Makin Numbers Howard Aiken And The Computer

Presents an illustrated A-Z encyclopedia containing approximately 600 entries on computer and technology related topics.
The story of the U.S. Department of Defense's extraordinary effort, in the period from 1983 to 1993, to achieve machine intelligence. This is the story of an extraordinary effort by the U.S. Department of Defense to hasten the advent of machines that think. From 1983 to 1993, the Defense Advanced Research (DARPA) spent an extra $1 billion on computer research aimed at achieving artificial intelligence. The Strategic Computing Initiative (SCI) was conceived as an integrated plan to promote computer chip design and manufacture, computer architecture, and artificial intelligence software. What distinguished SCI scale technology programs was that it self-consciously set out to advance an entire research front. The SCI succeeded in fostering significant technological successes, even though it never achieved machine intelligence. The goal provided a powerful organizing principle for a suite of related research programs the problem of coordinating these programs. In retrospect, it is hard to see how it could have.In Strategic Computing, Alex Roland and Philip Shiman uncover the roles played in the SCI by technology, individuals, and social and political forces. They explore DARPA culture, especially the information processing the agency, and they evaluate the SCI's accomplishments and set them in the context of overall computer development during this period. Their book is an important contribution to our understanding of the complex sources of contemporary computing.
This work derives from a conference discussing the history of computing in education. This conference is the first of hopefully a series of conferences that will take place within the International Federation for Information Processing (IFIP) and hence, we describe it as the First Conference on the History of Com Education (HCE1). These proceedings represent a collection of works presented at the HCE1 Conference held in association with the IFIP 2004 World Computer Congress held in Toulouse, France. Contributions to this volume range from a wide variety of educational perspectives and represent activities from
The HCE1 conference represents a joint effort of the IFIP Working Group 9.7 on the History of Computing and the IFIP Technical Committee 3 on Education. The HCE1 Conference brings to light a broad spectrum of issues and spans fourcontinents. It illustrates topics in computing education as they occurred of computing whose ramifications or overtones remain with us today. Indeed, many of the early challenges remain part of our educational tapestry; most likely, many will evolve into future challenges. Therefore, this work provides additional value to the reader as it will reflect in part the future development of co education to stimulate new ideas and models in educational development.
The untold history of women and computing: how pioneering women succeeded in a field shaped by gender biases. Today, women earn a relatively low percentage of computer science degrees and hold proportionately few technical computing jobs. Meanwhile, the stereotype of the male “computer geek” seen in popular culture. Few people know that women were a significant presence in the early decades of computing in both the United States and Britain. Indeed, programming in postwar years was considered woman's work (perhaps in contrast to the more manly task of building the computers themselves). In Rec Abbate explores the untold history of women in computer science and programming from the Second World War to the late twentieth century. Demonstrating how gender has shaped the culture of computing, she offers a valuable historical perspective on today's concerns over women's underrepresentation in describes the experiences of women who worked with the earliest electronic digital computers: Colossus, the wartime codebreaking computer at Bletchley Park outside London, and the American ENIAC, developed to calculate ballistics. She examines postwar methods for recruiting programmers, and the 196 programming as the more masculine “software engineering.” She describes the social and business innovations of two early software entrepreneurs, Elsie Shutt and Stephanie Shirley; and she examines the career paths of women in academic computer science. Abbate's account of the bold and creative strate loved computing work, excelled at it, and forged successful careers will provide inspiration for those working to change gendered computing culture.
The Computer Revolution in Canada
Mathematics and War
Turing’s Revolution
The Impact of His Ideas about Computability
Milestones in Analog and Digital Computing
Computers and Commerce
Admiral of the Cyber Sea
with the cooperation of Robert V. D. CampbellThis collection of technical essays and reminiscences is a companion volume to I. Bernard Cohen's biography, Howard Aiken: Portrait of a Computer Pioneer. After an overview by Cohen, Part I presents the first complete publication of Aiken's 1937 proposal for an automatic calculating machine, which was later realized as the Mark I, as well as recollections of Aiken's first two machines by the chief engineer in charge of construction of Mark II, Robert Campbell, and the principal programmer of Mark I, Richard Bloch. Henry Tropp describes Aiken's hostility to the exclusive use of binary numbers in computational systems and his alternative approach.Part II contains essays on Aiken's administrative and teaching styles by former students Frederick Brooks and Peter Calingaert and an essay by Gregory Welch on the difficulties Aiken faced in establishing a computer science program at Harvard. Part III contains recollections by people who worked or studied with Aiken, including Richard Bloch, Grace Hopper, Anthony Oettinger, and Maurice Wilkes. Henry Tropp provides excerpts from an interview conducted just before Aiken's death. Part IV gathers the most significant of Aiken's own writings. The appendixes give the specs of Aiken's machines and list his doctoral students and the topics of their dissertations.
