普通高校系列教材·信息技术

计算机专业英语

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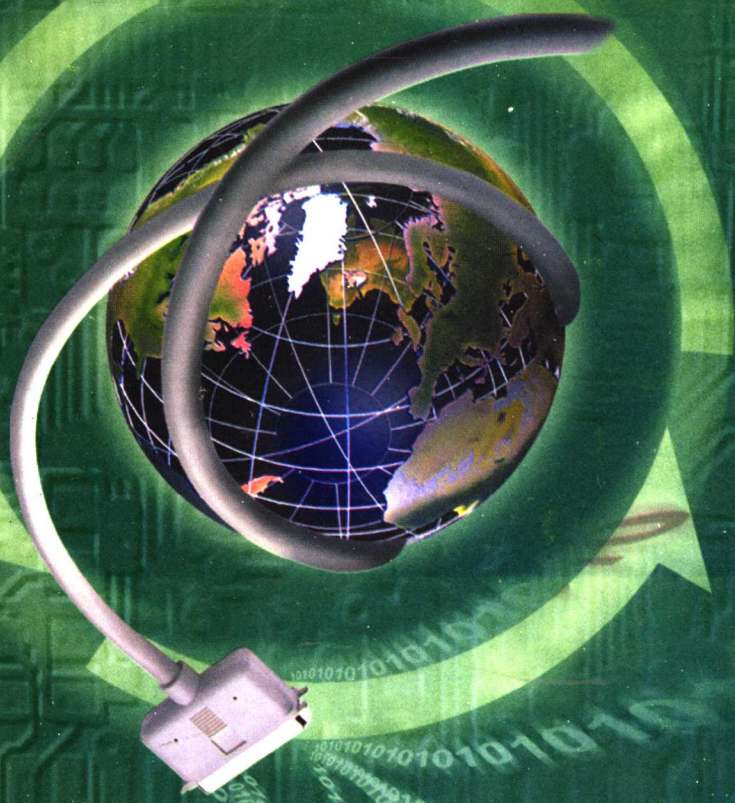
钟富强　张　琪　曹建文　编



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普通高等校系列教材·信息技术

计算机专业英语

钟富强
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曹建文

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内容简介

本书是一本实用计算机技术英语教材，包括计算机基本硬件、软件技术原理和计算机应用等方面的知识。全书结构清晰，内容详实，取材新颖，系统性较强。

本书分为15章，每一章根据内容划分为不同的节，按课文、词汇、注解、练习、泛读材料和屏幕信息学习的体例编写。书后附有参考译文、常用术语、缩略语等，以帮助读者对课文的学习和日常应用。每章练习中安排有构词和阅读练习题，泛读材料取材紧贴每课学习主题，既拓展了知识，又可以培养阅读能力。

本书既可作为大专院校专业英语教材，也可供一般计算机用户学习使用。

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出 版 前 言

近年来，我国的高等教育事业有了长足的发展，高校招生人数年年递增，越来越多的年轻人有机会接受正规的高等教育。这一举措无疑对我国的社会进步和经济发展有着重要的意义。但是人们也深刻地认识到，高等教育质量的好坏是一个不容忽视的关键性问题，而保证教育质量的一个重要环节就是抓好教材建设。但是，教材内容陈旧、教学手段落后的现象一直存在着。尤其像计算机技术这样的新兴领域发展迅猛，知识更新日新月异，教学内容落后于新技术新知识的矛盾显得尤为突出。基于上述两方面考虑，在南京大学出版社的鼎立相助下，一个以组编高校信息、电子类专业教材为主要任务的教材编委会成立了。

针对我国高等教育的现状和信息、电子技术的发展趋势，编委会组织部分高校的专家教授进行了深入的专题研讨。大家一致认为，在当前情况下组编一套紧跟新技术发展、符合高校教学需要、满足大学生求知欲望的系列教材势在必行，这将有助于规范教学体系，更新教学内容，把握教学质量，培养合格人才。专家们还对教材的结构、内容、体例及配套服务等提出了具体要求。为了能使这套教材逐步完善，并促进全国各地高校教学质量的提高，编委会决定在教材之外认真做好三件事：第一，为每本教材配备一本供学生使用的学习参考书，其主体内容为学习方法指导、习题分析与解答、典型题解或课程设计、模拟测试卷及解答、实验指导书；第二，定期对教材内容进行修订，及时补充新技术新知识，并根据具体情况组编新的教材；第三，有计划地组织各地高校教师进行教学交流与研讨，通过这种途径来提高偏远地区的师资水平。我们相信，通过各方面的大力支持和大家的不懈努力，这套教材会逐步被广大师生所接受，并在使用过程中得到完善、充实。

