Chapter1

这描述了一个电子数字计算机的设计体系结构，它包含如下部件：
(1)一个处理单元包含一个算术逻辑单元和处理器寄存器；
(2)一个控制单元包含一个指令寄存器和程序计数器；
(3)存储数据和指令的存储器；
(4) 外部的大容量存储器；
(5) 输入和输出的机制。
（翻译上述句子）

This describes a design architecture for an electronic digital computer with parts consisting of

(1) a processing unit containing an arithmetic logic unit and processor registers;

(2) a control unit containing an instruction register and program counter;

(3) a memory to store both data and instructions;

(4) external mass storage;

(5) and input and output mechanisms.

1. Choose the right answer

(1) A _____ is a functional unit that interprets and carries out instructions.

A. memory B. processor C. storage D. network

(2) A _____ consists of the symbols, characters, and usage rules that permit people to communicate with computer.

A. programming language B. network C. keyboard D. display

(3) _____ software, also called end-user program, includes database programs, word processors, spreadsheets, etc.

A. Application B. System C. Complier D. Utility

(4) In _____, the only element that can be deleted or removed is the one that was inserted most recently.

A. a line B. a queue C. an array D. a stack

BAAD

2. Translation

(1) Most online services have their own browsers.

(2) Floppy disk may be double-density or high-density.

(3) Java technology is both a programming language and a platform.

(4) A window manager can be though of as a GUI(graphical user interface) for an OS.

(5) A database management system handles user requests for database action.

2.

(1) 大多数在线服务都有自己的浏览器。

(2) 软盘(Floppy disk)可以是双倍密度的或者高密度的。

(3) **Java**技术既是一种编程语言，也是一个平台。

(4) 一个视窗管理器(window manager)可以被看作是操作系统的图形用户界面。

(5) 数据库管理系统处理 用户对数据库的操作请求。

(user requests for database action)

We can define a computer as a device that accepts input, processes data, stores data, and produces output. According to the (1) mode of processing, computer are either analog or (2) digital. They can also be classified as mainframes, (3) minicomputer, workstation, or microcomputers. All else (for example, the age of the machine) being equal, this (4) categorization provides some indication of the computer's (5) speed, size, cost, and abilities.

Ever since the (6) advent of the computers, there have been constant changes. First-generation computers of historic (7) significance, such as UNIVAC, introduced in the early 1950s, were (8) based on vacuum tubes. Second-generation computers, (9) appeared in the early 1960s, were those in which (10) transistors replaced vacuum tubes. In third-generation computers, dating from the 1960s, integrated (11) circuits replaced transistors. In fourth-generation computers such as (12) microcomputer, which first appeared in the mid-1970s, large-scale (13) integration enabled thousands of circuits to in incorporated on one (14) chip. Fifth-generation computers are expected to (15) combine very-large-scale integration with sophisticated approaches to (16) computing, including artificial intelligence and true distributed processing.

To get an idea of the speed computing throughput 460 teraflops represents, the press release states that, “These two systems will have more than one-and-a-half times the combined processing power of all 500 machines on the recently announced TOP 500 List of Supercomputers.”

为了了解 460 万亿次 teraflops 的运算吞吐量 throughput 所代表的速度，新闻稿 press release 指出，“这两个系统的处理能力将是最近公布的 500 强超级计算机名单上所有 500 台机器的综合处理能力的 1.5 倍以上。”

Exercises

1 PC (Personal Computer) (D)
2 Workstation (C)
3 Mini Computer (E)
4 Main Frame (B)
5 Supercomputer (A)

A. It is an extremely fast computer, which can execute hundreds of millions of instructions per second.

B. It is a multi-user computer system, capable of supporting hundreds of users simultaneously. Software technology is different from minicomputer.

C. It is also a single user computer system, similar to personal computer however has a more powerful microprocessor.

D. It is a single user computer system having moderately powerful microprocessor.

E. It is a multi-user computer system, capable of supporting hundreds of users simultaneously.

Chapter2

In computers, a (1)pipeline is the continuous and somewhat overlapped movement of (2)instructions to the processor or in the arithmetic steps taken by the processor to perform an instruction. Pipelining is the use of a pipeline.
Without a pipeline, a computer processor gets the first instruction from memory, performs the (3)operation it calls for, and then goes to get the next instruction from memory, and (4)so forth. While (5)fetching the instruction, the (6)arithmetic part of the processor is (7)idle. It must wait until it gets the next instruction.