When grace Hooper retired as a rear admiral from the U.S. Navy in 1986, she was the first woman restricted line officer to reach flag rank and, at the age of seventy-nine, the oldest serving officer in the Navy. A mathematician by training who became a computer scientist, the eccentric and outspoken Hoper helped propel the Navy into the computer age. She also was a superb publicist for the Navy, appearing frequently on radio and television and quoted regularly in newspapers and magazines. Yet in spite of all the attention she received, until now "Amazing Grace," as she was called, has never been the subject of a full biography. Kathleen Broome Williams looks at Hooper's entire naval career, from the time she joined the Waves and was sent in 1943 to work on the Mark 1 computer at Harvard, where she became one of the country's first computer programmers. Thanks to this early Navy introduction to computing, the author explains, Hooper had a distinguished civilian career in commercial computing after the war, gaining fame for her part in the creation of COBOL. The admiral's Navy days were far from over, however, and Williams tells how Hopper--already past retirement age--was recalled to active duty at the Pentagon in 1967 to standardize computer-programming languages for Navy computers. Her temporary appointment lasted for nineteen years while she standardized COBOL for the entire department of defense. Based on extensive interviews with colleague and family and on archival material never before examined, this biography not only illuminates Hopper's pioneering accomplishments in a field that came to be dominated by men, but provides a fascinating overview of computing from its beginnings inWorld War II to the late 1980s.
The book shows how the wartime alliance of engineers, scientists, and the military exemplified by MIT's Radiation Lab helped to transform research and development practice in the United States through the end of the Cold War period. This book presents an organizational and social history of one of the foundational projects of the computer era: the development of the SAGE (Semi-Automatic Ground Environment) air defense system, from its first test at Bedford, Massachusetts, in 1951, to the installation of the first unit of the New York Air Defense Sector of the SAGE system, in 1958. The idea for SAGE grew out of Project Whirlwind, a wartime computer development effort, when the U.S. Department of Defense realized that the Whirlwind computer might anchor a continent-wide advance warning system. Developed by MIT engineers and scientists for the U.S. Air Force, SAGE monitored North American skies for possible attack by manned aircraft and missiles for twenty-five years. Aside from its strategic importance, SAGE set the foundation for mass data-processing systems and foreshadowed many computer developments of the 1960s. The heart of the system, the AN/FSQ-7, was the first computer to have an internal memory composed of "magnetic cores," thousands of tiny ferrite rings that served as reversible electromagnets. SAGE also introduced computer-driven displays, online terminals, time sharing, high-reliability computation, digital signal processing, digital transmission over telephone lines, digital track-while-scan, digital simulation, computer networking, and duplex computing. The book shows how the wartime alliance of engineers, scientists, and the military exemplified by MIT's Radiation Lab helped to transform research and development practice in the United States through the end of the Cold War period.
This book tells the story of the evolution of the Dahlgren Laboratory from a naval proof and test facility into a modern research and development center crucial to the technological evolution of the U.S. Navy. Combining a close analysis of the technical work that led to the improvements in weapons, bombsights, missiles, and the computers that provided their guidance with a close account of changing management styles, this work recounts many previously classified stories.
The R&D Story of The SAGE Air Defense Computer
Recoding Gender
The Computer Boys Take Over
How Britain Discarded Women Technologists and Lost Its Edge in Computing
ENIAC in Action
From Airline Reservations to Sonic the Hedgehog
Dictionary Of Modern American Philosophers
Tells the story of the evolution of the Dahlgren Laboratory from a proof and test facility into a modern research and development center crucial to the technological evolution of the United States Navy.
The evolution of the multi-billion-dollar computer services industry, from consulting and programming to data analytics and cloud computing, with case studies of important companies. The computer services industry has worldwide annual revenues of nearly a trillion dollars and employs millions of workers, but is often overshadowed by the hardware and software products industries. In this book, Jeffrey Yost shows how computer services, from consulting and programming to data analytics and cloud computing, have played a crucial role in shaping information technology—in making IT work. Tracing the evolution of the computer services industry from the 1950s to the present, Yost provides case studies of important companies (including IBM, Hewlett Packard, Andersen/Accenture, EDS, Infosys, and others) and profiles of such influential leaders as John Diebold, Ross Perot, and Virginia Rometty. He offers a fundamental reinterpretation of IBM as a supplier of computer services rather than just a producer of hardware, exploring how IBM bundled services with hardware for many years before becoming service-centered in the 1990s. Yost describes the emergence of companies that offered consulting services, data processing, programming, and systems integration. He examines the development of industry-defining trade associations; facilities management and the firm that invented it, Ross Perot's EDS; time sharing, a precursor of the cloud; IBM's early computer services; and independent contractor brokerages. Finally, he explores developments since the 1980s: the transformations of IBM and Hewlett Packard; the offshoring of enterprises and labor; major Indian IT service providers and the changing geographical deployment of U.S.-based companies; and the paradigm-changing phenomenon of cloud service.
