



Al-Mustaqbal University
Department of Artificial Intelligence Techniques
Engineering
Class one - first semester
Lecture 10

Computer Troubleshooting

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Computer Troubleshooting

Computer troubleshooting is a systematic approach used to identify, diagnose, and resolve problems related to computer hardware and software. Effective troubleshooting minimizes downtime, improves system performance, and ensures reliable operation.

Common Hardware Problems: Identification and Solutions

Hardware problems are physical issues related to the components of a computer system. These problems are often detected through unusual behavior, error messages, or complete system failure.

a) Power Supply Problems

Identification:

Computer does not turn on
Sudden shutdowns or restarts
No lights or fan activity

Solutions:

Check power cables and electrical outlets
Test or replace the power supply unit (PSU)
Use a surge protector to prevent electrical damage

b) Overheating Issues

Identification:

System becomes very hot

Frequent crashes or automatic shutdowns

Loud or constantly running fans

Solutions:

Clean dust from fans and air vents

Ensure proper ventilation

Replace or reapply thermal paste on the CPU

c) Hard Drive Failures

Identification:

Slow performance

File corruption or missing data

Solutions:

Backup important data immediately

Replace the faulty hard drive

d) RAM (Memory) Problems

Identification:

System freezes or blue screen errors

Applications crash frequently

Common Software Issues: Errors, Crashes, and Performance Problems

Software issues occur when programs or operating systems fail to function correctly.

a) Software Errors

Identification:

Error messages during installation or execution

Programs failing to start

Solutions:

Reinstall the software

Update the application or operating system

Check system requirements and compatibility

b) System Crashes

Identification:

Operating system freezes

Blue Screen of Death (BSOD)

Sudden system restarts

Solutions:

Update device drivers

Scan for malware

Restore the system to a previous stable state

c) Performance Issues

Identification:

Slow startup

Delayed response from applications

Solutions:

Close unnecessary background programs

Increase RAM or storage capacity

Perform disk cleanup and defragmentation

Basic Troubleshooting Techniques: Steps and Diagnostic Tools

Troubleshooting follows a logical sequence to ensure accurate and efficient problem resolution.

a) Basic Troubleshooting Steps

1. Identify the problem
2. Gather information
3. Form a possible cause
4. Test the solution
5. Verify system functionality
6. Document the solution

b) Diagnostic Tools

- **Task Manager:** Monitors CPU, memory, and disk usage
- **Device Manager:** Identifies hardware and driver problems
- **Event Viewer:** Displays system and application logs
- **Antivirus Software:** Detects malware and security threats