Unit 1

Computer Overview

Text A

Foundation of Computers

Computer is an electronic equipment which can make arithmetic and logical calculation, process information rapidly and automatically.

It was in 1946 that the first computer of the world was invented in America, it was named ENIAC. Though it was very huge and without high performance, it made basis for the development of computers.

Since the first computer was born, the development of computer science technique has been quite surprising. Take the speed of calculation for instance, ENIAC could only make calculations 5,000 times per second; but today, the fastest computer can do 100,000,000,000 times.

Computers can process various tasks in a variety of areas. such as industry, agriculture, finance, transportation, culture and education, national, defense and family use. In summary, applications of computers may be classified as follows.

↙ Science Calculation

The purpose of inventing and developing computer is to make arithmetic calculation rapidly and accurately. Computers can be used for all kinds of science calculations, which have become one of the most important fields of computer application, for example, calculations in the process of launching satellites and missiles, etc.

↙ Data Processing

With the development of science and technology, more and more information

including numerical data and non-numerical data comes out. At present, data processing is the widest field of computer application. Production management, data counting, office automation, traffic dispatching, information retrieval all belong to this field. Especially in recent years, with the development of the database and computer network technique, computer users in different districts and countries can share many valuable information resources through the network.

Real-Time Control

Real-time control is the control of procedure in the process of practical productions where computers are applied. Real-time means that the time of computer's calculating and controlling may match the time of controlled object's practical running or working.

Adjuvant Design

With its strong ability in calculating and mapping, we can use the computer to improve the quality and efficiency when doing engineering designs in the matter of architecture, machinery and electron. At present, as CAM, CAD and CAI being used very widely, complete automation from design to production has been achieved in many fields.

Artificial Intelligence

Computers can simulate people's feelings and thoughts, replacing part labors of human beings.

New Words and Expressions

electronic /ɪlekˈtrɒnɪk/	*adj.*	电子的,电子学的
arithmetic /əˈrɪθmətɪk/	*adj.*	算术的
	n.	算术
automatically /ˌɔːtəˈmætɪklɪ/	*adv.*	自动地,机械地
variety /vəˈraɪətɪ/	*n.*	变化,多样性,种类
performance /pəˈfɔːməns/	*n.*	性能,成绩,执行,表演
purpose /ˈpɜːpəs/	*n.*	目的,用途
	v.	打算,企图
accurately /ˈækjʊrɪtlɪ/	*adv.*	精确地,正确地
launch /lɔːntʃ/	*v.*	发射(导弹、火箭)
	n.	发射,下水
missile /ˈmɪsaɪl/	*n.*	导弹,发射物

numerical /njʊ(:)'merɪkəl/	*adj.*	数字的,用数字表示的
dispatching /dɪs'pætʃɪŋ/	*n.*	调度,派遣
retrieval /rɪ'tri:vəl/	*n.*	重新得到;收回;恢复;补救,修正
district /'dɪstrɪkt/	*n.*	区,地方,管区,行政区
real-time	*adj.*	实时的
adjuvant /'ædʒʊvənt/	*adj.*	辅助的
efficiency /ɪ'fɪʃənsɪ/	*n.*	效率,功效
architecture /'ɑ:kɪtektʃə/	*n.*	建筑,建筑学,体系机构
machinery /mə'ʃi:nərɪ/	*n.*	机械,机器
electron /ɪ'lektrɒn/	*n.*	电子
simulate /'sɪmjʊleɪt/	*v.*	模拟,模仿
office automation		办公自动化
artificial intelligence		人工智能
in the matter of		在……方面,关于
CAM (Computer-Aided Manufacturing)		计算机辅助制造
CAD (Computer-Aided Design)		计算机辅助设计
CAI (Computer-Aided Instruction)		计算机辅助教育

Notes to the Text

1. Computer is an electronic equipment which can make arithmetic and logical calculation, process information rapidly and automatically.

   句中 which 引导的定语从句 which can make arithmetic and logical calculation, process information rapidly and automatically 修饰先行词 equipment。

   计算机是一种能够高速、自动地进行算术和逻辑运算及信息处理的电子设备。

2. Take the speed of calculation for instance, ENIAC could only make calculations 5,000 times per second; but today, the fastest computer can do 100,000,000,000 times.

   就运算速度而言,ENIAC 每秒仅能完成 5,000 次运算;而如今最快的计算机,其速度可达每秒钟运算千亿次。

3. With the development of science and technology, more and more information including numerical data and non-numerical data comes out.

