UNIT:5

Trouble Shooting and Presentence

5.1 REQUIREMENT OF COMPUTER MAINTENANCE

- Troubleshooting in a computer is an intelligent and sophisticated process.
- Advances in IC integration have totally changed the nature of troubleshooting.
- however the original design of computer is comes from IBM PC and intel's microprocessor.
  - Success of troubleshooting is depends on:
    - 1. Tolls and test equipment used
    - 2. Diagnostic aids in the PC
    - 3. Problem solving approach
    - 4. Various techniques adopted in troubleshooting

5.2 TROUBLING STRATEGY AND SKILLS

- Computer faults can be broadly classified into two types based on the nature of faults:
  - A) Solid fault or Permanent
    - When there is a permanent fault in a computer, the computer misbehaves consistently.
  - B)When there is an intermittent fault in a computer. the computer's behavior is not consistent. Sometime it works properly and suddenly in malfunctions .
  - here we divide this troubleshooting strategy in following steps:
    - 1. Symptoms Observation and Analysis Problem
    - 2. Recreating the Problem
    - 3. Problem Rectification
    - 4. Eliminating Possible Causes
    - 5. Using Diagnostic Tools

1) Symptoms observation and Analysis of problem

- Symptoms observation
  - if the symptoms are studied carefully without any mistake. most of the problem in a computer system can be solved.
  - The first step in troubleshooting a system in observation all the symptoms caused by the fault in the system.
  - Most of the problem are not solved due to one main reason that, engineer start the diagnosis the problem only observing one or two symptoms and leaving others.

Symptoms Analysis

- The second step in troubleshooting is the systematic analysis of the symptoms.
- A carefully analysis of the symptoms will give a direction of clue to the fault location process.
- If the location of problem or nature of the problem is understood, several steps can be skipped during fault location, which will reduce the down time (problem solving time)
- Two probable clues are given below:
  - Certain symptoms vanish suddenly.
  - Symptoms are not consistent but keep changing.

2) RECREATING THE PROBLEM

- Think back to what steps toy were doing that led you to this problem.
- try those steps again to see if this problem is easily recreated.
- If you have a consistently repeatable test case.
- you will have an easier time determining what solutions are necessary.
- The most important point here is the multidimensional view to be applied by the hardware engineer while troubleshooting problem.

3)PROBLEM RECTIFICATION

- Problem rectification is relatively a simple step
- Once a problem is diagnosed thoroughly and the fault is traced, the rectification involves skilled mechanical work rather then analytical work.
- This step may involve performing one or more of the action depending on the results of faults diagnosis:
  - Replacing a defective IC, PCB or other component.
  - Cleaning the connectors.
  - Soldering a broken wire or connections.
  - Straightening bent pins of a connector.
  - Isolating electrical loads.
  - Controlling temperature or improving cooling.

4) Eliminating Possible Causes

- Narrow the scope of your problem by eliminating components that are not causing the problem.
- By using a process of elimination, you will simplify your problem and avoid wasting time in areas that are not possible culprits
- Some questions might also want to ask yourself include the following:
  - Do you have the latest product fixes?
  - Is there a configuration setting that will help you?
  - Is this a known limitation or bug that is documented in the product remade or release notes?
  - IS there documentation that will help you?

5) USING DIAGNOSTIC TOOLS

- If you have researched the resources that are available to you and still find that you are experiencing this problem there may be tools available in the product that may give you more diagnostic information.
- Learn about the various debugging, profiling, tracing and testing tolls in this product by looking in the help.

5.3 POWER ON SELF TEST(POST)

- Power-on self-test (POST) is the common term for a computer, router or printer's pre-boot sequence.
- The same basic sequence is present on all computer architectures.
- It is the first step of the more general process called initial program load (IPL), booting, or bootstrapping.
- The BIOS performs a POST a POST when the system is turned on this test is used to ensure that the system contains, i.e. CPU clock speed, base memory size, base memory size, extension memory size, display type etc.

- When the problem is identified with the system during the POST, the BIOS will use three methods to represents the problem

A. Beep Code
B. Error Code
C. Detail Error Message

- The following procedure describes POST sequence:

1. Processor test
2. BIOS ROM test
3. Timer 1 test
4. DMA channel 0 test
5. Base 16 k RAM test
6. CRT controller test
7. Motherboard support chips test
8. RAM test
9. Optional ROM test
10. Peripheral controller test

5.4 TROUBLESHOOTING : POSSIBLE PROBLEMS AND DIAGNOSIS

- The following section explain various computer hardware most common problem, cause and their solution.

5.4.1 MOTHERBOARD TROUBLESHOOTING
5.4.2 KEYBOARD TROUBLESHOOTING

- **Keyboard won't respond anything**
- **Causes and Solutions:**
  - Check the keyboard connection to the computer and restart the computer.
  - Check the keyboard driver is properly installed or not. That we can seen in the device manage utility program in windows environment.
  - Verify the connection between controller and motherboard.

