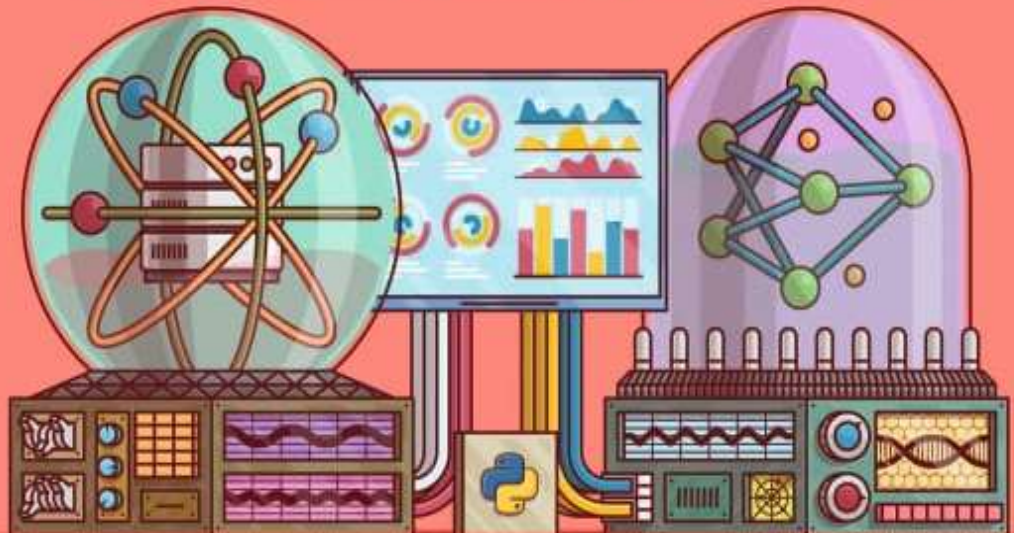


As per the Latest Syllabus of Anna University, Chennai (Regulation - 2021)



# DATA STRUCTURES AND ALGORITHMS (PYTHON)

For B.Tech III SEMESTER IT BRANCH

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



Dr. S.NITHYANANTHAM  
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# **Data Structures and Algorithms (Python)**

(CD3291 – Data Structures and Algorithms & CD3281 – Data Structures and Algorithm Laboratory)

B. Tech. – Information Technology

As per the Latest Syllabus of Anna University, Chennai

(Regulation 2021)

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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.

<b>Unit I</b>	Introduction towards Abstract Data Types and Object-Oriented Programming.  Contributes a knowledge on analysis of algorithm, asymptotic notations, divide & conquer and recursion with example.
<b>Unit II</b>	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.
<b>Unit III</b>	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.
<b>Unit IV</b>	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.
<b>Unit V</b>	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.
<b>Unit VI</b>	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.

We sincerely thank our Colleagues, Friends and Well-wishers for their understanding, patience in addition, constant encouragement.

Finally, we offer our special thanks to **Thiru. A. Ramesh**, A. R. S. Publishers and his Colleagues for their tireless effort in overseeing the production of the book.

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

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## **Contents**

### **UNIT I 2**

#### **ABSTRACT DATA TYPES 2**

<b>1.1</b>	<b>Introduction to Data Structure</b>	<b>2</b>
<b>1.1.1</b>	<b>Primitive Data Structures</b>	<b>2</b>
<b>1.1.2</b>	<b>Non-Primitive Data Structures</b>	<b>2</b>
<b>1.2</b>	<b>Abstract Data Types (ADTs)</b>	<b>4</b>
<b>1.3</b>	<b>ADTs and classes</b>	<b>5</b>
<b>1.4</b>	<b>Introduction to OOP in Python</b>	<b>5</b>
<b>1.4.1</b>	<b>Classes and Object</b>	<b>6</b>
<b>1.4.2</b>	<b>Constructors</b>	<b>7</b>
<b>1.4.3</b>	<b>Inheritance</b>	<b>11</b>
<b>1.4.4</b>	<b>Encapsulation</b>	<b>20</b>
<b>1.4.5</b>	<b>Abstraction</b>	<b>21</b>
<b>1.4.6</b>	<b>Polymorphism</b>	<b>22</b>
<b>1.4.7</b>	<b>Namespaces</b>	<b>23</b>
<b>1.4.8</b>	<b>Shallow and Deep copying</b>	<b>28</b>
<b>1.5</b>	<b>Introduction to analysis of algorithms</b>	<b>30</b>
<b>1.5.1</b>	<b>Notion of an Algorithm</b>	<b>30</b>
<b>1.5.2</b>	<b>Fundamentals of Algorithmic Problem Solving</b>	<b>32</b>
<b>1.5.3</b>	<b>Analysis Framework</b>	<b>38</b>
<b>1.5.4</b>	<b>Asymptotic notations</b>	<b>42</b>
<b>1.6</b>	<b>Divide &amp; conquer</b>	<b>48</b>
<b>1.6.1</b>	<b>Finding maximum and minimum</b>	<b>51</b>
<b>1.7</b>	<b>Recursion</b>	<b>52</b>
<b>1.7.1</b>	<b>Example 1: Factorial function <math>F(n) = n!</math></b>	<b>53</b>
<b>1.7.2</b>	<b>Example 2: Tower of Hanoi</b>	<b>56</b>
<b>1.7.3</b>	<b>Example 3: Calculate the number of binary digits in <math>n</math>'s binary representation</b>	<b>59</b>
<b>1.7.4</b>	<b>Example 4: Computing the <math>n</math>th Fibonacci Number</b>	<b>61</b>

