

# CoFoSans

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## ABOUT TYPEFACE:

CoFo Sans is a clean sans serif with a soul. This is not just another neutral sans. Simplicity in type design is the most difficult task, and yet there are so many sans serifs that are promoted as completely neutral and perfectly universal. CoFo Sans is based on the idea of harmony between rationality and emotion, and between Latin and Cyrillic. It is our perception of a perfect balance between simplicity and personality. It's not purely geometric, or even based on a specific model. It's a subtle mix of ideas, creating a solid base for a workhorse sans, without stripping away the character. It's simple and pure, and at the same time, you cannot escape the designer's personal view. The strong squareness of the shapes and a trace of industrial functionality are mixed in the designer's intuition, to make CoFo Sans unique. Simplicity doesn't need dozens of weights, widths and styles, so CoFo Sans comes in 4 individual and carefully drawn weights: Regular, Medium, Bold and Black. It is a typeface perfect for designers and brands that are looking for clarity and adaptability, without sacrificing the identity.

CoFo Sans Regular

CoFo Sans Medium

CoFo Sans Bold

CoFo Sans Black

**ABACUS**  
**ONE-TO-ONE**  
**TRANSISTOR**  
**INDUSTRIALIZED**  
**LOGARITHMIC TABLES**  
**HYDROPOWERED MECHANICAL**

# ENIAC

ENIAC was amongst the earliest electronic general-purpose computers made. It was Turing-complete, digital and able to solve “a large class of numerical problems” through reprogramming

# POLYMATH

A polymath is a person whose expertise spans a significant number of different subject areas—such a person is known to draw on complex bodies of knowledge to solve specific problems

# HARDWARE WILHELM SCHICKARD CALCULATING MACHINES BINARY NUMERAL SYSTEM

¶ COMPUTING HARDWARE IS A PLATFORM FOR INFORMATION PROCESSING.  
¶ GERMAN PROFESSOR OF HEBREW AND ASTRONOMY WHO BECAME FAMOUS IN THE SECOND PART OF THE 20TH CENTURY. ¶ EARLY MECHANICAL TOOLS TO HELP HUMANS WITH DIGITAL CALCULATIONS, SUCH AS THE ABACUS, WERE CALLED “CALCULATING MACHINES”. ¶ IN MATHEMATICS AND DIGITAL ELECTRONICS, A BINARY NUMBER IS A NUMBER EXPRESSED IN THE BASE-2 NUMERAL SYSTEM OR BINARY NUMERAL SYSTEM, WHICH USES ONLY TWO SYMBOLS: TYPICALLY 0 (ZERO) AND 1 (ONE)

The history of computing hardware covers the developments from early simple devices to aid calculation to modern day computers. Before the 20th century, most calculations were done by humans. Early mechanical tools to help humans with digital calculations, such as the abacus, were called “calculating machines”, called by proprietary names, or referred to as calculators. The machine operator was called the computer.

The first aids to computation were purely mechanical devices which required the operator to set up the initial values of an elementary arithmetic operation, then manipulate the device to obtain the result. Later, computers represented numbers in a continuous form, for instance distance along a scale, rotation of a shaft, or a voltage. Numbers could also be represented in the form of digits, automatically manipulated by a mechanical mechanism. Although this approach generally required more complex mechanisms, it greatly increased the precision of results. A series of breakthroughs, such as miniaturized transistor computers, and the integrated circuit, caused digital computers to largely replace analog computers. The cost of computers gradually became so low that by the 1990s, personal computers, and then, in the 2000s, mobile computers, (smartphones and tablets) became ubiquitous in industrialized countries.

Several analog computers were constructed in ancient and medieval times to perform astronomical calculations. These included the south-pointing chariot (c. 1050–771 BC) from ancient China, and the astrolabe and Antikythera mechanism from the Hellenistic world (c. 150–100 BC). In Roman Egypt, Hero of Alexandria (c. 10–70 AD) made mechanical devices including automata and a programmable cart. Other early mechanical devices used to perform one or another type of calculations include the planisphere and other mechanical computing devices

invented by Abu Rayhan al-Biruni (c. AD 1000); the equatorium and universal latitude-independent astrolabe by Abū Ishāq Ibrāhīm al-Zarqālī (c. AD 1015); the astronomical analog computers of other medieval Muslim astronomers and engineers; and the astronomical clock tower of Su Song (1094) during the Song dynasty. The castle clock, a hydro-powered mechanical astronomical clock invented by Ismail al-Jazari in 1206, was the first programmable analog computer. Ramon Llull invented the Lullian Circle: a notional machine for calculating answers

