COMPUTER SYSTEM MAINTENANCE

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Computer system maintenance refers to a set of activities and practices aimed at ensuring the **smooth functioning**, **reliability**, **security** and **optimal performance** of computer system over time.

Computer maintenance include software aspects like re-installation and physical of computer hardware maintenance

IMPORTANCE OF COMPUTER MAINTENANCE

1. To keep the computer system running smoothly
2. To identify and address potential issues before they lead to system failures
3. To help protect a computer from vulnerabilities malware, viruses and hackers could exploit.
4. To improve data security through regular data backups.
5. To extend lifespan of hardware components
6. To prevent conflicts and compatibility issues that could arise from outdated software.
7. To reduce the needs for costly repairs or replacements

TOOLS FOR PERFORMING COMPUTER MAINTENANCE

Computer maintenance required both physical and soft tools.

Electrostatic Discharge (ESD)

This is the sudden flow of electricity between two electrically charged objects

ESD occurs when static electricity accumulates on one object and then discharges to another object with a different electrical potential.

To prevent electrostatic Discharge is essential to wear wrist strips with grounding cords properly connected to a grounded surface.

The wrist strips ensures that both you and your body have the same electrical potential , preventing static charge buildup and providing a safe path for any accumulated charge to dissipate to the ground.

ANTISTATIC WRIST STRAP

TYPES OF COMPUTER SYSTEM MAINTENANCE

There are three common computer system maintenance

a) Preventive maintenance
b) Corrective maintenance
c) Routine Maintenance

PREVENTIVE MAINTENANCE

Preventive maintenance involves proactive measures taken to prevent potential problems and systems failures.

It includes regular hardware cleaning and inspections to identify and address potential problems before they cause aby harm.

HARDWARE PREVENTIVE MAINTENANCE

Examples of preventive maintenance tasks for computer hardware are:-

a. Airflow management
b. Power connection check
c. Hard drive health assessment
d. Temperature monitoring
e. Cleaning keyboard, mouse, monitor, and motherboard
f. Battery maintenance(laptops)
g. Regularly checking fans and heatsinks
h. Inspection of RAM and expansion cards

1. Motherboard Cleaning

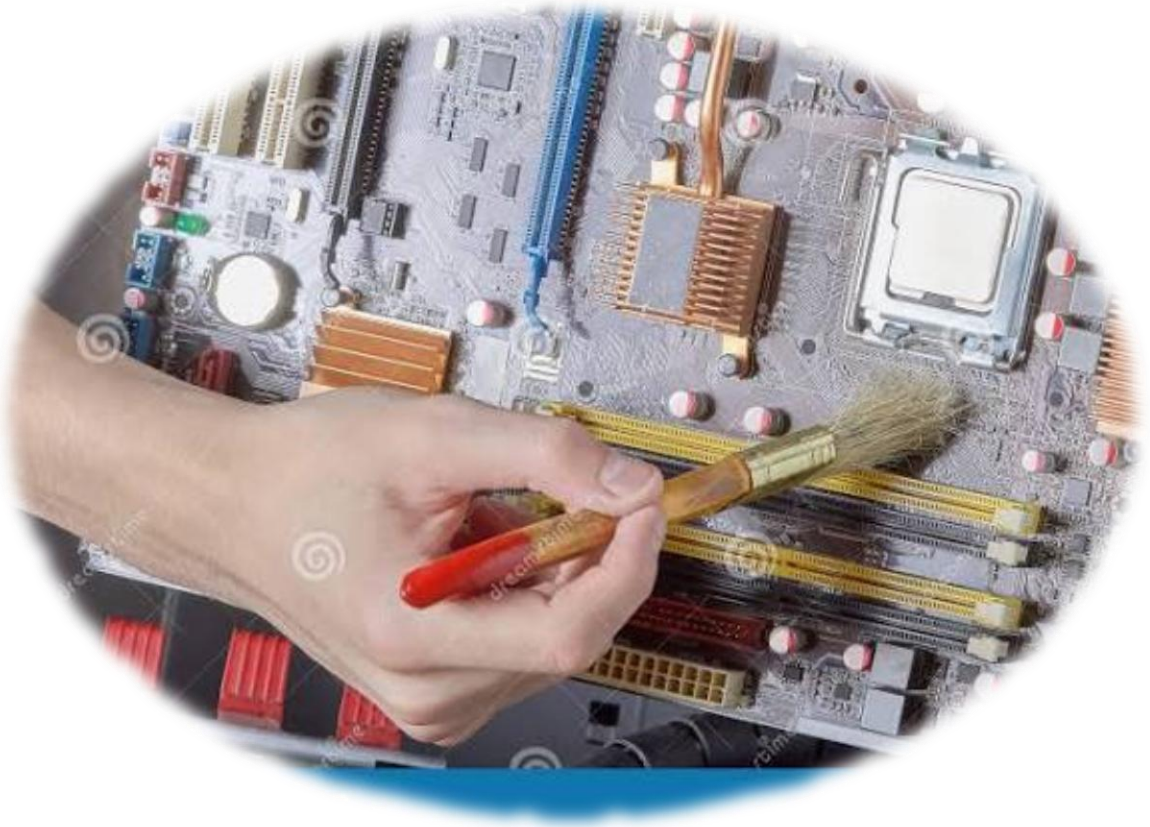
Helps to remove dust and debris from causing overheating.

