

The Cobot logo, featuring the word "Cobot" in a stylized, blue, 3D-effect font.

Rajat Soni

Edited by

The illustration depicts a black silhouette of a person sitting at a desk with a laptop, their hand resting on their chin in a thoughtful pose. The background is white and populated with numerous circular icons. These icons represent a wide array of disciplines: science (robot, brain/circuitry), art (paint palette, paint can), business (Microsoft Office suite icons - Word, Excel, PowerPoint), technology (Python logo, Raspberry Pi), nature (leaf), and general concepts (lightbulb, gear, magnifying glass). The overall theme is interdisciplinary learning or creative problem-solving.

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PREFACE

Digital transformation involves using digital technologies to transform the curriculum to become more efficient or effective. The idea is to use technology to transform and improve education process while playing a vital role in the progress of the country. **COBOT**, a comprehensive and exhaustive computer series for class **1** to **8** is an endeavour to equip students with necessary repertoire of technical skills and contribute effectively in shaping the digital world.

To make students ready to face the uncertain challenges and to stay tuned with the unprecedented journey of technology, **National Education Policy 2020** has suggested certain skills that should be taught to them. These skills will help them in becoming successful, innovative, adaptable, and productive human beings in the various fields such as Digital Literacy, Coding, Computational Thinking and Artificial Intelligence in the rapidly changing tech-savvy world. This series is based on **Windows 10** and **MS Office 2016** version with a glimpse of **Windows 11** which helps the students to learn the basics of the subject while simultaneously giving them opportunities for exploration and self-learning.

This book incorporates the following features to facilitate the learning process by accomplishing these objectives :

- Proper explanation of concepts is given in each chapter followed with interactive fun-based coding for all levels which empowers them not only to use technology but also to create it.
- **PLUGIN** gives the idea of the chapter at a glance.
- **FACT FOLDER** provide extra information about the concerned topics as well as will help the students to know about the historical development of computers with the flavour of pictorial data regarding inventors and discoverers. It also provides keyboard shortcuts to consolidate the learning process.
- **Fetching Time** includes the different kinds of activities to develop the observation power of the students.
- **THROWBACK** summarizes the whole chapter.
- **Bookmarks** covers the important terms covered in the chapter.
- **Exercise** at the back of the chapter are designed in accordance with an objective and subjective pattern to evolve the conceptual understanding of students.
- **Fun Venture** of every lesson provides an integrated approach to learning and adds value to the long-term growth of a child. It also includes discussion-based questions which helps the students to develop communication and analytical skills. A perfect blend of Sustainable Development Goals (SDGs) which encompass economic, social and environment dimensions.
- **HOTS** put advanced cognitive demand on the students which encourage them to think beyond literal questions.
- **Lab Tech** are given along with the guidelines to enhance the creativity of students.
- **HyperLink** provides online links to breakthrough technologies that are incorporated to access more information on the given topics.
- **Projects** have been added to encourage students to try out for themselves, and to instil in them the confidence before they embark on making their projects using a software.
- **National Cyber Olympiad (NCO)** questionnaire is included to promote awareness about the national level competition.

The amazing world of apps gives a new dimension to this journey of learning. An insight into the captivating branches of augmented and virtual reality, artificial intelligence, big data analytics and machine learning is included. We welcome constructive suggestions and valuable feedback to make this series more relevant, updated and useful for both the teachers and learners.

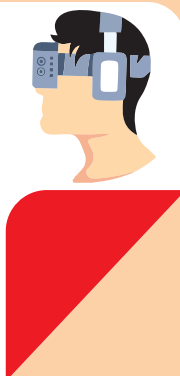
—Publishers

Objective of NEP 2020

NEP 2020 aims at reforming school education with equal emphasis on all subjects and soft skills while integrating them with new era technology-based learning to prepare the students for the leading role in future. This series has specially been designed to achieve the goal set by NEP 2020, CBA, NIPUN BHARAT and SAFAL 2021.

Spatial Intelligence

An ability to perceive and derive insight from visual data. This is an approach to judge space and visualize its different angles, shapes and fine details, along with recognizing and remembering complete visual scenes. This cognitive process creates an aptitude for understanding visual information in the real and abstract world.



Vocational Skills

It is a non-academic education which provides information on practical activities. These activities are thereby related to a specific trade, occupation or vocation. It prepares students for future job possibilities.



Life Skills



- It is all about working together to improve the overall results and enhancing psychosocial capabilities to deal with the situations and the people in an acceptable manner.

