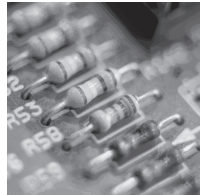


PC-Check

OBJECTIVES

1. Provide exposure to diagnostic software testing.
2. Establish parameters for a working computer system.
3. Develop testing procedures for a non-working computer system.
4. Use software diagnostics packages to evaluate system performance.



Hardware

RESOURCES

1. Marcraft 8000 Trainer
2. PC-Check diagnostic disk
3. Preformatted blank floppy disk
4. Serial port loopback plug
5. Parallel port loopback plug

DISCUSSION

This procedure explores the use of the PC-Check diagnostic programs. This utility is a self-booting diskette, and can be executed as a single module from a command prompt. Once loaded, PC-Check can be used to test specific sections of the system or to run a complete bank of tests. A multilevel menu is used to select between the diagnostic's various functions. The main functions are selected through the main menu, depicted in Figure 6-1.

The most widely-used functions are found under the System Information Menu and Advanced Diagnostic Tests entries. The Advanced Diagnostic Tests portion of the utility includes modules to test the serial port/s, system board components, memory, and video operation. The System Information Menu includes utilities to edit CMOS settings, save device drivers to disk, and collect configuration and bus information. When the test applications are executed, they produce a report that lists the results of the test. These results can be directed to the screen or the system printer.

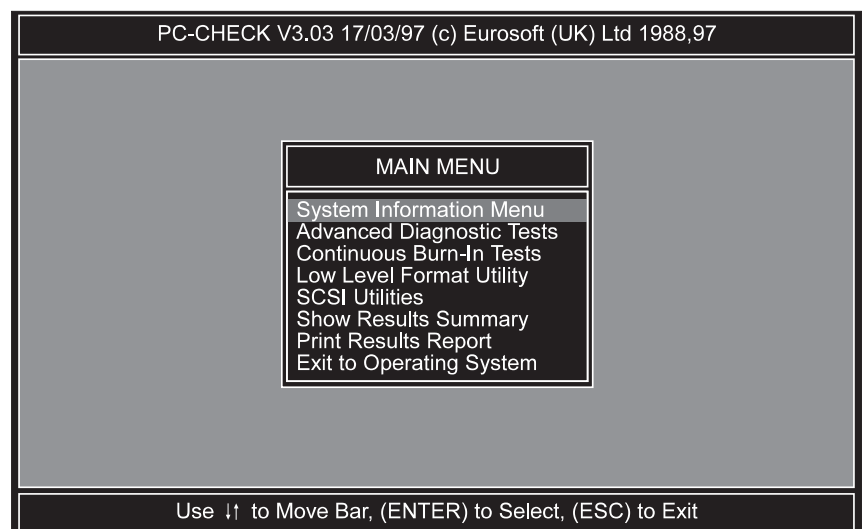


Figure 6-1: PC-Check Main Menu

PROCEDURE - 6

PC-Check also provides professional-level burn-in capabilities. Before delivering a unit to a customer, technicians use this function to test new installations and new setups. Burn-ins involve loading the diagnostic into the machine to be tested, starting the burn-in tests, and letting them run for a predetermined period of time. This time period is normally between 8 and 72 hours.



Hardware

PROCEDURE

System Configuration Information

1. Booting up the system with PC-Check

- ☐ a. Turn on all peripheral equipment, (monitor, printer, etc.).
- ☐ b. Insert the PC-Check disk into the floppy drive.
- ☐ c. Turn the computer on.

2. Gathering the System Information for this computer

- ☐ a. At the PC-Check main menu screen, move the cursor up or down using the arrow keys and highlight "System Information Menu", if it's not already highlighted, and press ENTER.
- ☐ b. Select the "System Configuration Menu" from the menu by pressing ENTER.
- ☐ c. Record the processor type and speed in Table 6-1.
- ☐ d. Record the bus types in Table 6-2.
- ☐ e. Record the Installed Memory, Main Memory, Free Memory, Extended Memory, and Expanded Memory in Table 6-3.
- ☐ f. Record the Level 1 and Level 2 Cache information in Table 6-4.
- ☐ g. Press the ESC key to exit the System Configuration screen.