Materials needed

a. Ethanol/ hydrogen peroxide
b. Soft bristle brush
c. Air blower/ air compressor
d. Ant-static wrist strap
e. Ant-static wrist mat
f. Silicon skin

Procedure

a. Prepare a clean workspace
b. Turn off and unplug your computer
c. Ground yourself
d. Open the computer case
e. Remove components (if necessary)
f. Blow away dust
g. Brust away stubborn dust
h. Clean with isopropyl alcohol
i. Inspect for residue
j. Allow to dry
k. Reassemble and power on



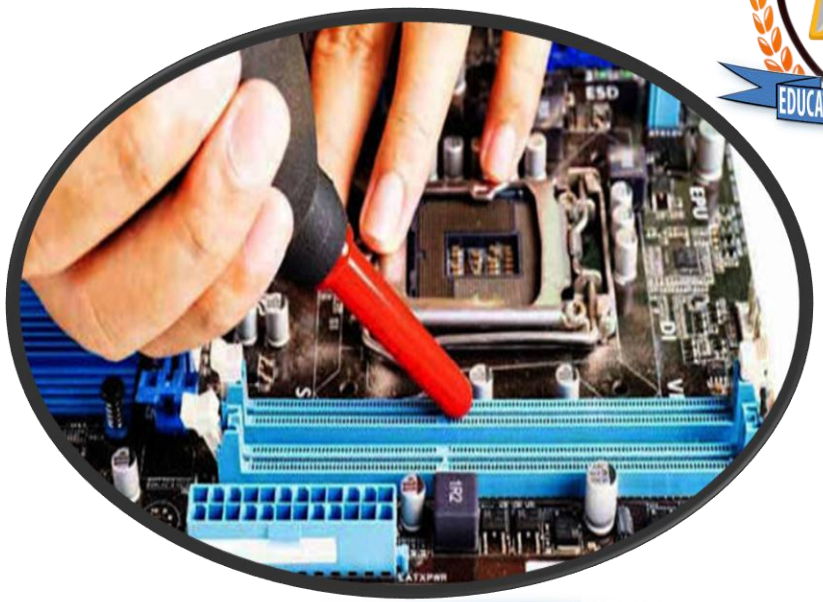
2. RAM cleaning

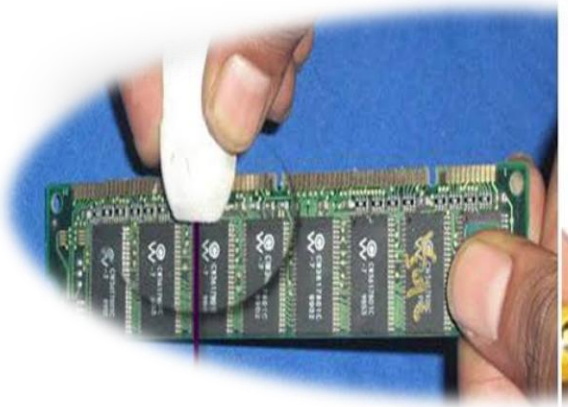
Materials needed

i. Air compressor
ii. Soft bristle brush
iii. Anti-static wrist strap
iv. Lint free cloth or paper towels

Procedure

a. Prepare a clean workspace
b. Turn off and unplug your computer
c. Ground yourself
d. Open the computer case
e. Remove components (if necessary)
f. Blow away dust
g. Brust away stubborn dust
h. Inspect for residue
i. Allow to dry
j. Reassemble and power on





2. Software preventive Maintenance

This is measures taken to keep computer software in good working condition.

This is planned activities carried out to prevent software problems before they occur.

This is done to prevent issues and ensure system stability.

