

# **Computer Science & Engineering Technology**

## **1st Semester**

### **Computer Laboratory Practices-66612**

#### **Title: Lab Report on Assembling a PC: Computer Laboratory Practices**

**Objective:** The objective of this lab session was to understand and execute the process of assembling a personal computer while adhering to best practices in computer laboratory safety and procedures.

**Introduction:** In today's technology-driven world, assembling a personal computer (PC) is a fundamental skill for computer enthusiasts and professionals alike. Proper assembly not only ensures the functionality and efficiency of the PC but also promotes safety and longevity. This lab aimed to familiarize participants with the step-by-step process of assembling a PC, including selecting appropriate components, handling hardware safely, and configuring the system.

#### **Materials and Methods:**

1. **Specification Preparation:** The first step involved preparing a detailed specification of the PC's components, including the motherboard, processor, RAM, storage devices, power supply unit (PSU), peripherals, and other accessories. Cost estimates were also made for each component.
2. **Hardware Collection:** Following the specification, the necessary hardware components were collected from the store. Careful attention was paid to ensure compatibility and quality. Electrostatic discharge precautions were observed, and personal protective equipment (PPE) was worn as required.
3. **Assembly Process:**

- **PSU and Motherboard Installation:** The PSU was installed in the casing, followed by the installation of the processor, heatsink, cooling fan, RAM modules, and other peripherals onto the motherboard. The motherboard was securely set into the casing.
  - **Storage Device and Electrical Connection:** Hard disk and optical drive were installed, and power and data cables were properly connected. Front panel switches and LEDs were also connected, ensuring proper functionality.
  - **System Unit Assembly:** All connections were double-checked, and the system unit was securely assembled and covered.
4. **Input and Output Unit Connection:** The system unit was connected to the electrical power line, and the display unit (monitor) was also connected.
  5. **BIOS Modification:** The power switch was turned on, and access to the BIOS settings was gained. Date, time, processor, memory clock frequency, hard disk, CD/DVD interface, and boot device sequence were modified as required, and changes were saved.
  6. **Operating System Installation:** The operating system was connected to the PC drive, and installation was initiated. Hard disk partitioning, OS configuration, and device driver installation were performed, ensuring compatibility and functionality.
  7. **Workplace Shutdown and Cleanup:** The operating system was properly shut down, and the computer was switched off. Tools and equipment were cleaned and stored according to workplace standards, and waste materials were disposed of properly.

**Results and Discussion:** The assembled PC successfully booted up without any hardware or software issues. All components were properly

installed and configured, and the operating system was running smoothly. The lab session provided valuable hands-on experience in PC assembly and reinforced the importance of following safety protocols and best practices in computer laboratory settings.

**Conclusion:** In conclusion, the lab session effectively demonstrated the process of assembling a PC while emphasizing safety measures and proper procedures. Participants gained practical skills in selecting components, handling hardware, configuring the system, and ensuring functionality. This knowledge is invaluable for future endeavors in computer hardware maintenance and troubleshooting.

**Recommendations:** It is recommended to continue practicing PC assembly and troubleshooting to reinforce the skills learned in this lab session. Additionally, staying updated with the latest advancements in computer hardware and technology will further enhance proficiency in PC assembly and maintenance.

### **References:**

- Computer Laboratory Safety Guidelines
- PC Hardware Installation Manuals
- Operating System Installation Guides

### **Title: Lab Report on Installing and Configuring Custom Software in a Personal Computer**

**Objective:** The objective of this lab session was to install and configure custom software in a personal computer while adhering to international standards for electrical and electronic safety, client requirements determination, hardware and software installation, and user satisfaction documentation.

**Introduction:** Installing and configuring custom software in a personal computer is a crucial task that requires careful planning, execution, and adherence to safety protocols and standards. This lab aimed to

demonstrate the process of installing and configuring custom software in a personal computer while ensuring compliance with international standards for electrical and electronic safety and client satisfaction documentation.

## **Materials and Methods:**

1. **Electrical and Electronic Safety:** Safety measures were strictly observed throughout the lab session. PC equipment was isolated from electrical sources during assembly, electrostatic discharge precautions were taken, and personal protective equipment (PPE) was worn as required.