Before Palm Pilots and iPods, PCs and laptops, the term "computer" referred to the people who did scientific calculations by hand. These workers were neither calculating geniuses nor idiot savants but knowledgeable people who, in other circumstances, might have become scientists in their own right. When Computers Were Human represents the first in-depth account of this little-known, 200-year epoch in the history of science and technology. Beginning with the story of his own grandmother, who was trained as a human computer, David Alan Grier provides a poignant introduction to the wider world of women and men who did the hard computational labor of science. His grandmother's casual remark, "I wish I'd used my calculus," hinted at a career deferred and an education forgotten, a secret life unappreciated; like many highly educated women of her generation, she studied to become a human computer because nothing else would offer her a place in the scientific world. The book begins with the return of Halley's comet in 1758 and the effort of three French astronomers to compute its orbit. It ends four cycles later, with a UNIVAC electronic computer projecting the 1986 orbit. In between, Grier tells us about the surveyors of the French Revolution, describes the calculating machines of Charles Babbage, and guides the reader through the Great Depression to marvel at the giant computing room of the Works Progress Administration. When Computers Were Human is the sad but lyrical story of workers who gladly did the hard labor of research calculation in the hope that they might be part of the scientific community. In the end, they were rewarded by a new electronic machine that took the place and the name of those who were, once, the computers.
This book provides an overview of the confluence of ideas in Turing’s era and work and examines the impact of his work on mathematical logic and theoretical computer science. It combines contributions by well-known scientists on the history and philosophy of computability theory as well as on generalised Turing computability. By looking at the roots and at the philosophical and technical influence of Turing’s work, it is possible to gather new perspectives and new research topics which might be considered as a continuation of Turing’s working ideas well into the 21st century.
The sound of freedom: Naval Weapons Technology at Dahlgren, Virginia 1918-2006
From Whirlwind to MITRE
Birthing the Computer
Makin' Numbers
Philosophical and Historical Investigations
Strategic Computing
Making and Remaking the Modern Computer
Profiles more than 100 scientists from around the world who made important contributions to the study of computer science, including Howard Aiken, Steve Case, Steve Jobs, and Ted Nelson.
The identity of computing has been fiercely debated throughout its short history. Why is it still so hard to define computing as an academic discipline? Is computing a scientific, mathematical, or engineering discipline? By describing the mathematical, engineering, and scientific traditions of computing, The Science of Computing: Shaping a Discipline presents a rich picture of computing from the viewpoints of the field’s champions. The book helps readers understand the debates about computing as a discipline. It explains the context of computing’s central debates and portrays a broad perspective of the discipline. The book first looks at computing as a formal, theoretical discipline that is in many ways similar to mathematics, yet different in crucial ways. It traces a number of discussions about the theoretical nature of computing from the field’s intellectual origins in mathematical logic to modern views of the role of theory in computing. The book then explores the debates about computing as an engineering discipline, from the central technical innovations to the birth of the modern technical paradigm of computing to computing’s arrival as a new technical profession to software engineering gradually becoming an academic discipline. It presents arguments for and against the view of computing as engineering within the context of software production and analyzes the clash between the theoretical and practical mindsets. The book concludes with the view of computing as a science in its own right—not just as a tool for other sciences. It covers the early identity debates of computing, various views of computing as a science, and some famous characterizations of the discipline. It also addresses the experimental computer science debate, the view of computing as a natural science, and the algorithmization of sciences.
The history of the first programmable electronic computer, from its conception, construction, and use to its afterlife as a part of computing folklore. Conceived in 1943, completed in 1945, and decommissioned in 1955, ENIAC (the Electronic Numerical Integrator and Computer) was the first general-purpose programmable electronic computer. But ENIAC was more than just a milestone on the road to the modern computer. During its decade of operational life, ENIAC calculated sines and cosines and tested for statistical outliers, plotted the trajectories of bombs and shells, and ran the first numerical weather simulations. ENIAC in Action tells the whole story for the first time, from ENIAC's design, construction, testing, and use to its afterlife as part of computing folklore. It highlights the complex relationship of ENIAC and its designers to the revolutionary approaches to computer architecture and coding first documented by John von Neumann in 1945. Within this broad sweep, the authors emphasize the crucial but previously neglected years of 1947 to 1948, when ENIAC was reconfigured to run what the authors claim was the first modern computer program to be executed: a simulation of atomic fission for Los Alamos researchers. The authors view ENIAC from diverse perspectives—as a machine of war, as the “first computer,” as a material artifact constantly remade by its users, and as a subject of (contradictory) historical narratives. They integrate the history of the machine and its applications, describing the mathematicians, scientists, and engineers who proposed and designed ENIAC as well as the men—and particularly the women who—built, programmed, and operated it.