Preventive maintenance Tasks includes:-

a. Software updates(get the latest version or patch)
b. Performance monitoring to prevent software failures and check compatibility with hardware and other software.
c. Data backup
d. Anti-virus and anti-malware scans

ADVANTAGES OF SOFTWARE MAINTENANCE

1. Minimize downtime and repair costs
2. Improve system performance
3. Extends software lifespan
4. Reduces unexpected software crashes.

CORRECTIVE MAINTENANCE(BREAKDOWN MAINTENANCE

Corrective maintenance(Breakdown or run to failure is strategy where maintenance activities are performed after a problem or failure has occurred.

DISADVANTAGES OF CORRECTIVE MAINTENANCE

1. High repair costs
2. Data loss risk
3. Reduced equipment lifespan
4. Unplanned interruption
5. Productivity loss
6. Security Risks
7. System downtime

(the computer system remains no functional until the fault is repaired)

1. Hardware corrective maintenance involves addressing and fixing hardware issues
   a. Motherboard and hard disk replacement
   b. Fixing a faulty power supply unit
   c. Replacing graphic card
   d. Repairing breakdown laptop screen
   e. Fixing a malfunctioning keyboard
   f. Repairing a faulty CPU cooler
   g. Fixing overheating issues
   h. Repairing printer paper jam
   i. Resetting BIOS and CMOS battery replacement etc

1. Motherboard Replacement

Replacing a motherboard requires careful handling and attention

Ensure the compatibility of the replacement motherboard with the existing components like RAM, CPU, system case, power supply heat sink/ fan assembly

HOW TO REPLACE MOTHERBOARD

1. Backup all the important data on the external or cloud storage device.
2. Shutdown the computer
3. Disconnect all cables and peripherals from the computer
4. Remove the side panel of the computer case
5. Take photos on note current connections
6. Remove any expansion cards
7. Remove RAM modules and the CPU
8. Unscrew the motherboard from the case using screwdriver
9. Lift the motherboard out of the case
10. Replace the new motherboard to the case
11. Reconnect all cables to the new motherboard
12. Reinstall RAM and CPU
13. Close the computer Case and secure with screws
14. Reconnect the monitor
15. Reconnect the Power Cord to the power supply
16. Press the power button to turn on

2. Hard Disk Replacement

a) Choose a clean, static free surface to work on
b) Ensure the computer is powered off and unplugged from the electrical outlet
c) Identify the drive to replace
d) Disconnect the data and power cables from the HDD
e) Connect one end of the SATA power cable to the motherboard
f) Replace the computer case and secure it with screws
g) Connect the power cord to the power supply
h) Power on the computer

3. Printer Maintenance

To ensure consistent print quality, prevent paper jams

And extend the printer lifespan

STEPS

1. Turn off and unplug the printer before cleaning to ensure safety
2. Use a soft, lint free cloth to clean the exterior part
3. Clean the paper trays and input/output trays
4. Wipe the printhead or laser lens with a soft cloth

4. Basic Input Output System Re-setting(BIOS)

BIOS is firmware interface between the computer hardware and the operating system

BIOS setting is a set of configurable options that control the fundamental functions of computer hardware

BIOS SETTING INCLUDES

1. Access BIOS Setting
2. Focused on purpose of setting
3. Setting BIOS security
4. Setting boot order
5. CPU and RAM settings
6. Specify Memory timings
7. Power Management
8. Updating time and Date
9. Peripheral Management

5. Replacing a CMOS battery

A Complementary Metal Oxide Semiconductor (CMOS) battery is special chip stores important system information, including:-

a) the system's date and time,
b) BIOS settings and
c) hardware configuration

i. Power off the computer
ii. Open the computer case/ laptop panel
iii. Locate the CMOS Battery
iv. Remove the old Battery
v. Insert the New battery
vi. Close the case/panel
vii. Reconnect power and Boot
viii. Enter BIOS/UEFI Setup

2. Software Corrective Maintenance

Involves identifying and addressing issues in software application to ensure the function correctly and efficiently

Include: resolving compatibility issues, component and compliance updates and user account and access issues

ROUTINE MAINTENANCE

Routine maintenance refers to the regular, scheduled tasks performed to ensure that a computer operates efficiently, remains secure and has a longer lifespan.

The main goal is to prevent problems before they occur and keep the system running smoothly.

