

Programming In C And C University Of Cambridge

This book teaches computer programming to the complete beginner using the native C language. As such, it assumes you have no knowledge whatsoever about programming. The main goal of this book is to teach fundamental programming principles using C, one of the most widely used programming languages in the world today. We discuss only those features and statements in C that are necessary to achieve our goal. Once you learn the principles well, they can be applied to any language. If you are worried that you are not good at high-school mathematics, don't be. It is a myth that you must be good at mathematics to learn programming. C is considered a 'modern' language even though its roots date back to the 1970s. Originally, C was designed for writing 'systems' programs—things like operating systems, editors, compilers, assemblers and input/output utility programs. But, today, C is used for writing all kinds of applications programs as well—word processing programs, spreadsheet programs, database management programs, accounting programs, games, robots, embedded systems/electronics (i.e., Arduino), educational software—the list is endless. Note: Appendices A-D are available as part of the free source code download at the Apress website. What You Will Learn: How to get started with programming using the C language How to use the basics of C How to program with sequence, selection and repetition logic How to work with characters How to work with functions How to use arrays Who This Book Is For: This book is intended for anyone who is learning programming for the first time.

Get started with writing simple programs in C while learning the skills that will help you work with practically any

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programming language Key Features Learn essential C concepts such as variables, data structures, functions, loops, and pointers Get to grips with the core programming aspects that form the base of many modern programming languages Explore the expressiveness and versatility of the C language with the help of sample programs Book Description C is a powerful general-purpose programming language that is excellent for beginners to learn. This book will introduce you to computer programming and software development using C. If you're an experienced developer, this book will help you to become familiar with the C programming language. This C programming book takes you through basic programming concepts and shows you how to implement them in C. Throughout the book, you'll create and run programs that make use of one or more C concepts, such as program structure with functions, data types, and conditional statements. You'll also see how to use looping and iteration, arrays, pointers, and strings. As you make progress, you'll cover code documentation, testing and validation methods, basic input/output, and how to write complete programs in C. By the end of the book, you'll have developed basic programming skills in C, that you can apply to other programming languages and will develop a solid foundation for you to advance as a programmer. What you will learn Understand fundamental programming concepts and implement them in C Write working programs with an emphasis on code indentation and readability Break existing programs intentionally and learn how to debug code Adopt good coding practices and develop a clean coding style Explore general programming concepts that are applicable to more advanced projects Discover how you can use building blocks to make more complex and interesting programs Use C Standard Library functions and understand why doing this is desirable Who this book is for This book is written for two

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very diverse audiences. If you're an absolute beginner who only has basic familiarity with operating a computer, this book will help you learn the most fundamental concepts and practices you need to know to become a successful C programmer. If you're an experienced programmer, you'll find the full range of C syntax as well as common C idioms. You can skim through the explanations and focus primarily on the source code provided.

Learning a language--any language--involves a process wherein you learn to rely less and less on instruction and more increasingly on the aspects of the language you've mastered. Whether you're learning French, Java, or C, at some point you'll set aside the tutorial and attempt to converse on your own. It's not necessary to know every subtle facet of French in order to speak it well, especially if there's a good dictionary available. Likewise, C programmers don't need to memorize every detail of C in order to write good programs. What they need instead is a reliable, comprehensive reference that they can keep nearby. C in a Nutshell is that reference. This long-awaited book is a complete reference to the C programming language and C runtime library. Its purpose is to serve as a convenient, reliable companion in your day-to-day work as a C programmer. C in a Nutshell covers virtually everything you need to program in C, describing all the elements of the language and illustrating their use with numerous examples. The book is divided into three distinct parts. The first part is a fast-paced description, reminiscent of the classic Kernighan & Ritchie text on which many C programmers cut their teeth. It focuses specifically on the C language and preprocessor directives, including extensions introduced to the ANSI standard in 1999. These topics and others are covered: Numeric constants Implicit and explicit type conversions Expressions and operators Functions Fixed-length and

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variable-length arrays Pointers Dynamic memory management Input and output The second part of the book is a comprehensive reference to the C runtime library; it includes an overview of the contents of the standard headers and a description of each standard library function. Part III provides the necessary knowledge of the C programmer's basic tools: the compiler, the make utility, and the debugger. The tools described here are those in the GNU software collection. C in a Nutshell is the perfect companion to K&R, and destined to be the most reached-for reference on your desk.