## **UNIT II 3**

### **LINEAR STRUCTURES 3**

<b>2.1</b>	<b>List ADT</b>	<b>3</b>
<b>2.1.1</b>	<b>Array-based implementations</b>	<b>3</b>
<b>2.1.2</b>	<b>Linked list implementations</b>	<b>6</b>
<b>2.1.3</b>	<b>Difference between Array and Linked list implementation</b>	<b>7</b>
<b>2.2</b>	<b>Singly linked lists</b>	<b>8</b>
<b>2.2.1</b>	<b>Create a Node</b>	<b>12</b>
<b>2.2.2</b>	<b>Display the List</b>	<b>13</b>
<b>2.2.3</b>	<b>Search in List</b>	<b>14</b>
<b>2.2.4</b>	<b>Inserting</b>	<b>15</b>
<b>2.2.5</b>	<b>Deleting</b>	<b>16</b>
<b>2.2.6</b>	<b>Application</b>	<b>17</b>
<b>2.3</b>	<b>Circular linked lists</b>	<b>18</b>
<b>2.3.1</b>	<b>Create a Node</b>	<b>22</b>
<b>2.3.2</b>	<b>Display the List</b>	<b>23</b>
<b>2.3.3</b>	<b>Search in List</b>	<b>25</b>
<b>2.3.4</b>	<b>Inserting</b>	<b>25</b>
<b>2.3.5</b>	<b>Deleting</b>	<b>27</b>
<b>2.3.6</b>	<b>Application</b>	<b>27</b>
<b>2.4</b>	<b>Doubly linked lists</b>	<b>28</b>
<b>2.4.1</b>	<b>Create a Node</b>	<b>33</b>
<b>2.4.2</b>	<b>Display the List</b>	<b>34</b>
<b>2.4.3</b>	<b>Search in List</b>	<b>35</b>
<b>2.4.4</b>	<b>Inserting</b>	<b>36</b>
<b>2.4.5</b>	<b>Deleting</b>	<b>37</b>
<b>2.4.6</b>	<b>Difference between Singly and Doubly Linked List</b>	<b>37</b>
<b>2.4.7</b>	<b>Application</b>	<b>37</b>
<b>2.5</b>	<b>Stack ADT</b>	<b>38</b>

2.5.1	Array based implementation	38
2.5.2	Linked List based implementation	43
2.5.3	Applications of Stack	48
2.5.4	Expressions	49
2.6	Queue ADT	56
2.6.1	Array based implementation	56
2.6.2	Linked List based implementation	64
2.6.3	Applications of Queue	69
2.7	Double ended queues	69
2.7.1	Input restricted Queue	70
2.7.2	Output restricted Queue	70
2.7.3	Operations performed on deque	70
2.7.4	Sample program to implement the Dequeue	73

### UNIT III 2

#### SORTING AND SEARCHING 2

3.1	Sorting	2
3.1.1	Bubble sort	3
3.1.2	Selection sort	8
3.1.3	Insertion sort	15
3.1.4	Merge sort	20
3.1.5	Quick sort	25
3.1.6	Analysis of sorting algorithms	30
3.2	Searching	30
3.2.1	Linear search	31
3.2.2	Binary search	33
3.2.3	Comparison on Linear and Binary Search	36
3.3	Hashing	37
3.3.1	Hash functions	37