1. Routine Hardware Maintenance

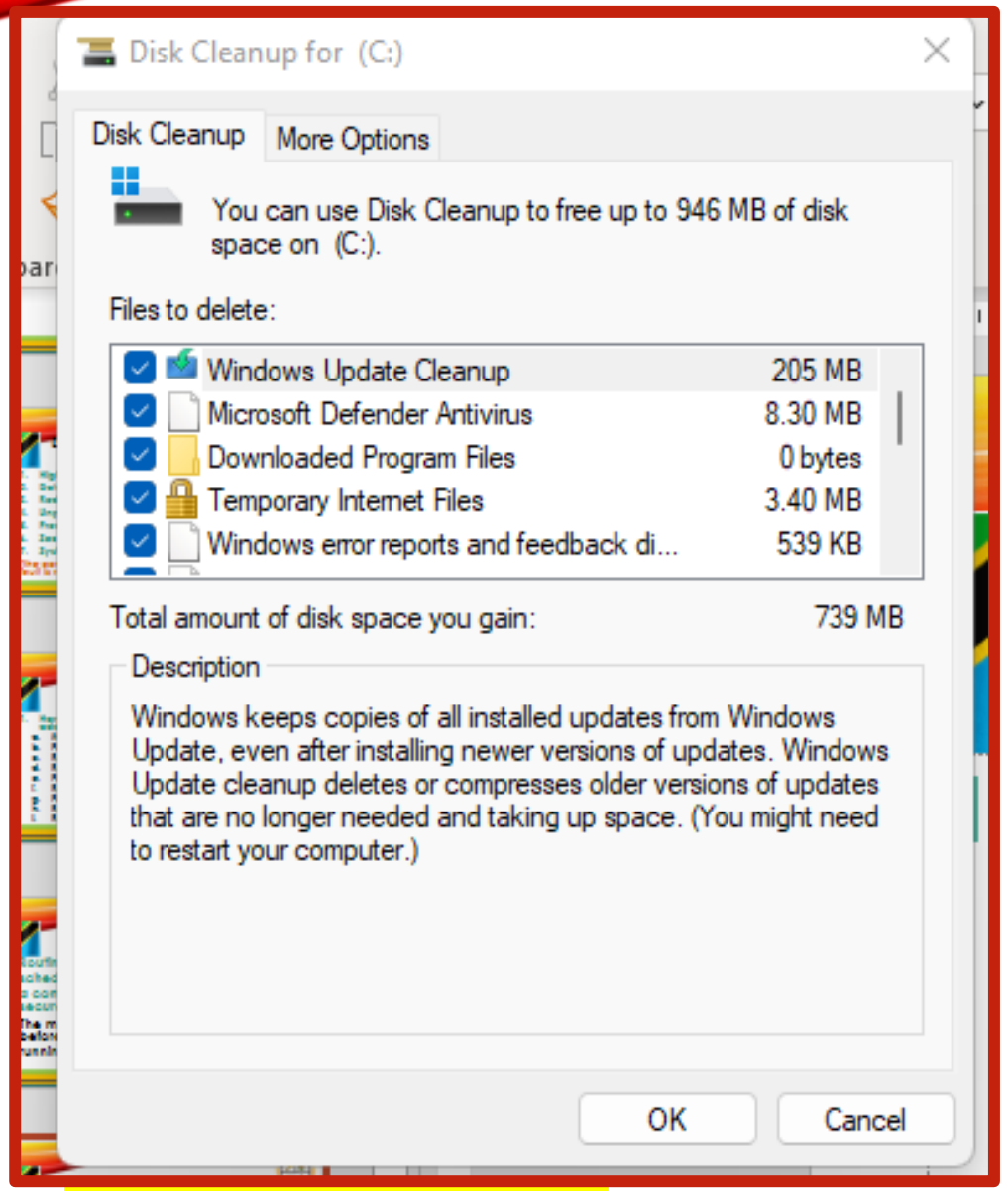
a) Disk cleanup
b) Disk defragmenter
c) Check disk
d) Cleaning Dust from Fans, vents and Keyboard

DISK CLEANUP

Disk cleanup is a maintenance utility in computer systems that helps to free up space on a computer's hard drive by removing unnecessary files.

STEPS

i. Type “**disk cleanup**” into the taskbar search box
ii. Choose “**disk cleanup**” from the list of results
iii. Select **OK** after choosing the drive you want to clean up
iv. Under “files to delete” choose the file types you want to delete
v. Select it to see a description of the file types
vi. Click **OK**



DISK DEFRAGMENTER

Disk defragmenter rearranges all files so that they are all saved in the same place to make program run faster.

STEPS

i. Type "**defrag**" into taskbar search box
ii. Select Defragmenter optimize Drives
iii. Select the disk drive to be optimized
iv. Select the Optimize button

Optimize Drives

You can optimize your drives to help your computer run more efficiently, or analyze them to find out if they need to be optimized. Only drives on or connected to your computer are shown.