"This collection of original historical essays examines aspects of the relationship between science and the nation's oldest academic institution. This is history as viewed from the varying perspectives of a group of scholars for whom science at Harvard University is a significant component of their ongoing research. Thus, the essays are of specialist interest, while collectively the volume is a case study of science in an institutional setting. In conducting their research, the authors have used a wealth of primary sources from the Harvard Archives and other repositories." "The volume opens with a thematic introduction by Margaret Rossiter reflecting the picture of Harvard science drawn in the several papers in the volume, while suggesting ways in which a study of Harvard relates to and illuminates the history of science in America." "The subsequent papers follow a generally chronological sequence, beginning with Sara Schechner Genuth's study of attitudes toward comets in relation to early Harvard University programs and functions. Mary Ann James examines the beginnings of applied science at Harvard, and Bruce Sinclair continues that theme with a comparative study of MIT and Harvard." "Toby Appel's paper on zoologist Jeffries Wyman identifies the special part that personal character plays in institutional history. Curtis Hinsley concentrates on facilities and shows how the Peabody Museum gave rise to teaching in anthropology. David Livingstone's biographical treatment of Nathaniel S. Shaler reveals a number of intellectual strands running through the University in the late nineteenth century, and John Parascandola's paper on L. J. Henderson likewise deals with a figure of wide influence and many interests, ranging from biochemistry to sociology. The latter topic leads to Lawrence Nichols's account of the rise of sociology at Harvard. A view of the internal tensions within psychology are seen in Rodney Triplet's study of Henry A. Murray." "I. Bernard Cohen examines the relations among Howard Aiken, IBM, and Harvard in the development of the Mark I computer, while Peggy Kidwell studies the Observatory community during World War II and its response to national defense and a developing federal support system." "Finally, Clark Elliott considers the history of Harvard science as a field for study through a review of published literature and archival sources and makes suggestions for further investigation."--BOOK JACKET.Title Summary field provided by Blackwell North America, Inc. All Rights Reserved
A History of the Software Industry
Portrait of a Computer Pioneer
IFIP 18th World Computer Congress, TC3 / TC9 1st Conference on the History of Computing in Education 22-27 August 2004 Toulouse, France
A History of the Free and Open Source Software Revolution
Delete
A History of Modern Computing, second edition
IBM
A business history of the software industry from the days of custom programming to the age of mass-market software and video games. From its first glimmerings in the 1950s, the software industry has evolved to become the fourth largest industrial sector of the US economy. Starting with a handful of software contractors who produced specialized programs for the few existing machines, the industry grew to include producers of corporate software packages and then makers of mass-market products and recreational software. This book tells the story of each of these types of firm, focusing on the products they developed, the business models they followed, and the markets they served. By describing the breadth of this industry, Martin Campbell-Kelly corrects the popular misconception that one firm is at the center of the software universe. He also tells the story of lucrative software products such as IBM's CICS and SAP's R/3, which, though little known to the general public, lie at the heart of today's information infrastructure.With its wealth of industry data and its thoughtful judgments, this book will become a starting point for all future investigations of this fundamental component of computer history.
Biography of Howard Aiken, a major figure of the early digital era, by a major historian of science who was also a colleague of Aiken's at Harvard. Howard Hathaway Aiken (1900-1973) was a major figure of the early digital era. He is best known for his first machine, the IBM Automatic Sequence Controlled Calculator or Harvard Mark I, conceived in 1937 and put into operation in 1944. But he also made significant contributions to the development of applications for the new machines and to the creation of a university curriculum for computer science. This biography of Aiken, by a major historian of science who was also a colleague of Aiken's at Harvard, offers a clear and often entertaining introduction to Aiken and his times. Aiken's Mark I was the most intensely used of the early large-scale, general-purpose automatic digital computers, and it had a significant impact on the machines that followed. Aiken also proselytized for the computer among scientists, scholars, and businesspeople and explored novel applications in data processing, automatic billing, and production control. But his most lasting contribution may have been the students who received degrees under him and then took prominent positions in academia and industry. I. Bernard Cohen argues convincingly for Aiken's significance as a shaper of the computer world in which we now live.
How productivity culture and technology became emblematic of the American economic system in pre- and postwar Germany. The concept of productivity originated in a statistical measure of output per worker or per work-hour, calculated by the US Bureau of Labor Statistics. A broader productivity culture emerged in 1920s America, as Henry Ford and others linked methods of mass production and consumption to high wages and low prices. These ideas were studied eagerly by a Germany in search of economic recovery after World War I, and, decades later, the Marshall Plan promoted productivity in its efforts to help post–World War II Europe rebuild. In Productivity Machines, Corinna Schlombs examines the transatlantic history of productivity technology and culture in the two decades before and after World War II. She argues for the interpretive flexibility of productivity: different groups viewed productivity differently at different times. Although it began as an objective measure, productivity came to be emblematic of the American economic system; post-World War II West Germany, however, adapted these ideas to its own political and economic values. Schlombs explains that West German unionists cast a doubtful eye on productivity's embrace of plant-level collective bargaining; unions fought for codetermination—the right to participate in corporate decisions. After describing German responses to US productivity, Schlombs offers an in-depth look at labor relations in one American company in

Germany—that icon of corporate America, IBM. Finally, Schlombs considers the emergence of computer technology—seen by some as a new symbol of productivity but by others as the means to automate workers out of their jobs.