RELAY  
ALGORITHM  
VACUUM TUBES  
ENIGMA-MACHINE  
CRYPTOLOGIC BOMB  
ENTSCHEIDUNGSPROBLEM

# Z2

The Z2 was one of the earliest examples of an electromechanical relay computer

# SSEM

The Manchester Small-Scale Experimental Machine, nicknamed Baby, was the world's first stored-program computer

# K.ZUSE

Konrad Zuse was a German civil engineer, inventor and computer pioneer. His greatest achievement was the world's first programmable computer; the functional program-controlled Turing-complete Z3 became operational in May 1941. Thanks to this machine and its predecessors, Zuse has often been regarded as the inventor of the modern computer

The principle of the modern computer was first described by computer scientist Alan Turing, who set out the idea in his seminal 1936 paper, *On Computable Numbers*. Turing reformulated Kurt Gödel's 1931 results on the limits of proof and computation, replacing Gödel's universal arithmetic-based formal language with the formal and simple hypothetical devices that became known as Turing

He also introduced the notion of a 'Universal Machine' (now known as a Universal Turing machine), with the idea that such a machine could perform the tasks of any other machine, or in other words, it is provably capable of computing anything that is computable by executing a program stored on tape, allowing the machine to be programmable. Von Neumann acknowledged that the central concept of the modern computer was due to this paper. Turing machines are to this day a central object of study in theory of computation. Except for the limitations imposed by their finite memory stores, modern computers are said to be Turing-complete, which is to say, they have algorithm execution capability equivalent to a universal Turing machine.

The era of modern computing began with a flurry of development before and during World War II. Most digital computers built in this period were electromechanical—electric switches drove mechanical relays to perform the calculation. These devices had a low operating speed and were eventually superseded by much faster all-electric computers, originally using vacuum tubes. The Z2 was one of the earliest examples of an electromechanical relay computer, and was created by German

engineer Konrad Zuse in 1940. It was an improvement on his earlier Z1; although it used the same mechanical memory, it replaced the arithmetic and control logic with electrical relay circuits. In the same year, electro-mechanical devices called bombes were built by British cryptologists to help decipher German Enigma-machine-encrypted secret messages during World War II. The bombes' initial design was created in 1939 at the UK Government Code and Cypher School (GC&CS)

**NOCR**

**COLOSSUS**

**SHIFT REGISTERS**

**ELECTRONIC CIRCUIT**

# N530 STIBITZ

George Robert Stibitz was a Bell Labs researcher internationally recognized as one of the fathers of the modern first digital computer

IN NOVEMBER 1937, GEORGE STIBITZ, THEN WORKING AT BELL LABS, COMPLETED A RELAY-BASED CALCULATOR HE LATER DUBBED THE “MODEL K” (FOR “KITCHEN TABLE”, ON WHICH HE HAD ASSEMBLED IT), WHICH CALCULATED USING BINARY ADDITION. REPLICAS OF THE “MODEL K” NOW RESIDE IN THE COMPUTER HISTORY MUSEUM, THE SMITHSONIAN INSTITUTION, THE WILLIAM HOWARD DOANE LIBRARY AT DENISON UNIVERSITY AND THE AMERICAN COMPUTER MUSEUM IN BOZEMAN, MONTANA, WHERE THE GEORGE R. STIBITZ COMPUTER AND COMMUNICATIONS PIONEER AWARDS ARE GRANTED

# BOOLEAN

Boolean algebra is the branch of algebra in which the values of the variables are the truth values true and false, usually denoted 1 and 0 respectively

# LOGIC GATES

Is an idealized or physical device implementing a Boolean function; that is, it performs a logical operation on one or more binary inputs and produces a single binary output

Purely electronic circuit elements soon replaced their mechanical and electro-mechanical equivalents, at the same time that digital calculation replaced analog. Machines such as the first IBM electronic accounting machine (US 2,580,740), the NCR electronic calculating machine (US 2,595,045), the Z3, the Atanasoff–Berry Computer, the Colossus computers, and the ENIAC were