3.3.2	Collision handling	42
3.3.3	Load factors	55
3.3.4	Rehashing	56
3.3.5	Efficiency	58
UNIT IV 3		
TREE STRUCTURES 3		
4.1	Tree ADT	3
4.1.1	Terms	4
4.1.2	Properties	5
4.2	Binary Tree ADT	6
4.2.1	Characteristics	7
4.2.2	Various types of Binary Tree	8
4.2.3	Binary search trees	11
4.2.4	Tree traversals	16
4.2.5	Sample Program to implement Binary Search Tree	26
4.2.6	Algorithm Analysis	32
4.3	AVL trees	33
4.3.1	Balance Factor	33
4.3.2	Rotation	33
4.3.3	Insert	37
4.3.4	Delete	39
4.3.5	Search a Node	42
4.3.6	Tree traversals	42
4.3.7	Sample Program	42
4.3.8	Sample AVL Tree construction	48
4.3.9	Algorithm Analysis	51
4.4	Heaps	51
4.4.1	Heapify	53
4.4.2	Heap Sort	54



4.4.3	Priority Queues	56
4.4.4	Construct a Max Heap - Example	58
4.4.5	Construct a Min Heap - Example	60
4.4.6	Sample Program	62
4.4.7	Algorithm Analysis	68
4.4.8	Applications of Heap	68
4.5	Multiway search trees	69
4.5.1	B-Tree	70
4.5.2	B+ Tree	78
4.5.3	B Tree VS B+ Tree	81

## UNIT V 2

### GRAPH STRUCTURES 2

5.1	Graph	2
5.1.1	Graph ADT	4
5.1.2	Types of Graphs	5
5.2	Representations of graph	10
5.2.1	Adjacency Matrix	10
5.2.2	Adjacency Lists	13
5.2.3	Incidence Matrix	14
5.3	Graph traversals	15
5.3.1	Depth-First Search	16
5.3.2	Breadth-First Search	18
5.3.3	Applications of graph traversal	22
5.3.4	BFS vs DFS	24
5.4	Theoretical Idea on Graph Evaluation	26
5.4.1	Directed Acyclic Graph (DAG)	26
5.4.2	Topological ordering	26
5.4.3	Greedy algorithms	27
5.4.4	Dynamic programming	27

5.4.5	Shortest paths	29
5.4.6	Spanning trees	29
5.5	Algorithms for Shortest Path and Minimum Spanning Tree	32
5.5.1	Kruskal's algorithm – MST & Greedy	32
5.5.2	Prim's algorithm - MST & Greedy	38
5.5.3	Bellman-Ford algorithm – SP & DP	44
5.5.4	Dijkstra's algorithm - SP & Greedy	49
5.5.5	Floyd warshall algorithm - SP	57
5.6	Introduction to complexity classes and intractability	62
5.6.1	Tractable Vs. Intractable Problems	62
5.6.2	Terminology on Classes	63
5.6.3	Complexity classes	64
UNIT - 6		3
DATA STRUCTURES AND ALGORITHMS LABORATORY		3
6.1	Implement simple ADTs as Python classes	3
6.2	Implement recursive algorithms in Python	3
6.2.1	Factorial of a Number	3
6.2.2	Count number of binary digits to a decimal value	4
6.2.3	Fibonacci of nth element	4
6.3	Implement List ADT using Python arrays	5
6.4	Linked list implementations of List	8
6.5	Implementation of Stack and Queue ADTs	11
6.5.1	Stack – Array	11
6.5.2	Stack – Linked List	13
6.5.3	Queue – Array	16
6.5.4	Queue – Linked List	19
6.6	Applications of List, Stack and Queue ADTs	21
6.6.1	Stack - Evaluate Expression	21
6.6.2	Stack - Reverse String	23

6.6.3	Queue - Tree traversal using BFS	24
6.6.4	Queue - CPU Process Scheduling	25
6.7	Implementation of sorting and searching algorithms	26
6.7.1	Bubble Sort	26
6.7.2	Quick Sort	27
6.7.3	Linear Search	29
6.8	Implementation of Hash tables	30
6.8.1	Linear Probing	30
6.8.2	Quadratic Probing	33
6.9	Tree representation and traversal algorithms	37
6.9.1	Tree traversal using DFS	37
6.9.2	Tree traversal using BFS	38
6.10	Implementation of Binary Search Trees	40
6.11	Implementation of Heaps	46
6.11.1	Max Heap	46
6.11.2	Min Heap	49
6.12	Graph representation and Traversal algorithms	52
6.12.1	Depth-First search from Adjacency List	52
6.12.2	Breadth-First search from Adjacency List	53
6.13	Implementation of single source shortest path algorithm - Dijkstra Algorithm	55
6.14	Implementation of minimum spanning tree algorithms	57
6.14.1	Kruskal's algorithm	57
6.14.2	Prim's algorithm	59

## References

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