This Third Edition is the first English-language edition of the award-winning Meilensteine der Rechentechnik; illustrated in full color throughout in two volumes. The Third Edition is devoted to both analog and digital computing devices, as well as the world's most magnificient historical automatons and select scientific instruments (employed in astronomy, surveying, time measurement, etc.). It also features detailed instructions for analog and digital mechanical calculating machines and instruments, and is the only such historical book with comprehensive technical glossaries of terms not found in print or in online dictionaries. The book also includes a very extensive bibliography based on the literature of numerous countries around the world. Meticulously researched, the author conducted a worldwide survey of science, technology and art museums with their main holdings of analog and digital calculating and computing machines and devices, historical automatons and selected scientific instruments in order to describe a broad range of masterful technical achievements. Also covering the history of mathematics and computer science, this work documents the cultural heritage of technology as well.
Digitizing Life in the United States
A Revolutionary History of the Computer
Biomedical Computing
Making IT Work
Productivity Machines
Research and Development in the U.S. Army Corps of Engineers
From Relays to Vacuum Tubes

How the computer became universal. Over the past fifty years, the computer has been transformed from a hulking scientific supertool and data processing workhorse, remote from the experiences of ordinary people, to a diverse family of devices that billions rely on to play games, shop, stream music and movies, communicate, and count their steps. In A New History of Modern Computing, Thomas Haigh and Paul Ceruzzi trace these changes. A comprehensive reimagining of Ceruzzi's A History of Modern Computing, this new volume uses each chapter to recount one such transformation, describing how a particular community of users and producers remade the computer into something new. Haigh and Ceruzzi ground their accounts of these computing revolutions in the longer and deeper history of computing technology. They begin with the story of the 1945 ENIAC computer, which introduced the vocabulary of "programs" and "programming," and proceed through email, pocket calculators, personal computers, the World Wide Web, videogames, smart phones, and our current world of computers everywhere--in phones, cars, appliances, watches, and more. Finally, they consider the Tesla Model S as an object that simultaneously embodies many strands of computing.
The forces that shaped Canada's digital innovations in the postwar period. After World War II, other major industrialized nations responded to the technological and industrial hegemony of the United States by developing their own design and manufacturing competence in digital electronic technology. In this book John Vardalas describes the quest for such competence in Canada, exploring the significant contributions of the civilian sector but emphasizing the role of the Canadian military in shaping radical technological change. As he shows, Canada's determination to be an active participant in research and development work on advanced weapons systems, and in the testing of those weapons systems, was a cornerstone of Canadian technological development during the years 1945-1980. Vardalas presents case studies of such firms as Ferranti-Canada, Sperry Gyroscope of Canada, and Control Data of Canada. In contrast to the standard nationalist interpretation of Canadian subsidiaries of transnational corporations as passive agents, he shows them to have been remarkably innovative and explains how their aggressive programs to develop all-Canadian digital R&D and manufacturing capacities influenced technological development in the United States and in Great Britain. While underlining the unprecedented role of the military in the creation of peacetime scientific and technical skills, Vardalas also examines the role of government and university research programs, including Canada's first computerized systems for mail sorting and airline reservations. Overall, he presents a nuanced account of how national economic, political, and corporate forces influenced the content, extent, and direction of digital innovation in Canada.
An examination of technology and politics in the evolution of the British "government machine." In The Government Machine, Jon Agar traces the mechanization of government work in the United Kingdom from the nineteenth to the early twenty-first century. He argues that this transformation has been tied to the rise of "expert movements," groups whose authority has rested on their expertise. The deployment of machines was an attempt to gain control over state action—a revolutionary move. Agar shows how mechanization followed the popular depiction of government as machine-like, with British civil servants cast as components of a general purpose "government machine"; indeed, he argues that today's general purpose computer is the apotheosis of the civil servant. Over the course of two centuries, government has become the major repository and user of information; the Civil Service itself can be seen as an information-processing entity. Agar argues that the changing capacities of government have depended on the implementation of new technologies, and that the adoption of new technologies has depended on a vision of government and a fundamental model of organization. Thus, to study the history of technology is to study the state, and vice versa.
