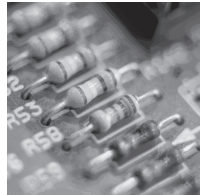


# Boot Sequence

## OBJECTIVES

1. Show the boot sequence of Marcraft 8000 Trainer.
2. See the extended memory count.
3. Change settings in CMOS.
4. See the LED sequence.
5. Detect hard disk drives.
6. Boot to operating system.



Hardware

## RESOURCES

1. Marcraft 8000 Trainer
2. Windows Millennium installed



Hardware

## DISCUSSION

In this lab you will learn about the booting sequence of a computer, observing what the computer checks before going on to the next sequence of events. The sequence will be manipulated so that it will either skip checking something or stop booting up because of a diagnostic check. You will learn how to set up hard drives easily in CMOS.

## PROCEDURE

1. **Pausing the bootup process**
  - a. Turn the computer on.

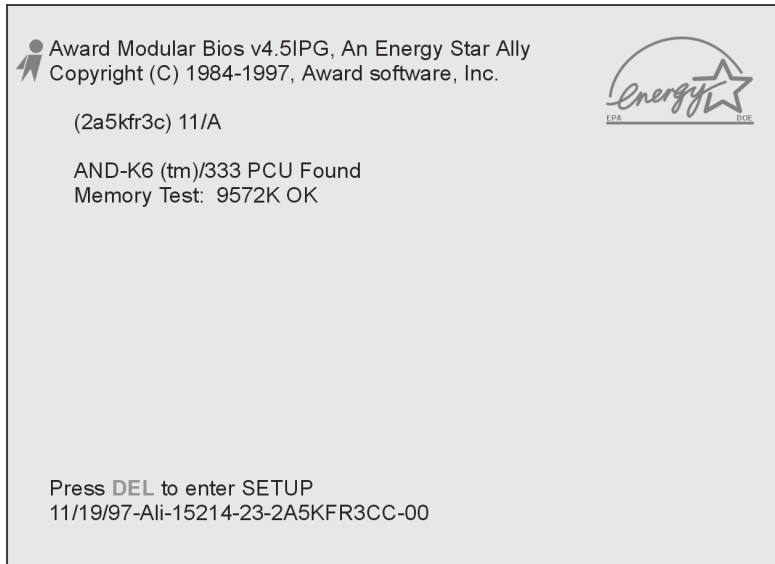
Depending on the video card in the system, you may see a Video ROM message flash on the screen. Some video cards display this message while others do not. If so this will tell you the video card type and amount of memory on the card, if recognized, as shown in Figure 2-1.

Copyright 1993-1997 IGS  
VGA / VESA BIOS Ver 2.0413  
Video Memory Size: 8MB

Figure 2-1: Bootup Process Video ROM Message Screen

## PROCEDURE - 2

- \_\_\_ b. When the computer is counting memory press the PAUSE key.



**Figure 2-2: Boot-up Memory Test Complete**

The PAUSE key allows you to pause the bootup process so that you can see some key processes happening. Notice the bottom of the screen says you can press the DEL key to enter setup or press the ESC key to bypass the memory test as shown in Figure 2-2. We will be entering CMOS later. Notice at the bottom there is a CMOS BIOS date and serial number; these would be useful in an upgrade.

- \_\_\_ c. Press the SPACE key to continue the memory test.  
 \_\_\_ d. After the memory count is done a Plug and Play BIOS extension should pop up. Press PAUSE and record the copyright date info in Table 2-1.  
 \_\_\_ e. Press the SPACE key to continue.  
 \_\_\_ f. The Plug and Play BIOS should find a CD-ROM drive.  
 \_\_\_ g. Press the PAUSE key.  
 \_\_\_ h. Record the CD-ROM type and number in Table 2-2.  
 \_\_\_ i. Press the SPACE key.  
 \_\_\_ j. A System Configuration box should come up, as shown in Figure 2-3.

Award Software, Inc. System Configuration							
CPU	:	AMD-K6(tm)-2	Base Memory	:	640 K		
Co-Processor	:	Installed	Extended Memory	:	130048 K		
CPU Clock	:	400Mz	Cache Memory	:	512 K		
Diskette Drive A	:	1.44M, 3.5 in.	Display Type	:	EGA/VGA		
Diskette Drive B	:	None	Serial Ports(s)	:	3F8 2F8		
Hard Disk Drive C	:	LBA, Mode 4, 4299MB	Parallel Ports(s)	:	378		
Hard Disk Drive D	:	None	Bank0 DRAM Type	:	EDO DRAM		
Hard Disk Drive E	:	CDROM, Mode 4	Bank1 DRAM Type	:	None		
Hard Disk Drive F	:	None	Cache L2 Type	:	Pipe-Burst		
PCI device listing...							
Bus No.	Device No.	Func. No.	Vendor/Device	Class	Device Class	IRQ	
0	2	1	10B9 5219	0101	IDE Controller	14	
0	3	0	1013 00B8	0300	Display Controller	NA	
0	4	0	10EC 8139	0200	Network Controller	11	
Verifying DMA Pool Data .....							

