

Assignment : Installation and maintenance of hardware and its Components

Section 1: Multiple choice

1. which of the following precautions should be taken before working on computer hardware?

Ans: c) work on carpeted surfaces to prevent slipping.

2.what is the purpose of thermal paste during CPU installation ?

Ans: d) To prevent the CPU from overheating.

3. which tool is used to measure the output voltage of a power supply unit(PSU)?

Ans: a) multimeter

4. which component is responsible for storing BIOS setting, such as date and time, even when the computer is powered off?

Ans: a) CMOS battery

Section 2: True or False

5. when installing a new hard drive, it is essential to format it before use.- TRUE

6.A POST(power-On-self-Test) error indicates a problem with the CPU.-FALSE

7. it is safe to remove a USB flash drive from a computer without ejecting it first.-FALSE

Section 3: short answer

8. Describe the steps involved in installing a new graphics card in a desktop computer.

Ans:

- Power off the computer and unplug it.
- Remove the side panel of the computer case.
- If replacing, uninstall old drives, disconnect old card, unscrew it.
- Insert new graphics card into PCIe slot until it clicks.
- Screw new card's bracket to case, connect any required power cables.
- Put side panel back on, secure it with screws.
- Plug computer back in, power on.
- Download/ install latest drivers for new graphics card.
- Ensure card is recognized and working in device manager.
- Optionally adjust display settings using graphics card control panel software.

9. What is RAID. And what are some common RAID configurations?

Ans : RAID (Redundant array of Independent disks) is a technology that combines multiple physical hard drives into a single logical unit for improved performance, data redundancy, or both.

Common RAID configurations:

1. RAID 0: stripes data across multiple drives for enhanced performance but offers no redundancy.
2. RAID 1: Mirrors data across drives for redundancy; requires at least two drives.
3. RAID 5: Strips data across multiple drives with distributed parity for enhanced fault tolerance.
4. RAID 6: Similar to RAID 5 but with dual distributed parity for enhanced fault tolerance.
5. RAID 10(RAID 1+0): Combines mirroring and striping; provides good performance and redundancy but requires more drives.

Section 4: Practical Application

10. Demonstrate how to replace a CPU fan in a desktop computer.

Materials needed:

- New CPU fan compatible with your motherboard socket type
- Thermal paste (if not pre-applied on the new CPU fan)
- Screwdriver (typically Phillips-head)
- Isopropyl alcohol and lint-free cloth (for cleaning)
- Antistatic wrist strap (recommended to prevent static discharge)

Steps:

- Ensure the computer is off and unplugged.
- Remove the side panel.

- Touch a metal part of the case to discharge static electricity.
- Identify the CPU fan mounted on the heatsink.
- Disconnect the fan's power cable from motherboard.
- Unscrew or unclip the fan from the heatsink.
- Use isopropyl alcohol and a lint-free cloth to remove old thermal paste to the CPU.
- Apply a small amount of thermal paste to the
CPU
- Mount the new fan or heatsink onto the CPU and secure it.
- Plug the new fan's power cable into the motherboard.
- Plug in the computer and ensure the fan is working properly.

11. Discuss the importance of regular maintenance for computer hardware and provide examples of maintenance tasks.

The Importance of Regular Maintenance for Computer Hardware

In today's technology-driven world, computers are an integral part of both personal and professional life. These sophisticated machines require regular maintenance to function optimally and avoid unexpected issues. Just like any other piece of equipment, computer hardware can wear out over time, and neglecting its upkeep can lead to decreased performance, system failures, and costly repairs. This essay explores the importance of regular maintenance for computer hardware and provides examples of essential maintenance tasks.

Prolonging Lifespan

One of the primary benefits of regular maintenance is the prolonged lifespan of computer hardware. Computers are significant investments, and proper care can help ensure

that this investment lasts as long as possible. Regular maintenance can prevent the premature failure of components such as hard drives, power supplies, and cooling systems. For example, dust accumulation inside the computer case can lead to overheating, which in turn can cause components to fail. By regularly cleaning the interior of the computer, users can prevent overheating and extend the life of their hardware.

Preventing Failures

Routine maintenance is crucial for identifying and addressing potential issues before they escalate into serious problems. Just as routine check-ups with a doctor can catch health issues early, regular hardware checks can detect and fix minor problems before they cause significant damage. For instance, checking the health of a computer's hard drive using diagnostic tools can reveal signs of imminent failure, allowing users to back up their data and replace the drive before it fails.

completely. Similarly, inspecting and replacing worn-out components such as cooling fans can prevent overheating and subsequent hardware damage.

Enhancing Performance

A well-maintained computer runs more efficiently and performs better than one that is neglected. Over time, dust and debris can clog fans and vents, leading to overheating and reduced performance. Regular cleaning ensures proper airflow, which helps maintain optimal operating temperatures and prevents thermal throttling of components like the CPU and GPU. Additionally, keeping hardware drivers and firmware up to date can improve compatibility with new software, fix bugs, and enhance overall system performance. For example, updating the graphics card drivers can lead to better performance in games and graphics-intensive applications.

Improving Security

Regular maintenance is not only about physical hardware but also involves updating software components that interact with the hardware. Firmware updates and driver updates are essential for keeping the system secure. Manufacturers often release updates to fix security vulnerabilities and improve the stability of their products. By regularly applying these updates, users can protect their systems from potential security threats. Moreover, maintaining a secure system involves ensuring that hardware-related software, such as antivirus programs and firewalls, is always up to date.

Examples of Maintenance Tasks

To effectively maintain computer hardware, users should perform several essential tasks on a regular basis. These tasks include cleaning, checking and replacing parts,

software updates, monitoring, data backup, and physical inspection.

Cleaning: Regularly removing dust from fans, vents, and other components helps prevent overheating and ensures proper airflow. Screen cleaning with appropriate cleaners keeps the monitor clear of dust and smudges.

Checking and Replacing Parts: This involves checking the health of components such as the battery in laptops and replacing it if necessary. Ensuring that screws and other fastenings are secure prevents physical damage. Reapplying thermal paste to the CPU or GPU can maintain efficient heat transfer.

Software Updates: Keeping hardware drivers and firmware up to date ensures compatibility with new software and improves performance. For instance, updating the firmware of the motherboard or SSDs can enhance system stability and functionality.

Monitoring: Using software to monitor the temperatures of key components helps prevent overheating. Regularly checking the health of hard drives and SSDs using built-in tools or third-party software can prevent data loss by identifying potential issues early.

Data Backup: Regularly backing up important data to an external drive or cloud storage is crucial to prevent data loss in case of hardware failure. Having a backup ensures that users can quickly recover their data if something goes wrong.

Physical Inspection: Checking for and fixing any loose or damaged cables that might affect performance or cause hardware issues is essential. Ensuring that peripherals like keyboards, mice, and printers are functioning correctly and are clean is also important.

In conclusion, regular maintenance of computer hardware is vital for prolonging the lifespan of the components, preventing failures, enhancing performance, and improving security. By performing routine maintenance tasks such as cleaning, checking and replacing parts, updating software, monitoring, backing up data, and conducting physical inspections, users can ensure that their computers remain in good working condition. This proactive approach not only saves time and money but also provides a better overall user experience.