# UNIT ONE

## START COMPUTER, SYSTEM INFORMATION AND FEATURES

### 1.1. Introduction to Computer basics

- A computer is a device that accepts information (in the form of digitalized data) and manipulates it for some result based on a program or sequence of instructions on how the data is to be Processed.
- A programmer is a person who inputs the data into the computer in order to get a desired final result..

Basic Parts Of A Computer

- **Input Unit** − Devices like keyboard and mouse that are used to input data and instructions to the computer are called input unit.
- **Output Unit** − Devices like printer and visual display unit that are used to provide information to the user in desired format are called output unit.
- **Control Unit** − As the name suggests, this unit controls all the functions of the computer. All devices or parts of computer interact through the control unit.
- **Arithmetic Logic Unit** − This is the brain of the computer where all arithmetic operations and logical operations take place.

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- **Memory** − All input data, instructions and data interim to the processes are stored in the memory.
- Memory is of two types – **primary memory** and **secondary memory**. Primary memory resides within the CPU whereas secondary memory is external to it.
  - Computer devices like keyboard, mouse, printer, etc. that we can see and touch are the **hardware** components of a computer.
  - The set of instructions or programs that make the computer function using these hardware parts are called **software**.
    - We cannot see or touch software. Both hardware and software are necessary for working of a computer.

✓ **Arithmetic operations** − Examples include calculations like addition, subtraction, differentials, square root, etc.

✓ **Logical operations** − Examples include comparison operations like greater than, less than, equal to, opposite, etc.

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## Characteristics of Computer

- **Speed** − typically, a computer can carry out 3-4 million instructions per second.
- **Accuracy** − Computers exhibit a very high degree of accuracy. Errors that may occur are usually due to inaccurate data, wrong instructions or bug in chips – all human errors
- **Reliability** − Computers can carry out same type of work repeatedly without throwing up errors due to tiredness or boredom, which are very common among humans.
- **Versatility** − Computers can carry out a wide range of work from data entry and ticket booking to complex mathematical calculations and continuous astronomical observations. If you can input the necessary data with correct instructions, computer will do the processing.
- **Storage Capacity** − Computers can store a very large amount of data at a fraction of cost of traditional storage of files. Also, data is safe from normal wear and tear associated with paper.

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## Booting

Starting a computer or a computer-embedded device is called booting. Booting takes place in following steps −

- Switching on power supply
- Loading operating system into computer's main memory
- Keeping all applications in a state of readiness in case needed by the user

- The first program or set of instructions that run when the computer is switched on is called BIOS or Basic Input Output System

- BIOS is a firmware, i.e. a piece of software permanently programmed into the hardware
  - If a system is already running but needs to be restarted, it is called rebooting. Rebooting may be required if a software or hardware has been installed or system is unusually slow.

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## Input devices

### Keyboard

- A simple device comprising keys and each key denotes either an alphabet, number or number commands which can be given to a computer for various actions to be performed
- It has a modified version of typewriter keys
- The keyboard is an essential input device and computer and laptops both use keyboards to give commands to the computer

### Mouse

- It is also known as a pointing device
- Using mouse we can directly click on the various icons present on the system and open up various files and programs.
- A mouse comprises 3 buttons on the top and one trackball at the bottom which helps in selecting and moving the mouse around, respectively
- In case of laptops, the touchpad is given as a replacement of the mouse which helps in the movement of the mouse pointer

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## Input devices

### Joy Stick

- It is a device which comprises a stick which is attached at an angle to the base so that it can be moved and controlled
- Mostly used to control the movement in video games
- Apart from a computer system, a joystick is also used in the cockpit of an aeroplane, wheelchairs, cranes, trucks, etc. to operate them well.

### Light Pen

- It is a wand-like looking device which can directly be moved over the device's screen
- It is light-sensitive
- Used in conjunction with computer's cathode ray tube

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## Input devices

### Microphone

- Using a microphone, sound can be stored in a device in its digital form
- It converts sound into an electrical signal
- To record or reproduce a sound created using a microphone, it needs to be connected with an amplifier

### Scanner

- This device can scan images or text and convert it into a digital signal
- When we place any piece of a document on a scanner, it converts it into a digital signal and displays it on the computer screen.