- **Receiving a keyboard error when system is boot**

- **Causes :**
  - A key being pushed down while the computer starts.
  - Something on top of the keyboard.

- **Solutions:**
  - Make sure you do not boot the PC with a key pressed down on the keyboard.
  - Make sure nothing is on top keyboard during boot time.

- **Pressing {Ctrl} + {Alt}+{Delete} keys, system does not respond**

- **Causes :**
  - Any one of the key mechanism is damaged.
  - System having virus.

- **Solutions :**
  - Individually test each of key.
  - Open other program and pressed the keys.
  - Scan our system with best antivirus software.

- **One or more key on keyboard not generating a keystroke reliably or key are or misbehaving.**

- **Causes :**
  - Particular key is used frequently(gamming program)
  - Keyboard having dirt and debris.
  - If key internal mechanism is damaged.
- **Solutions :**
  - Clean the keyboard carefully
  - Verify key on the other program.
  - Change the key or keyboard.

- **Keys are repeating**

- **Cause :**
  - BIOS typematic delay setting is not proper

- **Solutions :**
  - Check in BIOS for a setting to control the typematic delay and increase the repeating time

5.4.3 MOUSE TROUBLESHOOTING

- **Loose Connection :**
  - This is the most common problem in case of any mouse, be it PS/2 mouse, a USB mouse or a wireless mouse (its receiver).
  - If you notice that the cursor is not responding to the mouse movements, check whether the connection between the mouse and the CPU has become loose.
  - In case of a wireless mouse, check the connection of its receiver device. If it is loose, plug it in securely.

- **Accumulation of Dirt and Other Disturbance :**

  - If this is the problem you will have to open the chamber, and clean it as well as the trackball.
  - Ideally you should use a clean cloth and alcohol to cleanse
  - Also, an optical mouse may not work quite well if the surface below is shiny or transparent.

- **Low Batteries :**

  - In case of wireless mouse, the problem may be to the batteries, interferences or range.
  - Instead of concluding that there is a major problem and opting for a mouse repair, the foremost thing you need to do is to check if the batteries are low, and charge or replace them as required .
  - Be sure to place the pointing device, i.e. mouse within the specified range of its receiver.

Virus and Configuration Problem :

- Virus can also be one of the reasons for the mouse working abnormally i.e. if the cursor jumps across the screen uncontrollably, clicking on its own, etc.
- There are few viruses that may corrupt the mouse to malfunction.
- Mouse troubleshooting in this context will involves scanning the PC with a good antivirus in order to get rid of the virus.

Problems with the Port or Mouse Driver :

- To verify whether the trouble is with the mouse or the PC, connect the mouse to a different PC to check.
- If it functions perfectly on another PC, then there is probably some problem with the port where it was connected or with the mouse driver in the system.
- Check by connecting the mouse to another port.

Bluetooth Mouse Not Responding

- Make sure that the polarity of the batteries is correct. The positive (+) and negative (-) ends of each battery must match the positive(+) and negative(-) connections in the battery housing.
- Make sure the batteries are charged.
- Verify that computer is Bluetooth enabled.
- Verify that the device drivers are installed.

5.4.4 HARD DISK DRIVE TROUBLESHOOTING

- **Hard disk will not auto detect in the CMOS setup program**
- **Causes and Solutions :**
  - Try hard disk in other system; if problem will not hard disk have problem, otherwise problem in system. Or try with Hard disk if problem not solve then system have some problem otherwise previous Hard disk have problem
  - Verify Hard disk drive get enough power and is spinning. If it does not spin, then drive has problem or power problem.
  - Make sure the power input connection to the disk is tight.

- **Computer is running slowly or opening programs on the hard disk has become slow.**

- **Cause :**
  - The volumes on your hard diskmay have become excessively fragmented, possibly because you have recently created a large number of files or folders or have installed new software.
- **Solution :**
  - Analyze and then defragment the volumes on your hard disk if necessary. For more information

- **Hard disk drive is not detected**

- **Causes :**
  - Miss alignment of power/interface cable
  - Wrong setting of Master/Salve Jumper

- **Solutions :**
  - Verify the Hard disk drive power/interface cable
  - Verify the Master/ Salve Jumper setting.

- **The Hard disk drive is not bootable nor accessible at all**

- **Causes :**
  - Wrong Configuration
  - Hard disk is dead

- **Solutions :**
  - Detect you Hard disk in CMOS setup, if it detect then there is operating system is crash, Install operating system.
  - Verify the Master/Salve Jumper setting.

- **The Hard disk drive generate more noise**

- **Solutions :**
  - Verify the hard disk drive is the source of the noise by removing the cover of the system and identifying the hard disk drive as the source of the noise.
  - Run diagnostics on the hard disk drive. Replace drive if diagnostic testing reveals a failures.
  - Back up your important data, it may be dead soon!

- **“No ROM basic system halted” error message during startup (there are no active partitions)**

- **Causes :**
  - Drive is not install properly
  - There is no active partition

- **Solutions :**
  - Verify that drive is install properly
  - Set active partition using FDISK or other utility program.