大家都知道，组编这样一套系列教材是个牵涉面很广的大工程。这个工程不仅在起步阶段需要得到各级教育主管部门、各高等院校、出版社的大力支持和协助，而且在使用过程中也离不开各位专家、教授、学生的热心呵护和指导。因此，殷切期待所有的能人志士关心我们，帮助我们，向我们提出好的建议或意见，为我们指出教材中的不足之处。

最后，感谢所有为本套系列教材出版付出辛勤劳动的同志们。

普通高校系列教材（信息技术）编委会

2003 年 3 月

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编 者 的 话

人类正步入一个以计算机技术应用、尤其以互联网络应用为核心的信息时代。熟练使用计算机处理工作事务，已成为个人的基本技能。通过互联网络及时获取和利用信息，是信息时代个人、企业、乃至一个国家发展和竞争成败的关键。

人们在学习计算机知识和使用计算机的过程中，不可避免地会遇到语言方面的问题。因为计算机上使用的帮助信息、出错和提示信息大部分都是用英文给出的，绝大部分产品说明、应用软件和编程语言使用英文，计算机技术研究论文、报告也是用英文书写的。因此，掌握一定程度的专业英语，是大部分计算机用户、尤其是相关工作人员与技术人员学习、应用和交流的需求。

此外，信息时代要求人才具备综合素质。随着全球经济、文化交流的加强，互联网络的日益普及，全球各地人民的距离大大地缩小，相互交流更加便利，语言能力必将成为个人素质的一个重要要素。

作者在教学以及和学生接触过程中，始终感觉到计算机专业英语教学的迫切性，但苦于难以找到合适的教学用书，也正是由于这方面的原因，我们编写了这本书。

本书注重实用性和培养学习者的能力。所谓实用，就是针对计算机知识学习和使用过程中普遍的难题，通过选材、术语讲解、屏幕英语学习等方式，解决学习者主要面临的专业词汇、术语和专业英语语言特点的问题；能力培养是指从用户使用计算机、可持续学习和发展两点出发，培养学习者在学习和应用中发现、解决问题的能力，培养学习者借助已有知识和工具书进一步学习和掌握相关知识的能力，主要是阅读和写作的能力。所以本书在每课练习中都安排有阅读练习题和一定篇幅的泛读文章。

全书由钟富强编写，曹建文、张琪老师为本书做了注解和审校，在编写过程中还听取了有关方面专家的意见。由于编者水平有限，时间仓促，书中难免存在不少缺点和错误，殷切希望广大读者批评指正。

编 者

2003 年 3 月

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Part I Text

Introduction to Computers

1.1 What is a computer

A computer is an electronic device that can automatically conduct accurate and fast data manipulation under the control of stored program instructions. It accepts, stores, and processes data and produces output results through output devices like screen and printers. Computer technology is the combination of electronic technology and calculating technology. Now, it has been developed into a new stage that features the merging of computer and communication, leading to the wonderful Internet world. The computer nowadays possesses rather powers of logical judgement, automatic control and memory capacity. As a result, it can, to some extent, take the place of labors at some occupational posts.

At its early years, computer was produced to do scientific calculations, but now it has been widely used in almost every fields. The following gives the main uses of computer.

1.1.1 Applications in scientific calculation and research

Data-computing has always been a headache problem in scientific research. The emerging of computer technology not only successfully solves the computing problem, but also enhances the efficiency and process of science development. Take for an example, for weather broadcasting, if it's not possible to manipulate the data and announce the result in advance, it can not be called a broadcasting, but obviously the manipulating of data for weather in even a small town is one hard task. In another aspect, computer system can control the experiment process more accurately. It can assemble parameters, collect and make analysis of data, coordinate, index and display the processed information, so it's good to improve the work of experiments in either the quantity or quality. Another good example is that the new computer graphic technology has been used in the research of psychology, ecology and economy. Its applications range from the production of charts and graphs, to the generation of realistic images for television and motion pictures to the interactive design of mechanical parts.