### Barcode Reader

- It is a kind of an optical scanner
- It can read bar codes
- A source of light is passed through a bar code, and its aspects and details are displayed on the screen

❑ All the devices mentioned above are the most commonly used input devices. Several other such types of equipment are used in different fields which can be counted as an input device.

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## Output Device

### Monitor

- The device which displays all the icons, text, images, etc. over a screen is called the Monitor
- When we ask the computer to perform an action, the result of that action is displayed on the monitor
- Various types of monitors have also been developed over the years

### Printer

- A device which makes a copy of the pictorial or textual content, usually over a paper is called a printer
- For example, an author types the entire book on his/her computer and later gets a print out of it, which is in the form of paper and is later published
- Multiple types of printers are also available in the market, which can serve different purposes

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## Output Device

### Speakers

- A device through which we can listen to a sound as an outcome of what we command a
- computer to do is called **a speaker.**
- Speakers are attached with a computer system and also are a hardware device which can be attached separately.
- With the advancement in technology, speakers are now available which are wireless and can be connected using BlueTooth or other applications

### Projector

- An optical device which presents an image or moving images onto a projection screen is called a projector
- Most commonly these projectors are used in auditoriums and movie theatres for the display of the videos or lighting
- If a projector is connected to a computer, then the image/video displayed on the screen is the same as the one displayed on the computer screen

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## Output Device

### Headphones

- They perform the same function as a speaker, the only difference is the frequency of sound
- Using speakers, the sound can be heard over a larger area and using headphones, the sound is only audible to the person using them Also known as earphones or headset.

# Computer components and types

**A computer** is an electronic machine that receives data from an input device, carries out arithmetic and logical processing according to a previously complied set of instructions, stores the proceed data, sends the processed data to an output device.

## Computer Hardware

**computer hardware:** refers to the physical components of a computer – basically, the parts and pieces that can be touched or moved, whether inside or outside of the computer (any part of a computer system you can see or touch).

- ✓ **A peripheral** is any piece of hardware attached to a computer, such as a printer.

# Ergonomics

## Ergonomics Definitions

- Can be defined as fitting the job to the worker. Not all workers are the same size and everyone has limits
- Ergonomics aims to design workstations, work processes, equipment, and tools to fit you. As a worker, it is important that you know how to adjust your office workstation to suit your needs.

## Ergonomics Risk Factors

- If a job does not fit a worker, the worker is more likely to be exposed to risk factors that may lead to musculoskeletal injury. The main ergonomic risk factors in the office include the following:

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- **REPETITION**: tasks or body movements carried out over and over again.
- **AWKWARD POSTURES**: body positions which deviate from neutral such as twisting your neck to view your monitor or reaching to use your mouse.
- **STATIC FORCES:** maintaining a position for a prolonged period of time (e.g. prolonged sitting, viewing the monitor with a bent neck, or reaching for the keyboard)

- Every person responds to ergonomic risk factors in different ways. For example, one worker may have symptoms of an injury while another worker performing the same tasks may not have symptoms.
- Ergonomic risk factors should be identified and reduced to lower the risk of injury for all workers.
- Even those workers who are not experiencing pain should take ergonomics seriously to reduce the risk of developing an injury.