In the US, in the period summer 1937 to the fall of 1939 Arthur Dickinson (IBM) invented the first digital electronic computer. This calculating device was fully electronic-control, calculations and output (the first electronic display). John Vincent Atanasoff and Clifford E. Berry of Iowa State University developed the Atanasoff-Berry Computer (ABC) in 1942, the first binary electronic digital calculating device. This design was semi-electronic (electro-mechanical control and electronic calculations), and used about 300 vacuum tubes, with capacitors fixed in a mechanically rotating drum for

During World War II, the British at Bletchley Park (40 miles north of London) achieved a number of successes at breaking encrypted German military communications. The German encryption machine, Enigma, was first attacked with the help of the electro-mechanical bombes. They ruled out possible Enigma settings by performing chains of logical deductions implemented electrically. Most possibilities led to a contradiction, and the few remaining could be tested by hand. The Germans also developed a series of teleprinter encryption systems, quite different from Enigma. The Lorenz SZ 40/42 machine was used for high-level Army com-

munications, termed “Tunny” by the British. The first intercepts of Lorenz messages began in 1941. As part of an attack on Tunny, Max Newman and his colleagues helped specify the Colossus. Tommy Flowers, still a senior engineer at the Post Office Research Station was recommended to Max Newman by Alan Turing and spent eleven months from early February 1943 designing and building the first Colossus. After a functional test in December 1943, Colossus was shipped to Bletchley Park, where it was delivered on 18 January 1944 and attacked its first message on 5 February.



ARRAYS

STEEL TAPE

INTERPOLATION

PUNCHED CARDS

VACUUM TUBE OSCILLATOR

PARTIAL DIFFERENTIAL EQUATIONS

# MHZ

THE HERTZ IS THE DERIVED UNIT OF FREQUENCY IN THE INTERNATIONAL SYSTEM OF UNITS (SI) AND IS DEFINED AS ONE CYCLE PER SECOND. IT IS NAMED FOR HEINRICH RUDOLF HERTZ, THE FIRST PERSON TO PROVIDE CONCLUSIVE PROOF OF THE EXISTENCE OF ELECTROMAGNETIC WAVES

# JOHN VON NEUMANN

FIRST DRAFT OF A REPORT ON THE EDVAC

INCOMPLETE 101-PAGE DOCUMENT WRITTEN BY JOHN VON NEUMANN AND DISTRIBUTED ON JUNE 30, 1945 BY HERMAN GOLDSTINE, SECURITY OFFICER ON THE CLASSIFIED ENIAC PROJECT. IT CONTAINS THE FIRST PUBLISHED DESCRIPTION OF THE LOGICAL DESIGN OF A COMPUTER USING THE STORED-PROGRAM CONCEPT, WHICH HAS CONTROVERSIALLY COME TO BE KNOWN AS THE VON NEUMANN ARCHITECTURE. VON NEUMANN DESCRIBES A DETAILED DESIGN OF A “VERY HIGH SPEED AUTOMATIC DIGITAL COMPUTING SYSTEM.” HE DIVIDES IT INTO SIX MAJOR SUBDIVISIONS: A CENTRAL ARITHMETIC PART, CA, A CENTRAL CONTROL PART, CC, MEMORY, M, INPUT, I, OUTPUT, O, AND (SLOW) EXTERNAL MEMORY, R, SUCH AS PUNCHED CARDS, TELETYPE TAPE, OR MAGNETIC WIRE OR STEEL TAPE. THE CA WILL PERFORM ADDITION, SUBTRACTION, MULTIPLICATION, DIVISION AND SQUARE ROOT. OTHER MATHEMATICAL OPERATIONS, SUCH AS LOGARITHMS AND TRIGONOMETRIC FUNCTIONS ARE TO BE DONE WITH TABLE LOOK UP AND INTERPOLATION, POSSIBLY BIQUADRATIC

Early computing machines had fixed programs. For example, a desk calculator is a fixed program computer. It can do basic mathematics, but it cannot be used as a word processor or a gaming console. Changing the program of a fixed-program machine requires re-wiring, re-structuring, or

The theoretical basis for the stored-program computer had been composed by Alan Turing in his 1936 paper. In 1945 Turing joined the National Physical Laboratory and began his work on developing an electronic stored-program digital computer. His 1945 report ‘Proposed Electronic Calculator’ was the first specification for such a device. Meanwhile, John von Neumann at the Moore School of Electrical Engineering, University of Pennsylvania, circulated his First Draft of a Report on the EDVAC in 1945. Although substantially similar to Turing’s design and containing comparatively little engineering detail, the computer architecture it outlined became known as