1.1.2 Applications in data and information processing

Data is the symbolized form of facts, concepts and orders. Data processing refers to the manipulation, combination and classification of data, while information processing means the work of analysis, classification and statistic activities of information, which is widely accepted in the enterprise management, materials management, information indexing and report tables. As the society has stepped into the age of information, the competition takes on a new look as the abilities to obtain, process and use information. Organizations begin to set up their own inner computer system, which then connects to the local area computer network or the world Internet, so as to access the database online, and realize the automation of information management and office automation.

1.1.3 Applications in process control

Besides the arithmetic operation power, a computer still possesses powerful logical judgement ability, making it possible to play a monitoring role in the process of production. Here the computer system can monitor any stages of the production, from the temperature, color to the speed etc. While monitoring the production process, the computer continuously receives signals, then it manipulates the production signals and stores the processed data into computer memory, here data analysis is completed and the consequent decision will be made. In this way, computer controls the process variables to maintain the correct ratios that allow for a quality product.

1.1.4 Applications in computer aided design

The assisting functions of computer generally include CAD, CAM, CAI and CAT. CAD refers to the use of computer to help engineering design, such as the construction, clothing and circuit design; CAM refers to the use of computer system in the management, control and operation of production equipment. CAI is the way to store varieties of teaching materials in computer to supply the students with individualized information, so as to realize the selective and self – determination study, or use computer as a teaching tool to create a vivid simulated environment to help students understand what they are learning, even in an interactive way of person to machine; CAT deals with testing work.

1.1.5 Applications in logic operation

Perhaps somebody is familiar with a machine named "Dark Blue". It is actually a computer-controlled intelligent robot, which can play chess with international master. The example of Dark Blue is a typical use of computer in logic operation, or called computer intelligence. Computer can also be used in decoding and language translation, like the black horse or golden hill series. The Artificial Intelligence and computer neural networks are the efforts of research in such fields.

1.1.6 Applications in family

Actually, computer is changing our family life by providing us with the functions of word processing, accounting management, amusement as well as the e – mail through bulletin board etc. On the other hand, computer is connecting a single family to the outdoor society, bringing us great convenience and interests.

1.2 Types of computer system

There are four types of computer system: microcomputer, minicomputer, mainframe computer, and supercomputer. They vary in processing speed, storage capacities, word size, and of course the cost, size and shape.

Microcomputer is the most common and familiar type to us, also known as personal computer or PC for short. It can be a desktop model or portable one. Microcomputers are widely used in offices, homes, schools, or companies. They can carry out lots of tasks, for example, we can deal with data, write reports, arrange files, communicate with others on network, do some calculations etc. Most microcomputers have either an 8 – bit, 16 – bit, 32 – bit or even 64 – bit word size, which is the term used to represent the processing ability of computer. Their main – storage capacities range from 1MB to 10MB or even bigger. Most of the users can accept it for its low cost and convenience.

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Minicomputer, also called midrange computers, has a 16 – bit to 64 – bit word size, with a main – storage capacity ranges from 8 to 16 megabytes. It can support 2 to about 50 users at the same time and works much faster than microcomputer. Some medium – sized companies or large departments of factories may use minicomputers to conduct accounting work or monitor a particular manufacture process.

If you go to the airline, a bank, a large insurance company, or a stock exchange, you may see a mainframe system. Mainframe computers offer faster processing speeds and greater storage capacity than minicomputer. They can support thousands of users, and their size can be either big or small.

Supercomputers are not likely to be visited by general users. They are always housed in certain environment for special purpose, for example for military use or scientific research. Their processing speed may be thousands of times faster than any other types of computers. They are the giants of the computer world.

Though for the common users, a microcomputer is enough, some workplace use a combination of computers. For example, in a bank there may be a mainframe computer for processing and storage of the complicated data. While the other microcomputers perform some specialized tasks. Furthermore, even microcomputers today are not separated, they are connected to communicate with each other by the wonderful network.

