Unit 1

Computer Hardware

Project 1 Reading and translating: Computer hardware

Text

Questions you need to answer based upon your reading...

(1) Which five basic parts does the computer include?

(2) What is the main function of the motherboard?

(3) How about the developing trend of removable storage devices in the future?

Computer is a system, consisting of many components. The devices you can actually see and feel are hardware, upon which an operating system can be installed, like Windows 7, and a multitude of software to perform the operator's desired functions. The system programs, such as operating system, and application programs are called software.

Though a computer appears in many different forms, every computer is made up of the following five basic hardware components: arithmetical and logical unit (ALU), control unit, main memory, input device, and output device. They are indispensable components of computer, and have their own functions. The arithmetical and logical unit can conduct various data operations including arithmetic operations, namely addition, subtraction, multiplication and division, and logical judgment, such as "and", "or", "not", data comparison, shift operation, etc. The control unit is the central place part of computer systems, which command and coordinate each parts of the computer to work methodically in order to accomplish the predetermined task. Both components above are known as Central Processing Unit

(CPU). The primary function of main memory is to storage programs and data, and complete accessing at high-speed automatically. The input device and output device, that is I/O(input/output) devices, finish inputting and outputting various programs and data from and to peripheral equipment.

A computer is composed of multiple physical components. A typical desktop system is made up of a system unit, a monitor, a keyboard, and a mouse shown in Fig. 1-1. The motherboard, hard disk, CD-ROM drive, and some other important components are built into a chassis as system unit in good order. The notebook computers probably have most of the same components as desktop system. Only in the latter's case are the components all integrated into a single book-sized portable unit.

Fig. 1-1

The motherboard is the central Printed Circuit Board (PCB), which is sometimes alternatively known as a mainboard, or system board. The other components of the system communicate with each other by the electrical connections provided by the motherboard, and also integrate some computer modules. The modules directly attached to the motherboard include the Central Processing Unit (CPU), RAM memory, video display controller, sound card, network adaptor, etc. Among them, the core clock of CPU and the size of RAM memory are the direct indication to measure computer performance. The well-known motherboards such as Asus, MSI, and GIGABYTE are the mainstream brand and play an important role in the market at present. For example, ASUS Rampage Ⅱ Gene motherboard shown in Fig. 1-2 coming into the market at the beginning of the year, is a high-performance motherboard, which adopts the Intel X58 Express Chipset and supports the latest Intel(R) Core™ i7 Processors and DDR3 memory. Some experts believe that it will be popular with game fans.

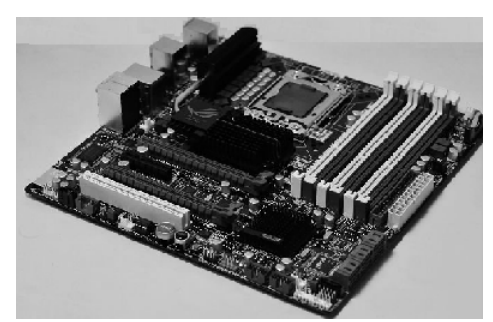

Fig. 1-2

Hard disk and CD-ROM drive are essential devices to store multimedia

information. With the rapid increasing of multimedia data, large-capacity storage devices are becoming more and more important. Flash drive, which is integrated with a USB interface and is typically small, lightweight, and rewritable, is a common removable storage device. The capacities range from hundreds of megabytes to tens of gigabytes. Aigo(R) L8269 is a latest USB flash storage device, which holds 32GB storage capacity and 480Mbps data transfer rate. With the development of multimedia technology, the removable storage devices with greater capacity and better performance will emerge continuously.

The input/output devices such as monitor, keyboard, and mouse are the common peripherals. With the technical progressing, more devices can be connected to a computer through wires or without wires for data communication so that the performance of computer and peripherals can work better. The most universal external equipment is mobile phones, digital cameras, MP4, etc. We guess you must have several devices like these at home.

