Computer Fundamentals

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Computer Fundamentals is proposed for anyone interested in knowing about computers. Computers are used in every field. It has changed the basic concepts of computing and become an activity of the common man. Increasing popularity of computers has proved that it is very powerful and useful tool.

This book has been structured to serve as an ideal text book for various introductory courses of Computer Science, fundamentals of computer, basic Computer Application for courses in BCA, B.Com, B.Sc, MCA and MBA. Computer Applications. The layout, organization and contents of the books are designed to project the fundamental concepts of computers in an interesting, logical and informative manner. In general, the book provides insights on the organization, functions and usage principal applicable to all types of modern computer systems. The concepts are well illustrated with suitable examples and numerous diagrams for better illustrations. The book has attempted to avoid overloading to a reader who is interested in introductory concepts.

The book has been authorized by P.K Sinha and Preeti Sinha. Pradeep K Sinha has wide experience of 25 years in the field of Information Science, Computer Science and Engineering. Several American, Indian and other Universities across the globe have sighted his books as test book.

Preeti Sinha is Master in Science (M.Sc) and largely been involved in the area of Computer Applications. She is also internationally acclaimed authority in the area of computers.

This book has been divided into 21 Chapters. Chapter 1 gives the introduction about Computer. What it is? Why it has become powerful and useful in society? It includes Evolution of Computers and Computer generation (First, Second, Third, Fourth and Fifth).

Chapter 2 explains Basic Organization of Computer Systems like Input unit, Output unit, Storage unit, Arithmetic Logic Unit (ALU), Control unit, Central Processing unit (CPU). These are the main components of Computer to make it Efficient and Effective.

Chapter 3 and Chapter 4 introduce the concept of Number systems (Binary, Octal Hexadecimal, and Decimal Number System) and Computer Codes (BCD Code, EBCDIC and ASCII code). Computer only understands binary numbers.

Chapter 5 describes the basic Arithmetic operations (Addition, Subtraction, Multiplication and Division) which are one of the most important tasks of the computer. All these operations are performed by the help of binary numbers because computer doesn't understand any other language except binary language.

Chapter 6 explains Boolean algebra and Logic circuit. It deals with binary number system. It is very useful in designing logic circuit used in processors of computer systems. Logic Gates (AND, OR, NOR, NAND and EX-OR) are used to construct logic circuit for performing arithmetic operations. It also includes designing of Combinational Circuit like Half-Adder and Full-Adder.

Chapter 7 describes Processor and memory. These are most essential part of computer because without memory and processor, computer is nothing. CPU is the brain of computer. All major calculations and comparisons performed by computer are carried out inside its CPU. Memory is the storage capacity of computer. Storage units are of two types: primary memory and secondary memory.

Chapter 8 deals with the structure and working of Secondary Storage Devices. It includes Magnetic Tape, Magnetic Disk, Optical Disk, Memory storage devices like Pen drive, Memory Card.

Chapter 9 shows the structure and working of Input-Output devices. Input devices are used to enter data from outside world into primary storage and Output devices supply the result of processing from primary storage to users. Input devices are: Keyboard, Mouse, Trackball, Joystick, Electronic Pen, Touch Screen, Scanner etc. Output devices are: Monitor, Printer, Plotter, Speaker, Projector etc.

Chapter 10 deals with the concept of Software. It explains why Hardware and Software are necessary for

computer to do useful tasks. Softwares are also divided into two categories: Application Software and System Software.

Chapter 11 is about Planning the computer program. Some tools are used for planning the computer programs before starting to write them such tools are as follows: Algorithm and Flowchart. Algorithm refers to the logic of program. It is a step by step description of how to arrive at a solution to a given problem. And Flowchart is the pictorial representation of an algorithm.

Chapter 12 deals with Computer Languages for writing computer programs. Computer languages are classified into three classes: Machine Language, Assembly Language and High Level Language. It also explains some software tools like Compiler, Interpreter and Assembler for conversion of languages.

Chapter 13 deals with the main activities of Implementation and operation phase, which include testing and debugging of programs. It also covers the importance of documentation of a system, changeover from an existing system to new system, and system modification and maintenance.

Chapter 14 Explains definition and needs for Operating System, Functions of an operating system, Parameters for measuring the performance of system. It also introduces some popular operating system used today.

Chapter 15 gives the insight about the Application Software Packages like usage of Word-processing package, Spreadsheet package, Graphics package and Personal assistance package.

Chapter 16 explains the term Data and Information, difference between these both, Business Data Processing, Data Storage Hierarchy, Methods for organizing Data, File management system, Database Management System, Database Models.

Chapter 17 presents the concept of Data communications, Computer network and its types, Distributed computing system like Types of Data Transmission, Switching Techniques, and Network Topologies.

Chapter 18 describes what is Internet? What are its uses and Services? Why is it so helpful? Chapter 19 explains Multimedia, its components and Applications.

Chapter 20 presents the Classification of Computer. How computers are classified as laptop, PCs, Workstation, Supercomputer and Mainframe computer? It also describes Client-server computing and explains what Client computer and server computer system is.

Chapter 21 introduces C programming language how one can write program in C language.

The book provides lot of information coverage and knowledge in the field of Computers. The faculty members would be able to prepare their lectures using this handbook. At the same time the students would be able to- (i) Acquire knowledge about the various topics. (ii) Make notes for their study purpose. (iii) Prepare for the examination.

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