With pipelining, the computer (8)architecture allows the next instructions to be fetched while the processor is performing arithmetic operations, holding them in a (9)buffer close to the processor until each instruction operation can be performed. The staging of instruction fetching is continuous. The result is an (10)increase in the number of instructions that can be performed during a given time period.

翻译练习：

The internal organizations of ROM and RAM chips are similar. To illustrate the simplest organization, a linear organization, consider an 8*2 ROM chip.

For simplicity, programming components are not shown. This chip has three address inputs and two data outputs, and 16 bits of internal storage arranged as eight 2-bit locations.

ROM 和 RAM 芯片的内部组成是相似的。为了说明一个最简单的组成——线性组成，我们来考虑一个 8*2 的 ROM 芯片。

为了简化，编程器件没有画出来。这个芯片有三个地址输入端和两个数据输出端，以及 16 位的**内部存储元件**，它排列成 8 个单元，每个

单元 2 位。

翻译练习：

Alignment simply means storing multibyte values in locations such that they begin at a location that also begins a multibyte read block.

In this example, this means beginning multibyte values at memory locations that have addresses evenly divisible by four, thus guaranteeing that a four-byte value can be accessed by a single read operation.

对齐简单地说就使存储多字节值的起始单元刚好是某个多字节读取模块的开始单元。在这个例子中，意味着多字节值开始存储的单元的地址要能被 4 整除，这样就保证该 4 字节值可在单一的一个读操作中存取到。

Fill in the blanks

1. CPU, memory system, and input/output devices are three main components in computer organization.

2.The CPU keeps the address of the next instruction to be fetched in program counter.

3. The instruction cycle is also called the fetch-decode-and-execute cycle.

4. Either both chips or neither chip is active at any given time.

5. When high-order interleaving is used, all memory locations within a chip are contiguous within system memory.

6. Virtual memory uses a hard disk as a part of the computer's memory

A buffer is a data area shared by (1)hardware devices or program processes that (2)operate at different speeds or with different sets of priorities. The buffer allows each (3)device or process to operate without being held up by the (4)other.

In order for a buffer to be (5)effective, the size of the buffer and the algorithms for (6)moving data into and out of the buffer need to be (7)considered by the buffer (8)designer. Like a cache, a buffer is a 'midpoint holding place' but (9)exists not so much to accelerate the (10)speed of an activity as to support the coordination of separate activities.

Chapter 3

翻译练习：

在十六进制数制系统中，个位的权为 160 ；十位的权为 161；而百位的权为 162。

In a (based 16) hexadecimal number system, the units position has a weight of 160 ; the tens position has a weight of 161; and the hundreds position has a weight of 162.

翻译练习：

Conversions from decimal to other number systems are more difficult to accomplish than conversion to decimal. To convert the whole number portion of a number to decimal, divide by the radix. To convert the fractional portion, multiply by the radix.

由十进制转换成其他进制比由其他进制转换成十进制困难。转换整数部分时，要用基数去除，转换分数部分时，要用基数去乘它们。

Answer the question.

How to generate the radix-1 and radix complements?

To form the radix-1 complement, each digit of the number is subtracted from the radix-1.

To form the radix complement, first find the radix-1 complement, and then add a one to the result.

Chapter 4

Types of linked list:
翻译练习：
3. Multiply linked list（多重链表）

While doubly linked lists can be seen as special cases of multiply linked list, the fact that the two orders are opposite to each other leads to simpler and more efficient algorithms, so they are usually treated as a separate case.

虽然双向链表可以被看作是多重链表的特殊情况，但是拥有两种彼此相反次序的链表能得到更简单和更有效的算法，所以它们通常被视为单独的情况。

翻译练习：

Reusability

Data structures are reusable because they tend to be modular and context-free.

They are modular because each has a prescribed interface through which access to data stored in the data structure is restricted.

That is, we access the data using only those operations the interface defines.

复用性

因为数据结构趋向于模块化并和环境无关,所以数据结构是可以复用的。因为每种结构有一个预定的接口,通过该接口限制访问存储在数据结构中的数据，所以它们是模块化的。也就是说,我们只能使用接口定义的那些操作来访问数据。

Chapter 5

Answer the following questions.

1. OS functions can be divided into resource allocation and related functions, and user interface functions .

2. Resources can be divided into system provided resources, and user-created resources .

3. Two types of strategies for resource allocation are partitioning of resources (static allocation) , and allocation from a pool (dynamic allocation) .