Keywords

computer hardware	计算机硬件
application program	应用程序
input device	输入设备
addition	加法
multiplication	乘法
comparison	关系运算“比较”
high-speed	高速的
keyboard	键盘
motherboard	主板
desktop system	台式计算机
sound card	声卡
core clock	主频
flash drive	闪存驱动器
mobile phone	移动电话
operating system	操作系统
main memory	主存储器
output device	输出设备
subtraction	减法
division	除法

shift operation	移位操作
monitor	显示器
mouse	鼠标
hard disk	硬盘
video display	视频显示
network adaptor	网络适配器
chipset	芯片组
peripheral	外设
digital camera	数码相机

Notes

[1] ALU (Arithmetical and Logical Unit),算术逻辑单元。

[2] CPU (Central Processing Unit),中央处理器。

[3] I/O (Input/Output),输入/输出。

[4] PCB (Printed Circuit Board),印刷电路板。

[5] USB (Universal Serial Bus),Intel 公司开发的通用串行总线架构。

[6] DDR (Double Data Rate),双数据速率。

[7] MP4 (MPEG Audio Video Layer 4),一种音频兼视频的压缩格式,MP3 的升级版本,也指 MP4 格式的便携式视频播放器。

Exercises

1. Mark the following sentences with T (true) or F (false) according to the text.

(1) Every computer has five basic hardware components: ALU, control unit, main memory, input device, output device. ( )

(2) Computer can carry out addition, subtraction, multiplication and division only. ( )

(3) The ALU and control unit are known as CPU. ( )

(4) The notebook computers have entirely different components to desktop system. ( )

(5) A motherboard provides the electrical connections integrating some computer modules. ( )

(6) The core clock of CPU is one of the direct indications to measure computer performance. ( )

(7) Large-capacity storage device is becoming important increasingly. ( )

(8) All devices connected to a computer for data communication are wired.

( )

2. Select option from Group B to fill in the brackets according to Group A.

Group A	Group B
( ) Universal serial bus	a. 操作系统
( ) Operating system	b. 硬盘
( ) Motherboard	c. 主板
( ) Central processing unit	d. 台式计算机
( ) Desktop system	e. 计算机硬件
( ) Hard disk	f. 通用串行总线
( ) Digital camera	g. 中央处理器
( ) Computer hardware	h. 数码相机

Project 2 Technical skill: BIOS setup

Examples

In this section, we illustrate BIOS setup with ASUS Rampage Ⅱ Gene motherboard. Rampage Ⅱ Gene is a new member of the ROG family. Gene Series product similar to the Extreme & Formula series is designed for gamers, which features the Micro ATX specifications, so that more friends who use small cabinet and like modifying computer can join the ROG family.

This motherboard has the following characteristics:

(1) Adopt the Intel X58 Express Chipset.

(2) Support the latest Intel(R) Core™ i7 Processors and Intel's next generation system interconnect interface, Intel(R) QuickPath Interconnect (QPI).

(3) Support DDR3 memory that is characterized by data transfer rates of up to 2000(O.C.).

Notes

Intel X58 Express Chipset: Intel X58 高速芯片组支持最新的 Intel 酷睿 i7 处理器和 Intel 新一代系统接口——Intel QuickPath Interconnect(QPI),支持 3 通道 DDR3 2000MHz(O.C)内存。

Task 1 Managing and updating BIOS

【Task-1】 Make a list of utilities to manage and update motherboard BIOS setup.

There are three utilities which allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup.

(1) **ASUS Update utility** which updates the BIOS in Windows environment.

(2) **ASUS EZ Flash 2 utility** which updates the BIOS using a floppy disk or USB flash disk.

(3) **ASUS CrashFree BIOS 3 utility** which restores the BIOS using the motherboard support DVD or a USB flash drive when the BIOS file fails or gets corrupted.

Comment *Save a copy of the original motherboard BIOS file to a USB flash drive in case you need to restore the BIOS in the future.*

【Task-2】 Introduce the specific function of one of the utilities.