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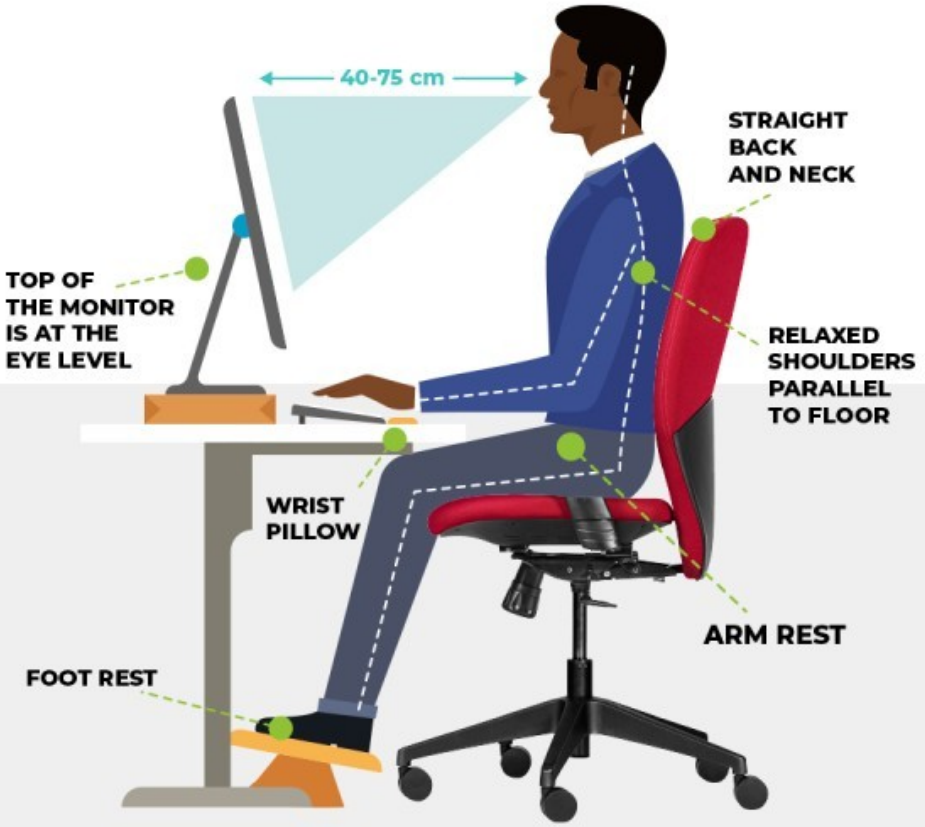
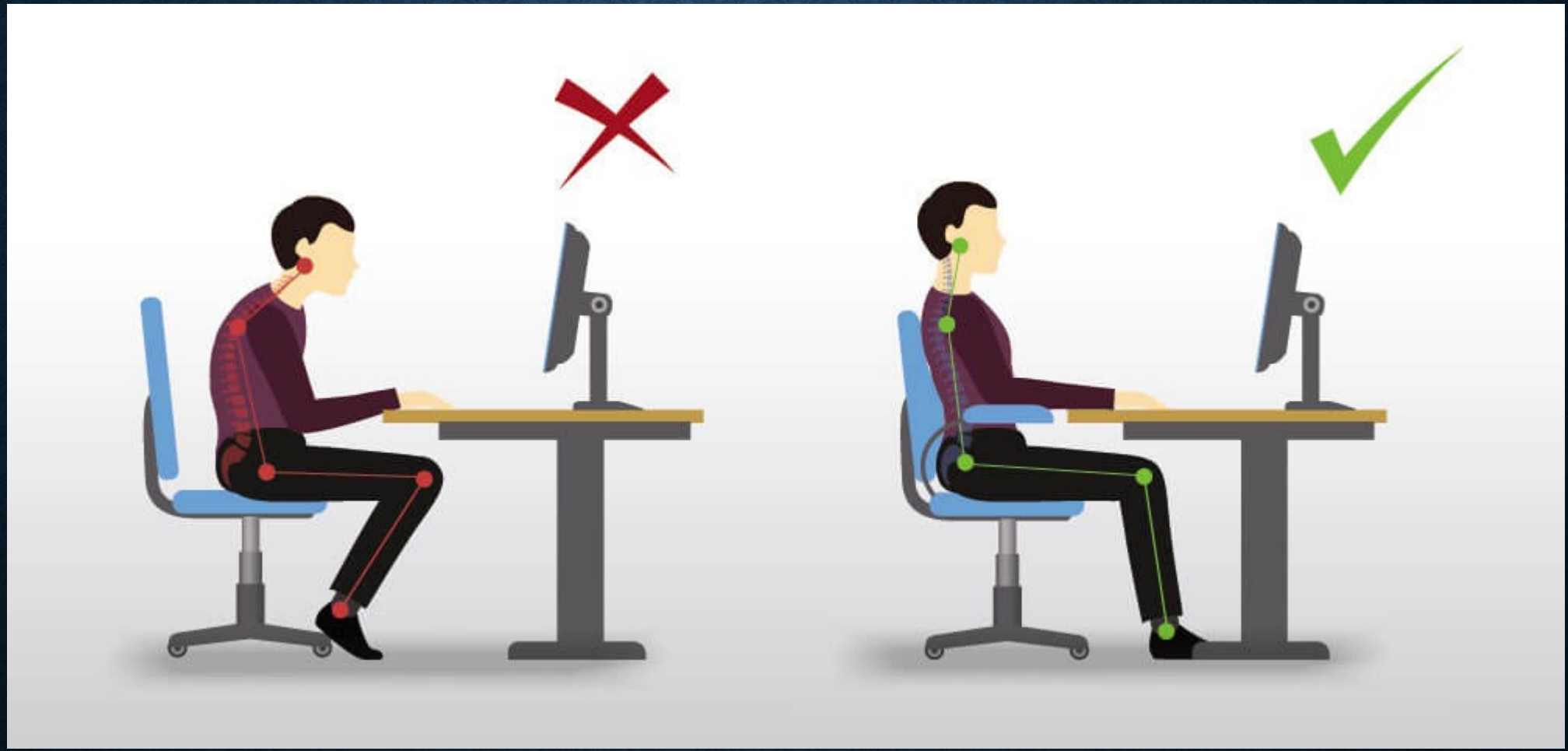
# Ergonomic Seating

