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DATA STRUCTURES AND ALGORITHMS (PYTHON)
For B.Tech III SEMESTER IT BRANCH
Dr. S.NITHYANANTHAM - N. P. SHANGARANARAYANEE - P. KRISHNA SANKAR

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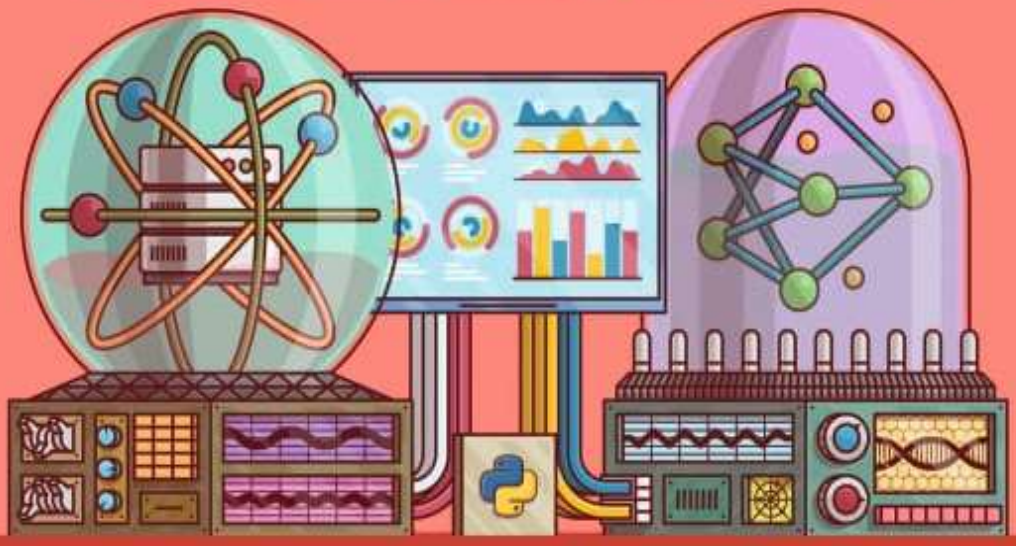

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For B.Tech III SEMESTER IT BRANCH

Dr. S.NITHYANANTHAM
N. P. SHANGARANARAYANEE
P. KRISHNA SANKAR

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(Regulation 2021)

Dr. S. Nithyanantham,

Associate Professor
School of Engineering
Department of Computer Science and Engineering
Kalasalingam Academy of Research and Education
Anand Nagar, Krishnankoil.

Ms. N. P. Shangara Narayanee, B.E., M.E.,

Assistant Professor
Department of Artificial Intelligence and Data Science Engineering
Erode Sengunthar Engineering College
Perundurai.

Mr. P. Krishna Sankar, B.E., M.E.,

Freelance Entrepreneur / Consultant
Kavindapadi

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No. 11, Veerabathra Nagar, Part II,
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PREFACE

This book “Data Structures and Algorithms” is about basic idea towards data representation in program and its manipulation. It provides a clear view towards Abstract Data Type and Object-Oriented Programming on Python. It provides a preliminary study on linear data structures, sorting, searching, hashing, Tree and Graph Structures along with Python implementation.

Unit I	Introduction towards Abstract Data Types and Object-Oriented Programming. Contributes a knowledge on analysis of algorithm, asymptotic notations, divide & conquer and recursion with example.
Unit II	Summary on Linear structures and its working mechanism. Provides an hands on understanding towards the Array List, Linked List, Stack and Queue. Linked list were represented with singly, doubly, circularly, stack and queue through Python.
Unit III	Brief knowledge over sorting and searching. Bubble, Selection, Insertion, Merge, Quick sort implemented through Python. It provides detailed understanding and procedures for linear search, binary search, hash functions and collision handling.
Unit IV	Transitory awareness on Tree and its traversal. Provides a procedure in Python to construct Binary Tree, AVL Tree, Heap, B Tree & B+ Tree and Tree Traversal.
Unit V	Provides a study over graph and its traversal mechanisms. Python hands on experience over estimating shortest path and constructing minimum spanning tree over a graph. Understanding towards problem complexity and its classes.
Unit VI	It provides an implementation idea over recursive algorithm, List, Stack and Queue. Understanding towards the several sorting and searching algorithm using python. Detailed implementation to construct tree traversal, minimum spanning tree and estimate the shortest path on graph through Python.

ACKNOWLEDGEMENT

Primarily, we would like to thank God. In the process of putting this book together, we realized how true this gift of writing is for us to share our knowledge. You give us the power to believe in our passion and pursue our dreams. We could never have done this without the faith we have in you, the Almighty.

We wholeheartedly thank next God, thy Parents, for showing faith with us and giving us liberty to choose what we desire. We salute you all for the selfless love, care, pain and sacrifice you did to shape our life.

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The authors would be happy to collect opinion for supplementary improvement of the book.

Dr. S. Nithyanantham

Ms. N. P. Shangara Narayanee

Mr. P. Krishna Sankar

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