4. There are two ways of sharing: sequential sharing, and concurrent sharing .

Answer the following questions.

What is resource preemption?

When a resource is sequentially shareable, the system can de-allocate a

resource when the program makes an explicit request for de-allocation. Alternatively, it can de-allocate a resource by force. This is called resource preemption, that is, forceful de-allocation of a resource.

Answer the questions.

1. Policies are usually architecture independent, while mechanisms are often architecture dependent/specific.

2. The porting effort of an operating system is determined by the size of the OS kernel.

3. Resource control actions of the module can be classified into

(a). Policies governing the use of resources. 控制资源使用的策略。

(b). Mechanisms to implement the policy. 执行策略的机制。

4. Thus, in either case the entry to the kernel is through the interrupt processing mechanism. For this reason, the OS kernel is often said to be interrupt-driven.

An operating system (sometime abbreviated as “OS”) is the program that, after being initially (1)loaded into the computer by a (2)boot(引导) program, manages all the other programs in a computer. The other programs are called (3)applications or application programs. The application programs make (4)use of the operating system by making **(5)requests** for services through a **(6)defined** application program

interface (API). In addition, users can (7)interact directly with the operating system (8)through a user interface such as a **(9)command** language or a (10)graphical user interface (GUI).

Chapter 6

中译英，英译中

(1) software life cycle	**软件生命周期**
(2) specification	**详述, 说明书, 规范**
(3) modular	**模块的, 有标准组件的**
(4) maintenance	**维护, 保持**
(5) waterfall model	**瀑布模型**

(6) 增量式模型	**incremental model**
(7) 设计模式	**design pattern**
(8) 原型	**prototype**
(9) 白盒测试	**White box testing**
(10) 现成组件	**off-the-shelf components**

Chapter7

A compiler translates the code into ___E___. This step is called ___D___ , and produces ___C___. The compiler then invokes __B__, which turns the object file into _A____.

A. an executable program

B. a linker

C. an object file

D. compiling

E. an intermediary form

Choose the right words:

the C's program building process involves four stages and utilizes different 'tools' such as a ____C____, ____D____, __B____, and ___A___.

A. linker

B. assembler

C. preprocessor

D. compiling

E. interpreter

value compile alphabet assembler instruction
interpret utility programmer communication load

(1)(load): To transfer (data) from a storage device into a computer's memory.
(2)(compile): To translate (a program) into machine language.
(3)(value): An assigned or calculated numerical quantity.
(4)(instruction): A machine code telling a computer to perform a particular operation.
(5) (interpret): To translate a statement or instruction into executable from and then execute it.
(6) (alphabet): The letters of a language, arranged in the order fixed by custom.
(7) (assembler): A program operating on symbolic input data to produce the equivalent executable machine code.
(8) (utility): A program designed to perform a particular function; the term usually refers to software that solve narrowly focused problems or those related to computer system management.
(9) (communication): The technology employed in transmitting message.
(10) (programmer): One who writes computer programs.

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java is A programming language expressly designed for use in the distributed (1)environment of the Internet. IT was designed to have the "look and feel" of the C++ language, but it's simpler to use than C++ and (2)enforces an object oriented programming model. Java can be used to create complete applications that may run on a (3)single computer or be distributed among (4)servers and clients in a network.

It can also be used to build a small application module or (5)applet for use as part of a Web page. Applets make it possible for a web page user to (6)interact with the page.

The Java virtual machine includes an optional just-in-time (7)compiler that dynamically compiles bytecode into (8)executable code as an alternative to interpreting one bytecode instruction at a time. In many case, the (9)dynamic JIT compilation is faster then the virtual machine (10)interpretation .

Chapter 8

3. TCP/IP is divided into four separate layers: network Interface Layer , internet layer , transport layer , and application layer .

中译英：

分组交换是传输数据的一种方法，它先将数据信息分割成许多称为“分组”的数据信息包；当路径可用时，经过不同的通信路径发送；当到达目的地后，再将它们组装起来。

Packet switching is a method of dividing digital messages into parcels called “packets,” sending the packets along different communication paths as they become available, and then reassembling the packets once they arrive at their destination.

英译中

Cloud computing refers to the use and access of multiple server-based computational resources via a digital network (WAN, Internet connection using the World Wide Web, etc.).

