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Course : Networking Career Development Program

Task : Assignment 2

Module 2

Section 1: Multiple Choice

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

   a) Ensure the computer is plugged in to prevent electrostatic discharge.
   b) Wear an anti-static wrist strap to prevent damage from electrostatic discharge.
   c) Work on carpeted surfaces to prevent slipping.
   d) Use magnetic tools to handle components more easily.

   Ans : (b) Wear an anti-static wrist strap to prevent damage from electrostatic discharge.

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

   a) To insulate the CPU from heat.
   b) To provide mechanical support for the CPU.
   c) To improve thermal conductivity between the CPU and the heat sink.
   d) To prevent the CPU from overheating.

   Ans : (c) To improve thermal conductivity between the CPU and the heat sink.

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

    a) Multimeter
    b) Screwdriver
    c) Pliers
    d) Hex key

    Ans : (a) Multimeter

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

    a) CMOS battery
    b) CPU
    c) RAM
    d) Hard drive

    Ans : (a) CMOS battery

    Section 2: True or False:

5. True or False: When installing a new hard drive, it is essential to format it before use.

    Ans : True

6. True or False: A POST (Power-On Self-Test) error indicates a problem with the CPU.

Ans : False. Because POST errors are general hardware errors, not specifically CPU only.

7. True or False: It is safe to remove a USB flash drive from a computer without ejecting it first.

Ans : False: it is not safe to remove a USB without ejecting first.

Section 3: Short Answer:

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

Ans : Steps to install a new graphics card in a desktop computer are:-

1. **Power Down and Unplug:**
   - Shut down the computer and disconnect the power cable to avoid electric shock.

2. **Open the Computer Case:**
   - Remove the side panel of a case using a screwdriver.

3. **Locate the PCI Express Slot**:
   - Find the appropriate PCI Express x16 Slot .

4. **Remove Old Card**:
   - Unscrew and gently remove the existing graphics card, if installed.

5. Insert the new Graphics card:

- Align the card with the PCIe Slot and press it down firmly until it clicks into place.

6. Secure the card:

- Use screws or case brackets to secure the card to the chassis.

7. **Connect Power Cables**:

- If required connect the 6-pin/8-pin PCIe power connectors from the PSU to the graphics card.

8. Close the Case:

- Replace the side panel and secure it.

9. Reconnect and Power On:

- Plug the power cable back in and turn on the PC.

10. Install drivers:

- Boot into the OS, then install or update the latest drivers for the graphics card from the manufacturer's website.

9. What is RAID, and what are some common RAID configurations?

Ans : RAID is a data storage virtualization technology that combines multiple physical hard drives into one logical unit.

Common RAID Configurations are:

1. RAID 0 (Striping):

- Data is split across multiple disks.
- High Performance.

- No redundancy.

2. RAID 1 (Mirroring):
- Data is duplicated on two drives.
- High reliability and redundancy.
- Storage capacity is halved.

3. RAID 5 (Striping with parity):
- Data and parity are distributed across 3 or more disks.
- Good balance of performance.
- Slightly slower write performance due to parity calculation.

4. RAID 10 (1+0):
- Combination of RAID 1 and RAID 0.
- Disks are mirrored, and the mirrors are striped.
- High performance + Redundancy.

Section 4: Practical Application:

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

Ans : **Steps to Replace a CPU Fan in a Desktop Computer:**

1. Power Down and Unplug:
- Shut down the computer, disconnect the power cable, and press the power button once to discharge any remaining electricity.

2. Open the Case:

- Remove the side panel of the case using a screwdriver.

3. Locate the CPU Fan and Heatsink:

- Find the CPU fan mounted on top of the heatsink, which sits directly over the CPU socket.

4. Disconnect the Fan Cable:

- Unplug the CPU fan's power connector from the **CPU_FAN header** on the motherboard.

5. Remove the Old CPU Fan (and Heatsink if attached):

- Unscrew or unlatch the clips holding the fan/heatsink assembly in place.
- Carefully lift it off the CPU.

6. Clean the CPU Surface:

- Wipe off old thermal paste from the CPU and heatsink using isopropyl alcohol and a lint-free cloth.

7. Apply New Thermal Paste:

- Put a small pea-sized drop of thermal paste in the center of the CPU.

8. Install the New CPU Fan (with Heatsink):

- Position the new fan and heatsink over the CPU socket.
- Secure it using screws or retention clips.

9. Reconnect the Fan Cable:

- Plug the new fan's power connector into the **CPU_FAN header** on the motherboard.

10. Close the Case and Test:

- o Reattach the side panel, reconnect the power cable, and boot the PC.

- o Enter BIOS or use monitoring software to confirm the fan is running and CPU temperatures are normal.

Section 5: Essay:

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

Ans **:**

Importance of Regular Maintenance for Computer Hardware:

Regular maintenance of computer hardware is essential to ensure **long life, reliability, and smooth performance**. Without it, hardware can overheat, slow down, or fail, leading to **data loss, downtime, and costly repairs.**

Benefits of Regular Maintenance:

1. **Improves Performance –** Keeps the system fast and responsive.
2. **Prevents Overheating** – Dust removal ensures proper airflow and cooling.
3. **Extends Hardware Lifespan** – Reduces wear and tear on components.
4. **Prevents Data Loss** – Ensures reliable storage devices and backup.
5. **Cost Savings** – Minimizes chances of major hardware failures.

Examples of Maintenance Tasks:

1. **Cleaning:** Remove dust from fans, vents, and components using compressed air.
2. **Checking Connections:** Ensure cables, RAM, and expansion cards are seated properly.
3. **Cooling System Maintenance:** Replace faulty fans, reapply thermal paste if needed.
4. **Disk Maintenance:** Run disk cleanup, defragmentation (HDDs), and error-checking.
5. **Updating Drivers/Firmware:** Keep BIOS and drivers up to date for compatibility and performance.
6. **Backup:** Regularly back up important data to prevent loss.
7. **Antivirus Scans:** Protect against malware that can damage files and slow hardware.