   句中"with+另一成分"在句中作状语,表示方式、条件或伴随情况。例如:Tom did his homework with the TV on.汤姆一边开着电视一边做着功课。

   随着科学技术的发展,涌现的信息量与日俱增,这些信息除了数值型数据外,还有大量的非数值型数据。

4. Especially in recent years, with the development of the database and computer network technique, computer users in different districts and countries can share many valuable information resources through the network.

   句中 Especially in recent years 和 with the development of the database and computer

network technique 都在句中作状语。

特别是近年来数据库技术与计算机网络技术的发展，使不同地区、不同国家的计算机用户都能通过网络通信共享信息资源。

5. Real-time control is the control of procedure in the process of practical productions where computers are applied.

句中 where 为关系副词，引导定语从句，在句中作状语。

实时控制是指计算机应用于实际生产过程中的过程控制。

6. …as CAM, CAD and CAI being used very widely, complete automation from design to production has been achieved in many fields.

句中 as CAM，CAD and CAI being used very widely 中的 being used 为现在分词的被动语态，在句中作定语。

随着 CAM、CAD 和 CAI 的广泛应用，许多领域实现了从设计到生产全面自动化的过程。

7. Computers can simulate people's feelings and thoughts, replacing part labors of human beings.

计算机能模拟人的感觉和思维过程，以便取代人的部分劳动。

Exercises

Fill in the blanks according to the text.

1. Computer is an electronic equipment which can make _____ and _____ calculation, process information rapidly and automatically.
2. Take the speed of calculation for instance, ENIAC could only make calculations _____ times per second; today, the fastest computer can do _____ times.
3. Computers can simulate people's feelings and thoughts, replacing part labors of _____.
4. It was in _____ that the first computer of the world was invented in America, it was named ENIAC.
5. At present, _____ is the widest field of computer application.

Translate the following sentences into Chinese.

1. Computer is an electronic equipment which can make arithmetic and logical calculation, process information rapidly and automatically.
2. Take the speed of calculation for instance, ENIAC could only make calculations 5,000 times per second; but today, the fastest computer can do 100,000,000,000 times.
3. The purpose of inventing and developing computer is to make arithmetic calculation rapidly and accurately.
4. Production management, data counting, office automation, traffic dispatching,

information retrieval all belong to this field.

5. Real-time means that the time of computer's calculating and controlling may match the time of controlled object's practical running or working.

Text B

The History of Computers

While computers are now an important part of the lives of human beings, there was a time when computers did not exist. Knowing the history of computers and how much progress has been made can help you understand just how complicated and innovative the creation of computers really is.

Unlike most devices, the computer is one of the few inventions that do not have one specific inventor. Throughout the development of the computer, many people have added their creations to the list required to make a computer work. Some of the inventions extend the types of computers, while others help computers to be further developed.

The Beginning

Perhaps the most significant date in the history of computers is the year 1936. It was in this year that the first "computer" was developed. It was created by Konrad Zuse and dubbed the Z1 Computer. This computer stands as the first as it was the first system to be fully programmable. There were devices prior to this, but none had the computing power that sets it apart from other electronics.

It wasn't until 1942 that any business saw profit and opportunity in computers. This first company was called ABC computers, owned and operated by John Atanasoff and Clifford Berry. Two years later, the Harvard Mark Ⅰ computer was developed, furthering the science of computing.

Over the course of the next few years, inventors all over the world began to search more into the study of computers, and how to improve upon them. Those next ten years say the introduction of the transistor, which would become a vital part of the inner workings of the computer, the ENIAC Ⅰ computer, as well as many other types of systems. The ENIAC Ⅰ is perhaps one of the most interesting, as it required 20 000 vacuum tubes to operate. It was a massive machine, and started the revolution to build smaller and faster computers.

The age of computers was forever altered by the introduction of International Business Machines, or IBM, into the computing industry in 1953. This company, over the course of computer history, has been a major player in the development of new systems and servers for public and private use. This introduction brought about the first real signs of competition within computing history, which helped to spur faster and better development of computers. Their first contribution was the IBM 701 EDPM

Computer.

A Programming Language Evolves

A year later, the first successful high level programming language — FORTRAN — was created. This was a programming language not written in "assembly" or binary, which are considered as very low level languages. FORTRAN was written so that more people could begin to program computers easily.

