

COMPUTER CARE & COMPUTER LAB MANAGEMENT

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Notes to cover basic computer machine
[hardware & software] care and
computer lab management

INTRODUCTION COMPUTER MANAGEMENT

- ❑ Computers, like any other piece of electronic equipment, need special care and attention in order to perform properly and safely.
- ❑ This is done in the computer laboratory in observation of Computer Ethics and Integrity.

INTRODUCTION COMPUTER MANAGEMENT

- ❑ Computer Ethics Computer Ethics are human values and moral conduct for computers users. Also refers to the right or wrong behavior exercised when using computers.
- ❑ Computer Integrity refers to the loyalty or faithfulness to a principled set of laws regarding computer use.
- ❑ There are many tasks that should be done, and caution that should be taken to ensure proper working, and safety of all components of the computer system.

What is Computer Lab Management?

- ❑ Taking proper care of all hardware and software installations in the computer lab.
- ❑ Taking charge of the school computer laboratory so as to provide and maintain efficient service delivery of all hardware/software facilities.

What is a computer laboratory?

A computer laboratory is a:

- ❑ room or building where computers are stored and used for learning purposes
–[teaching & learning practical skills, internet surfing etc.
- ❑ place or room [building] where computers are kept, used to teach students practical skills like typing, computer repairs, programming etc.

The concerns:

- ❑ Data risks in the laboratory:
 - Data erasure.
 - Data theft.
 - Data manipulations.
 - Virus attack.
 - Erroneous deletion of files
 - Failure to save files
 - Computer may hang or freeze.
 - Poor file management
 - Information theft and piracy
 - Cracking software without permission
- ❑ Storage media may be destroyed or poorly cared for.
 - Virus attack?
 - Erroneous deletion of files
 - Failure to save files
 - Compatibility issues

The concerns:

- ❑ Computer security risks:
 - Theft of hardware parts
 - Burglary
- ❑ The general room environment:
 - Ventilation?
 - Dusty?
 - Power connection and safety -short circuits?
 - Leaking roofs?
 - Contamination of computer lab with food stuff/ water?
- ❑ Computer may hang or freeze.
- ❑ Other devices may fail to operate
- ❑ Inadequate consumables
 - printing materials
 - Back up requirements
 - Internet subscription

The concerns:

- ❑ Computer handling risks:
 - Touch and fall/ break?
 - Accidents? Eg fire outbreaks, hardware breakage etc
 - Software crash and bugs?
- ❑ System failure due to hardware/ software failure and short circuits
- ❑ Wear and tear management:
 - Hardware and
 - Software troubleshooting
- ❑ Power fluctuation and outage
 - Abrupt power shutdown due to black out
 - Unstable/ fluctuating power from mains
 - Power disconnection or interruptions- switch offs.

Computer security

Computer security risks include:

- ❑ Virus attack/ infections that corrupt files.
- ❑ Hard disk crash due to overheating, virus attack etc.
- ❑ Computer content related crimes such as:
 - Hacking
 - Software piracy
 - cyber terrorism
 - Spamming
 - cracking software without permission
 - production and use of obscene or offensive content
 - harassing other users over internet
 - fraud activities, in case the school runs a website.

Computer security

- ☐ Theft by robbers
- ☐ Information and software theft
- ☐ Change of system configurations
- ☐ Water and food in the computer lab?
- ☐ Poor quality cables
- ☐ Unstable power supply
- ☐ Unnecessary movement in the computer lab
- ☐ Trespass
- ☐ Physical hardware damage

The concerns handled?

To enforce computer laboratory security, is by:

-
- ❑ Use of burglar proof doors, windows and locking systems.
 - ❑ Avoid dust in the lab by regular cleaning- mopping, sweeping, dusting of shoes, woolen carpets etc.
 - ❑ Avoid carrying food items- water etc in the computer laboratory.
 - ❑ Avoid use of storage devices like flash disks that are infected with virus.
 - ❑ Disable ports to avoid carrying thru flash disks into ur computer.
 - ❑ Avoid un-authorized access by user passwords
 - ❑ Use of biometric devices for access control
 - ❑ Sensitizing computer users on computer etiquette

The concerns handled?