In the following text, we will illustrate how to manage and update BIOS by introducing ASUS Update utility. The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows environment. The ASUS Update utility allows you to

(1) Save the current BIOS file;

(2) Download the latest BIOS file from the Internet;

(3) Update the BIOS from an updated BIOS file;

(4) Update the BIOS directly from the Internet;

(5) View the BIOS version information.

Comment *This utility is available in the support DVD that comes with the motherboard package. ASUS Update requires an Internet connection.*

【Task-3】 Give an example to illustrate the detailed procedure of updating BIOS.

Before updating BIOS, you should install ASUS Update program firstly. To install ASUS Update:

Step 1. Place the support DVD in the optical drive. The drivers menu appears.

Step 2. Click the **Utilities** tab, and then click **Install ASUS Update VX. XX. XX**.

Step 3. The ASUS Update utility is to select **Update BIOS from the Internet** option from the drop-down menu, then click **Next**.

There are two methods to update the BIOS, through the Internet and the BIOS file. In the following text, we will introduce them respectively.

Method 1 Update the BIOS through the Internet

Step 1. As shown in Fig. 1-3,launch the ASUS Update utility from the Windows desktop by clicking **Start** > **All Programs** > **ASUS**>**ASUS Update** > **ASUS Update**. The ASUS Update main window appears.

Step 2. As shown in Fig. 1-4, select **Update BIOS from the Internet** option from the drop-down menu, and then click **Next**.

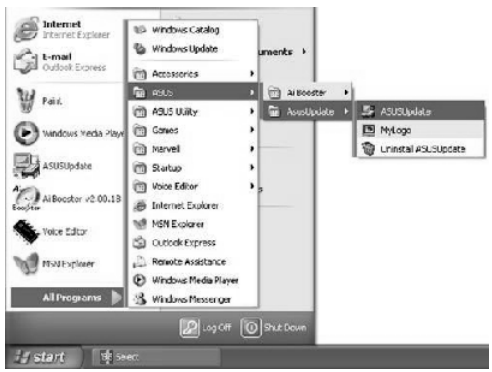

Fig. 1-3

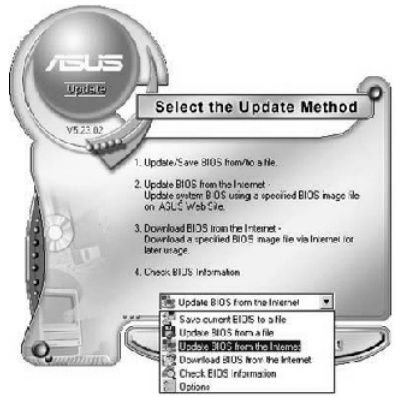

Fig. 1-4

Step 3. As shown in Fig. 1-5, select the ASUS FTP site nearest you to avoid network traffic, or click **Auto Select**. Click **Next**.

Step 4. As shown in Fig. 1-6, select the BIOS version that you wish to download. Click **Next**.

Fig. 1-5

Fig. 1-6

Step 5. Follow the screen instructions to complete the update process.

Method 2 Update the BIOS through the BIOS file

Step 1. Launch the ASUS Update utility from the Windows desktop by clicking **Start**>**All Programs**> **ASUS**> **ASUS Update**> **ASUS Update**. The ASUS Update main window appears.

Step 2. Select **Update BIOS from a file** option from the drop-down menu, as shown in Fig. 1-7, and then click **Next.**

Step 3. Locate the BIOS file from the **Open** window shown in Fig. 1-8, and then click **Open**.