3. Examining the system's IRQ usage

- ☐ a. Using the arrow keys, highlight "IRQ Information" and press ENTER.
- ☐ b. Record the IRQ number and device for each IRQ that is Active in Table 6-5.
- ☐ c. Press the ESC key to return to the System Information Menu.

4. Examining the system's I/O port usage

- ☐ a. Highlight "I/O Port Information" and press ENTER.
- ☐ b. Review the messages on the screen and if acceptable, press ENTER to continue.
- ☐ c. Press the PAGE DOWN key to scroll down.
- ☐ d. Record the address of the Primary Hard Disk Controller in Table 6-6.
- ☐ e. Record the address of all Active parallel serial and game ports in Table 6-7.
- ☐ f. Press the ESC key to return to the System Information Menu.

5. Examining the hard disk drive information

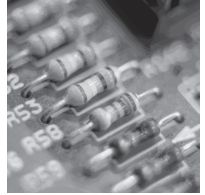
- ☐ a. Highlight "IDE Bus Information" and press ENTER.
- ☐ b. Wait for the drives to be detected and select the "Primary Master" option and press ENTER.

NOTE: The Primary Master should be a hard disk.

- ☐ c. Record the number of Cylinders, Sectors, and Heads for the current disk drive in Table 6-8.
- ☐ d. Press the ESC key to return to the IDE Bus Information menu.

- ___ e. Press the ESC key to return to the System Information Menu.
- ___ f. Press the ESC key to return to the Main Menu.

Diagnostic Tests



1. Moving to the Diagnostic menu

- ___ a. Highlight "Advanced Diagnostic Tests" and press ENTER.

2. Testing the serial port using Loopback Plugs from Check-it with Eurosoft PC-Check Software

- ___ a. Plug the Loopback Plug into COM 1.
- ___ b. Select the "Serial Ports" option from the Advanced Diagnostic Tests menu and press ENTER.
- ___ c. When the *Select Serial Port* window appears, choose COM 1 and press ENTER.
- ___ d. Record the port's Interrupt Level and Port Type in Table 6-9.
- ___ e. Highlight the "Run All Serial Port Tests" option and press ENTER.
- ___ f. Record any failed tests in Table 6-10.
- ___ g. Remove the Loopback plug from COM 1.

3. Testing the hard disk drive

- ___ a. Press ESC to return to the Diagnostic menu.
- ___ b. Select the "Hard Disk Test" option from the menu, and press ENTER.
- ___ c. Select the "Analyze Hard Disk Drive" option, and press ENTER.
- ___ d. Record the data bits per track in Table 6-11.
- ___ e. Select the "Drive Mechanics Test" option from the menu, and press ENTER.
- ___ f. Record the Linear, Full Stroke, and Random Seek times in Table 6-12.
- ___ g. Select the "Data Transfer Test" option from the menu, and press ENTER.
- ___ h. Record the Mean Throughput value of the HDD in Table 6-13.
- ___ i. Press the ESC key to return to the Advanced Diagnostic Tests menu.

4. Testing the parallel port

- ___ a. Install the loopback plug into LPT1.
- ___ b. Select "Parallel Ports" from the menu, and select a parallel port to test, then press ENTER.
- ___ c. Record the I/O Base Address setting for all parallel ports in Table 6-14.
- ___ d. Select the "Run All Parallel Port Tests" option from the menu.
- ___ e. Record any failed tests in Table 6-15.
- ___ f. Exit this test by pressing the ESC key and remove the loopback plug.

5. Testing system memory

- ___ a. Select the "Memory" option from the Diagnostic menu, and press ENTER.
- ___ b. Select the "Base Memory Test" option from the menu, and press ENTER.
- ___ c. How many different tests are performed on the memory by this option? ____
- ___ d. Press the ENTER key to continue testing memory.
- ___ e. Select the "Quick Extended Memory Test" option from the menu.
- ___ f. How many different tests are performed on the memory by this option? ____
- ___ g. Press the ENTER key to continue.
- ___ h. Select the "Memory Refresh Test" option from the menu, and press ENTER.
- ___ i. Press ENTER, then the ESC key to return to the Advanced Diagnostic Test menu.