With the encroachment of the Internet into nearly all aspects of work and life, it seems as though information is everywhere. However, there is information and then there is correct, appropriate, and timely information. While we might love being able to turn to Wikipedia® for encyclopedia-like information or search Google® for the thousands of links on a topic, engineers need the best information, information that is evaluated, up-to-date, and complete. Accurate, vetted information is necessary when building new skyscrapers or developing new prosthetics for returning military veterans While the award-winning first edition of Using the Engineering Literature used a roadmap analogy, we now need a three-dimensional analysis reflecting the complex and dynamic nature of research in the information age. Using the Engineering Literature, Second Edition provides a guide to the wide range of resources available in all fields of engineering. This second edition has been thoroughly revised and features new sections on nanotechnology as well as green engineering. The information age has greatly impacted the way engineers find information. Engineers have an effect, directly and indirectly, on almost all aspects of our lives, and it is vital that they find the right information at the right time to create better products and processes. Comprehensive and up to date, with expert chapter authors, this book fills a gap in the literature, providing critical information in a user-friendly format.
Using the Engineering Literature, Second Edition
Programmed Inequality
Building National Technological Competence
Home Front Heroes [Three Volumes]
The Government Machine
German Appropriations of American Technology from Mass Production to Computer Automation

Birthing the Computer: From Relays to Vacuum Tubes is the first in a multi-volume series on historical computing machines. This series will span the development of computer systems from the Zuse machines of the early 1930s to about 1995 when microprocessors began to be commoditized. Each volume will focus on a range of technologies, or a class of machines or a particular vendor, and will describe the hardware of the machines and its peripherals, the operating system and system software, and its influence upon programming languages. This volume begins with the Zuse machines which were constructed from relays, but contained the basic elements of a computer system, namely input, computing engine, and output. Early machines from Atanasoff and Berry, Aiken, Stibitz, and IBM are described. The transition from relays to vacuum tubes increased speed and performance significantly, and led to the first true computers in ENIAC, EDSAC, and EDVAC which used paper tape and Williams tubes for I/O and storage. These machines were built by universities. Several early machines were purpose built such as Colossus and BINAC, and created with government support and industrial know-how. By the mid-to-late '50s, computing machines were being built by universities (the SSEM, Whirlwind, and IAS machines), governments (the NBS SEAC and SWAC, and several other machines), and industry (the UNIVAC series and the English Electric DEUCE). Most of these machines were constructed using the von Neumann architecture, and represent an evolution of thinking in how computing machines were to operate along with some innovative ideas in software and programming languages. By the end of the 1950s, the design, development, programming and use of computing machines were in full ferment as many new ideas were proposed, many different machines were designed and some were constructed. Computing machines became a commercial enterprise. Governments receded from building machines to levying requirements and funding construction, while universities continued to explore new architectures, new operating systems, and new programming languages.
Mathematics has for centuries been stimulated, financed and credited by military purposes. Some mathematical thoughts and mathematical technology have also been vital in war. During World War II mathematical work by the Anti-Hitler coalition was part of an aspiration to serve humanity and not help destroy it. At present, it is not an easy task to view the bellicose potentials of mathematics in a proper perspective. The book presents historical evidence and recent changes in the interaction between mathematics and the military. It discusses the new mathematically enhanced development of military technology which seems to have changed the very character of modern warfare.
A history of one of the most influential American companies of the last century. For decades, IBM shaped the way the world did business. IBM products were in every large organization, and IBM corporate culture established a management style that was imitated by companies around the globe. It was "Big Blue, " an icon. And yet over the years, IBM has gone through both failure and success, surviving flatlining revenue and forced reinvention. The company almost went out of business in the early 1990s, then came back strong with new business strategies and an emphasis on artificial intelligence. In this authoritative, monumental history, James Cortada tells the story of one of the most influential American companies of the last century. Cortada, a historian who worked at IBM for many years, describes IBM's technology breakthroughs, including the development of the punch card (used for automatic tabulation in the 1890 census), the calculation and printing of the first Social Security checks in the 1930s, the introduction of the PC to a mass audience in the 1980s, and the company's shift in focus from hardware to software. He discusses IBM's business culture and its orientation toward employees and customers; its global expansion; regulatory and legal issues, including antitrust litigation; and the track records of its CEOs. The secret to IBM's unequalled longevity in the information technology market, Cortada shows, is its capacity to adapt to changing circumstances and technologies.
From the first digital computer to the dot-com crash—a story of individuals, institutions, and the forces that led to a series of dramatic transformations. This engaging history covers modern computing from the development of the first electronic digital computer through the dot-com crash. The author concentrates on five key moments of transition: the transformation of the computer in the late 1940s from a specialized scientific instrument to a commercial product; the emergence of small systems in the late 1960s; the beginning of personal computing in the 1970s; the spread of networking after 1985; and, in a chapter written for this edition, the period 1995-2001. The new material focuses on the Microsoft antitrust suit, the rise and fall of the dot-coms, and the advent of open source software, particularly Linux. Within the chronological narrative, the book traces several overlapping threads: the evolution of the computer's internal design; the effect of economic trends and the Cold War; the long-term role of IBM as a player and as a target for upstart entrepreneurs; the growth of software from a hidden element to a major character in the story of computing; and the recurring issue of the place of information and computing in a democratic society. The focus is on the United States (though Europe and Japan enter the story at crucial points), on computing per se rather than on applications such as artificial intelligence, and on systems that were sold commercially and installed in quantities.
