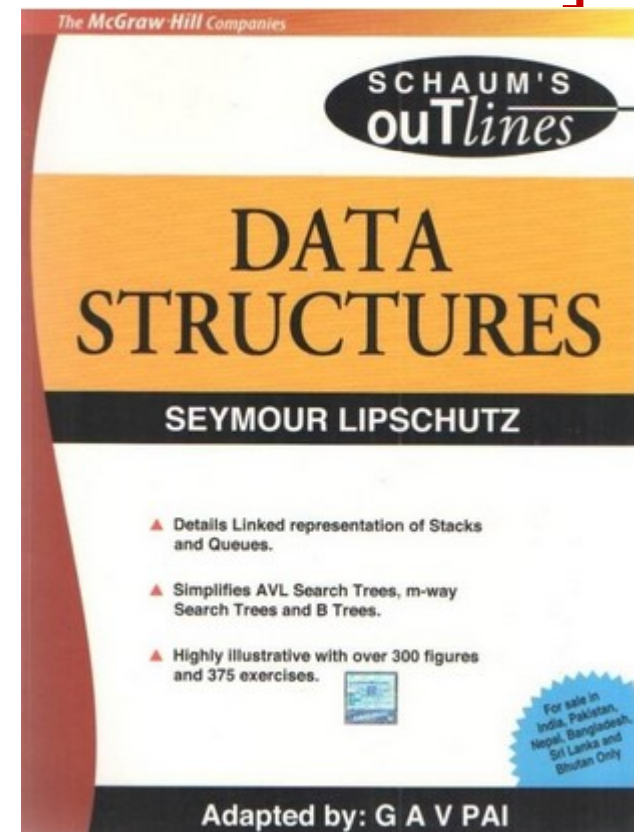
Lecture #0

The kick start session

Course Details

- CSE205
- LTP – 3 0 2 [3 lectures, 2 practical's /week]

- **Book to Follow**

Data Structures (Schaums' Outlines Series)

Author - Seymour Lipschutz

Course Assessment Model

- **CSE205**   **Marks break up***
- Attendance   5
- Daily Practice Problems   20
- CA (Two best out of Three ATs)   30
- ETP (Practical /Laptop)   45
- **Total**   **100**

Academic Tasks

Academic Task	Tentative Week
CA-1: Daily Practice Problems (MCQs + Coding) (Mandatory)	Week1 – Week14
CA-2: Mix of MCQs(10 Marks) + Coding Problems(20 Marks)	Week 5
CA-3: Mix of MCQs(10 Marks) + Coding Problems(20 Marks)	Week 9
CA-4: Mix of MCQs(10 Marks) + Coding Problems(20 Marks)	Week 12

Practice Problems

- In the Practice Problems marks are only for coding Problems.

- MCQs are only for practice.

Sequence locking:

- Student must has completed all the problems of lecture 1, to complete the problems of lecture 2.

Marks Calculation for Programming Practice

- In order to qualify for programming practice marks, the student must solve a minimum of 50% (75 Coding Problems) problems (eligibility condition)

- No marks for MCQs.

Scoring Criteria:

I.   If the student scores ≥ 81% in all CA's (best 2 out of 3), they will be eligible for 100% of the programming practice marks.

II. If the student scores between 71% - 80% (inclusive) in all CA's (best 2 out of 3), they will be eligible for 70% of the programming practice marks.

Marks Calculation for Programming Practice

III. If the student scores between 51% - 70% (inclusive) in all CA's (best 2 out of 3), they will be eligible for 50% of the programming practice marks.

IV. If the student scores between 30% - 50% (inclusive) in all CA's (best 2 out of 3), they will be eligible for 30% of the programming practice marks.

V. If the student scores less than 30% in the CA's (best 2 out of 3), they will not be eligible for any benefit.

Daily Practice Problems

| S. No	Unit	Question	Tentative Dates for Completion
1	Unit-1	25 Multiple Choice Questions and 25 Practical Implementation problems in each unit	27th August 2023
2	Unit-2		10th September 2023
3	Unit-3		24th September 2023
4	Unit-4		22nd October 2023
5	Unit-5		5th November 2023
6	Unit-6		12th November 2023

Note:- Most Important for the improvement of Performance in Course Assessments.

End Term Practical (45 Marks)

- Coding Problems [70%]
- Viva [30%]

Course Content

- Introduction to data structures
- Computation of complexity
- Arrays, Sorting & Searching
- Linked List
- Stack and Queues
- Recursions
- Trees
- Hashing
- Graphs
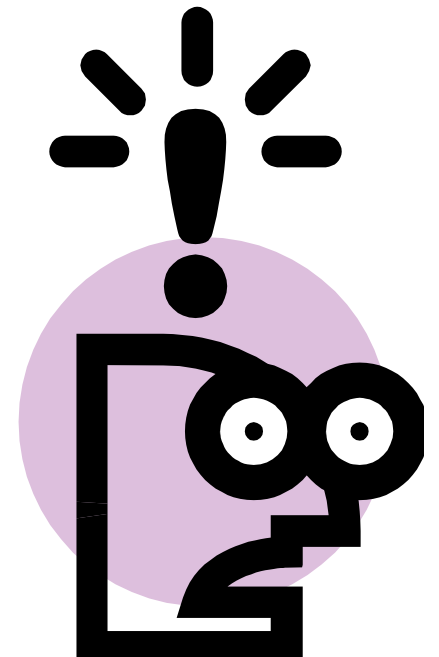
Why Star Course?

➢ Weightage in Gate/Govt. exams
➢ Industry demand
  ➢ Product Based
  ➢ Service Based
➢ Higher Studies
➢ Government Jobs

What will be the course outcome?

- Understand the time and space complexity of programs and data-structures.
- Illustrate the importance of linked list in context of real world problems
- Differentiate the stack and queue data structures for problem solving
- Use of recursion in iteration process and tree data structure
- Analyze the effectiveness of AVL Tree and Heap Data Structures
- Use of graph and hashing techniques in problem solving

Program Outcomes achieved from the course

- Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

- Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

- Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Outcomes achieved from the course

- Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

- Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Program Educational Objectives achieved from the course

- Those employed in industry will be able to apply fundamentals of technical knowledge in multidisciplinary areas related to automobile, thermal, manufacturing and mechatronics by participating as top professionals in leading Industries.

- Pursue advanced education, research and development in science, engineering, and technology, as well as other professional endeavors.

- Be receptive to professional and ethical responsibilities for the impact of engineering solutions on society being as a successful innovator, consultant and entrepreneur

Platform Used

- Live Demostration of IamNeo Platform

- URL: https://lpucolab438.examly.io/login

- UserName: *RegistrationNumber@neocolab.ai*
- Password: *Registration Number*

Next Class: Basic Data Structures