Environment & Health

Students should be aware of the need of a healthy environment and the importance of their own physical and mental health. A healthy environment helps in generating interest and increasing learning capabilities.



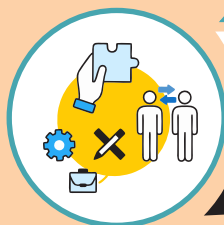
Experiential Learning

Experiential learning is the purposeful engagement with students in direct experience and focused reflection in order to increase knowledge, develop skills and clarify values.



Multidisciplinary Learning

A multidisciplinary curriculum is one in which the same topic is studied from the viewpoint of more than one discipline.



Conceptual Learning

This is to make sure that students are engaged in quality learning around key concepts and central ideas rather than using the traditional method of focusing on topics.





Creativity

Creativity is an ability to make things happen using skills and imaginations. It is the way of self-expression which can reflect and nurture children's emotional health. There is nothing more satisfying and fulfilling for children than to be able to express themselves openly and without judgment.



LEADERSHIP SKILLS

Students must be trained to be visionaries and are goal oriented. They should be able to see beyond the task at hand. They involve people and set the steps to achieve it for themselves and for the team.

Art Integration



A teaching-learning model which is based on learning 'through the arts' and 'with the arts'. It is an approach to engage in a creative process which connects an art form and another subject and to meet evolving objectives in both.



Communication is the act of giving, receiving and sharing information. Communication skills are needed to speak appropriately with a wide variety of people whilst maintaining good eye contact, demonstrate a varied vocabulary and respect different opinions.

Communication Skills

Critical Thinking



Critical thinking is at the forefront of learning, as it aids a student reflect and understand their points of views to reason better. It helps them base conclusions on facts rather than emotions and ability to go deep into details and examine the different aspects of an issue.

Computational Thinking



It is a problem solving process followed with an interrelated set of skills and practices for solving complex problems. It is a way to learn topics in many discipline by fully participating in a computational world with an approach that integrates across activities.

Scientific Temper

It is a way of life which uses the scientific method followed with an attitude of logical reasoning observing physical reality, questioning, testing, hypothesizing, analysing and communicating.



Problem Solving



Students learn to look at challenges from a fresh perspective. Therefore, they take more calculated risks by examining the questions to find the key ideas, doing the calculations, choosing an appropriate strategy and finding the answers.

Democratic and Human Values



India is a democratic country. Everyone should be treated equally and fairly regardless of their background. Students should learn to have respect and empathy for all human beings.

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COMPUTER AND ITS COMPONENTS



PLUG IN

- ✓ Computer System
- ✓ Characteristics of a Computer
- ✓ Computer Software
- ✓ Working of a Computer
- ✓ Computer Hardware

COMPUTER SYSTEM

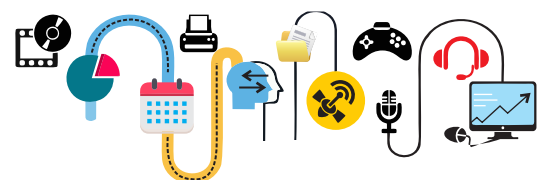
Computer is an electronic machine. It helps us to do our work easily and quickly. The word computer comes from the term 'compute' which means to calculate or count. A **system** is a combination of components which are used together for a specific task.

A **computer system** is made up of many parts. Each part of the computer performs a different task. The computer system is a combination of hardware and software that work together.

Look at the picture of a computer system below :



Computer-3





All the computer hardware attached to it are called **peripherals**.

WORKING OF A COMPUTER

A computer receives the **data** (input) from the user, manipulates it according to the specified rules (process) and converts it into **information** or **result** (output).

A computer working is based on the following principle :

Input → Process → Output

Input : The data and instructions that is given to a computer to do any specific task is called input.

Process : The computer then convert the raw data into meaningful information. This is called processing.

Output : After processing the data, computer gives the desired result which is known as output.

Let us now understand the input-process-output cycle with the help of an example :



Put fruits in
the juicer.
(INPUT)



Juicer blends the fruits
to make the juice.
(PROCESS)

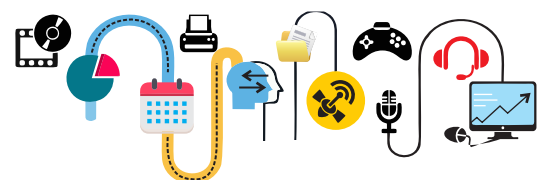


As a result, we
get fruit juice.
(OUTPUT)

This is how a computer works and it is called **IPO cycle**.