2. **Client Requirements Determination:**

- User requirements for software and hardware were documented.
- Client requirements were analyzed, and a list of PC components and their costs were determined.
- The components and budget were verified with the client, and approval was obtained.

3. **Hardware Installation:**

- Computer power was switched off before installing hardware components.
- Software containers were inserted appropriately into PC drives.
- Hardware components were connected to the appropriate ports, and the PC and peripherals were connected to the AC power line if external power was required.
- The system automatically detected the hardware, and device drivers were installed. Vendor-provided or internet-based

device drivers were installed and configured, ensuring correct functioning of hardware components.

#### **4. Software Installation:**

- Existing versions of software components were identified, and upgrades were performed if necessary.
- Fresh installations of software components were done, and changes or modifications to the system were documented.
- Installed or updated software components were checked to work correctly.

#### **5. User Satisfaction and Documentation:**

- User requirements for software and hardware were verified to ensure satisfaction.
- User satisfaction was recorded, and confirmation of the completion of work was documented.

**Results and Discussion:** The lab session successfully demonstrated the process of installing and configuring custom software in a personal computer while adhering to international standards for electrical and electronic safety, client requirements determination, hardware and software installation, and user satisfaction documentation. The installed software components functioned correctly, and the client expressed satisfaction with the work performed.

**Conclusion:** In conclusion, the lab session provided valuable hands-on experience in installing and configuring custom software in a personal computer while ensuring compliance with international standards and client satisfaction. Participants gained practical skills that are essential for effectively managing computer systems and meeting client needs.

**Recommendations:** It is recommended to continue practicing software installation and configuration to further enhance proficiency in computer

system management. Additionally, staying updated with the latest advancements in software technology and international standards will contribute to maintaining high-quality standards in computer laboratory practices.

### **References:**

- International Electrotechnical Commission (IEC) Standards
- Institute of Electrical and Electronics Engineers (IEEE) Standards
- ISO/IEC 27001:2013 - Information technology - Security techniques - Information security management systems - Requirements

### **Title: Lab Report on Using Peripherals (Printer, Scanner, and Projector) with PC/Laptop**

**Objective:** The objective of this lab session was to demonstrate the proper use and maintenance procedures for peripherals such as printers, scanners, and projectors with a PC or laptop while adhering to international standards for safety and efficiency.

**Introduction:** In modern computer laboratories and workplaces, peripherals play a vital role in enhancing productivity and facilitating various tasks. This lab aimed to familiarize participants with the proper installation, operation, and maintenance of common peripherals, including printers, scanners, and projectors, while ensuring adherence to world-class standards for safety and efficiency.

### **Materials and Methods:**

1. **Safety Measures:** Safety protocols were strictly followed throughout the lab session. Measures included identifying and taking necessary precautions to prevent electrical hazards, following manufacturer's instructions, and wearing appropriate personal protective equipment (PPE).

## **2. Printer Installation and Operation:**

- A printer was selected and placed in an appropriate location.
- External connectors, settings, and controls were identified and interpreted using the user manual.
- Necessary cables were connected, and driver software was installed or the printer was added to the system.
- The installed printer was tested to ensure proper functionality.
- Procedures for replacing the toner cartridge were followed, including selecting the appropriate cartridge, preparing it according to the user manual, removing the old cartridge, and installing the new one. A test print was performed to check print quality.

## **3. Scanner Installation and Operation:**

- Similar safety measures were applied for scanner installation and operation.
- The scanner was selected and placed correctly, with external connectors, settings, and controls identified and interpreted using the user manual.
- Necessary cables were connected, and driver software was installed or the scanner was added to the system.
- The installed scanner was tested to ensure proper functionality.
- Scanning procedures were demonstrated, including placing the document or picture properly, selecting the appropriate scanner, configuring settings, and saving the scanned file in the desired location.

## **4. Multimedia Projector Installation and Operation:**

- Safety measures were observed during the installation and operation of the multimedia projector (MMP).
- The MMP was selected and placed appropriately for proper projection, with external connectors, settings, and controls identified and interpreted using the user manual.
- Necessary cables were connected, and both the projector and PC/laptop were turned on properly.
- The connection between the PC/laptop and projector was ensured, with necessary configurations and settings adjusted as needed.
- Proper usage and maintenance procedures for the projector were demonstrated, including adjusting controls and settings, setting up the projector screen, focusing, using the projector, and turning off projection after a specific time to save the bulb's lifetime.