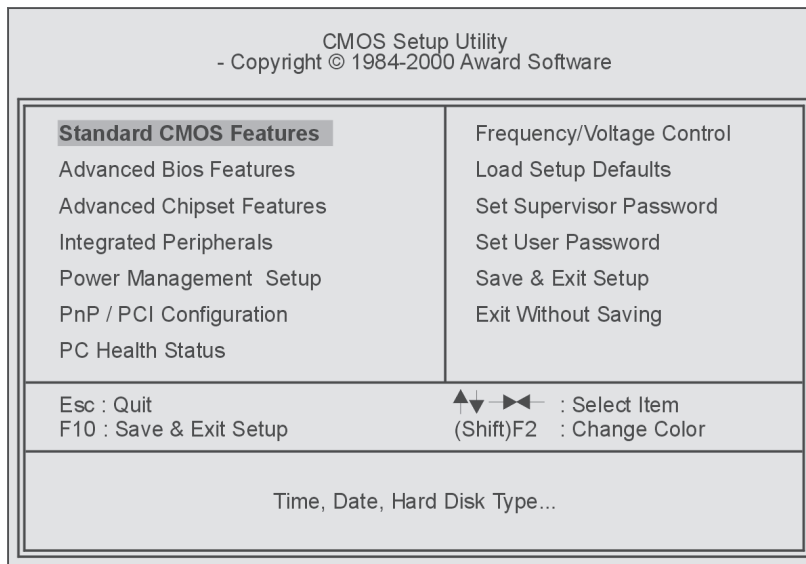
**Figure 2-3:  
System  
Configuration**

- \_\_\_ k. Press the PAUSE key.  
 \_\_\_ l. This is the system information. Fill out Table 2-3 as completely as you can.  
 \_\_\_ m. Below the System Configuration box is a PCI device listing. In Table 2-4 write down the Device No., Device Class, and IRQ numbers used for each device.  
 \_\_\_ n. Press the SPACE key to continue.

- \_\_\_ o. The computer will boot to the software menu. Choose either Microsoft Windows 2000 Professional or Microsoft Windows Millennium Edition.
- \_\_\_ p. Turn the power off on the computer by flipping the power switch on the back of the power supply.

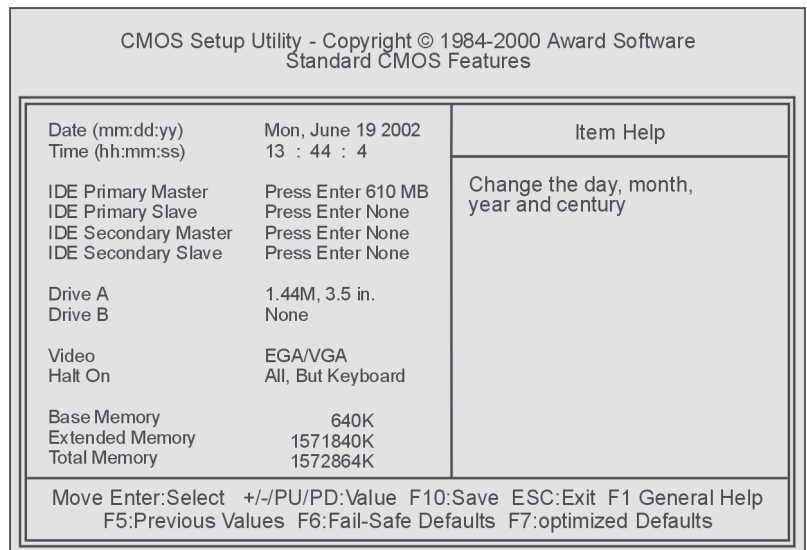
## 2. Standard CMOS Setup Utility

- \_\_\_ a. Turn the power on.
- \_\_\_ b. Press the DEL key when the computer is counting memory. The CMOS Setup Utility screen appears as shown in Figure 2-4.



**Figure 2-4:**  
**CMOS Setup Utility**  
**Screen**

- \_\_\_ c. Press ENTER on Standard CMOS Features Setup.
- \_\_\_ d. In here you can change the date, time, floppy-disk drive type, hard-disk drive settings, video display type, and what errors to halt the boot process on.
- \_\_\_ e. Use the DOWN ARROW key to highlight the Halt On: area as shown in Figure 2-5.
- \_\_\_ f. Press the PAGE DOWN key to change the settings.
- \_\_\_ g. Enter all possible options in Table 2-5.
- \_\_\_ h. Set it to halt on all errors.



