Assignment-2

Section1: Multiple choice

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

Ans: wear an anti-static wrist strap to prevent damage from electrostatic discharge.

1. What is the purpose of thermal paste during CPU installation?

Ans: to improve thermal conductivity between the CPU and the heat sink.

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

Ans: Multimeter.

1. Which component is responsible for storing BIOS settings, such as date and time, even when the computer is powered off?

Ans: CMOS battery.

Section2: True or False

1. When installing a new hard drive, it is essential to format it before use.

Ans: True.

1. A POST (Power-On Self-Test) error indicates a problem with the CPU.

Ans: False.

1. It is safe to remove a USB flash drive from a computer without ejecting it first.

Ans: False.

Section3: Short Answer.

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

Ans: Steps to install a new graphics card:

1. Always unplug the PC’s power cable before you begin and also wear an anti-static wrist strap to prevent electrostatic discharge (ESD).
2. Open the PC case by removing the side panel.
3. Insert the new card. Locate the primary PCIe slot on your motherboard. Put the new GPU in the slot and press it down firmly but gently until we hear a click sound.
4. Screw the bracket into the PC case to hold it in place.
5. Connect the power cable as many GPUs need a dedicated power cable from the power supply.
6. What is RAID, and what are some common RAID configurations?

Ans: RAID stands for Redundant Array of Independence Disks. RAID is a storage technology that combines multiple physical HDD or SSD into one or more logical units. This is done for better performance, data redundancy. There are some RAID levels to provide balance between performance, data protection and storage capacity.

-Raid 0 (Striping): This configuration writes data across two or more disks simultaneously in a striped fashion. It provides the best performance and uses 100% of the combined storage capacity. But it doesn’t offer redundancy. If the drive fails, all data in the array is lost.

-RAID 1 (Mirroring): In this setup, data is written identically to two or more drives. This creates a copy of the data. The primary goal is to protect the data, as the array can continue to function as long as at least one drive is operational.

-RAID 5 (Stripping and Parity): This is a popular configuration that balances performance and redundancy. It requires minimum 3 drives. While it has good read performance, write performance is slightly slower due to the parity calculations.

-RAID 6 (Striping with Dual Parity): It is similar to RAID 5, but it uses two sets of parity data. This requires minimum 4 drives and can withstand the failure of up to two drives. It offers a higher level of data protection than RAID 5 but at the cost of slightly slower write speeds and more storage overhead for the extra parity.

-RAID 10 (Striping of Mirrors): A nested or hybrid RAID level that combines RAID 1 and RAID 0. It stripes data across mirrored pairs of drives. This configuration provides both high performance and excellent data redundancy. It requires at least four drives but offers fast rebuild times and can tolerate multiple drive failures, provided the failures do not occur within the same mirrored pair.

Section 4: Practical Application.

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

Ans: Step 1: Shut down and unplug your computer. Ground yourself to prevent electrostatic discharge.

Step 2: Open the case by removing the side panel.

Step 3: Disconnect the fan's power cable from the motherboard. This cable is typically a 3 or 4-pin connector labelled "CPUFAN" near the CPU.

Step 4: Remove the fan and heatsink assembly

Step 5: Clean the CPU. Once the old cooler is removed, you will see the CPU. Use a clean cloth and a small amount of rubbing alcohol to gently wipe away the old thermal paste from both the CPU and the base of the heatsink. This ensures a clean surface for the new thermal paste.

Step 6: Mount the new fan and heatsink. Carefully place the new cooler on the CPU, making sure the mounting holes or clips are aligned. Secure the cooler using the appropriate method (clips, screws, or pushpins).

Step 7: Connect the new fan's power cable to the CPU\_FAN header on the motherboard.

Step 8: Close the case, reconnect all cables, and power on the computer. Your new CPU fan should now be working correctly.

Section5: Essay

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

Ans: Computer hardware needs regular upkeep to work well, last longer, and stay secure. Just like a car needs a tune-up to prevent a major breakdown, a computer needs routine care to run smoothly.

**Why It's Important**

* **Better Performance:** Over time, dust, disorganized files, and old software can slow a computer down. Regular maintenance keeps the system quick, which means faster startups and smoother app use.
* **Longer Lifespan:** Dust is a big problem for computer parts. It can clog fans and vents, causing the device to overheat, which often leads to hardware failure. Keeping your computer clean reduces wear and tear, so it lasts longer.
* **Stronger Security:** Updating your operating system and drivers often adds crucial security fixes. These updates close gaps that hackers and malware could use to attack your computer.
* **Saves Money:** Fixing a problem is usually more expensive than preventing one. By taking care of your computer regularly, you avoid costly repairs and won't have to replace parts as often.
* **Protects Your Data:** Routine check-ups include tasks like backing up your files and checking the health of your hard drive. This helps protect your important data from being lost because of a hardware crash or a cyberattack.
* Physical **Cleaning:** This is one of the most important things you can do. Use a can of compressed air to blow dust out of the case, fans, and vents. For the outside, wipe down the keyboard, mouse, and screen with a microfiber cloth to get rid of dirt and fingerprints.
* Check **Connections:** Make sure all your internal and external cables, like power cords and video cables, are plugged in tightly and aren't frayed.
* Watch **Temperatures:** Use software to monitor the temperature of your CPU and graphics card. If they get too hot, it could signal a problem before it causes damage.
* Update **Drivers:** Keeping your hardware drivers updated is key for a stable and fast system. Manufacturers often release updates to fix bugs and improve how your hardware works.