1.3 Computer in Progress

Having made clear what is a computer system, we'll see the development of computer.

The first computer-like machine, named ENIAC, or said Electronic Numerical Integrator and Computer, was produced in 1946, initially for military use under the host by the American army. ENIAC was a giant, weighing over 30 tons and containing over 18,000 vacuum tubes. Anyhow, it was the first general – purpose electronic computing machine in the world and was capable of performing thousands of operations per second. Since the day ENIAC was produced, computer technology has evolved rapidly, undergoing 5 generations mainly based on the different electronic components adopted.

1.3.1 The First Generation of Computers: 1946—1959

The first generations of computers were characterized by the most prominent feature of the vacuum tubes. Hundreds of vacuum tubes made up the main memory. Due to the primary lack of the vacuum tubes, say it was bulky and produced a lot of heat and did not operate very fast, the computers that time had the features of high cost and huge bulk with low memory capacity, low execution speed. In addition, most input and output media were paper cards, magnetic drums and magnetic tapes. Users couldn't access information directly, and they could run only one program at a time. Through 1950s, new advancements were continuously made both in hardware and software, such as the binary arithmetic, random access, and the concept of stored programs. Machine language in binary system was the only programming language at this stage, although the idea of programming language translation and high – level languages still occurred a bit later, for example, the FORTRAN programming language was made in 1957, which developed into the first widely use high – level languages.

1.3.2 The Second Generation of Computers: 1959 —1964

During this period, the computer scientists fortunately found a kind of new material, the transistor, which is smaller and less expensive, to replace the bulky and costly vacuum tubes in computers, resulted in great decrease in the size and cost of computers, with operation speed increased greatly. At the same time, magnetic cores made of magnetic materials were commonly used as the main memory. Removable magnetic disk packs, which are stacks of disks connected by a common spindle, also used as storage devices. Not only were the special – purpose expensive mainframes produced this time, but also the minicomputers became available in 1960s. Software was still under its early development, and assembly language played a more and more important role instead of the machine language. At the same time, computers began to be used in other fields, like data processing, besides the original applications in military and scientific research, calculations. More and more businesses and organizations were coming to use computers for data processing needs.

1.3.3 The Third Generation of Computers: 1964—1970

An important event in the history of computer development should be stated here, that is the announcement of their system 360 lines of computers by the IBM on April 7, 1964. The System/360 ushered us into a new age of the computer development, the third generation of computers, which was characterized by the technical development of integrated circuits. An integrated circuit is a piece of silicon (chip) that consists of numerous transistors, and this caused the revolutionary evolution in hardware.

Another important mark of this generation is the solution to the compatibility problems to the previous computers. All models were compatible so that programs written for one model could be used in others.

Software development gained a breakthrough during the third computer generation. Although simple operating system had already been developed even in the first generation of computers, many of the functions of modern operating system appeared in the third generation, or we can say it more vividly that the first and second generations of computers were the birth and childhood of operating system, the third generation was the time it grown up and began to mature. Advanced programming languages and interactive operating systems began to be used in computer systems. Minicomputers began to be widely used in 1970s. The third generation computers work so quickly that they provide the capability to run more than one program concurrently (multiprogramming), furthermore, it could support virtual memory and time sharing operation.

1.3.4 The Fourth Generation of Computers: 1971—till now

Since the day when transistors took the place of vacuum tubes as the basic electronic components of computers, the evolution of computers has been the continuous research in the highly efficient use of transistors. Integrated circuit was the first step, however in the fourth generation of computers, scientists found way to put more and more transistors on a tiny silicon chip. First there was large – scale integration (LSI), with hundreds and thousands of transistors per chip, then came the very large scale integration (VLSI), with thousands and hundreds of thousands of transistors. At the same time, integrated semiconductor storage was used as main memory instead of the previous magnetic cores. This

time, the operating speed can reach millions or hundreds of millions times per second.