This book provides a hands-on introductory course on concepts of C programming using a PIC® microcontroller and CCS C compiler. Through a project-based approach, this book provides an easy to understand method of learning the correct and efficient practices to program a PIC® microcontroller in C language. Principles of C programming are introduced gradually, building on skill sets and knowledge. Early chapters emphasize the understanding of C language through experience and exercises, while the latter half of the book covers the PIC® microcontroller, its peripherals, and how to use those peripherals from within C in great detail. This book demonstrates the programming methodology and tools used by most professionals in embedded design, and will enable you to apply your knowledge and programming skills for any real-life application. Providing a step-by-step guide to the subject matter, this book will encourage you to alter, expand, and customize code for use in your own projects. A complete introduction to C programming using PIC microcontrollers, with a focus on real-world applications, programming methodology and tools Each chapter includes C code project examples, tables, graphs, charts, references, photographs, schematic diagrams, flow charts and compiler compatibility

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notes to channel your knowledge into real-world examples
Online materials include presentation slides, extended tests, exercises, quizzes and answers, real-world case studies, videos and weblinks

A detailed introduction to the C programming language for experienced programmers. The world runs on code written in the C programming language, yet most schools begin the curriculum with Python or Java. *Effective C* bridges this gap and brings C into the modern era--covering the modern C17 Standard as well as potential C2x features. With the aid of this instant classic, you'll soon be writing professional, portable, and secure C programs to power robust systems and solve real-world problems. Robert C. Seacord introduces C and the C Standard Library while addressing best practices, common errors, and open debates in the C community. Developed together with other C Standards committee experts, *Effective C* will teach you how to debug, test, and analyze C programs. You'll benefit from Seacord's concise explanations of C language constructs and behaviors, and from his 40 years of coding experience. You'll learn:

- How to identify and handle undefined behavior in a C program
- The range and representations of integers and floating-point values
- How dynamic memory allocation works and how to use nonstandard functions
- How to use character encodings and types
- How to perform I/O with terminals and filesystems using C Standard streams and POSIX file descriptors
- How to understand the C compiler's translation phases and the role of the preprocessor
- How to test, debug, and analyze C programs

Effective C will teach you how to write professional, secure, and portable C code that will stand the test of time and help strengthen the foundation of the computing world.

This textbook is an ideal introduction in college courses or self-study for learning computer programming using the C

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language. Written for those with minimal or no programming experience, *Computer Programming in C for Beginners* offers a heavily guided, hands-on approach that enables the reader to quickly start programming, and then progresses to cover the major concepts of C programming that are critical for an early stage programmer to know and understand. While the progression of topics is conventional, their treatment is innovative and designed for rapid understanding of the many concepts in C that have traditionally proven difficult for beginners, such as variable typing and scope, function definition, passing by value, pointers, passing by reference, arrays, structures, basic memory management, dynamic memory allocation, and linked lists, as well as an introductory treatment of searching and sorting algorithms. Written in an informal but clear narrative, the book uses extensive examples throughout and provides detailed guidance on how to write the C code to achieve the objectives of the example problems. Derived from the author's many years of teaching hands-on college courses, it encourages the reader to follow along by programming the progressively more complex exercise programs presented. In some sections, errors are purposely inserted into the code to teach the reader about the common pitfalls of programming in general, and the C language in particular.

Programming in C will teach you how to write programs in the C programming language. Whether you're a novice or experienced programmer, this book will provide you with a clear understanding of this language, which is the foundation for many object-oriented programming languages such as C++, Objective-C, C#, and Java. This book teaches C by example, with complete C programs used to illustrate each new concept along the way. Stephen Kochan provides step-by-step explanations for all C functions. You will learn both the language fundamentals and good programming practices.

