Core Programming

Core Programming: Reference-1

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01	Programming
02	Higher-Level Languages
03	Integrated Development Environments
04	Operating System
05	Compiling Programs
06	Integrated Development Environment
07	Language Interpreters
	Compiling and Running Your First Program
08	Compiling Your Program
09	Running Your Program
10	Understanding Your First Program
11	Displaying the Values of Variables
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	Variables, Data Types, and Arithmetic Expressions
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22	Working with Arithmetic Expression – Topics 3
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30	The (While) Statement
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54	Top-Down Programming
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Core Programming: Reference-2

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01	Software Crisis
02	Software Evolution
03	A Look at Procedure-Oriented Program
04	Object-Oriented Programming Paradigm
05	Concepts of Object-Oriented Programming
06	Benefits of OOP
07	Object-Oriented Languages
08	Applications of OOP
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09	What is C++
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11	A Simple C++ Program
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15	Creating the Source File
16	Compiling and Linking
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17	Introduction
18	Tokens
19	Keywords
20	Identifiers and Constants
21	Basic Data Types
22	User-Defined Data Types
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24	Derived Data Types
25	Symbolic Constants
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27	Declaration of Variables
28	Dynamic Initialization of Variables
29	Reference Variables
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32	Member Dereferencing Operators
33	Memory Management Operators
34	Manipulators
35	Type Cast Operator
36	Expressions and Their Types
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72	Parameterized Constructors
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82	Defining Operator Overloading
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Core Programming: Reference-3

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09	What Exactly is a Class – Topics 4
10	Using UML to Model a Class Diagram
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Discrete Mathematics

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02	Sets and Elements, Subsets
03	Ven Diagrams
04	Algebra of Sets, Duality
05	Finite Sets, Counting Principle
06	Classes of Sets, Power Sets, Partitions
07	Mathematical Introduction
	Solved Problems
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09	Product Sets
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11	Pictorial Representatives of Relations
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29	Propositions and truth Tables
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49	Pigeonhole Principle Revisited
50	Recurrence Relations
51	Linear Recurrence Relations with Constant Coefficients
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55	Sample Space and Events
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61	Chebyshev's Inequality, Law of Large Numbers
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63	Graphs and Multigraphs
64	Subgraphs, Isomorphic and Homeomorphic Graphs
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68	Complete, Regular, and Bipartite Graphs
69	Tree Graphs
70	Planar Graphs
71	Graph Colorings
72	Representing Graphs in Computer Memory
73	Graph Algorithms
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76	Directed Graphs
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39	Nested Quantifiers – Topics 7
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113	Complexity of Algorithms – Topics 5
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Data Structure

Data Structure: Reference-1

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22	The Representation of Multidimensional Arrays
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Data Structure: Reference-2

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19	Program Maintenance – Topics 3
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28	Stack Specifications – Topics 5
32	Implementation of Stacks – Topics 4
33	Application: A Desk Calculator
34	Application: Bracket Matching
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39	Definitions – Topics 2
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41	Circular Implementation of Queues in C++
42	Demonstration and Testing
49	Application of Queues: Simulation – Topics 7
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53	Linked Stacks
57	Linked Stacks with Safeguards – Topics 4
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65	Applications: Polynomial Arithmetic – Topics 6
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75	Principles of Recursion – Topics 5
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87	Tree-Structured Programs: Look-Ahead in Games – Topics 5
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Algorithm

Algorithm: Reference-1

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13	Randomized Algorithms – Topics 5
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34	Strassen's Matrix Multiplication
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41	Tree Vertex Splitting
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58	Reliability Design
59	The Traveling Salesperson Problem
60	Flow Shop Scheduling
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Algorithm: Reference-2

	The Design and Analysis of Computer Algorithms
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02	Random Access Machines
03	Computational Complexity of RAM Programs
04	A Stored Program Model
05	Abstractions of the RAM
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07	Relationship Between the Turning Machine and RAM Models
08	Pidgin ALGOL – A High-Level Language
	Design of Efficient Algorithms
09	Data Structures: Lists, Queues, and Stacks
10	Set Representations
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12	Trees
13	Recursion
14	Divide-and-Conquer
15	Balancing
16	Dynamic Programming
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20	Sorting by Comparisons
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22	Quicksort – an O(n log n) Expected Time Sort
23	Order Statistics
24	Expected Time for Order Statistics
	Data Structures for Set Manipulation Problems
25	Fundamental Operations on Sets
26	Hashing
27	Binary Search
28	Binary Search Trees
29	Optimal Binary Search Trees
30	A Simple Disjoint-Set Union Algorithm
31	Tree Structures for the UNION-FIND Problem
32	Applications and Extensions of the UNION-FIND Algorithm
33	Balanced Tree Schemes
34	Dictionaries and Priority Queues
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37	Partitioning
	Algorithms on Graphs
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39	Depth-First Search
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42	Strong Connectivity
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44	A Transitive Closure Algorithm
45	A Shortest-Path Algorithm
46	Path Problems and Matrix Multiplication

47	Single-Source Problems
48	Dominators in a Directed Acyclic Graph: Putting the Concepts Together
	Matrix Multiplication and Related Operations
49	Basics
50	Strassen's Matrix-Multiplication Algorithm
51	Inversion of Matrices
52	LUP Decomposition of Matrices
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54	Boolean Matrix Multiplication
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56	The Fast Fourier Transform Algorithm
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58	Products of Polynomials
59	The Schonhage-Strassen Integer-multiplication Algorithm
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60	The Similarity Between Integers and Polynomials
61	Integer Multiplication and Division
62	Polynomial Multiplication and Division
63	Modular Arithmetic
64	Modular Polynomial Arithmetic and Polynomial Evaluation
65	Chinese Remaindering
66	Chinese Remaindering and Interpolation of Polynomials
67	Greatest Common Divisors and Euclid's Algorithm
68	An Asymptotically Fast Algorithm for Polynomial GCD's
69	Integer GCD's
70	Chinese Remaindering Revisited
71	Sparse Polynomials
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72	Finite Automata and Regular Expressions
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79	Languages and Problems
80	NP-Completeness of the Satisfiability Problem
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84	The Space Hierarchy for Deterministic Turing Machines
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88	Straight-Line Code Revisited
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90	A Row-Oriented Lower Bound on Multiplications
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Algorithm: Reference-3

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Database Management System

Software Engineering

Software Engineering: Reference-1

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Software Engineering: Reference-2

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Pure Mathematics – 1, 2, and 3

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