## The Science of Comfort & Well-Being




A BLOG BUSTER WEEK

# While using  computer

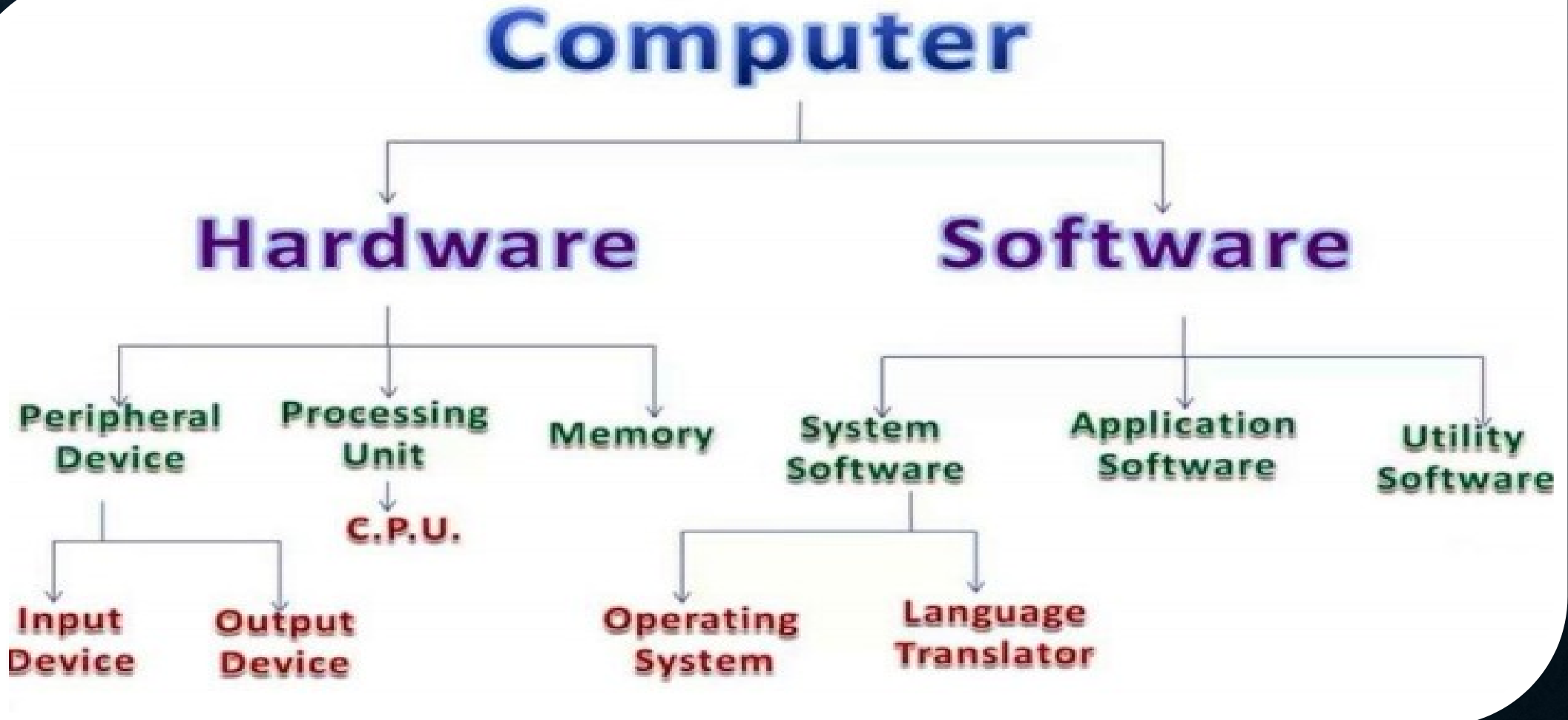


# Ergonomic chair

# Unit Two

## INSTALL AND ADMINISTER BASIC COMPUTER APPLICATIONS

Installing basic computer applications



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**Application Software** is that which is designed for the end-users and hence known as end-user programs.