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Exercises at the end of each chapter make the book ideally suited for classroom use or for self-instruction. All the features of the C language are covered in this book, including the latest additions added with the C11 standard. Appendixes provide a detailed summary of the language and the standard C library, both organized for quick reference. "Absolutely the best book for anyone starting out programming in C. This is an excellent introductory text with frequent examples and good text....This is the book I used to learn C—it's a great book." –Vinit S. Carpenter, Learn C/C++ Today

"The security of information systems has not improved at a rate consistent with the growth and sophistication of the attacks being made against them. To address this problem, we must improve the underlying strategies and techniques used to create our systems. Specifically, we must build security in from the start, rather than append it as an afterthought. That's the point of Secure Coding in C and C++. In careful detail, this book shows software developers how to build high-quality systems that are less vulnerable to costly and even catastrophic attack. It's a book that every developer should read before the start of any serious project." --Frank Abagnale, author, lecturer, and leading consultant on fraud prevention and secure documents Learn the Root Causes of Software Vulnerabilities and How to Avoid Them Commonly exploited software vulnerabilities are usually caused by avoidable software defects. Having analyzed nearly 18,000 vulnerability reports over the past ten years, the CERT/Coordination Center (CERT/CC) has determined that a relatively small number of root causes account for most of them. This book identifies and explains these causes and shows the steps that can be taken to prevent exploitation. Moreover, this book encourages programmers to adopt security best practices and develop a security mindset that can help protect software from tomorrow's attacks, not just

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today's. Drawing on the CERT/CC's reports and conclusions, Robert Seacord systematically identifies the program errors most likely to lead to security breaches, shows how they can be exploited, reviews the potential consequences, and presents secure alternatives. Coverage includes technical detail on how to Improve the overall security of any C/C++ application Thwart buffer overflows and stack-smashing attacks that exploit insecure string manipulation logic Avoid vulnerabilities and security flaws resulting from the incorrect use of dynamic memory management functions Eliminate integer-related problems: integer overflows, sign errors, and truncation errors Correctly use formatted output functions without introducing format-string vulnerabilities Avoid I/O vulnerabilities, including race conditions Secure Coding in C and C++ presents hundreds of examples of secure code, insecure code, and exploits, implemented for Windows and Linux. If you're responsible for creating secure C or C++ software--or for keeping it safe--no other book offers you this much detailed, expert assistance.

Learn Intel 64 assembly language and architecture, become proficient in C, and understand how the programs are compiled and executed down to machine instructions, enabling you to write robust, high-performance code. Low-Level Programming explains Intel 64 architecture as the result of von Neumann architecture evolution. The book teaches the latest version of the C language (C11) and assembly language from scratch. It covers the entire path from source code to program execution, including generation of ELF object files, and static and dynamic linking. Code examples and exercises are included along with the best code practices. Optimization capabilities and limits of modern compilers are examined, enabling you to balance between program readability and performance. The use of various performance-gain techniques is demonstrated, such as SSE

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instructions and pre-fetching. Relevant Computer Science topics such as models of computation and formal grammars are addressed, and their practical value explained. What You'll Learn Low-Level Programming teaches programmers to: Freely write in assembly language Understand the programming model of Intel 64 Write maintainable and robust code in C11 Follow the compilation process and decipher assembly listings Debug errors in compiled assembly code Use appropriate models of computation to greatly reduce program complexity Write performance-critical code Comprehend the impact of a weak memory model in multi-threaded applications Who This Book Is For Intermediate to advanced programmers and programming students Learn key topics such as language basics, pointers and pointer arithmetic, dynamic memory management, multithreading, and network programming. Learn how to use the compiler, the make tool, and the archiver.

This book provides instruction for using C in an object-oriented fashion. The book covers the problems likely to arise in a C++ application, explains why C++ is inappropriate for some object-oriented applications, and shows how to do real object-oriented programming (based on a multitasking model) in a C or C++ environment.