Cloud users may access the server resources using a computer, netbook, pad computer, smart phone, or other device. In cloud computing, applications are provided and managed by the cloud server and data is also stored remotely in the cloud configuration.

Users do not download and install applications on their own device or computer; all processing and storage is maintained by the cloud server. The online services may be offered from a cloud provider or by a private organization.

云计算是指通过数字网络 via a digital network（WAN、使用万维网 World Wide Web 的互联网连接等）使用和访问多个基于服务器的计算资源。

云用户可以使用计算机、上网本 netbook、平板电脑、智能手机或其他设备访问服务器资源。在云计算中，应用程序由云服务器提供和管理，数据也远程存储在云配置中。

用户不在自己的设备或计算机上下载和安装应用程序；所有处理和存储都由云服务器维护。在线服务可以由云提供商或私人组织提供。

Chapter 9

The two leading brands of Web server software are Apache, which is **free Web server shareware** that accounts for about 60% of the market, and Microsoft's NT Server software, which accounts for about 20% of the market.

网络服务器软件的两种主要品牌是 Apache 和微软的 NT 服务器软件，前者是一种**免费的网络服务器共享软件**，约占有 60%的市场；后者约占有 20%的市场。

Bluetooth requires that a low-cost (1)transceiver chip be included in each device. The transceiver transmits and (2)receives in a previously unused (3)frequency band of 2.45 GHz that is available (4)globally (with some variation of bandwidth in different countries), In addition to data, up to three (5)voice channels are available. Each device has a (6)unique 48-bit address from the IEEE 802 standard. Connections can be point-to-point or (7)multipoint.

The maximum range is 10 meters. Data can be (8)**exchanged** at a rate of 1 megabit per second (up to 2 Mbps in the second generation of the technology). A frequency hop (9)**scheme** allows devices to communicate even in areas with a great deal of electromagnetic interference. Built-in encryption and (10)verification is provided

Chapter 10

The term hacker is used in popular (1)media to describe someone who attempts to break into computer systems. Typically, this kind of hacker would be a **(2)proficient** programmer or engineer with sufficient (3)technical knowledge to understand the weak points in a (4)security system.

A (5)cracker is someone who breaks into someone else's computer system, often on a network; bypasses passwords or (6)licenses in computer programs; or in other ways intentionally **(7)breaches** computer security.

A cracker can be doing this for profit, maliciously, for some altruistic purpose or cause, or because the (8)challenge is there. Some breaking-and-entering has been done ostensibly to point out (9)weaknesses in a site's security system.

The term "cracker" is not to be (10)confused with "hacker". Hackers generally deplore cracking. However, as Eric Raymond, compiler of The New Hacker's Dictionary notes, some journalists ascribe break-ins to "hackers."

Steganography includes the **concealment (隐藏)**of information within computer files.

In digital steganography, **electronic communications** may include steganographic coding inside of a transport layer, such as a document file,

image file, program or protocol.

隐写术包括在计算机文件中隐藏信息。在数字隐写术中，电子通信可能传输层中包括隐写编码，比如一个文档文件、图像文件、程序或是协议。

Chapter 11

A database is a (1)collection of information that is organized so that it can easily be (2)accessed, managed, and **(3)updated.** In one view, databases can be classified according to (4)types of content: bibliographic, full-text, numeric, and images.

In computing, databases are sometimes classified according to their (5)organizational approach. The most prevalent approach is the (6)relational database, a tabular database in which data is defined so that it can be **(7)reorganized** and accessed in a number of different ways. A **(8)distributed** database is one that can be dispersed or replicated among different points in a (9)network. An object-oriented programming database is one that is congruent with the data defined in object **(10)classes** and subclasses.

Chapter 12

选择相应的英文单词

frame media dialogue compress demo
clip text microphone bitmap manner

(1) text : Data that consists of characters representing the words and symbols of humna speech; usually, character coded according to the ASCII standard, which assigns numeric values to numbers, letters, and certain symbols.
(2) media : The physical matrerial, such as paper, disk, and tape, used for storing computer-based information.
(3) bitmap : A data structure in memory that represents information in the form of a collection of individual bits.
(4) compress : To reduce the size of a set of data, such as a file or a communications message, so that it can be stored in less space or transmitted with less bandwidth.
(5) clip : A short extract from a film or videotape.
(6) microphone : An instrument that coverts sound waves into an electric current, ususlly fed into an amplifier, a recorder, or a broadcast transmitter.

