Practical: 4

Aim: To study and configure BIOS and troubleshooting with BIOS utility.

Bios:

BIOS (basic input/output system) is the program a computer's microprocessor uses to start the computer system after it is powered on. It also manages data flow between the computer's operating system (OS) and attached devices, such as the hard disk, video adapter, keyboard, mouse and printer.

How does BIOS work?

BIOS comes included with computers, as firmware on a chip on the motherboard. In contrast, an OS like Windows or iOS can either be pre-installed by the manufacturer or vendor or installed by the user. BIOS is a program that is made accessible to the microprocessor on an erasable programmable read-only memory (EPROM) chip. When users turn on their computer, the microprocessor passes control to the BIOS program, which is always located at the same place on EPROM.

When BIOS boots up a computer, it first determines whether all of the necessary attachments are in place and operational. Any piece of hardware containing files the computer needs to start is called a boot device. After testing and ensuring boot devices are functioning, BIOS loads the OS -- or key parts of it -- into the computer's random access memory (RAM) from a hard disk or diskette drive (the boot device).

The 4 functions of BIOS

BIOS identifies, configures, tests and connects computer hardware to the OS immediately after a computer is turned on. The combination of these steps is called the boot process.

These tasks are each carried out by BIOS' four main functions:

- Power-on self-test (POST). This tests the hardware of the computer before loading the OS.
- Bootstrap loader. This locates the OS.
- Software/drivers. This locates the software and drivers that interface with the OS once running.
- Complementary metal-oxide semiconductor (CMOS) setup. This is a configuration program that enables users to alter hardware and system settings. CMOS is the name of BIOS' non-volatile memory.

Troubleshooting the BIOS

Troubleshooting the BIOS can turn out to be really easy and quick or it could take a while. The most likely problem involves POST or power-on self-test. Here are some ways that you can fix POST issues in BIOS.

Error message

If you can see an error message on the screen, take note and search for that specific error message.

Reset the BIOS

Repeatedly pressing F2 on the keyboard should bring-up the BIOS. From there you can try finding the Load Setup Defaults option or something similar. This option will recover BIOS settings to the factory configuration. After doing this, check to see if the computer starts normally. If it does start normally, then make any changes to the BIOS one by one, and restart to see the effect because one of them might have been the problem.

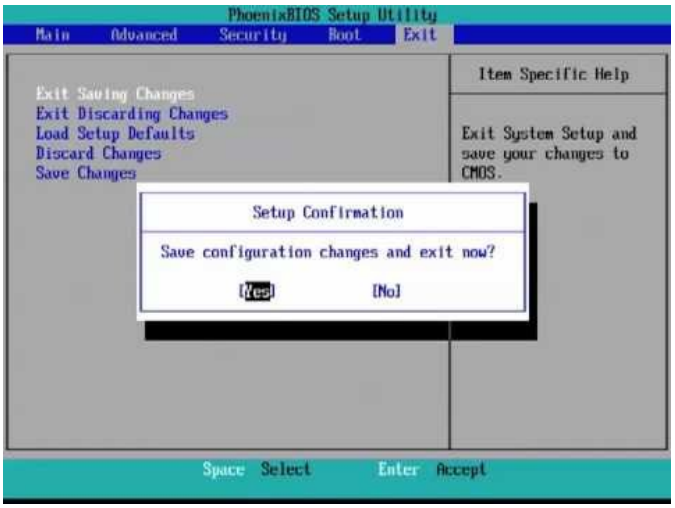

figure 10.1 Image of Troubleshooting

The BIOS recovery feature helps recover the computer from a Power On Self-Test (POST) or a boot failure that is caused by a corrupt BIOS.