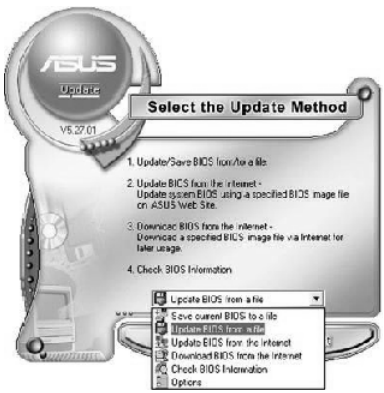

Fig. 1-7

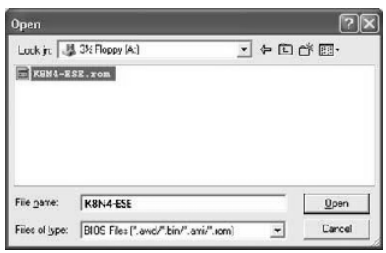

Fig. 1-8

Step 4. Follow the screen instructions to complete the update process.

Notes

[1] BIOS(Basic Input/Output System),基本输入输出系统。

[2] drop-down menu,下拉菜单。

Task 2 Configuring main menu

【Task-1】 Set system date to 06/20/2009. Set system time to 10：55：25. Set language to English.

Step 1. Press ＜Delete＞ during the Power-On Self-Test (POST) to enter the setup utility.

Step 2. As shown in Fig. 1-9, select **Main** menu on the menu bar, the screen of the basic system information appears.

Step 3. Select **System Time**, and then set to [10：55：25].

Select **System Date**, and then set to [06/20/2009].

Select **Language**, and then set to [English].

The screen of basic system information after setting is shown in Fig. 1-10.

Comment *If you wish to enter setup after POST, restart the system by pressing ＜Ctrl＋Alt＋Delete＞, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the*

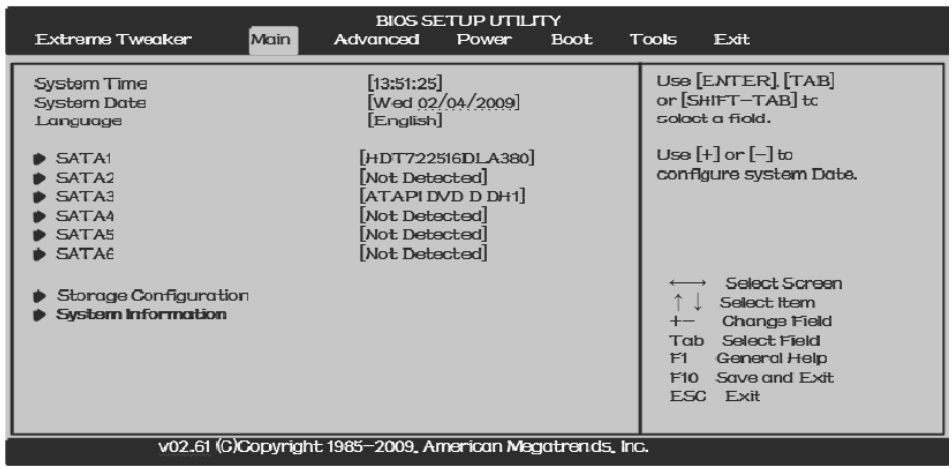

Fig. 1-9

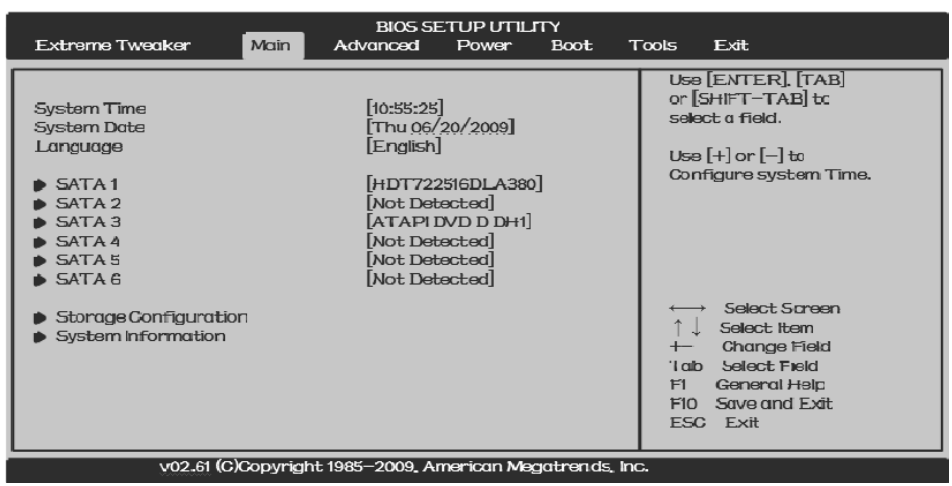

Fig. 1-10

first two failed.