The Manchester Small-Scale Experimental Machine, nicknamed Baby, was the world’s first stored-program computer. It was built at the Victoria University of Manchester by Frederic C. Williams, Tom Kilburn and Geoff Tootill, and ran its first program on 21 June 1948. The machine was not intended to be a practical computer but was instead designed as a testbed for the Williams tube, the first random-access digital storage device. Invented by Freddie Williams and Tom Kilburn at the University of Manchester in 1946 and 1947, it was a cathode ray tube that used an effect called secondary emission to temporarily store electronic binary data, and was used successfully in several

early computers. Although the computer was considered “small and primitive” by the standards of its time, it was the first working machine to contain all of the elements essential to a modern electronic computer. As soon as the SSEM had demonstrated the feasibility of its design, a project was initiated at the university to develop it into a more usable computer, the Manchester Mark 1. The Mark 1 in turn quickly became the prototype for the Ferranti Mark 1, the world’s first commercially available general-purpose computer. The SSEM had a 32-bit word length and a memory of 32 words. As it was designed to be the simplest possible stored-program computer, the only arith-

**FLIP-FLOPS**

**WHIRLWIND**

**MAGNETICDRUM**

**MICROPROGRAMMING**

**CENTRAL PROCESSING**

**IBM SOLID LOGIC TECHNOLOGY**

**GERMANIUMPOINT-CONTACTTRANSISTORS**

# LEO 1

THE LEO 1 (LYONS ELECTRONIC OFFICE I) WAS THE FIRST COMPUTER USED FOR COMMERCIAL BUSINESS APPLICATIONS

# MARK 1

THE FERRANTI MARK 1, ALSO KNOWN AS THE MANCHESTER ELECTRONIC COMPUTER IN ITS SALES LITERATURE, AND THUS SOMETIMES CALLED THE MANCHESTER FERRANTI, WAS THE WORLD'S FIRST COMMERCIALLY AVAILABLE GENERAL-PURPOSE ELECTRONIC COMPUTER

# IBM 650 MAINFRAME

¶ The IBM 650 Magnetic Drum Data-Processing Machine is one of IBM's early computers, and the world's first mass-produced computer. It was announced in 1953 and in 1956 enhanced as the IBM 650 RAMAC with the addition of up to four disk storage units. ¶ Mainframe computers are computers used primarily by large organizations for critical applications; bulk data processing, such as census, industry and consumer statistics, enterprise resource planning; and transaction processing

The first commercial computer was the Ferranti Mark 1, built by Ferranti and delivered to the University of Manchester in February 1951. It was based on the Manchester Mark 1. The main improvements over the Manchester Mark 1 were in the size of the primary storage (using random access Williams tubes), secondary storage (using a magnetic drum), a faster multiplier, and additional instructions. The basic cycle time was 1.2 milliseconds, and a multiplication could be completed in

In October 1947, the directors of J. Lyons & Company, a British catering company famous for its teashops but with strong interests in new office management techniques, decided to take an active role in promoting the commercial development of computers. The LEO I computer became operational in April 1951 and ran the world's first regular routine office computer job. On 17 November 1951, the J. Lyons company began weekly operation of a bakery valuations job on the LEO (Lyons Electronic Office). This was the first business application to go live on a stored program computer.

In June 1951, the UNIVAC I (Universal Automatic Computer) was delivered to the U.S. Census Bureau. Remington Rand eventually sold 46 machines at more than US\$1 million each (\$9.43 million as of 2018). UNIVAC was the first "mass produced" computer. It used 5,200

vacuum tubes and consumed 125 kW of power. Its primary storage was serial-access mercury delay lines capable of storing 1,000 words of 11 decimal digits plus sign (72-bit words). IBM introduced a smaller, more affordable computer in 1954 that proved very popular. The IBM 650

# MCU

A microcontroller (MCU for microcontroller unit, or UC) is a small computer on a single → integrated circuit. In modern terminology, it is similar to, but less sophisticated than, a system on a chip or SoC; an SoC may include a microcontroller as one of its components. A microcontroller contains one or more CPUs (processor cores) along with memory and programmable input/output peripherals. Program memory in the form of ferroelectric RAM, NOR flash or OTP ROM is also often included on chip, as well as a small amount of RAM. Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or other general purpose applications consisting of various discrete chips.