**Results and Discussion:** The lab session successfully demonstrated the proper use and maintenance procedures for peripherals such as printers, scanners, and projectors with a PC or laptop, while adhering to world-class standards for safety and efficiency. Participants gained practical skills that are essential for effectively utilizing these peripherals in various computing environments.

**Conclusion:** In conclusion, the lab session provided valuable hands-on experience in using and maintaining peripherals with a PC or laptop, contributing to enhanced productivity and efficiency in computer laboratories and workplaces. By following international standards and best practices, participants learned how to maximize the functionality and lifespan of these peripherals while ensuring safety.

**Recommendations:** It is recommended to continue practicing the use and maintenance of peripherals to reinforce the skills learned in this lab



session. Additionally, staying updated with the latest advancements in peripheral technology and safety standards will further enhance proficiency in computer laboratory practices.

### **References:**

- International Organization for Standardization (ISO) Standards
- Manufacturer's User Manuals
- Occupational Safety and Health Administration (OSHA) Guidelines

### **Title: Lab Report on Connecting a PC to an Existing Network**

**Objective:** The objective of this lab session was to connect a PC to an existing network following workplace health and safety regulations and adhering to international standards for network connectivity. The process included collecting existing network specifications, determining client requirements, connecting the PC to the network, assigning client machine addresses, and testing network connectivity.

**Introduction:** Connecting a PC to an existing network is a fundamental task in modern computing environments. This lab aimed to demonstrate the proper procedures for connecting a PC to an existing network while ensuring workplace health and safety and adhering to international standards for network connectivity. The process involved gathering existing network specifications, determining client requirements, establishing network connections, assigning machine addresses, and testing network connectivity.

### **Materials and Methods:**

1. **Workplace Health and Safety:** Workplace health and safety regulations were strictly followed throughout the lab session. Electrical isolation was maintained during the installation of network equipment, and measures were taken to avoid electrical hazards. Personal protective equipment (PPE) was worn as required for the work performed.

## **2. Collecting Existing Network Specifications:**

- Interviews were conducted with the person responsible for the existing network.
- Existing network topology, network protocol, IP addresses, and network address plan were reviewed and documented.

## **3. Determining Client Network Requirements:**

- Hardware and software components required for connecting the PC to the existing network were determined.
- The cost of components was determined, and approval was obtained from the client.

## **4. Connecting PC to the Existing Network:**

- Network hardware and hardware driver software were installed on the PC.
- The existing network transmission media (e.g., wireless or wired) was determined, and appropriate connections were made with the existing network infrastructure.

## **5. Assigning Client Machine Address:**

- An address was assigned to the client machine, either automatically or statically, including IP address, subnet mask, domain name, and host name if required.
- Network interface card (NIC) was disabled and enabled as necessary.

## **6. Testing Network Connectivity:**

- Network connectivity was tested using simple network connectivity tools like ping, local loop-back, and remote loop-back.

- If the loop-back test failed, the network interface card and connecting wire were tested for continuity.

**Results and Discussion:** The lab session successfully demonstrated the process of connecting a PC to an existing network while adhering to workplace health and safety regulations and international standards for network connectivity. By following the established procedures, the PC was successfully integrated into the existing network, and network connectivity was tested to ensure proper functionality.

**Conclusion:** In conclusion, the lab session provided valuable hands-on experience in connecting a PC to an existing network, contributing to enhanced productivity and efficiency in computing environments. By adhering to workplace health and safety regulations and international standards for network connectivity, participants gained practical skills essential for network administration and maintenance.

**Recommendations:** It is recommended to continue practicing network connectivity procedures to reinforce the skills learned in this lab session. Additionally, staying updated with the latest advancements in networking technology and standards will further enhance proficiency in computer laboratory practices.

**References:**

- Occupational Safety and Health Administration (OSHA) Guidelines
- International Organization for Standardization (ISO) Standards
- Network Administration Manuals and Guides