**Key Points for All Chapters**

**Section 1: Components of a Computer**

* **Chapter 1: Processor components**
  + CPU components: ALU, Control Unit, Registers.
  + Roles of each component in instruction execution.
* **Chapter 2: Processor performance**
  + Factors affecting CPU performance: clock speed, number of cores, cache size.
  + Performance metrics: MIPS, FLOPS.
* **Chapter 3: Types of processor**
  + Processor types: CISC, RISC, GPU.
  + Features and applications of each type.
* **Chapter 4: Input devices**
  + Common input devices: keyboard, mouse, scanner.
  + Operating principles and applications.
* **Chapter 5: Output devices**
  + Common output devices: monitors, printers, speakers.
  + Functions and characteristics.
* **Chapter 6: Storage devices**
  + Types of storage: Primary (RAM, ROM), Secondary (HDD, SSD, optical disks).
  + Advantages, disadvantages, and applications.

**Section 2: Systems Software**

* **Chapter 7: Functions of an operating system**
  + Main OS functions: memory management, process management, file systems, device management.
* **Chapter 8: Types of operating system**
  + OS types: Batch, time-sharing, real-time, embedded systems.
* **Chapter 9: The nature of applications**
  + Differences between application software and system software.
  + Types of applications: local applications, web applications.
* **Chapter 10: Programming language translators**
  + Functions and differences of compilers, interpreters, and assemblers.

**Section 3: Software Development**

* **Chapter 11: Systems analysis methods**
  + Methods for requirement collection and analysis: interviews, questionnaires, observations.
* **Chapter 12: Writing and following algorithms**
  + Principles and representations of algorithms: pseudocode, flowcharts.
* **Chapter 13: Programming paradigms**
  + Programming paradigms: procedural, object-oriented, functional.
* **Chapter 14: Assembly language**
  + Basic concepts and instruction sets.

**Section 4: Exchanging Data**

* **Chapter 15: Compression, encryption, and hashing**
  + Purposes and methods of data compression.
  + Basic principles and applications of encryption.
  + Characteristics and uses of hashing functions.
* **Chapter 16: Database concepts**
  + Fundamental database concepts: tables, records, fields.
* **Chapter 17: Relational databases and normalization**
  + Characteristics of relational databases.
  + Database normalization forms and their roles.
* **Chapter 18: Introduction to SQL**
  + Basic SQL syntax: data queries, insertions, updates, deletions.
* **Chapter 19: Defining and updating tables using SQL**
  + Creating, modifying, and deleting table structures using SQL.
* **Chapter 20: Transaction processing**
  + Transactions and their ACID properties.

**Section 5: Networks and Web Technologies**

* **Chapter 21: Structure of the Internet**
  + Internet structure: ISP, NAP, backbone networks.
* **Chapter 22: Internet communication**
  + TCP/IP protocol stack and functions.
* **Chapter 23: Network security and threats**
  + Common network threats: viruses, trojans, DDoS attacks.
  + Network security measures: firewalls, intrusion detection systems.
* **Chapter 24: HTML and CSS**
  + Basic HTML structure and tags.
  + CSS selectors, properties, and style application.
* **Chapter 25: Web forms and JavaScript**
  + Creating and processing HTML forms.
  + Basic JavaScript syntax and web application.
* **Chapter 26: Search engine indexing**
  + Search engine indexing: crawlers, indexing, ranking algorithms.
  + Basics of Search Engine Optimization (SEO).
* **Chapter 27: Client-server and peer-to-peer**
  + Features and pros/cons of client-server architecture.
  + P2P networks and their applications.

**Section 6: Data Types**

* **Chapter 28: Primitive data types, binary and hexadecimal**
  + Conversion between binary, decimal, and hexadecimal.
* **Chapter 29: ASCII and Unicode**
  + Differences and usage of ASCII and Unicode.
* **Chapter 30: Binary arithmetic**
  + Principles of binary addition and subtraction.
  + Concept of overflow.
* **Chapter 31: Floating point arithmetic**
  + Representation of floating-point numbers (mantissa and exponent).
  + Precision issues.
* **Chapter 32: Bitwise manipulation and masks**
  + Bitwise operations (AND, OR, XOR, NOT).