One of the most significant contributions of the fourth generation of computers is the microprocessor. As the technology developed, more and more transistors could be integrated on a silicon chip, it eventually became possible to put an entire computer processor, called a microprocessor, on a chip. Consequently, microcomputers using microprocessors for personal user was produced, and this laid the foundation for computers to step into common family, which can be called another milestone in the progress of computer. Without the microprocessor and the following microcomputers, there wouldn't have been the wonderful nowadays' development of Internet, which concurrently has activated the development of software. Operating systems were gradually improved to be perfect, and newly advanced languages were designed. Varieties of application software were developed for different purposes, from work to amusement, even the blaming virus programs. Multimedia, office automation bulletin board, Internet computer games are the popular words at this age. Database software became widely used during this time.

1.3.5 The Fifth – Generation of Computers now? —future?

Some says the fifth generation of computers will have two basic characteristics, one is the use of parallel processing techniques, and another is the use of Artificial Intelligence. In the future, incredibly fast computer chips will be used, which makes the computers be able to carry out thousands of operations simultaneously. Data storage system may come in the form of laser cards, of the size of a small plastic credit card but can hold terabytes of information. The computers will be based on logical inference. There will be extensive use of artificial intelligence. Such machines will be able to do such things as make decisions, draw conclusions, and understand everyday speech and voice recognition. In future computers, voice and data will probably be transmitted by built – in cellular radio. Printers, projectors, and video cameras will probably communicate through an infrared interface similar to today's remote devices. Computers will weigh less than a pound.

***New words and expressions*:**

electronic adj. 电子的
merge v. 合并,结合
parameter n. 参数
index n. 索引
variable n. 变量
binary adj. 二进位的
silicon 硅元素
transistor n. 晶体管
chip n. 芯片
memory n. 存储器,内存
document n. 文档
worksheet n. 工作表
incredibly adv. 难以置信的
intelligence n. 智能
manipulate n. 操纵,处理
assemble v. 集合,汇编
coordinate n. 坐标
arithmetic n. 算术
decode v. 解码
costly adj. 昂贵的
concurrently adv. 同时地
microprocessor n. 微处理器
process vt./ n 处理,加工,过程
instruction n. 指令
database n. 数据库
timesharing n. 分时
terabyte n. 太字节
built – in 内设

cellar n. 单元式
interface n. 界面
hardware n. 硬件
communication n. 交通,通信
convert vt. 转换
microcomputer n. 微型机
mainframe computer n. 大型计算机
desktop n. 桌面(电脑)
accounting n. 会计
vacuum tube 真空管
magnetic adj. 磁的,有磁性的
transistor n. 晶体管
spindle n. 轴,杆
multiprogramming n. 多道程序设计
stored program 存储程序
primary storage 主存
Central Processing Unit 中央处理器
Arithmetic/Logic Unit 算术逻辑单元
operating system 操作系统
processing speed 处理速度
programming language 编程语言
magnetic disk pack
integrated circuit 集成电路
in addition 此外
for short 简称,缩写
to some extent 在某种程度上

infrared adj. n. 红外线
temporary adj. 临时的
software n. 软件
operate vi. 操作,运转
execute vt. 执行
minicomputer n. 小型机
supercomputer n. 超型计算机
portable adj. 手提式的
specialized adj 专业的
bulky adj. 体积大的
drum n. 鼓
stack n. 栈
simultaneously adv. 同时地
database software 数据库
work cycle 工作周期
secondary storage 辅助存储器
control unit 控制单元
application program 应用程序
high – level language 高级语言
storage capacity 存储容量
laser card 激光卡
silicon chip 硅片

stock exchange 股票交易所
be likely to 可能,往往
be familiar with 熟悉

***Notes*:**

1) logical inference:逻辑推论
2) data computing:数据计算
3) virtual memory:虚拟内存
4) artificial intelligence:人工智能
5) voice recognition:声音识别

Skills Development

专业英语的特点

专业英语由于表达专业内容的需要,在语言运用、句型结构及文体形式等方面有很强的

专业特点，主要表现在：

1)具有大量的专业词汇；

2)语句注重实义表达，省略句使用较多，甚至有的句子直接由词组或词段构成，并不具有严格完整的句法和语法；

3)文体客观性强，使用被动语态及非谓语动词.