↓  
An integrated circuit or monolithic integrated circuit is a set of electronic circuits on one small flat piece of semiconductor material, normally silicon

# RAM

Random-access memory is a form of computer → data storage that stores data and machine code currently being used. A random-access memory device allows data items to be read or written in almost the same amount of time irrespective of the physical location of data inside the memory. In contrast, with other direct-access data storage media such as hard disks, CD-RWs, DVD-RWs and the older magnetic tapes and drum memory, the time required to read and write data items varies significantly depending on their physical locations on the recording medium, due to mechanical limitations such as media rotation speeds and arm movement.

↓  
Computer data storage, often called storage or memory, is a technology consisting of computer components and recording media that are used to retain digital data. It is a core function and fundamental component of computers.

ENGLISH → The history of computing hardware covers the developments from early simple devices to aid calculation to modern day computers. Before the 20th century, most calculations were done by humans. Early mechanical tools to help humans with digital calculations, such as the abacus, were called “calculating machines”, called by proprietary names, or referred to as calcula-

DEUTSCH → Die Computertechnologie entwickelte sich im Vergleich zu anderen Elektrogeräten sehr schnell. Die Geschichte der Entwicklung des Computers reicht zurück bis in die Antike und ist damit wesentlich länger als die Geschichte der modernen Computertechnologien und mechanischen bzw. elektrischen Hilfsmitteln (Rechenmaschinen oder Hardware). Sie umfasst

SPANISH → El hardware ha sido un componente importante del proceso de cálculo y almacenamiento de datos desde que se volvió útil para que los valores numéricos fueran procesados y compartidos. El hardware de computador más primitivo fue probablemente el palillo de cuenta; después grabado permitía recordar cierta cantidad de elementos, probablemente ganado o granos,

SWEDISH → Datorns historia sträcker sig över den tid då människan konstruerat maskiner för att göra beräkningar och bearbeta data. Räknemaskiner har funnits i flera hundra år, men det var först på 1900-talet som de blev elektriska. Det vi kallar datorer omfattar egentligen många helt skilda koncept: dels utrustning avsedd att underlätta beräkningar (därav den engelska termen

HUNGARIAN → A számítógép története lényegében az első számítógépek kialakításával kezdődik és a számítógép gyorsabbá, olcsóbbá, elérhetőbbé tételének folyamatát rögzíti. A számítógépek a kézzel működtetett eszközökből a lyukkártyás, majd az előre programozott számítógépek irányába fejlődtek. A számítógép történetének ebben a szakaszában jelentős előrelépések történ-

FRENCH → L'histoire des ordinateurs commence au milieu du xxe siècle. Si les premiers ordinateurs ont été réalisés après la seconde Guerre mondiale, leur conception héritait de diverses expériences comme l'Harvard Mark I et le Z3, machines électromécaniques programmables commencées en 1939, et surtout de deux calculateurs électroniques : le Colossus du service de crypta-

ITALIAN → La storia del computer è la storia dell'apparecchio elettronico destinato alla elaborazione dei dati, privo di capacità decisionale o discrezionale, che compie determinate operazioni secondo procedure prestabilite o programmi. Risalgono alla preistoria i primi ritrovamenti archeologici che dimostrano come l'uomo avesse rudimentali conoscenze matematiche. In par-

FINNISH → Tietokonetekniikan historia käsittää niin tietokoneen, tietotekniikka, automaation kuin laskennan ja ihmisen ajattelun samanaikaisen kehittymisen näiden suhteen. Nykyaikaisen tietokoneen kehitys alkoi sähköisistä laskentalaitteista ja kehitys on kulkenut rele- ja putkikoneista transistoritietokoneiden kautta mikrokontrollereihin ja mikroprosessoreihin. Ensimmäiset tie-

TURKISH → Bilgisayarın tarihçesi, bilgiyi hesaplamak, düzenlemek ve değiştirmek için kullanılan yazılım ve donanımların tarihsel gelişiminden bahsetmektedir. Bilgisayar, en basit bakış açısıyla bir matematiksel işlemci, yani bir hesap aracıdır ve veri işler. Bazı kaynaklarda basit hesap makinesi olan abaküs, ilk bilgisayar olarak tanımlanmaktadır. Bilgisayarın geçmişi yaklaşık 2000 yıl önce-