**Section 7: Data Structures**

* **Chapter 33: Arrays, tuples, and records**
  + Definitions and use cases of data structures.
* **Chapter 34: Queues**
  + FIFO characteristics and operations (enqueue/dequeue).
* **Chapter 35: Lists and linked lists**
  + Characteristics, advantages, and basic operations of linked lists.
* **Chapter 36: Stacks**
  + LIFO characteristics and operations (push/pop).
* **Chapter 37: Hash tables**
  + Principles and collision resolution techniques.
* **Chapter 38: Graphs**
  + Types (directed/undirected) and applications.
* **Chapter 39: Trees**
  + Tree structures and traversal methods (pre-order, in-order, post-order).

**Section 8: Boolean Algebra**

* **Chapter 40: Logic gates and truth tables**
  + Truth tables for basic gates (AND, OR, NOT, XOR).
* **Chapter 41: Simplifying Boolean expressions**
  + Methods of simplifying Boolean algebraic expressions.
* **Chapter 42: Karnaugh maps**
  + Steps for simplifying expressions using Karnaugh maps.
* **Chapter 43: Adders and D-type flip-flops**
  + Structure and function of adders.
  + Principles and applications of D-type flip-flops.

**Section 9: Legal, Moral, Ethical, and Cultural Issues**

* **Chapter 44: Computing related legislation**
  + Basics of data protection legislation (GDPR).
* **Chapter 45: Ethical, moral and cultural issues**
  + Social impacts, privacy concerns, and digital divides.
* **Chapter 46: Privacy and censorship**
  + Issues surrounding data privacy, censorship, and freedom of speech.

**Section 10: Computational Thinking**

* **Chapter 47: Thinking abstractly**
  + Importance and methods of abstraction.
* **Chapter 48: Thinking ahead**
  + Predicting issues and planning solutions.
* **Chapter 49: Thinking procedurally**
  + Steps involved in procedural problem-solving.
* **Chapter 50: Thinking logically, thinking concurrently**
  + Logical reasoning and concurrent execution.
* **Chapter 51: Problem recognition**
  + Defining and scoping problems.
* **Chapter 52: Problem solving**
  + Systematic methods for solving problems.

**Section 11: Programming Techniques**

* **Chapter 53: Programming basics**
  + Variables, data types, operators, expressions.
* **Chapter 54: Selection**
  + Usage and syntax of IF and switch statements.
* **Chapter 55: Iteration**
  + Loop structures (for, while, do-while).
* **Chapter 56: Subroutines and recursion**
  + Structure and calling of subroutines.
  + Principles of recursion.
* **Chapter 57: Use of an IDE**
  + Features of IDEs (editing, debugging, compiling).
* **Chapter 58: Use of object-oriented techniques**
  + Basics of OOP (classes, objects, encapsulation, inheritance).

**Section 12: Algorithms**

* **Chapter 59: Analysis and design of algorithms**
  + Efficiency analysis (time and space complexity).
* **Chapter 60: Searching algorithms**
  + Linear and binary search methods and efficiency comparison.
* **Chapter 61: Bubble sort and insertion sort**
  + Principles and comparison of bubble and insertion sorts.
* **Chapter 62: Merge sort and quick sort**
  + Algorithmic steps and analysis of merge and quick sorts.
* **Chapter 63: Graph traversal algorithms**
  + Depth-first search (DFS) and breadth-first search (BFS).
* **Chapter 64: Optimisation algorithms**
  + Types and applications of optimization algorithms (greedy, dynamic programming).

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 - 每个知识点都关联学习内容  
 - 练习题目和示例题  
 - 知识点进度统计（练习次数、正确率）