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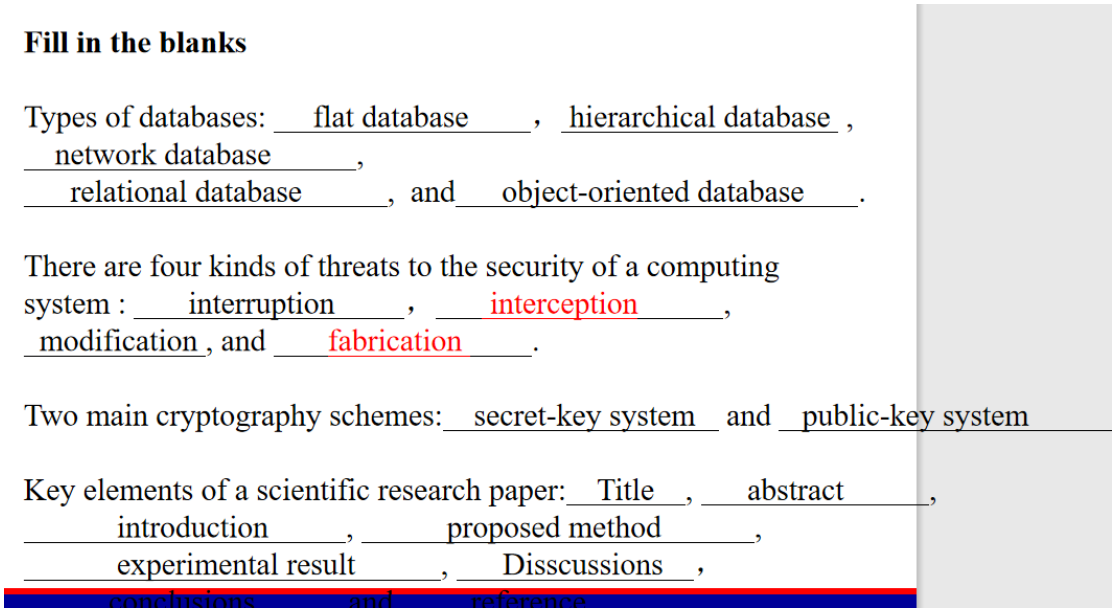
transmitter.

Fill in the blanks



Fill in the blanks

Types of databases: flat database , hierarchical database , network database , relational database , and object-oriented database .

There are four kinds of threats to the security of a computing system : interruption , interception , modification , and fabrication .

Two main cryptography schemes: secret-key system and public-key system

Key elements of a scientific research paper: Title , abstract , introduction , proposed method , experimental result , Disscussions , conclusions and reference

Types of databases: flat database , hierarchical database , network database , relational database , and object-oriented database .

There are **four kinds of threats** to the security of a computing system : interruption , interception 拦截 , modification , and fabrication 伪造 .

Two main **cryptography schemes**: secret-key system and public-key system .

Key elements of a scientific research paper: Title , abstract , introduction , proposed method ,experimental result , Disscussions , conclusions , and reference .

在密码学里，公钥基础设施是一种把公钥和实体身份进行绑定的一种约定。绑定是使用认证中心进行证书注册、证书发放的过程。基于绑定的确保等级，这个过程可以是一个自动的过程，也可以在人类监督下进行。

In cryptography, a PKI is an arrangement that binds public keys with respective identities of entities (like persons and organizations).

The binding is established through a process of registration and issuance of certificates at and by a certificate authority (CA).

Depending on the assurance level of the binding, this may be carried out by an automated process or under human supervision.

Chapter 6 选择

(1) (D): An error can be caused by attempting to divide by 0.
A. Interrupt B. Default C. Underflow D. Overflow

(2) (A): The process of identifying and correcting errors in a program.
A. Debug B. Bug C. Fault D. Default

(3) (B): A collection of related information, organized for easy retrieval.
A. Data B. Database C. Buffer D. Stack

(4)(C): A location where data can be temporarily stored.
A. Area B. Disk C. Buffer D. File

Chapter8 选择

1. The basic building blocks used in Internet are: (BEF).

A. domain names and URLs
B. client/server computing
C. circuit-switching
D. communications capacity
E. packet-switching
F. TCP/IP
G. HTTP/FTP/SSL/SMTP

2. The history of the Internet can be segmented into (CBF)

A. Concept Phase
B. Institutional Phase
C. Innovation Phase
D. Implementation Phase
E. Commercial Phase
F. Commercialization Phase