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This book presents an introduction to the C programming language, featuring a structured approach and aimed at professionals and students with some experience of high-level languages. Features *includes embedded summary material in bulleted form *highlights common traps and pitfalls in C programming.

"Provides an in-depth explanation of the C and C++ programming languages along with the fundamentals of object oriented programming paradigm"--

For students learning C or for programmers working in

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industry who need a clearly written resource on the language. The authors demonstrate the C language with numerous examples and exercises that guide the readers through each concept.

C++ Programming in easy steps instructs the reader how to program in C++ both on Windows platforms and on Unix-based platforms, such as Linux. It contains separate chapters on the major features of the C++ language. There are complete example programs that illustrate each aspect of C++. C++ Programming in easy steps begins by explaining how to download and install a free C++ compiler so that the reader can quickly begin to create their own executable programs by copying the book's examples. This book makes no assumption that the reader will have previous knowledge of any programming language so it's ideal for the newcomer to computer programming. Each chapter builds the reader's knowledge of C++. By the end of this book the reader will have gained a sound understanding of the C++ language and be able to write their own C++ programs and compile them into executable files that can be run on any compatible computer.· Introducing C ++· Storing Data· Performing Operations· Making Statements· Working with strings· Reading and writing files· Using Functions· Creating Classes and Objects· Pointing to Data· Referencing Data· Inheriting Features· Harnessing Polymorphism· Processing Macros· Handling Exceptions· Moving On

C++ is a powerful, highly flexible, and adaptable programming language that allows software engineers to organize and process information quickly and effectively. But this high-level language is relatively difficult to master, even if you already know the C programming language. The new second edition of "Practical C++ Programming is a complete introduction to the C++ language for programmers who are learning C++. Reflecting the latest changes to the C++ standard, this new

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edition takes a useful down-to-earth approach, placing a strong emphasis on how to design clean, elegant code. In short, to-the-point chapters, all aspects of programming are covered including style, software engineering, programming design, object-oriented design, and debugging. It also covers common mistakes and how to find (and avoid) them. End of chapter exercises help you ensure you've mastered the material. Steve Oualline's clear, easy-going writing style and hands-on approach to learning make "Practical C++ Programming a nearly painless way to master this complex but powerful programming language.

C programming is taught as the primary computer language in almost every university and its affiliated colleges. as it acts as a building block to learn other high-level languages. This book can act as a textbook or a supplementary book that helps the learner understand the subject in greater detail. It can also be used by professionals.

Beginning computing students often finish the introduction to programming course without having had exposure to various system tools, without knowing how to optimize program performance and without understanding how programs interact with the larger computer system. Adam Hoover's System Programming with C and Unix introduces students to commonly used system tools (libraries, debuggers, system calls, shells and scripting languages) and then explains how to utilize these tools to optimize program development. The text also examines lower level data types with an emphasis on memory and understanding how and why different data types are used.

Introduces the features of the C programming language, discusses data types, variables, operators, control flow, functions, pointers, arrays, and structures, and looks at the UNIX system interface

Written as a practical Packt book brimming with engaging

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examples, C Programming for Arduino will help those new to the amazing open source electronic platform so that they can start developing some great projects from the very start. This book is great for people who want to learn how to design & build their own electronic devices. From interaction design art school students to the do-it-yourself hobbyist, or even simply people who want to learn electronics, this book will help by adding a new way to design autonomous but connected devices.

The subject on Computer Concepts and Programming in C (or with the name Fundamentals of Computer and Programming in C) is one of the core courses in various undergraduate and postgraduate programmes of various institution and universities of India. This book is designed to serve as textbook for those programmes of study. While writing the book, special emphasis is given to keep the language very simple and lucid; level of presentation is kept simple and illustrative so that even an average reader can grasp the subject matter with quite ease.

A 1998 beginner's guide to problem solving with computers - both a text for introductory-level engineering undergraduates and a self-study guide for practising engineers.