PROCEDURE - 6

6. Checking the main components on the system board

- ___ a. Select the “Motherboard” option from the menu and press ENTER.
- ___ b. Select the “Run All Tests” option and press ENTER.
- ___ c. Record the system board devices tested by the program in Table 6-16.
- ___ d. Press the ENTER key once to continue.
- ___ e. Press the ESC key to return to the Advanced Diagnostic Tests menu.

7. Test the video adapter memory and operation

- ___ a. Select the “Video Adapter” option from the menu and press ENTER.
- ___ b. Select the “Video Card Information” option and press ENTER.
- ___ c. Record the adapter's memory size in Table 6-17.
- ___ d. Press the ENTER key to return to the Video Tests menu.
- ___ e. Run all of the tests in the menu one at a time, following the prompts through the test.
- ___ f. Press the ESC key to return to the Advanced Diagnostic Tests menu.

8. Test the floppy disk drive

- ___ a. Select the “Floppy Disk” option from the menu and press ENTER.
- ___ b. Remove the PC-Check disk and insert a blank, write-protected disk.
- ___ c. Select the “Write Protect Test” option and press ENTER.
- ___ d. When prompted, remove the floppy disk, slide the write-protect tab to remove the write protection, and place the floppy disk back into the floppy drive. Press ENTER when prompted.
- ___ e. When the Write Protect Test is completed, choose the “Linear Read Test” option and press ENTER.
- ___ f. When the Linear Read test is complete, choose the “Non-Destructive Write Test”, and press ENTER.
- ___ g. When the Non-Destructive Write test is complete, choose the “Random Read/Write Test” and press ENTER.
- ___ h. When the Random Read/Write test is complete, select the “View Floppy Disk Test Results” option and press ENTER.
- ___ i. How many different tests were performed on the floppy drive? ___
- ___ j. Press the ESC key three times to return to the Main Menu.
- ___ k. Remove the blank disk and insert the PC-Check disk.

9. Viewing the reports

- ___ a. Select the “Show Results Summary” option from the menu and press ENTER.
- ___ b. Scroll the list using the DOWN ARROW key to familiarize yourself with how the results are given after running diagnostic tests.
- ___ c. Press the ESC key twice, and press ENTER to exit the PC-Check testing menus.
- ___ d. Remove the PC-Check disk and press any key.
- ___ e. Shut down the computer.

TABLES

Table 6-1

Microprocessor Type:	
Microprocessor Speed:	

Table 6-2

Bus Types

Table 6-3

Installed Memory:	
Main Memory:	
Free Memory:	
Extended Memory:	
Expanded Memory:	

Table 6-4

Level 1 Cache:	
Level 2 Cache:	

Table 6-5

IRQ No.	Active Device	IRQ No.	Active Device

PROCEDURE - 6

Table 6-6

Primary Hard Disk Drive Controller Port Address:	
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Table 6-7

Port Addresses	
Serial Port 2:	
Parallel Printer Port 1 :	
Primary Serial Port :	

Table 6-8

No. of Cylinders:	
No. of Sectors:	
No. of Heads:	

Table 6-9

Interrupt Level:	
Port Type:	

Table 6-10

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Table 6-11

Data Bits Per Track:	
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Table 6-12

Linear Seek Time:	
Full Stroke Seek Time:	
Random Seek Time:	

Table 6-13

Mean Throughput:	
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Table 6-14

I/O Base Address Parallel Port LPT1:	
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Table 6-15

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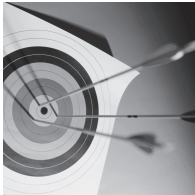
Table 6-16

Motherboard Test System Board Devices Tested	

PROCEDURE - 6

Table 6-17

Video Adapter Memory Size:	
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Feedback

LAB QUESTIONS

1. How are the burn-in tests different from the standard diagnostic tests?
2. Return to the headings under the System Information Menu. What interrupt vector is used to service the Print Screen function?
3. At what vector address are the FDD parameters stored?
4. Which program entry would be used to test the DMA controller?
5. Run the HDD Head Park utility to determine what function it serves.
6. Describe the information available through the HDD Partition Table Viewer.
7. List the system board items tested by the motherboard tests.
8. What items can be edited through the PC-Check CMOS RAM editor?