To enforce computer laboratory security, is by:

-
- ❑ Installing updated anti-virus and Use of updated antivirus to avoid loss of data or information and computer crash.
 - ❑ Proper ventilation and installing air conditioners and fans in the coputer lab
 - ❑ Scan all storage media like flash disks using updated anti-virus.
 - ❑ Ensure steady supply of power e.g use of UPS [Uninterruptible Power Supply], stand- by generators.
 - ❑ Use of Surge protector or surge suppressor: an appliance designed to protect electrical devices from voltage spikes.

The concerns handled?

To enforce computer laboratory security, is by:

-
- ☐ Employ security guards to keep the computer lab safe from strangers.
 - ☐ Software installations such as firewalls
 - ☐ Data encryption
 - ☐ Call back systems
 - ☐ Using screen savers
 - ☐ Copy rights and licensing certificates & agreements

Lab equipments & tools

- ❑ **Air conditioner** – regulate room temperature since computers generate a lot of heat.
- ❑ **Burglar proofing** – Protection mechanism against unauthorized access.
- ❑ **Woolen Carpet** – used as a shock and dust absorber.
- ❑ **Toolkit** – used to store necessary tools required for computer maintenance. a **blower** is a mechanical device, such as a fan, that blows dust from internal components of the computer system e.g monitors, CPU case etc. *Used to blow out dust that may have gotten into the computer system unit.*
- ❑ **Water proof covers** A waterproof is designed to protect computer hardware withstand various levels of exposure to moisture. Keyboard models can offer protection ranging from the occasional spill to total immersion in a liquid.
- ❑ **A gaseous fire extinguisher:** equipment which make use of mixtures of inert gases to prevent or control fire outbreaks in the computer labs.
- ❑ **Surge protector or surge suppressor** is an appliance designed to protect electrical devices from voltage spikes.

The computer laboratory Rules and Regulations

1. Computer components should be kept **dust-free**. Avoid smoking and exposing computers to dust.
2. The room should have special curtains and computers should remain covered using dust covers when not in use.
3. **Never try to remove the cover** on your computer or touch inside the system unit. There are many sensitive components. Instead, take it to a qualified technician.
4. A computer room **should have enough light** avoid eyestrain, and headaches.
5. **Radiation filter screens** should be fitted to reduce the light that reaches the eye.
6. **Standard furniture**: The table on which a computer is placed must be strong and wide enough to bear the weight and accommodate all the peripheral devices.

The computer laboratory Rules and Regulations

4. Never use your computer during a **storm**. The computer is connected to electricity and that means that lightning could be conducted to the computer.
5. Keep all **liquids and food** items away from your computer.
 - Liquids and food crumbs can cause rusting and corrosion and damage electronic circuits. Also, mixing liquids and electronic components can cause serious electrical shock!
6. **Proper shut down** of computers should be followed to avoid disk and system failure (avoid abrupt switching off).
7. Physically, be careful, **avoid knocking** and **dropping** any hardware to the ground as this could cause any of the delicate components to break or be damaged and stop working.

The computer laboratory Rules and Regulations

8. Avoid making hardware connections to **the motherboard when the computer is on** [i.e keyboard, monitor and mouse].
9. Don't bring **magnetic devices** to the lab. The computer has magnetic disks which can be spoilt if they come near other magnetic fields.
10. Handle **delicate storage devices with care**. Don't touch the inner surface of Compact disks and Floppy disks. Safely remove Flash disks from the system.
11. **Always Sit upright** to avoid muscle pains and back aches caused by poor sitting posture.
12. Be careful when using the internet. Do not **accept downloads** from Internet sites that you don't know and trust.
13. And never open an email attachment unless you know and trust the person who sent it.