Improving the Common Stock of Knowledge
When Computers Were Human
A New History of Modern Computing
The Science of Computing
Grace Hopper
Technology and Mathematics
A History of the Computer Services Industry

This history of computing focuses not on chronology (what came first and who deserves credit for it) but on the actual architectures of the first machines that made electronic computing a practical reality. The book covers computers built in the United States, Germany, England, and Japan. It makes clear that similar concepts were often pursued simultaneously and that the early researchers explored many architectures beyond the von Neumann architecture that eventually became canonical. The contributors include not only historians but also engineers and computer pioneers. An introductory chapter describes the elements of computer architecture and explains why "being first" is even less interesting for computers than for other areas of technology. The essays contain a remarkable amount of new material, even on well-known machines, and several describe reconstructions of the historic machines. These investigations are of more than simply historical interest, for architectures designed to solve specific problems in the past may suggest new approaches to similar problems in today's machines. Contributors Titiimaea F. Ala'ilima, Lin Ping Ang, William Aspray, Friedrich L. Bauer, Andreas Brennecke, Chris P. Burton, Martin Campbell-Kelly, Paul Ceruzzi, I. Bernard Cohen, John Gustafson, Wilhelm Hopmann, Harry D. Huskey, Friedrich W. Kistermann, Thomas Lange, Michael S. Mahoney, R. B. E. Napper, Seiichi Okoma, Hartmut Petzold, Raúl Rojas, Anthony E. Sale, Robert W. Seidel, Ambros P. Speiser, Frank H. Sumner, James F. Tau, Jan Van der Spiegel, Eiiti Wada, Michael R. Williams
The hazards of perfect memory in the digital age Delete looks at the surprising phenomenon of perfect remembering in the digital age, and reveals why we must reintroduce our capacity to forget. Digital technology empowers us as never before, yet it has unforeseen consequences as well. Potentially humiliating content on Facebook is enshrined in cyberspace for future employers to see. Google remembers everything we've searched for and when. The digital realm remembers what is sometimes better forgotten, and this has profound implications for us all. In Delete, Viktor Mayer-Schönberger traces the important role that forgetting has played throughout human history, from the ability to make sound decisions unencumbered by the past to the possibility of second chances. The written word made it possible for humans to remember across generations and time, yet now digital technology and global networks are overriding our natural ability to forget—the past is ever present, ready to be called up at the click of a mouse. Mayer-Schönberger examines the technology that's facilitating the end of forgetting—digitization, cheap storage and easy retrieval, global access, and increasingly powerful software—and describes the dangers of everlasting digital memory, whether it's outdated information taken out of context or compromising photos the Web won't let us forget. He explains why information privacy rights and other fixes can't help us, and proposes an ingeniously simple solution—expiration dates on information—that may. Delete is an eye-opening book that will help us remember how to forget in the digital age.
Resource added for the Health Information Technology program 105301.
Makin' NumbersHoward Aiken and the ComputerMIT Press
Howard Aiken and the Computer
History and Architectures
A Study of Technology and Management at Eckert-Mauchly Computer Company, Engineering Research Associates, and Remington Rand, 1946-1957
History of Computing in Education
The Outsourcer
Historical Perspectives
Science at Harvard University

How Britain lost its early dominance in computing by systematically discriminating against its most qualified workers: women. In 1944, Britain led the world in electronic computing. By 1974, the British computer industry was all but extinct. What happened in the intervening thirty years holds lessons for all postindustrial superpowers. As Britain struggled to use technology to retain its global power, the nation's inability to manage its technical labor force hobbled its transition into the information age. In Programmed Inequality, Mar Hicks explores the story of labor feminization and gendered technocracy that undercut British efforts to computerize. That failure sprang from the government's systematic neglect of its largest trained technical workforce simply because they were women. Women were a hidden engine of growth in high technology from World War II to the 1960s. As computing experienced a gender flip, becoming male-identified in the 1960s and 1970s, labor problems grew into structural ones and gender discrimination caused the nation's largest computer user—the civil service and sprawling public sector—to make decisions that were disastrous for the British computer industry and the nation as a whole. Drawing on recently opened government files, personal interviews, and the archives of major British computer companies, Programmed Inequality takes aim at the fiction of technological meritocracy. Hicks explains why, even today, possessing technical skill is not enough to ensure that women will rise to the top in science and technology fields. Programmed Inequality shows how the disappearance of women from the field had grave macroeconomic consequences for Britain, and why the United States risks repeating those errors in the twenty-first century.