Computer-3





FACT FOLDER

Wrong input leads to wrong output. It is called **GIGO** – Garbage In, Garbage Out.

Fetching Time

Observe the images in each row. Number them in the correct order to obtain the result of the given process : [Conceptual Learning]

1. Freezing water to make ice



Ice



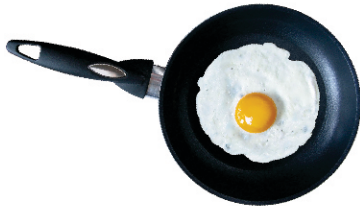
Filling tray



Freezing in refrigerator



2. Making poached eggs



Cooking the eggs



Poached eggs



Buying eggs



CHARACTERISTICS OF A COMPUTER

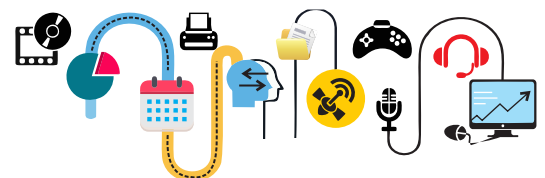
A computer is a useful machine. It has certain characteristics which are different from other electronic machines.

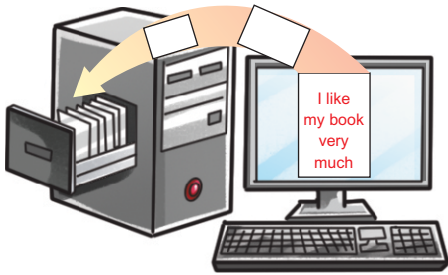
Speed

A computer work at a very high speed. It provides the output in seconds.



Computer-3





Storage

A computer has a large storage capacity. It can store large amount of data which can be reused anytime.

Versatility

A computer is a multi-purpose machine that performs many tasks and is used in almost all fields. It can perform a variety of task efficiently.



Diligence

A computer can work for long hours without getting bored or tired.

Reliability

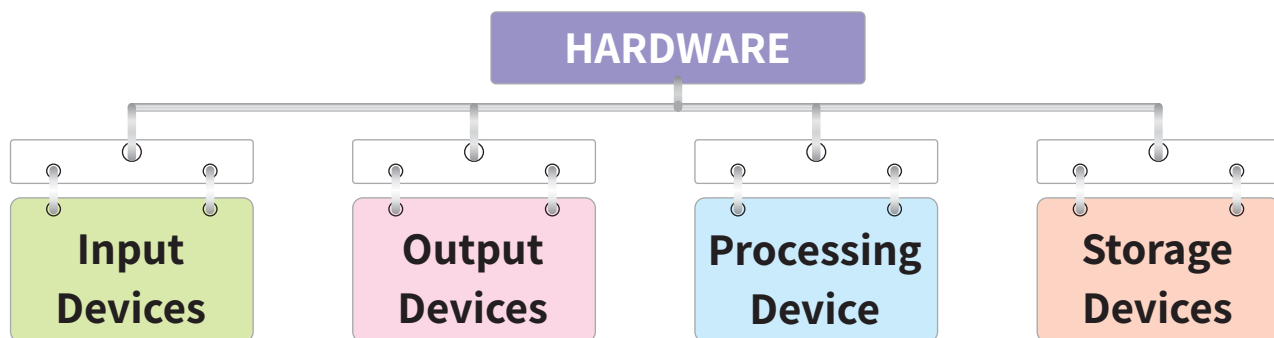
A computer always gives accurate results. It cannot make mistakes on its own. It gives correct answer.



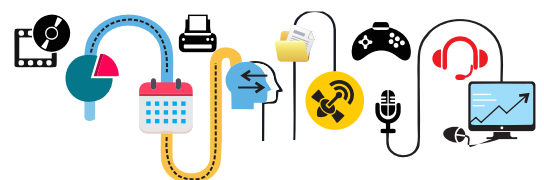
COMPUTER HARDWARE

The parts of a computer that we can see or touch are called **hardware**. All input, output, processing and storage devices form the hardware components of a computer system.

Let us divide the hardware components of a computer system :



Computer-3



Input Devices

The data or instruction we enter into the computer is called **input**. **Input devices** are those devices that allow us to enter data and instructions into a computer. Keyboard, joystick, scanner, mouse, microphone, web camera and light pen are some examples of input devices.