Management Of Computers And Their Environments

After the establishment of the computer laboratory, a number of precautions should be observed to provide a safe conducive environment for teaching and learning as seen below:

1. Avoid direct sunlight and high Temperatures that may damage hardware components.
2. Always use surge protectors, Uninterruptible Power supply (UPS) or voltage stabilizers to ensure **steady power supply** to safeguard their system.
3. Protection against fires. A computer room should have **fire extinguishers** of carbon dioxide but not water or powder.
4. **Proper cable installation** and placement. Cables should be preferably along walls, avoiding danger of exposing the use to electric shock

Management of Computers and their Environments

- 4. **Burglar proofing** avoid unauthorized access to computer room. Fit strong locks, doors, windows and roofing. security should be good around computer room to avoid thefts.
- 6. **Overcrowding** of either machines or people should be avoided.
- 7. Always install **lightening conductors** to the computer laboratory to protect the machines and the users of the computers.
- 8. **Ventilation** should be good. Good aeration enables the computer to cool and hence avoids overheating.

Management of Computers and their Environments

1. Electrical noise is commonly generated by devices like Fluorescent lights of high frequency, Motors, Battery Chargers, Inverters, Radios, television, and Cell phones.
2. Avoid excessively **bright and flickering** computer monitors. The brightness of the computer monitors should be adjusted to avoid eye strain.
3. Minimize Electrical noise / interferences in the computer environment.
 1. Definition: ELECTRICAL NOISE refers to externally radiated signals or electrical that cause undesirable additions to the current voltage.

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The computer laboratory Rules and Regulations- handling

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b)Management of Computers and their Environments

- ✓ Always install **lightening conductors** to the computer laboratory to protect the machines and the users of the computers.
- ✓ **Dust control**. When setting up the computer laboratory, consider a location away from excessive dust.
- ✓ **Dump Control**: Humidity must be regulated in the computer laboratory to remain at an optimum 50%. Low humidity may cause static electricity to build and damage sensitive components. High Humidity of over 70% may cause rusting of the metallic parts of the computer system.

c) Maintenance of Computers in good working conditions

The following measures should always be carried out to keep computers in good working conditions:

1. **Regular servicing** should be done for hardware and software updates to ensure proper working conditions of the computers
 2. Computers require **special cleaning** even on the outside including hardware parts such as the mouse and keyboard to perform correctly.
 3. Always use **optimizer utilities** that modify programs to make computers to improve performance and make them to run more quickly.
-

c) Maintenance of Computers in good working conditions

1. Always use and regularly updated **antivirus software**. Viruses and worms are horrible computer-unfriendly programs that can crash your system and cause damage.
 2. Avoid **Installation Marathons**: Sometimes, installing a new program can cause conflicts within your system. It is therefore advisable to use the computer long enough to see how your system responds to the installation before installing the next program.
 3. Carry out **Disk Defragmentation** when necessary.
- A computer is a storehouse for large amounts of data and so, Having a disorganized computer slows down the processing time.

Terms associated with the computer lab personnel:

☐ **Computer technician:**

- A person employed to carry out minor hardware / software repairs – [troubleshooting].

☐ **Computer instructor:**

- A person employed to teach and guide learners & users on how to use computers and other related devices.

☐ **Systems administrator:**

- A modern professional responsible for the maintenance of computer hardware and software that comprises a computer network. Is the person in charge of the network.
- The individual responsible for the installation, management, and control of a network.

Terms associated with the computer lab personnel:

□ **Data base administrator:**

- A person who manages and supervises the company's database- updates/.

□ **Programmer:**

- A person who designs and create software to operate computers and for use as application software. Someone who develops application or system software. A programmer writes instructions to direct computer to process data into information.

□ **web master:**

- A technician who designs or maintains a website. A person who either: a) Creates and manages the information content and organization of a Web site;
- Manages the computer server. A person in charge of administrating Web site of the computer lab.