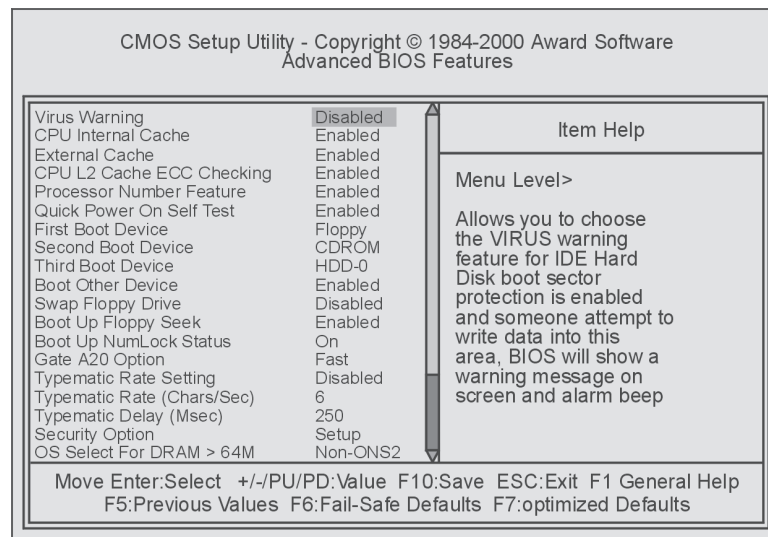
**Figure 2-5: Standard CMOS Features Screen**

## PROCEDURE - 2

- \_\_\_ i. Press the ESC key to exit the Standard CMOS Features Setup screen.
- \_\_\_ j. Press F10 to save changes and exit CMOS.
- \_\_\_ k. Press Y.
- \_\_\_ l. Press ENTER to confirm.
- \_\_\_ m. Turn the power off.
- \_\_\_ o. Unplug the keyboard.
- \_\_\_ p. Turn the computer on.
- \_\_\_ q. Write the message from the screen into Table 2-6.
- \_\_\_ r. Turn the computer off.
- \_\_\_ s. Plug the keyboard in; make sure it is oriented the correct way.

### 3. CMOS BIOS Features Setup

- \_\_\_ a. Turn the computer on.
- \_\_\_ b. Press the DEL key to enter CMOS setup.
- \_\_\_ c. Press the DOWN ARROW key once to highlight Advanced BIOS Features Setup.
- \_\_\_ d. Press ENTER. The BIOS features screen will appear as shown in Figure 2-6.



**Figure 2-6: The Advanced BIOS Features Screen**

- \_\_\_ e. Check the bootup floppy seek; make sure that it is enabled. Press PAGE DOWN to change.
- \_\_\_ f. Arrow to Quick Power on self-test.
- \_\_\_ g. Press PAGE DOWN to disable it.
- \_\_\_ h. Press the ESC key.
- \_\_\_ i. Press F10 to save and exit CMOS.
- \_\_\_ j. Press Y.
- \_\_\_ k. Press ENTER to confirm.
- \_\_\_ l. Watch the memory test. Write down in Table 2-7 what is different from before.
- \_\_\_ m. Press the DEL key after memory stops counting to enter CMOS setup.
- \_\_\_ n. Arrow down to Advanced BIOS Features Setup.
- \_\_\_ o. Press ENTER.
- \_\_\_ p. Arrow down and change the Quick Power on self-test to enabled.
- \_\_\_ q. Press ESC.
- \_\_\_ r. Press F10 to save and exit .
- \_\_\_ s. Press Y.
- \_\_\_ t. Press ENTER to confirm.
- \_\_\_ u. Turn the power off.

4. The drive LED sequence

- \_\_\_ a. Turn the power on.
- \_\_\_ b. Watch the LED on the front of the case. Write down the order in which the floppy disk drive LED and the hard disk drive LED come on in Table 2-8.
- \_\_\_ c. Let the computer boot to the software menu.
- \_\_\_ d. Arrow down once to select Microsoft Windows Millennium Edition.
- \_\_\_ e. Press ENTER.
- \_\_\_ f. Windows Millennium will boot up.
- \_\_\_ g. Click on Start.
- \_\_\_ h. Click on Shut Down.
- \_\_\_ i. Then in the Shut Down Windows dialog box select "Shut down".
- \_\_\_ j. Click the OK button.
- \_\_\_ k. The computer will shut down and turn off.

TABLES

Table 2-1

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Table 2-2

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Table 2-3

System Information			
CPU Type:		Base Memory:	
Coprocessor:		Extended Memory:	
CPU Clock:		Cache Memory:	
Drive A:		Display Type:	
Drive B:		Serial Ports:	
Primary Master:		Parallel Ports:	
Primary Slave:		Cache L2 Type:	
Secondary Master:		SDRAM at Rows:	
Secondary Slave:		EDO RAM at Rows:	
Power Management:		Fast-Page RAM at Rows:	

**PROCEDURE - 2**

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**Table 2-4**

System Configuration		
Device No.	Device Class	IRQ Number

**Table 2-5 Standard CMOS Setup**

Halt On:		

**Table 2-6 Keyboard Removed**

--

**Table 2-7 Quick Power on Self-Test Disabled**

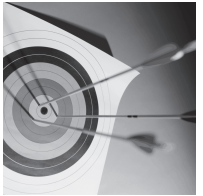
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**Table 2-8 Drive LED Sequence**

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## **LAB QUESTIONS**

1. How do you enter a CMOS setup screen on most BIOS?
2. How do you pause the bootup process?
3. What is the box called on bootup that has a lot of information about the computer?
4. How do you save changes and exit CMOS setup?
5. What does the Quick Power on Self-Test do?



**Feedback**

