

## Objectives

- ◆ In this session, you will learn to:
  - ◆ Test and troubleshoot power supplies.
  - ◆ Test and troubleshoot memory.
  - ◆ Test and troubleshoot CPUs.
  - ◆ Test and troubleshoot system boards.

## Troubleshoot Power Supplies

- ◆ Before troubleshooting power supplies, you need to understand the following:
  - ◆ Common power problems
  - ◆ Common power supply issues

## Common Power Problems

- ◆ Following are the various common power problems:
  - ◆ Line noise
  - ◆ Power sag
  - ◆ Brownouts
  - ◆ Frequency variations
  - ◆ Overvoltage
  - ◆ Power failure

## Common Power Supply Issues

- ◆ Following are the various common power supply problems:
  - ◆ Fan doesn't work.
  - ◆ Computer won't start.
  - ◆ Noise coming from power supply.

## Power Supply Wire Color Conventions

- ◆ The Power Supply wire color conventions are:
  - ◆ Yellow wire +12 (Disk drive motor, fans. Cooling Systems, & system bus slots)
  - ◆ Blue wire -12 (Some types of serial port circuits, and early PROM)
  - ◆ Orange +3.3 (Most newer CPUs, some types of system memory and AGP Video cards)
  - ◆ Red wire +5 (Motherboards, Baby AT, and earlier CPUs, and many motherboards components)
  - ◆ White wire -5 (ISA bus cards and early PROMs)
  - ◆ Black 0 (Ground)
  - ◆ Motor +/-12
  - ◆ Circuitry +/-5



## Testing Power Supply

- ◆ To test the Power Supply:
  - ◆ Locate a spare Molex connector, and remove it from the bundle if necessary so that
  - ◆ Measure the 5 volt output from the power supply using a multimeter
  - ◆ Measure the 12 volt output from the power supply using a multimeter

## Activity 7-4

### Activity on Troubleshooting Power Supplies

## Troubleshoot Memory

- ◆ Before troubleshooting memory, you need to understand the following:
  - ◆ Error checking
  - ◆ Common memory issues



## Error Checking

- ◆ Following are the error-checking mechanisms, which help save the data used in memory modules:
  - ◆ The **Parity** is an error correction method that is used for electronic communications.
  - ◆ The **Error Correction Code (ECC)** is an error correction method that uses several bits for error-checking.

## Common Memory Issues

- ◆ Following are the common memory issues:
  - ◆ Computer crashes
  - ◆ Application data is corrupted.
  - ◆ Memory errors displayed
  - ◆ Computer seems to boot, but screen is blank
  - ◆ Computer won't boot, and beep codes are heard
  - ◆ New memory not recognized by the system

## Troubleshooting Memory Issues

- ◆ Some common steps to troubleshoot memory issues:
  - ◆ Perform a virus scan. Viruses can cause symptoms that mimic those of a memory problem.
  - ◆ Verify that the correct memory modules were installed in the system. Verify this with the system documentation.
  - ◆ Verify that the memory was installed and configured properly.
  - ◆ Try swapping the memory between slots.
  - ◆ Check for BIOS upgrades. If there are known problems, then a fix has probably been issued.

## Troubleshoot CPUs

- ◆ Following are the common CPUs issues:
  - ◆ Overheating
  - ◆ Chip creep
  - ◆ Failure

## Troubleshoot CPUs

- ◆ To troubleshoot Overheating problems with CPUs
  - ◆ Verify that the air vents in the computer chassis are not blocked.
  - ◆ Move the system further from the wall if airflow is not sufficient.
  - ◆ Use compressed air to remove dust and dirt from fan components and the CPU heatsink.
  - ◆ Verify that the fan blades are turning freely; remove debris or obstructions.
  - ◆ Make sure the heat sink is securely clipped to the CPU.
  - ◆ If a cooling component has failed, replace it.
  - ◆ Configure the processor to eliminate overclocking.



## Troubleshoot CPUs (contd.)

- ◆ To troubleshoot chip creep problems with CPUs
  - ◆ Reseat the processor
- ◆ If a processor has failed, replace the processor

## Troubleshoot System Boards

- ◆ Following are the common system board issues:
  - ◆ Computer viruses
  - ◆ Loose connections
  - ◆ Out-of-date BIOS
  - ◆ CMOS battery failure
  - ◆ Overheating
  - ◆ Electrical short-circuits
  - ◆ Physical damage

## Troubleshoot System Boards

- ◆ To troubleshoot system board problems:
  - ◆ If the computer displays error messages, research the messages to determine a possible cause.
  - ◆ Eliminate problems with all other system components.
  - ◆ Perform a virus scan.
  - ◆ Reseat all components on the system board, including both cables and connector pins.
  - ◆ Update the system BIOS.
  - ◆ Update device drivers.
  - ◆ Replace the CMOS battery.

## Summary

- ◆ In this session, you learned that:
  - ◆ There are various common power problems, such as line noise, power sag, brownouts, and frequency variations.
  - ◆ Common power supply issues are fan doesn't work, computer won't start and noise coming from power supply.
  - ◆ Parity and ECC are the error checking mechanism.
  - ◆ Computer crashes, memory errors display, and computer seems to boot, but screen is blank are common memory issues.
  - ◆ Overheating, chip creep, and failure are the common CPU issues.
  - ◆ Computer viruses, loose connections, out-of-date BIOS, and CMOS battery failure are the common system board issues.