CZECH → Dějiny počítačů zahrnují vývoj jak samotného hardware, tak jeho architektury a mají přímý vliv na vývoj softwaru. První číslicové počítače byly vyrobeny ve 30. letech 20. století, avšak za jejich vynálezce je přesto považován Charles Babbage, který již v 19. století vymyslel základní principy fungování stroje pro řešení složitých výpočtů. Počítačů stále přibývá, jejich výkon roste

DANISH → En fjerdegenerationsdatamat er en datamat opbygget med én eller flere mikroprocessorer. Marcian Hoff's opfindelse af mikroprocessoren i slutningen af 1960'erne og Intels og Texas Instruments introduktion af de første realiseringer af ideen i starten af 1970'erne gav mulighed for at konstruere computere på en ny måde, og gjorde det muligt at forestille sig computere

LATVIAN → Brīvpiekļuves atmiņa jeb operatīvā atmiņa (angļu: Random Access Memory - RAM) ir datoru atmiņa, kurai centrālais procesors spēj piekļūt tieši, tas ir - izpildīt tur esošās programmas vai apstrādāt tur esošos datus. Procesors tieši spēj piekļūt tikai operatīvajai atmiņai un lasāmatmiņai, tāpēc pirms apstrādes vai izpildes citu veidu atmiņu saturs vispirms jāielādē opera-

LITHUANIAN → Atmintis (angl. memory) – adresuojamoji apdorojimo vieneto atminties erdvė ir visa kita komandoms vykdyti naudojama vidinė atmintis. Paprastai tai specialus skaičiavimo įrenginys, veikiantis kaip neatsiejama kompiuterio dalis. Dėl paplitusio kompiuterių veikimo nesupratimo, atmintis dažnai painiojama su duomenų saugojimo įrenginiais (pvz., diskais). Dėl šios priežas-

ROMANIAN → Istoria mașinilor de calcul cuprinde evoluția diverselor tehnici folosite de oameni pentru a efectua calcule matematice și a mașinilor și aparaturilor fizice de care s-au folosit pentru acest scop. Multă vreme, aceste calcule se efectuau mintal, eventual cu ajutorul unor dispozitive simple, cum ar fi abacul și, din secolul al XVII-lea, rigla de calcul.

POLISH → RAM (od ang. random-access memory), pamięć o dostępie swobodnym – podstawowy rodzaj pamięci cyfrowej. Choć nazwa sugeruje, że jest to każda pamięć o bezpośrednim dostępie do dowolnej komórki pamięci (w przeciwieństwie do pamięci o dostępie sekwencyjnym, na przykład rejestrów przesuwanych), ze względów historycznych oznacza ona tylko te rodzaje

NORWEGIAN → Å studere datamaskinens historie er en relativt ny disiplin. Inn-til 1990-tallet ble historien tatt vare på hovedsakelig gjennom overleveringer fra enkeltpersoner, hvor de skrev om de prosjektene de hadde vært med på. Et tidlig forsøk på å få et overblikk var Williams A History of Computing Technology, men selv denne behandlet datamaskinen hovedsakelig som et teknisk

PORTUGUESE → O hardware do Computador é um componente essencial no processo de cálculo e armazenamento de dados pois ele é necessário para o processamento e compartilhamento de dados. O primeiro computador que se tem notícia é literalmente duro. Os Fenícios armazenavam peças cerâmicas representando coisas como estoque e grãos em vasilhames, que não eram

CROATIAN → Veliko je pitanje povjesničara tko je stvorio koncept modernog računala, ali većina se slaže da je koncepte modernog računala stvorio u devetnaestom stoljeću engleski izumitelj Charles Babbage. Njegova nastojanja da stvori programabilno računalo s tehnologijom svoga vremena dovela su ga do neuspjeha jer masovna proizvodnja uniformnih mehaničkih dijelova s ni-

BOSNIAN → Historija računara je u pravom smislu veoma kratka, obzirom da se nakon pojave prvog modernog računara taj razvoj odvijao jako brzo. Međutim, sam koncept računara svoje korijene vuče iz davnina. Arhitekturu računara je opisao američki matematičar John von Neumann još mnogo prije nego se prvi računar i konstruisao. Definicija je data 1945. godine, a govori