Microphone



Web Camera



Joystick



Scanner



Light Pen



Mouse



Keyboard



FACT FOLDER

A fingerprint scanner is a device used to identify a person by scanning their fingerprints.

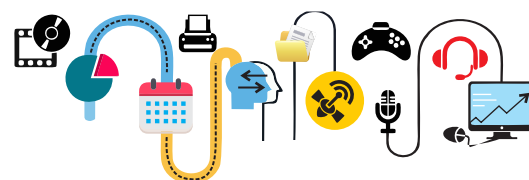
Processing Device

CPU stands for **Central Processing Unit**. It is called the **brain of the computer**. This processing device is responsible for processing data given by the user. This data works on input and sends the result to the output devices. The CPU is the chip which is placed inside the CPU box.

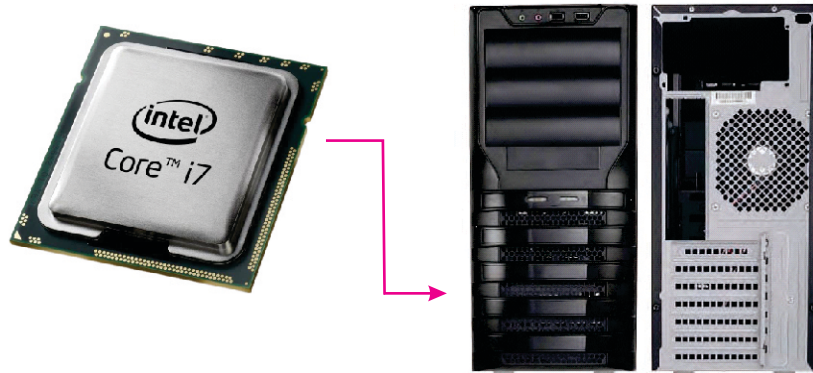
A CPU is made up of three main parts : ALU, CU and MU.

Arithmetic and Logical Unit (ALU) : ALU does all the calculations in a computer.

Control Unit (CU) : CU controls all the parts of the CPU. It gets data from the MU and sends them to the ALU.



Memory Unit (MU) : CPU stores all the data that need to be processed in the MU.



Output Devices

The computer components that help us to get the final result of our input are called **output devices**. After processing, computer shows the final result as an output. Monitor, printer, headphones, speakers, plotter, projector and smartboard are the examples of output devices.



Monitor



Plotter



Speakers



Smartboard



Printer



Projector



Headphones

Fetching Time

Write the name of the following computer devices :

[Conceptual Learning]

1.



2.



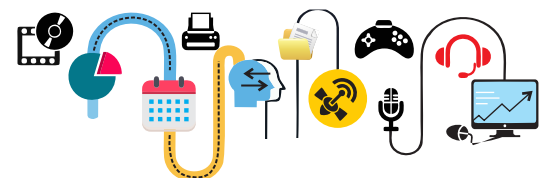
3.



4.



Computer-3





A smartboard is also known as an **electronic whiteboard**. It is a classroom tool that allows images from a computer screen to be displayed onto a classroom board using a digital projector.

Storage Devices

Storage devices or **storage media** are the devices that are used to store data. We may need to save our data for future use. Hard disk, CD, DVD and pen drive are the various types of storage devices.



Hard Disk



CD



DVD



Pen Drive

COMPUTER SOFTWARE

Hardware alone cannot perform any function. It has to be given some instructions. A set of instructions given to the computer to perform a specific task is called a **computer program** or **software**.

Software is created through the process of programming. We cannot touch or feel a software. Software works as a manager between computer hardware and users. Without software, the hardware would not be functional.

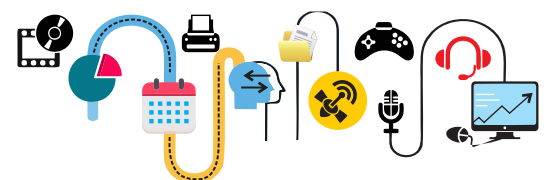
There are two types of software—System Software and Application Software.

System Software

System software is an in-built software that controls and manages all the activities of a computer. It also runs application software. Operating System (OS) is an example of the System Software. OS is the most important program that runs various other applications on the computer.



Computer-3



Microsoft Windows is the most popular operating system used by people across the world. Some of the popular operating systems are :



Windows

UNIX

Unix



Linux



macOS

Application Software

The software that allows user to perform some specific type of work is called an **application software**. For example, if we have to write a paper, we might use the application software program—Microsoft Word. To play a song, we need to run the Windows Media Player which is specifically designed to play movies and songs.

