

COURSE NAME	CREATIVE PROBLEM SOLVING USING - “C AND DATA STRUCTURES”
HIGHLIGHTS	<ol style="list-style-type: none"> 1. No prior programming language knowledge required. 2. Learn-by-doing approach 3. Enhances Thinking process 4. 20% theory, 80% practical 5. Problems Selection from real world software applications. <ol style="list-style-type: none"> 1. Problems are small to grasp, understand and solve. 2. Problems have big impact to empower complex software systems.
DURATION	20 DAYS
PROBLEMS TO DISCUSS	20
PROBLEMS FOR ASSIGNMENT	10
PROBLEMS FOR ASSESSMENT TEST	5
MODULES	4

MODULE 1: Getting Ready for Creative Problem Solving

Description

This module introduces basic tools that are necessary for every problem solving. Thinking process, generating alternative solutions and selecting right solutions are the key goals of this module. This module also focuses on understanding fundamentals of programming language C that would be required for solving complex problems we would encounter in rest of the modules.

Topics Covered

1. Creative Problem Solving
2. Problem Solving Approach
3. Programming Language C
4. Case Studies - Practical Problems Discussion
5. Assignment

MODULE 2: Linear Data Structures and their Applications

Description

This module starts getting into the world of problem solving by analyzing popular games of desktop or mobile and understanding how simple yet powerful linear data structures provide solid back bones for game programming. This provides reasoning capability to learners and apply the skills acquired to solve other similar problems.

Topics Covered

1. Arrays
2. Linked Lists
3. Stack
4. Queue

MODULE 3: Crucial Programming Problems behind **Social Networks** [Non-Linear Data Structures]

Description

There are lots of special kind of problems that need very specific solutions in terms of efficiency. Reason for efficiency demand arises because such problems serve a large number of people across the globe. This provides pattern identification capability to learners to enable them to model the problems by picking right data structures to solve them effectively.

Topics Covered

1. Recursion
2. Trees
3. Graph

MODULE 4: Interesting programming Problems fuelling **Search Engines** [Algorithms]

Description

Everyone in today's world is searching for something, be it Job, College, Life Partner, Technical Answers, Political Answer or Information that he forgot or he never had. Search engines empower us to do that. So it is crucial to understand, how to search and how to make it more and more efficient. This provides capability to find right information quickly to the learners and empowers them to not only understand the back bones of such solutions but also to apply to their own search needs.

Topics Covered

1. Searching & Sorting
2. Hashing
3. Bit Fiddling