- ✓ It employs the capabilities of a computer to execute the tasks that the user wishes to perform on a computer system.

Examples of application software are:

- ❖ Word Processing Software
- ❖ Presentation Software
- ❖ Spreadsheet Software
- ❖ Desktop Publishing Software
- ❖ Database Management Software

# Cont..

**System Software:** is computer software that manages and controls hardware in order to enable application software to perform its tasks.

- System software performs the functions like transferring data from memory to the disk or delivering text onto a display device.

**E.g.** Operating systems (Like Windows, Linux. etc)

**Utility Software** is a set of tools that helps configure, analyze and optimize computer resources to help users perform multiple tasks efficiently.

- ✓ Utility Software provides key functionality such as data compression, data recovery, disk defragmentation, computer resources and files management, system diagnosis, and more.

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- ✓ Utility software focuses on computer components such as hardware, software, operating system, and storage parts.

ex
- ✓ Antivirus
- ✓ Backup Software
- ✓ Data Synchronization Tools
- ✓ File Management System
- ✓ Disk Management Tools  etc..

## Common operations performed during software installations include creation or modification of:

- Shared and non-shared program files
- Folders/directories
- Windows registry entries
- Configuration file entries
- Environment variables
- Links or shortcuts

## Type of Installations

- **Silent installation**
  - ✓ Installation that does not display messages or windows during its progress.
- **Unattended installation**
  - ✓ Installation that is performed without user interaction during its progress.
- **Self-installation**
  - ✓ software that self-installs from the USB port
- **Clean installation**
- **Flat installation**
  - ✓ An installation of a program performed from a copy (called a *flat copy*) of its original me (mostly CDs or DVDs) to a hard drive, rather than directly from the media.
- **Network Installation**
  - ✓ An installation of a program from a shared network drive.

# Installing required device drivers.

**Driver** is software that a device uses to work with your PC. When your device isn’t working properly, you can check if the driver is installed correctly.

## Creating and administering user accounts

## Standard vs. administrator accounts

- **Standard :** Standard accounts are the basic accounts you use for normal, everyday tasks. As a Standard user, you can do just about anything you would need to do, such as running software or personalizing your desktop. Also, Parental Controls can be placed on Standard accounts.
- **Administrator:** Administrator accounts are special accounts that are used for making certain changes to system settings or managing other people's accounts. They have full access to every setting on the computer. Every computer will have at least one Administrator account

# Control panel

# UNIT THREE

## IDENTIFY THE EXISTING HEALTH TECHNOLOGIES

- Existing health technologies encompass a wide range of innovations that contribute to the improvement of healthcare delivery, patient outcomes, and overall health m



## ❑ Electronic Health Records (EHRs):

- ✓ EHR systems digitize patient health records, including medical history, diagnoses, medications, lab results, and more. Examples include Epic Systems, Cerner, and All scripts.

**Function:** EHRs are digital versions of a patient's medical history, including diagnoses, medications, allergies, immunizations, lab results, and imaging reports.
**Benefits:** Improved care coordination, reduced medical errors, easier access to medical information for patients and providers.

## ❑ Telemedicine and Telehealth:

- ✓ Telemedicine platforms enable remote consultations, diagnosis, monitoring, and treatment through video calls, messaging, and virtual visits. Examples include Teladoc Health, Amwell, and Doctor On Demand.

**Function:** Telemedicine allows healthcare professionals to deliver care remotely using video conferencing, phone calls, or other technologies.
**Benefits:** Increased access to healthcare for people in remote areas, improved convenience for patients, cost savings.