The year 1955, the Bank of America, coupled with Stanford Research Institute and General Electric, saw the creation of the first computers for use in banks. The MICR, or Magnetic Ink Character Recognition, coupled with the actual computer, the ERMA, was a breakthrough for the banking industry. It wasn't until 1959 that the pair of systems was put into use in actual banks.

In 1958, one of the most important breakthroughs in computer history occurred, the creation of the integrated circuit. This device, also known as the chip, is one of the base requirements for modern computer systems. On every motherboard and card within a computer system, are many chips that contain information on what the boards and cards do. Without these chips, the systems as we know them today cannot function.

Gaming, Mice & the Internet

For many computer users now, games are a vital part of the computing experience. 1962 saw the creation of the first computer game, which was created by Steve Russel and MIT, which was dubbed Spacewar.

The mouse, one of the most basic components of modern computers, was created in 1964 by Douglass Engelbart. It obtained its name from the "tail" leading out of the device.

One of the most important aspects of computers today was invented in 1969. ARPA net was the original Internet, which provided the foundation for the Internet that we know today. This development would result in the evolution of knowledge and business across the entire planet.

It wasn't until 1970 that Intel entered the scene with the first dynamic RAM chip, which resulted in an explosion of computer science innovation.

On the heels of the RAM chip was the first microprocessor, which was also designed by Intel. These two components, in addition to the chip developed in 1958, would number among the core components of modern computers.

A year later, the floppy disk was created, gaining its name from the flexibility of the storage unit. This was the first step in allowing most people to transfer bits of data

between unconnected computers.

The first networking card was created in 1973, allowing data transfer between connected computers. This is similar to the Internet, but allows for the computers to connect without use of the Internet.

Household PC's Emerging

The next three years were very important for computers. This is the time when companies began to develop systems for the average consumers. The Scelbi, Mark-8 Altair, IBM 5100, Apple I and II, TRS-80, and the Commodore Pet computers were the forerunners in this area. While expensive, these machines started the trend for computers within common households.

One of the most major breakthroughs in computer software occurred in 1978 with the release of the VisiCalc Spreadsheet program. All development costs were paid for within a two-week period of time, which makes this one of the most successful programs in computer history.

1979 was perhaps one of the most important years for the home computer users. This is the year that WordStar, the first word processing program, was released to the public for sale. This drastically altered the usefulness of computers for the everyday users.

The IBM home computer quickly helped revolutionize the consumer market in 1981, as it was affordable for home owners and standard consumers. 1981 also saw the mega-giant Microsoft enter the scene with the MS-DOS operating system. This operating system utterly changed computing forever, as it was easy enough for everyone to learn.

The Competition Begins: Apple vs Microsoft

Computers saw yet another vital change during the year of 1983. The Apple Lisa computer was the first with a graphical user interface, or a GUI. Most modern programs contain a GUI, which allows them to be easy to use and pleasing for the eyes. This marked the beginning of the out-dating of most text-based only programs.

Beyond this point in computer history, many changes and alterations have occurred, from the Apple-Microsoft wars, to the developing of microcomputers and a variety of computer breakthroughs that have become an accepted part of our daily lives. Without the initial first steps of computer history, none of those would have been possible.

New Words and Expressions

dub /dʌb/	*v.*	授予称号
further /ˈfɜːðə/	*v.*	促进，推动
transistor /trænˈzɪstə/	*n.*	晶体管
spur /spɜː/	*v.*	刺激，激励，鞭策
assembly /əˈsemblɪ/	*n.*	汇编，集合
binary /ˈbaɪnərɪ/	*n.*	二进制
breakthrough /ˈbreɪkˈθruː/	*n.*	突破，重大成就
chip /tʃɪp/	*n.*	芯片
scene /siːn/	*n.*	舞台
number /ˈnʌmbə/	*v.*	列入，把……算作
forerunner /ˈfɔːˌrʌnə/	*n.*	先驱
release /rɪˈliːs/	*v.*	发布
vacuum tube		真空管，电子管
be coupled with		和……联合，结合
integrated circuits		集成电路
on the heels of		紧跟着
networking card		网卡
operating system		操作系统
ENIAC (Electronic Numerical Integrator And Calculator)		电子数字积分计算机
IBM (International Business Machines)		(美国)国际商用机器公司
EDPM (Electronic Data Processing Machine)		电子数据处理机
MICR (Magnetic Ink Character Recognition)		磁墨水字符识别
ERMA (Electronic Recording Method of Accounting)		电子账目记录方法
MIT (Massachusettes Institute of Technology)		(美国)麻省理工学院
ARPA (Advanced Research Projects Agency)		(美国国防部)高级研究计划署
RAM (Random-Access Memory)		随机访问存储器
MS-DOS (Microsoft Disk Operating System)		微软磁盘操作系统
GUI (Graphical User Interface)		图形用户界面