Updated for C11 Write powerful C programs...without becoming a technical expert! This book is the fastest way to get comfortable with C, one incredibly clear and easy step at a time. You'll learn all the basics: how to organize programs, store and display data, work with variables, operators, I/O, pointers, arrays, functions, and much more. C programming has never been this simple! Who knew how simple C programming could be? This is today's best beginner's guide to writing C programs—and to learning skills you can use with practically any language. Its simple, practical instructions will help you start creating useful, reliable C code, from games to mobile apps. Plus, it's fully updated for the

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new C11 standard and today's free, open source tools!

Here's a small sample of what you'll learn:

- Discover free C programming tools for Windows, OS X, or Linux
- Understand the parts of a C program and how they fit together
- Generate output and display it on the screen
- Interact with users and respond to their input
- Make the most of variables by using assignments and expressions
- Control programs by testing data and using logical operators
- Save time and effort by using loops and other techniques
- Build powerful data-entry routines with simple built-in functions
- Manipulate text with strings
- Store information, so it's easy to access and use
- Manage your data with arrays, pointers, and data structures
- Use functions to make programs easier to write and maintain
- Let C handle all your program's math for you
- Handle your computer's memory as efficiently as possible
- Make programs more powerful with preprocessing directives

Turn static Web pages into dynamic documents with CGI (Common Gateway interface) programming. You'll learn how to write programs in C and Perl to handle forms and generate images, movies, sound, and more on the fly.

The CD-ROM offers an array of useful CGI programs in C and Perl, ready to plug in.

Companion to the bestselling Graphics Programming in C, this comprehensive text is for all C and C++ programmers who want to create impressive graphic designs on their IBM PC or compatible. All source code is available on disk in MS/PC-DOS format. Contains 16 pages of full-color graphics.

A Book on C Programming in C Benjamin-Cummings Publishing Company

Software -- Programming Languages.

"Discusses the fundamentals of computation and

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programming in C language"--

Learn the basics of programming with C with this fun and friendly guide! C offers a reliable, strong foundation for programming and serves as a stepping stone upon which to expand your knowledge and learn additional programming languages. Written by veteran For Dummies author Dan Gookin, this straightforward-but-fun beginner's guide covers the fundamentals of using C and gradually walks you through more advanced topics including pointers, linked lists, file I/O, and debugging. With a special focus on the subject of an Integrated Development Environment, it gives you a solid understanding of computer programming in general as you learn to program with C. Encourages you to gradually increase your knowledge and understanding of C, with each chapter building off the previous one Provides you with a solid foundation of understanding the C language so you can take on larger programming projects, learn new popular programming languages, and tackle new topics with confidence Includes more than 100 sample programs with code that are adaptable to your own projects Beginning Programming with C For Dummies assumes no previous programming language experience and helps you become competent and comfortable with the fundamentals of C in no time. An introduction to embedding systems for C and C++ programmers encompasses such topics as testing memory devices, writing and erasing Flash memory, verifying nonvolatile memory contents, and much more. Original. (Intermediate).

A comprehensive guide to programming with network

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sockets, implementing Internet protocols, designing IoT devices, and much more with C Key Features Leverage your C or C++ programming skills to build powerful network applications Get to grips with a variety of network protocols that allow you to load web pages, send emails, and do much more Write portable network code for operating systems such as Windows, Linux, and macOS Book Description Network programming, a challenging topic in C, is made easy to understand with a careful exposition of socket programming APIs. This book gets you started with modern network programming in C and the right use of relevant operating system APIs. This book covers core concepts, such as hostname resolution with DNS, that are crucial to the functioning of the modern web. You'll delve into the fundamental network protocols, TCP and UDP. Essential techniques for networking paradigms such as client-server and peer-to-peer models are explained with the help of practical examples. You'll also study HTTP and HTTPS (the protocols responsible for web pages) from both the client and server perspective. To keep up with current trends, you'll apply the concepts covered in this book to gain insights into web programming for IoT. You'll even get to grips with network monitoring and implementing security best practices. By the end of this book, you'll have experience of working with client-server applications, and be able to implement new network programs in C. The code in this book is compatible with the older C99 version as well as the latest C18 and C++17 standards. Special consideration is given to writing robust, reliable, and secure code that is portable across operating