Booting a computer system

- ❑ When a computer is started up, the hardware will automatically load the operating system and start it running. This process is called **booting**. It can be of the two forms
- ❑ The Basic Input Output System (**BIOS**) is the program that gets run when a computer is first turned on.
- ❑ It is responsible for putting all the messages up on the screen before the Microsoft windows Logo comes up.
- ❑ It is responsible for checking that the components of the computer such as disk drives, hard disk drives e.t.c. are working and then for finding and loading the operating system.

Booting may take place in two forms:

- ❑ **Cold boot:** Turning on a computer from a powered-down/off state. Activated by switching on your computer system.
- ❑ **Warm booting:** This is restarting a computer that is already turned on via the Operating system. It is necessary when a program encounters an error (CTRL +ALT+DEL).
- ❑ Why a warm boot?
 - Installation of new hardware
 - Installation of new software
 - Computer freezing/ hanging/ software bug
 - Some components poorly fixed and connected

Trouble shooting: Machine/ software diagnosis

Servicing is done in order to:

- Improve efficiency of the computer and its peripheral devices
- To prevent or remove spyware and virus
- To enable system upgrading to better versions
- Allow system hardware and software installations
- Carry out hardware and software troubleshooting
- Replace tear and wear: both hardware [e.g hardware crash] and software configurations.
- Carry out diagnostics on computer operations
- Enable data recovery

software and computer lab management

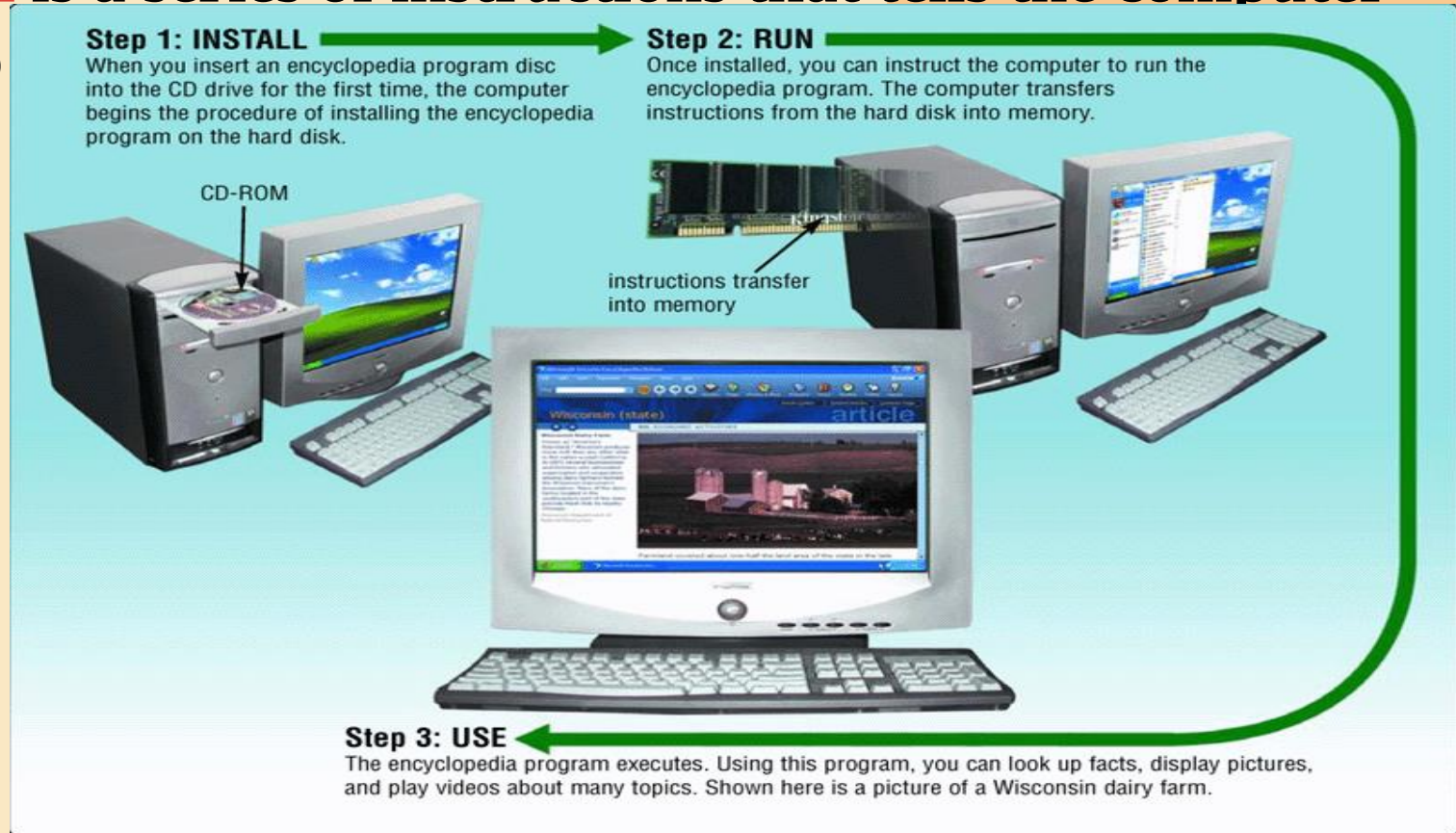
- A **program** is a series of instructions that tells the computer what to do