【Task-2】 Get the information about SATA 1, such as device, vendor, size, LBA mode, block mode, and S.M.A.R.T. monitoring.

Step 1. and Step 2. do ditto.

Step 3. Select **SATA 1** item, then press <Enter> to display the SATA 1 device information shown in Fig. 1-11. The BIOS automatically detects the values opposite the dimmed items. You will get:

Device is Hard Disk.

Vendor is HDT722516DLA380.

Size is 164.7GB.

LBA Mode is supported.

Block Mode is 16 Sectors.

SMART Monitoring is supported.

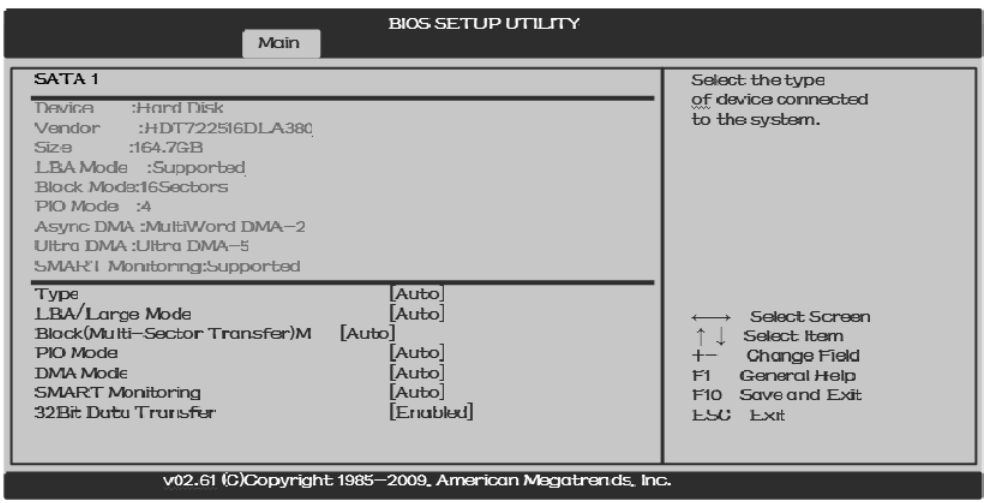

Fig. 1-11

【Task-3】 Set SATA to support PATA storage devices. Set SATA detection waiting time to 25 seconds.

Step 1. and Step 2. do ditto.

Step 3. Select **Storage Configuration** on the main menu screen, then press <Enter> to enter the storage configuration screen shown in Fig. 1-12.

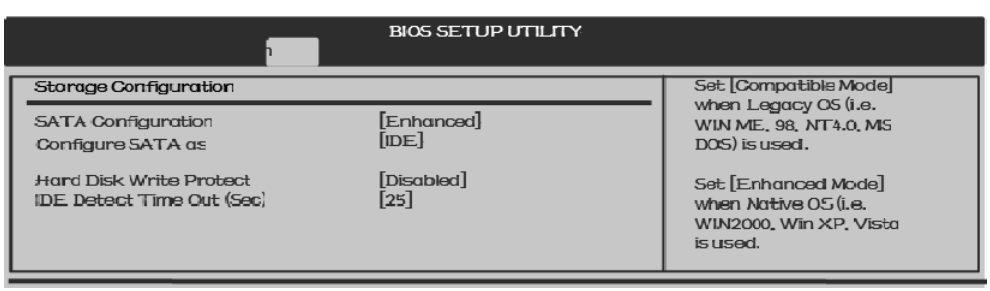

Fig. 1-12