## Health Wearables and IoT Devices:

- ✓ Wearable devices such as fitness trackers, smartwatches, and IoT-enabled devices monitor vital signs, physical activity, sleep patterns, and more. Examples include Fitbit, Apple Watch, and continuous glucose monitors (CGMs)

**Function:** Wearable devices like smartwatches and fitness trackers can monitor various health parameters like heart rate, blood pressure, sleep patterns, and activity levels.
**Benefits:** Improved self-monitoring of health conditions, early detection of potential problems, motivation for healthy behaviors.

# Situations to use new technologies

## Healthcare:

- ✓ **Telemedicine:** Use telemedicine platforms for remote consultations, especially during emergencies or when patients cannot visit healthcare facilities.
- ✓ **Health Wearables:** Employ health wearables to monitor patients' vital signs, track medication adherence, and detect early warning signs of health issues.
- ✓ **AI in Diagnostics:** Implement AI-powered diagnostic tools to analyze medical imaging, pathology samples, and patient data for faster and more accurate diagnoses.
- ✓ **IoT in Healthcare Facilities:** Use IoT devices to track medical equipment, manage inventory, monitor environmental conditions, and enhance patient safety.

## Education :

- ✓ **E-Learning Platforms:** Utilize e-learning platforms and digital resources for remote education, distance learning, and personalized learning experiences.
- ✓ **Augmented Reality (AR) in Education:** Use AR applications for interactive learning experiences, simulations, and virtual field trips.
- ✓ **AI Tutoring Systems:** Implement AI-based tutoring systems for personalized feedback, adaptive learning paths, and real-time assessment.

## Business and Industry:

- ✓ **Automation and Robotics:** Integrate automation and robotics in manufacturing processes to increase production efficiency, reduce errors, and improve workplace safety.
- ✓ **Big Data Analytics:** Use big data analytics to analyze market trends, customer behavior, and business performance for data-driven decision-making.
- ✓ **Blockchain in Supply Chain:** Implement blockchain technology to improve transparency, traceability, and security in supply chain management.

## Finance and Banking:

- ✓ **Digital Banking:** Offer digital banking services, mobile payment solutions, and online financial platforms for convenient and secure transactions.
- ✓ **Fintech Solutions:** Utilize fintech innovations such as robo-advisors, peer-to-peer lending platforms, and blockchain-based financial services.
- ✓ **AI in Fraud Detection:** Use AI algorithms for real-time fraud detection, risk assessment, and compliance monitoring in financial transactions.

## Transportation and Logistics:

- ✓ **Autonomous Vehicles:** Deploy autonomous vehicles for transportation and logistics operations to improve efficiency, reduce costs, and enhance safety.
- ✓ **Route Optimization:** Use GPS tracking, AI algorithms, and predictive analytics for route optimization, fleet management, and supply chain logistics.
- ✓ **Smart Transportation Systems:** Implement smart transportation systems with IoT sensors, traffic management algorithms, and real-time data analysis for smoother traffic flow and reduced congestion.

## Components of electronic health record system

- **Patient Demographics:**


**Function:** Stores basic patient information such as name, date of birth, address, phone number, emergency contact details, and insurance information.

## ❖ Medical History:

**Function:** Includes details about past diagnoses, surgeries, immunizations, allergies, medications, and social history (e.g., smoking, alcohol use).

## ❖ Clinical Notes:

**Function:** Records of doctor visits, consultations, progress notes, physical exam findings, diagnoses, treatment plans, and medication orders.

# Lab Results:

- ✓ **Function:** Stores results from laboratory tests, such as blood tests, X-rays, imaging studies (CT scans, MRIs), and pathology reports.

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- ✓ **Function:** Allows doctors to electronically send prescriptions to pharmacies, improving accuracy and efficiency.

## Imaging and Diagnostic Reports:

- ✓ **Function:** Secure storage of digital X-rays, CT scans, MRIs, ultrasounds, and other medical images with associated reports.

# Benefits of EMR

- ✓ Improved Efficiency and Productivity
- ✓ Enhanced Patient Care and Safety
- ✓ Real-Time Information and Decision Support
- ✓ Improved Communication and Collaboration
- ✓ Patient Engagement and Empowerment
- ✓ Data Accuracy and Legibility
- ✓ Efficient Information Retrieval and Reporting
- ✓ Cost Savings and Revenue Optimization
- ✓ Compliance and Security

# UNIT FOUR