MS Word : This program is used to create, edit and save documents.



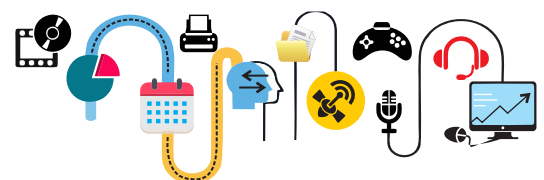
MS Excel : This program is used for doing calculations, making graphs, etc.

MS Paint : This program is used to draw and paint with the mouse.



THROWBACK

- ❖ The word computer comes from the term 'compute' which means to calculate or count.
- ❖ The working of a computer is based on IPO cycle.
- ❖ Speed, storage, versatility, diligence and reliability are the various characteristics of a computer.
- ❖ There are four groups of hardware components—Input devices, Processing device, Output devices and Storage devices.
- ❖ CPU is the brain of a computer which performs all the functions.
- ❖ Without software, the hardware would not be functional.





IPO cycle : The cycle followed by a computer system wherein it takes the input, processes it and then gives the output.

Diligence : Working for long hours without getting tired.

Reliability : The degree to which the result can be accurate.

System : It is a combination of components which are used together for a specific task.

Hardware : The parts of a computer that we can see or touch.

Software : A set of instructions given to the computer to perform a specific task.

exercise

A. Tick (✓) the correct option :

1. _____ can store large amount of data.

a) Computer ☐

b) Television ☐

c) AC ☐

2. Computers can solve big calculations in :

a) few hours ☐

b) few seconds ☐

c) few minutes ☐

3. Which of the following is used to input data to the computer ?

a) Monitor ☐

b) Joystick ☐

c) Speakers ☐

4. It is the brain of the computer.

a) Monitor ☐

b) Printer ☐

c) CPU ☐

5. Which of the following is software ?

a) Windows ☐

b) Pen drive ☐

c) Smartboard ☐

B. Fill in the blanks :

Light pen System software Speakers tired accurate

1. Computer never gets _____.

2. A computer always gives _____ results.



Computer-3



3. _____ is used to enter data into a computer.
4. _____ are used to hear the sound from a computer.
5. Operating system is an example of _____.

C. Write one word for the following characteristics processed by a computer :

1. Storing large amount of data _____
2. Never gets tired _____
3. Ability to do various tasks at the same time _____
4. Performing its task very fast _____

D. Name the part of the computer that are used for the following tasks :

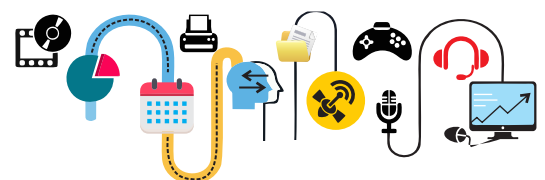
1. To chat with your friend face to face. _____
2. To scan your identity card into the computer. _____
3. To print a chapter on the paper. _____
4. To play games without keyboard and mouse. _____

E. Answer the following questions :

1. Write any two characteristics of computer.
2. What do you understand by IPO cycle on which a computer works ?
3. What do you mean by hardware ?
4. What is the role of CPU ?
5. What is computer software ?
6. What is an application software ?

Fun Venture

- A.** Observe your mother while cooking and identify the inputs, the process and the output. Make a flowchart on an A4 size sheet. [Experiential Learning]



B. Classify the following devices under the given heads in the table :

Joystick	Webcam	DVD	Keyboard	[Critical Thinking]
Printer	Speakers	Smartboard	Hard disk	
CD	Pen drive	Plotter	Mouse	

INPUT DEVICES	OUTPUT DEVICES	STORAGE DEVICES

HOTS

What do you mean by hard copy and soft copy ?

[Critical Thinking]



- A.** Type the characteristics of a computer in a WordPad. [Multidisciplinary Learning]
- B.** Go to your computer lab. Observe the devices that are used for input, process, output and storage. [Experiential Learning]

HyperLink

Android is an operating system for mobile devices such as smartphone and tablet. It has been developed by the **Open Handset Alliance** under the guidance of Google. All the versions of Android OS (before Android 10) were named after desserts, such as Kitkat, Lollipop, Oreo, etc.

Follow the link

(<https://officialtechsupport.com/abcd-android-cupcake-nougat>) to read the ABCD of Android.

[Multidisciplinary Learning]



Computer-3