ESTONIAN → Muutmälu ehk operatiivmälu ehk primaarmälu ehk põhimälu ehk suvapöördusmälu ehk RAM (lühend ingliskeelsetest sõnadest random access memory) on arvuti keskne mäluseade, kuhu saab andmeid kirjutada ja kust neid saab lugeda Põhimälu nimetatakse muutmäluks, sest erinevalt püsivmälu toime muutmäluks pidev andmete vahetamine ja uuendamise. Su-

RUSSIAN → Вычислительная техника является важнейшим компонентом процесса вычислений и обработки данных. Первыми приспособлениями для вычислений были, вероятно, всем известные счётные палочки, которые и сегодня используются в начальных классах многих школ для обучения счёту. Развиваясь, эти приспособления становились более сложными, например, такими как финикийские глиняные фигурки, также предназна-

BELOUSSIAN → Памяць з адвольным доступам, апэратыўная памяць—від камп'ютарных прыладаў для захоўвання інфармацыі. На сённяшні дзень існуе ў выглядзе інтэгральных схем, якія дазваляюць мець доступ да захаванай інфармацыі ў любым парадку (г.зн. адвольна). «Адвольна» ў гэтым выпадку падкрэслівае тое, што любая частка інфармацыі можа быць атрымана за пэўны час, незалежна ад яе месцазнаходжання і суадносін з па-

SERBIAN → Меморија са случајним приступом или оперативна меморија, означава врсту меморије која је директно адресибилна и њеном садржају се може приступити по произвољној локацији, а не само редом (секвенцијално, као код трака). RAM дозвољава да се подаци узимају директно у насумичном редоследу. Код других медијума, попут тврдих дискова, ЦД-ова, ДВД-ова и магнетних трака, као и примитивних типова меморија попут

UKRAINIAN → Обчислювальна техніка—найважливіший компонент процесу обчислень і обробки даних. Першими пристосуваннями для обчислень були, ймовірно, лічильні палички, які й сьогодні використовуються в початкових класах багатьох шкіл для навчання лічби. Розвиваючись, ці пристосування ставали складнішими, наприклад, такими як фінікійські глиняні фігурки, також призначені для наочного подання кількості, однак для зруч-

MAKEDONIAN → RAM меморија внатрешна меморија на сметачот, која се губи кога ќе се исклучи сметачот, а во меѓувреме, сите операции кои се одвиваат со меморијата се одвиваат во неа. Сите програми кои се стартуваат мора да се вчитаат во RAM меморијата, а ако нема доволно простор и во т.н. Swap датотека. Магнетното јадро е тип што е уште од многу одамна распространето околу 1949-1952 и подоцна се користи во повеќе сметачи

BULGARIAN → Паметта с произволен (непосредствен) достъп или RAM е вид компютърна памет, която позволява неограничен достъп до произволна част от запаметените данни, за разлика от паметта с последователен достъп и която има относително голяма скорост, за разлика от запаметяващи устройства като твърдите дискове. Най-често под RAM памет се разбира динамична памет с произволен достъп, която







OPENTYPE FEATURES:

FEATURE: OFF  ON

FIGURES:

TABULAR LINING:

2700–2300 BC 2700–2300 BC

SLASHED ZERO:

0 0

FRACTIONS:

1/2 silicon ½ silicon

SUPERSCRIPTS:

Mark<sup>2</sup> Mark<sup>2</sup>

SUBSCRIPTS:

Mark<sub>2</sub> Mark<sub>2</sub>

CASE SENSITIVE FORMS:

(SANS) (SANS)  
ibm650 IBM650

FEATURE: OFF  ON

DISCRETIONARY LIGATURES (DLIG)

CIRCLED NUMERALS:

STROKE:

012345678910 ①②③④⑤⑥⑦⑧⑨⑩  
+()

FILL:

012345678910 ①②③④⑤⑥⑦⑧⑨⑩  
+[]

ARROWS:

-> | <- | ^- | -^ → | ← | ↓ | ↑

LANGUAGE FEATURE:

BULGARIAN:

абвгдеёжзийкл абвгдеёжзийкл  
мнопрстуфхцч мнопрстуфхцч  
шщъьэюя шщъьэюя

SERBIAN:

абвгдеёжзийкл абвгдеёжзийкл  
мнопрстуфхцч мнопрстуфхцч  
шщъьэюя чшщъьэюя

RELEASED: 2018

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 Web: WOFF, WOFF2, EOT  
 App: OTF, TTF

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