1. 专业性

专业英语中存在大量的专业词汇、缩略语，这些词汇或来自于公共英语，这些公共英语词汇被赋予了特定的专业内容；或在行业及技术发展过程中逐渐创造出来的，如大量的公司及产品名称、程序语言、指令名称等；或从相关行业借用，或根据构词法规则人为构造的.

其中不少词汇往往一词多义，需要根据学科、专业、上下文和配搭习惯恰当选择词义，如：jumper 一词在不同行业、专业场合中具有不同的词义：跳高运动员(运动)，长凿、长钻(船舶)，跨接线(电力、电信)，工作服(纺织)，鹤嘴(机械)，跳线(计算机).

此外同一词汇在同一专业中也会遇到在不同语言环境词性、含义不同的情况，如：output 在下面几个句子中运用.

As output, the executed data can either be stored in the memory or be printed out through peripheral devices(作名词，意为"输出物).

Printers and display screens are the main forms of output devices (作定语，输出设备).

A computer is a machine that receives and manipulates data, then output information (作动词，输出信息).

2. 语句特性

专业英语文体多为介绍某个科技产品和技术，如产品外观、安装使用说明、维修等等，要求文体公允、客观，因此在句子结构上常采用被动语态或具有被动语态功能的分词描述，以被描述者为主题客观地介绍文章要点和内容.

1)被动语态结构.由于很少使用第一人称表述，最能反映专业文体的客观性，常用于技术性描述文章中，下面是一段计算机硬盘介绍的文字，阅读并体会被动态的运用效果.

The disks in a hard disk system are made of a metal alloy, coated on both sides with a magnetic material. Hard disks are more dimensionally stable. This means that they can be spun at higher speed, and that tracks and the bits on the tracks can be put closer together. In most cases the hard disks are permanently fastened in the drive mechanism and sealed in a dust - free package, bus some systems do have removable enclosed disks. Common hard disk sizes are 3.5, 5.25, 8, 10.5, 14, and 20 in. To increase the amount of storage per drive, several disks may be stacked with spacers between. A read - write head is used for each disk surface.

2)非谓语结构.专业文章介绍的内容除了技术性强外，操作性也较强，往往涉及动作的先后顺序，动作的目的性，及操作的结果等描述，非谓语结构由于其语法特性，利于表达操作步骤，且语言简洁，表达清晰.

Testing the Connection between the Computer and the Printer.

Make sure the Ready light is on(If necessary, briefly press the front button to bring the printer out of Intelligent Off mode).

计算机屏幕提示信息中常使用分词结构以求语言的简练.

Then type the following command from your DOS prompt: DIR > PRN.

Error while unlocking communication area.

Extended Card switches do not match system memory size.

An error occurred while writing to the signature file.

Bad memory image of FAT detected.

3.实义性

专业英语文体结构简练、用词节省、句子紧凑精练,表意准确,常采用实义词汇而不拘泥于完整语法,常采用不定式短语、分词短语、动名词短语等,通常也出现在专业广告、简介、产品手册、屏幕提示信息等多种文体中.

Exercises

1.Make new words adding suffix – er, – or to the given words.

(1) program _____ (2) interpret _____

(3) edit _____ (4) adapt _____

(5) translate _____ (6) assemble _____

(7) operate _____ (8) detect _____

(9) transform _____ (10) manage _____

(11) convert _____ (12) amplify _____

(13) transmit _____ (14) sense _____

(15) receive _____ (16) process _____

2.Translate the following terms into English.

(1)主存储器 (2)中央处理器

(3)操作系统 (4)应用程序

(5)芯片 (6)二进制

(7)字长 (8)集成电路板

(9)数据处理 (10)存储程序

(11)真空管 (12)预制卡

(13)磁带 (14)高级语言

(15)晶体管 (16)数据库软件

(17)太字节 (18)硅片

(19)大规模集成电路 (20) 红外接口

3. Fill in the blanks with the words or expressions given below. Change the form where necessary.

similar to	range from....to	instead of	be likely to
result in	lead to	due to	responsible for

(1) Magnetic – core memory was _____ data being retrieved and stored at a millionth of a second.

(2) Data were held on the tapes in serial number, which meant the user could not access the in-

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