Computer Software

How do you install a **software** program?

A **program** is a series of instructions that tells the computer what to do



Computer Software

What is **system software**?

- **Programs that control the operations of the computer and its devices**

Operating System (OS)

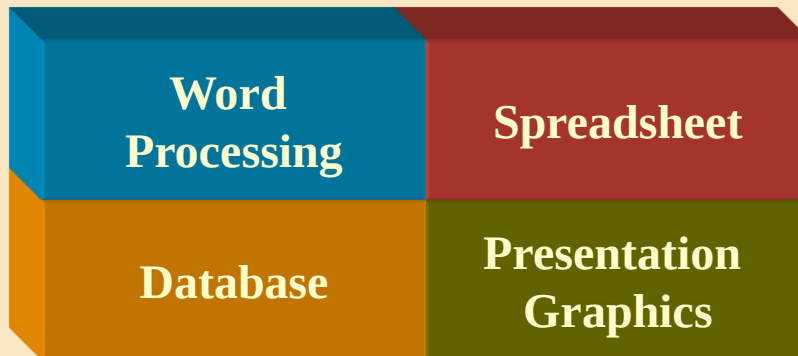
is a set of programs that coordinates all activities among computer hardware devices and allows users to run application software

Utility Programs allow the user to perform maintenance-type tasks usually related to managing a computer, its devices or its programs

Computer Software

What is **application software**?