Status

Drive	Media type	Last analyzed or o...	Current status
(C:)	Solid state drive	11/10/2025 20:05	OK (2 days since last retrim)
Local Disk (D:)	Solid state drive	11/10/2025 20:05	OK (2 days since last retrim)

Advanced View

Analyze

Optimize

Scheduled optimization

On

Change settings

Drives are being analyzed on a scheduled cadence and optimized as needed.

Frequency: Weekly

Close

CHECKDISK(CHKDSK)

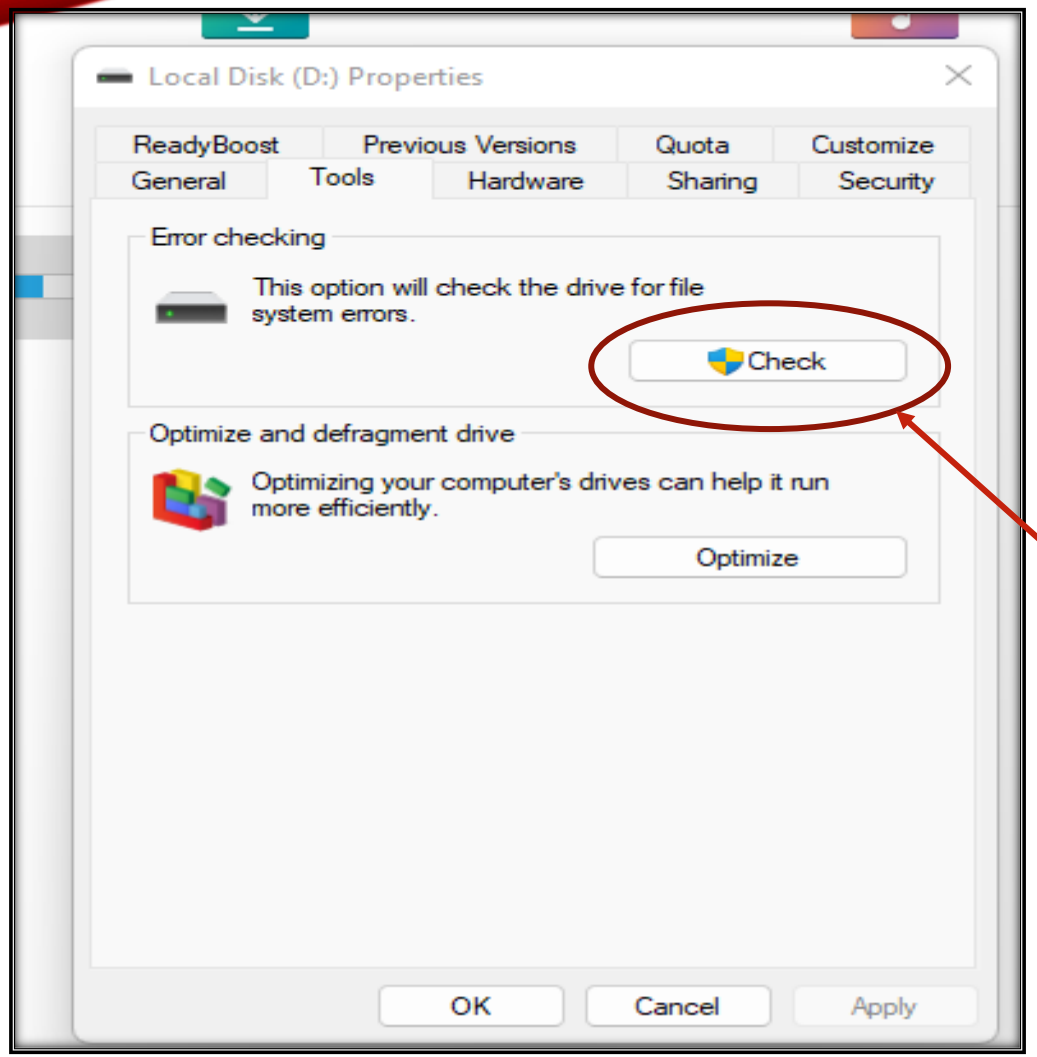
Check disk is maintenance utility used to check the integrity of a hard drive an d fix file system errors

The purpose of CHKDSK

i. Detects and repairs disk errors
ii. Ensures data integrity
iii. Scans for bad sectors

STEPS

i. Open the “File Explorer”
ii. Right click the drive to be checked and then select “properties”
iii. Then Click Tool option
iv. Click Check to check for errors



Click check to check errors

2. Routine Software maintenance Involves
   a. Software updates
   b. Running antivirus and malware scans
   c. Backup data regularly