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systems, including Winsock sockets for Windows and POSIX sockets for Linux and macOS. What you will learn
Uncover cross-platform socket programming APIs
Implement techniques for supporting IPv4 and IPv6
Understand how TCP and UDP connections work over IP
Discover how hostname resolution and DNS work
Interface with web APIs using HTTP and HTTPS
Acquire hands-on experience with Simple Mail Transfer Protocol (SMTP)
Apply network programming to the Internet of Things (IoT)
Who this book is for
If you're a developer or a system administrator who wants to enter the world of network programming, this book is for you. Basic knowledge of C programming is assumed.

The authors provide clear examples and thorough explanations of every feature in the C language. They teach C vis-a-vis the UNIX operating system. A reference and tutorial to the C programming language.
Annotation copyrighted by Book News, Inc., Portland, OR

This book is a clear, comprehensive book designed only for you, no-matter whether you are a student, a teacher, a professional programmer or others. Simplicity is the hallmark of this book. It assumes no necessities for you to have the background knowledge on C Programming Language. Firstly, it helps you to understand the basic fundamentals of C Programming and then about the stronger part of C and ultimately master the various features that C offers. It is written in a style and level of detail to capture the entire field, it admirably meets the needs of students of science and technology specially the computer engineering students as a textbook and of

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professionals as a basic reference volume. Ideal for self-study and certification exam. Includes solution of more than 160 programs Broad in-depth coverage of C Programming Language.

The overwhelming majority of bugs and crashes in computer programming stem from problems of memory access, allocation, or deallocation. Such memory related errors are also notoriously difficult to debug. Yet the role that memory plays in C and C++ programming is a subject often overlooked in courses and in books because it requires specialised knowledge of operating systems, compilers, computer architecture in addition to a familiarity with the languages themselves. Most professional programmers learn entirely through experience of the trouble it causes. This 2004 book provides students and professional programmers with a concise yet comprehensive view of the role memory plays in all aspects of programming and program behaviour. Assuming only a basic familiarity with C or C++, the author describes the techniques, methods, and tools available to deal with the problems related to memory and its effective use.

Embedded software is in almost every electronic device designed today. There is software hidden away inside our watches, microwaves, VCRs, cellular telephones, and pagers; the military uses embedded software to guide smart missiles and detect enemy aircraft; communications satellites, space probes, and modern medicine would be nearly impossible without it. Of course, someone has to write all that software, and there are thousands of computer scientists, electrical

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engineers, and other professionals who actually do. This book, written by a leading programming authority, will teach all of the basics, such as creating dialog boxes, menus, bitmaps, etc. It will take on all of the key issues for programmers who have Windows experience, but need to learn about topics not covered in Windows 3.1, such as handling multithreaded programs, creating custom controls, and working in a 32-bit environment. The popular programming language is now used for writing many different kinds of programs, from compilers and assemblers to spreadsheets and games. Assuming only familiarity with basic programming concepts such as variables and looping, this text covers all aspects of the C language.

The new edition of this classic O'Reilly reference provides clear, detailed explanations of every feature in the C language and runtime library, including multithreading, type-generic macros, and library functions that are new in the 2011 C standard (C11). If you want to understand the effects of an unfamiliar function, and how the standard library requires it to behave, you'll find it here, along with a typical example. Ideal for experienced C and C++ programmers, this book also includes popular tools in the GNU software collection. You'll learn how to build C programs with GNU Make, compile executable programs from C source code, and test and debug your programs with the GNU debugger. In three sections, this authoritative book covers: C language concepts and language elements, with separate chapters on types, statements, pointers, memory management, I/O, and more The C standard

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library, including an overview of standard headers and a detailed function reference Basic C programming tools in the GNU software collection, with instructions on how use them with the Eclipse IDE

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