

BASICS OF COMPUTER SCIENCE



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Book Title: **Basics of Computer Science**

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Price: ₹499

1st Edition

ISBN: 978-81-961210-5-1



Published: **Jan 2023**

Publisher:



Kripa-Drishti Publications

A/ 503, Poorva Height, SNO 148/1A/1/1A,

Sus Road, Pashan- 411021, Pune, Maharashtra, India.

Mob: +91-8007068686

Email: editor@kdpublications.in

Web: <https://www.kdpublications.in>

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PREFACE

This book, **Basics of Computer Science**, is written from the perspective of a programmer, and it describes how application programmers can use their knowledge of a system to write better programmes. Of course, learning what a system is supposed to do is a good first step in learning how to build one, so this book also serves as a valuable introduction for those who go on to implement system hardware and software. If you study and learn the concepts in this book, you will be on your way to becoming a rare "power programmer" who understands how things work and how to fix them when they go wrong. Our goal is to present the fundamental concepts in ways that you will find immediately useful. You'll also be ready to go deeper into topics like compilers, computer architecture, operating systems, embedded systems, and networking.

To keep up with the developments in the IT field, computer science and engineering curricula have been evolving at a rapid pace. Since the invention of the computer, experts and educators have been tasked with developing courses to teach emerging computer science concepts in college and university programmes. An undertaking of this magnitude necessitates adequate literature and an explanation of key computer concepts at an introductory level. College computer textbooks are either too advanced, with little instructional value, or are focused on describing specific tools such as word processing, multimedia, and spreadsheet applications. Some begin at a very high level of complexity, preventing students from grasping the fundamental.

There's a popular myth that if you're not "computer literate," whatever that means, you'll fail out of college, never get a job, and spend the rest of your life poor and miserable. Of course, computer manufacturers promote the myth, as do some educators and writers.

The truth is that no matter how many students study computer programming in high school, there will only be a limited number of programming jobs available. Computer scientists, computer engineers, and others who want to learn what goes on "under the bonnet" of a computer system in order to write better programmes. Our goal is to explain the fundamental concepts that underpin all computer systems and to demonstrate how these concepts affect the correctness, performance, and utility of your application programmes. Other systems books are written from the perspective of a builder, describing how to implement the hardware or software of the system, such as the operating system, compiler, and network interface.

Abbreviations

Arithmetic and Logic Unit (ALU)
Beginners All Purpose Symbolic Instruction Code (BASIC)
Bits Per Second (bps)
Blue Value(BB)
Bulletin Board System (BBS)
Central Processing Unit (CPU)
Character per second (CPS)
Character User Interface (CUI)
Common Business Oriented language (COBOL)
Common Gateway Interface (CGI)
Computer Aided Designing (CAD)
Computer Assisted Instruction (CAI)
Digital Subscriber Lines (DSL)
Disk Operating System (DOS)
dots per inch (dpi)
Dynamic RAM (DRAM)
Electrically Erasable and Programmable Read Only Memory (EEPROM)
Electrically Erasable and Programmable Read Only Memory (Eeprom)
Electronic Delay Storage Automatic Calculator (EDSAC)
Electronic Discrete Variable Automatic Computer (EDVAC)
Electronic Numerical Integrator and Calculator (ENIAC)
Erasable and Programmable Read Only Memory (EPROM)
Erasable and Programmable Read Only Memory (Eprom)
Formula Translation (FORTRAN)
Graphical User Interference (GUI)
Green Value(GG)
Hard Drive Disk (HDD)
Hypertext Markup Language (HTML)
Information and communication technology (ICT)
Integrated Services Digital Network (ISDN)
Intensive Care Unit (ICU)
Internet Relay Chat (IRC)
Internet service provider (ISP)
Internet Service Provider (ISP)
Laugh Out Loud (LOL)
Lines Per Minute(LPM)
Local Area Network (LAN)

Magnetic Ink Character Recognition (MICR)
Masked Rom (Mrom)
Metropolitan Area Network (MAN)
Multi-Author Blogs (MABs)
National Information Standards Organization (NISO)
Operating System (OS)
Operating System (OS)
Pages Per Minute (PPM)
Personal Area Network (PAN)
Personal Computer (PC)
Personal Computers (PCs)
Personal Digital Assistants (PDAs)
Power On Self-Test (POST)
Programmable Read Only Memory (PROM)
Programmable Read Only Memory (Prom)
Random Access Memory (RAM)
Read Only Memory (ROM)
Red Value(RR)
Search Engine Results Pages (SERPs)
Static RAM (SRAM)
Transmission Control Protocol/ Internet Protocol (TCP/IP)
Ultra Large Scale Integration (ULSI)
Uniform Resource Locator (URL)
Universal Automatic Computer (UNIVAC)
Website based Instruction (WBI)
Wide Area Network (WAN)
Wide Area Networks (WANs)
Windows for Workgroup (WFW)
World Wide Web (WWW)
Write Once, Read Many (WORM)

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Kripa-Drishti Publications
A-503 Poorva Heights, Pashan-Sus Road, Near Sai Chowk,
Pune - 411021, Maharashtra, India.
Mob: +91 8007068686
Email: editor@kdpublications.in
Web: <https://www.kdpublications.in>

Price: ₹ 499

ISBN: 978-81-961210-5-1



9 788196 121051