The contentious history of the computer programmers who developed the software that made the computer revolution possible. This is a book about the computer revolution of the mid-twentieth century and the people who made it possible. Unlike most histories of computing, it is not a book about machines, inventors, or entrepreneurs. Instead, it tells the story of the vast but largely anonymous legions of computer specialists—programmers, systems analysts, and other software developers—who transformed the electronic computer from a scientific curiosity into the defining technology of the modern era. As the systems that they built became increasingly powerful and ubiquitous, these specialists became the focus of a series of critiques of the social and organizational impact of electronic computing. To many of their contemporaries, it seemed the "computer boys" were taking over, not just in the corporate setting, but also in government, politics, and society in general. In The Computer Boys Take Over, Nathan Ensmenger traces the rise to power of the computer expert in modern American society. His rich and nuanced portrayal of the men and women (a surprising number of the "computer boys" were, in fact, female) who built their careers around the novel technology of electronic computing explores issues of power, identity, and expertise that have only become more significant in our increasingly computerized society. In his recasting of the drama of the computer revolution through the eyes of its principle revolutionaries, Ensmenger reminds us that the computerization of modern society was not an inevitable process driven by impersonal technological or economic imperatives, but was rather a creative, contentious, and above all, fundamentally human development.
The Dictionary of Modern American Philosophers includes both academic and non-academic philosophers, and a large number of female and minority thinkers whose work has been neglected. It includes those intellectuals involved in the development of psychology, pedagogy, sociology, anthropology, education, theology, political science, and several other fields, before these disciplines came to be considered distinct from philosophy in the late nineteenth century. Each entry contains a short biography of the writer, an exposition and analysis of his or her doctrines and ideas, a bibliography of writings, and suggestions for further reading. While all the major post-Civil War philosophers are present, the most valuable feature of this dictionary is its coverage of a huge range of less well-known writers, including hundreds of presently obscure thinkers. In many cases, the Dictionary of Modern American Philosophers offers the first scholarly treatment of the life and work of certain writers. This book will be an indispensable reference work for scholars working on almost any aspect of modern American thought.
"Both ERA and EMCC had their roots in World War II, and in postwar years both firms received major funding from the United States government. Norberg analyzes the interaction between the two companies and the government and examines the impact of this institutional context on technological innovation. He looks at the two firms' operations after 1951 as independent subsidiaries of Remington Rand, and documents the management problems that began after Remington Rand merged with Sperry Gyroscope to form Sperry Rand in 1955"--Jacket.
For Fun and Profit
Encyclopedia of Computer Science and Technology
The Story of India's IT Revolution
The Sound of Freedom
Howard Aiken
Computers, Programmers, and the Politics of Technical Expertise
Women's Changing Participation in Computing

The free and open source software movement, from its origins in hacker culture, through the development of GNU and Linux, to its commercial use today. In the 1980s, there was a revolution with far-reaching

consequences—a revolution to restore software freedom. In the early 1980s, after decades of making source code available with programs, most programmers ceased sharing code freely. A band of revolutionaries, self-described “hackers,” challenged this new norm by building operating systems with source code that could be freely shared. In For Fun and Profit, Christopher Tozzi offers an account of the free and open source software (FOSS) revolution, from its origins as an obscure, marginal effort by a small group of programmers to the widespread commercial use of open source software today. Tozzi explains FOSS's historical trajectory, shaped by eccentric personalities—including Richard Stallman and Linus Torvalds—and driven both by ideology and pragmatism, by fun and profit. Tozzi examines hacker culture and its influence on the Unix operating system, the reaction to Unix's commercialization, and the history of early Linux development. He describes the commercial boom that followed, when companies invested billions of dollars in products using FOSS operating systems; the subsequent tensions within the FOSS movement; and the battles with closed source software companies (especially Microsoft) that saw FOSS as a threat. Finally, Tozzi describes FOSS's current dominance in embedded computing, mobile devices, and the cloud, as well as its cultural and intellectual influence.
Originally published as: The long revolution.
This volume is the first extensive study of the historical and philosophical connections between technology and mathematics. Coverage includes the use of mathematics in ancient as well as modern technology, devices and machines for computation, cryptology, mathematics in technological education, the epistemology of computer-mediated proofs, and the relationship between technological and mathematical computability. The book also examines the work of such historical figures as Gottfried Wilhelm Leibniz, Charles Babbage, Ada Lovelace, and Alan Turing.
A to Z of Computer Scientists
Naval Weapons Technology at Dahlgren, Virginia, 1918-2006
Shaping a Discipline
The Rise and Fall and Reinvention of a Global Icon
The Virtue of Forgetting in the Digital Age
The First Computers
DARPA and the Quest for Machine Intelligence, 1983-1993