- Programs that perform specific tasks for users



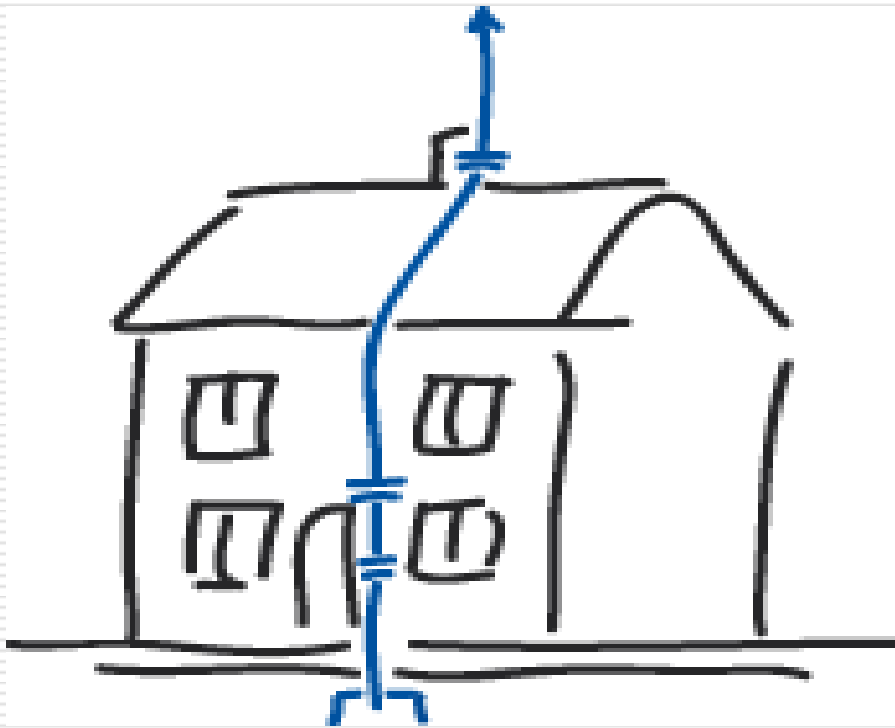
Some lab equipment:

- ☐ Fire extinguisher: ☐ Burglar proof:



Some lab equipment:

Lightening conductors



Dust covers

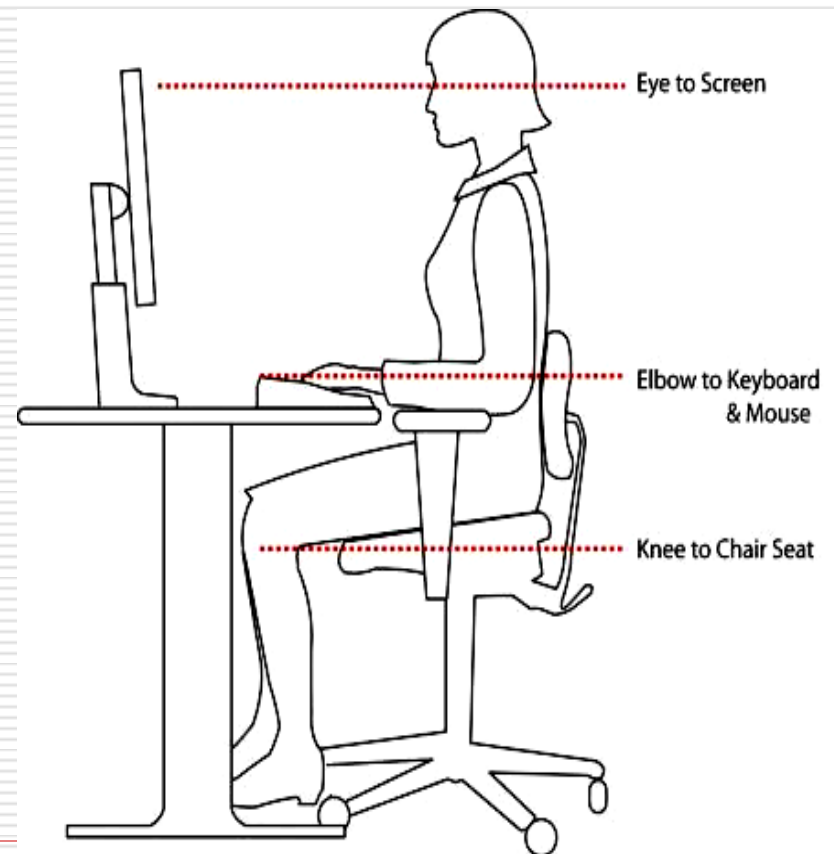


Sitting arrangement or posture

❑ Wrong



❑ Correct



QUERRIES/ QUESTIONS

Please email to:

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wafubasj@gmail.com

OR CALL:

**+256-774907256/
752841784/714907256/704608692**

Thanks for attending the lesson.

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ICT DEPARTMENT

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