Notes to the Text

1. This computer stands as the first as it was the first system to be fully programmable.
   因为这台计算机是第一个完全可编程的系统，所以它名列第一。
2. On every motherboard and card within a computer system, are many chips that contain information on what the boards and cards do.
   在计算机系统中的每一个主板和卡上，有许多包含信息的芯片，主板和卡执行这些芯片上的信息。

Exercises

Decide whether each of the following statements is true or false.

____ 1. Before 1936, all devices which had the computing power had to rely on other electronics.

____ 2. IBM was the first company who initiated the computer business.

____ 3. ENIAC Ⅰ was made with the technology of the vacuum tube.

____ 4. Prior to the high level programming language,"assembly" or binary is difficult to write and understand for the majority.

____ 5. Apple produced the first computer with a GUI.

Translate the following sentences into Chinese.

1. Perhaps the most significant date in the history of computers is the year 1936. It was in this year that the first "computer" was developed. It was created by Konrad Zuse and dubbed the Z1 Computer.
2. While expensive, these machines started the trend for computers within common households.
3. Two years later, the Harvard Mark Ⅰ computer was developed, furthering the science of computing.
4. The mouse, one of the most basic components of modern computers, was created in 1964 by Douglass Engelbart.
5. The IBM home computer quickly helped revolutionize the consumer market in 1981, as it was affordable for home owners and standard consumers.

Text C

A Brief Introduction to PC

When you mention the word "technology", most people think about computers. Virtually every facet of our lives has some computerized components. The appliances in our homes have microprocessors built into them, as do our televisions. Even our cars have a computer, but the computer that everyone thinks of first is typically the personal computer, or PC.

A PC is a general purpose tool built around a microprocessor. It has lots of different parts — memory, a hard disk, a modem, etc. — that work together. "General purpose" means that you can do many different things with a PC. You can use it to

type documents, send E-mail, browse the Web and play games.

Here is one way to think about it: A PC is a general-purpose information processing device. It can take information from a person (through the keyboard and mouse), from a device (like a floppy disk or CD) or from the network (through a modem or a network card) and process it. Once processed, the information is shown to the user (on the monitor), stored on a device (like a hard disk) or sent somewhere else on the network (back through the modem or network card). We have lots of special-purpose processors in our lives. An MP3 Player is a specialized computer for processing MP3 files. It can't do anything else. A GPS is a specialized computer for handling GPS signals. It can't do anything else. A Gameboy is a specialized computer for handling games, but it can't do anything else. A PC can do it all because it is general-purpose.

New Words and Expressions

processor /ˈprəʊsesə/	*n.*	处理器
microprocessor /maɪkrəʊˈprəʊsesə(r)/	*n.*	微处理器
document /ˈdɒkjʊmənt/	*n.*	文件
browser /braʊzə(r)/	*n.*	浏览器
keyboard /ˈkiːbɔːd/	*n.*	键盘
mouse /maʊs/	*n.*	鼠标
monitor /ˈmɒnɪtə/	*n.*	显示器
MP3		MP3 文件格式或 MP3 播放器
device /dɪˈvaɪs/	*n.*	设备
GPS		全球定位系统
computerized component		计算机化组件

Notes to the Text

1. A PC is a general purpose tool built around a microprocessor. It has lots of different parts — memory, a hard disk, a modem, etc.
   PC 机是利用微处理器建立的通用工具，具有相互配合的不同的部件，如内存、硬盘、调制解调器等。
2. Once processed, the information is shown to the user.
   处理信息之后，结果向用户显示。
3. A Gameboy is a specialized computer for handling games.
   Gameboy 是处理游戏的专用计算机。

Exercises

Answer the questions.

1. What kind of household appliances have microprocessors built into?
2. What does PC refer to in this book?
3. What can you do with a PC?
4. What is an MP3 player?
5. Can you give some examples of special-purpose PCs in our life?