



## EVERSHINE PUBLISHERS

(Educational Publishers)

Soni House, WZ-348

Nangal Raya, New Delhi - 110046

Phone : 9868877950, 9560408043

Email : [evershinepub@gmail.com](mailto:evershinepub@gmail.com)

© Reserved with Publishers

All rights reserved with the Publishers. No part of this publication can be reproduced or transmitted in any form or by any means, electronically or mechanically, including photocopying, recording or any information, storage or retrieval system, without prior permission in writing from the publisher or in accordance with the provision of the Copyright Act 1956 (as amended). Any person who does any unauthorised act in relation to this publication will be liable to criminal prosecution and civil claims for damages.

This book is meant for educational and learning purpose only. Every effort has been made to avoid errors and omission in this book. Any error or omission noted may please be brought to the notice of the publishers, which shall be taken care of in the next edition of this book. It is notified that neither the publisher nor the author, designer or printer will be responsible for any mistake or omission in this book.

*Designed by :*

**Graphic Zone Books Pvt. Ltd.**, New Delhi

E-mail : [graphiczone.top10@gmail.com](mailto:graphiczone.top10@gmail.com)



# 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.

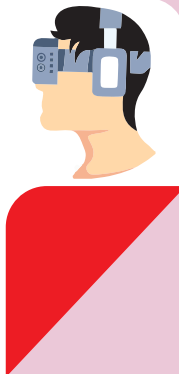
–Publishers

# 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.



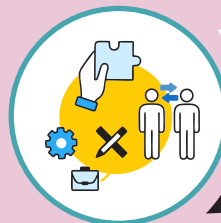
## Experiential Learning

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.

## 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.



## 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.



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.

# CONTENTS

1.	Evolution of Computers	7
2.	Introducing Windows 11 OS	18
3.	Advanced Features of Word 2016	31
4.	Working in PowerPoint 2016	47
5.	MS Excel 2016	61
6.	Internet and E-mail	78
7.	Scratch 3 Programming	88
8.	Programming Basics	105
9.	Digital Learning Platforms	114
10.	Domains of Artificial Intelligence	122
	<b>Project-1</b>	<b>133</b>
	<b>Project-2</b>	<b>134</b>
	<b>Cyber Olympiad</b>	<b>135</b>



# EVOLUTION OF COMPUTERS

PLUG IN

- Early Calculating Devices
- Generations of Computers
- Latest Technological Advancements
- First Electronic Computer
- Characteristics of Computers

Computers are one of the greatest inventions by humans. Computers play an important role in our everyday life. The concept of counting started with the evolution of human beings. Since ancient times, people have invented tools for calculations. Early man tied knots in a rope and carved marks on clays to keep records. They also used to count with the help of fingers, toes, stones, sticks, pebbles, bones, etc., and store information by marking on walls, rocks, etc. Initially built for doing complex mathematical calculations, the bulky computers of the past have evolved into machines that sit on almost every desktop and are carried in our pockets.



Fingers



Stones



Sticks



Bones

*Let us trace the evolution of computers by learning about the early calculating devices :*

## EARLY CALCULATING DEVICES

### Abacus

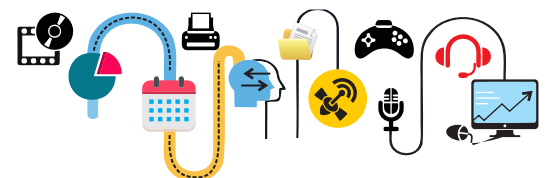
Abacus was the earliest counting device invented about 5,000 years ago by the **Chinese**. It consists of a frame of rods, with easily sliding beads of them. Simple calculations like addition and subtraction were performed by sliding the beads on the rack to the left or to the right.



Abacus



Computer-5



## Napier's Bones

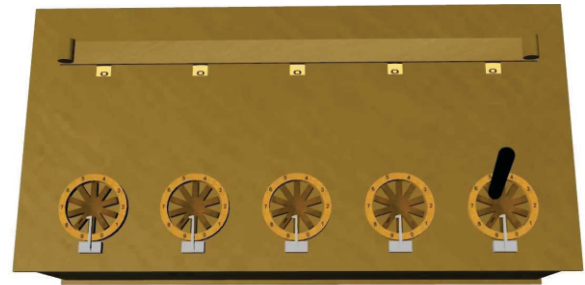


Napier's Bones

Napier's bones or simply Napier's rods, was invented by Scottish mathematician **John Napier** in 1616. It consists of nine bones or sticks with numbers marked on them. In this calculating device, the placement of sticks is done in such a way that the product and quotient of large numbers can be obtained easily.

## Pascaline Calculator

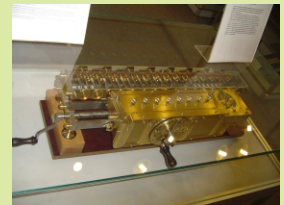
**Blaise Pascal**, a French mathematician invented the mechanical calculator known as **Pascaline** in 1642. It was the world's first mechanical adding machines that used moving parts such as gears to add and subtract. This device used a series of toothed wheels. Pascaline could handle numbers up to 999,999.999.



Pascaline Calculator

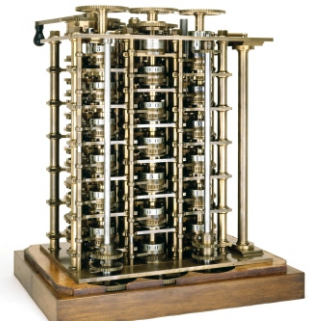


In 1672, the German mathematician philosopher named **Gottfried Wilhelm von Leibniz** designed a calculating machine called the **Step Reckoner**. It expanded on Pascal's ideas and did multiplication by repeated addition and shifting.



## Difference Engine

**Charles Babbage** designed the first automatic calculating engine called the **Difference Engine** in the 1800s. It could perform complex mathematical calculations.



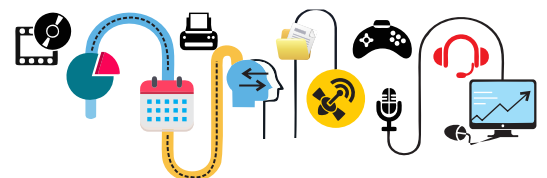
Difference Engine

## Analytical Engine

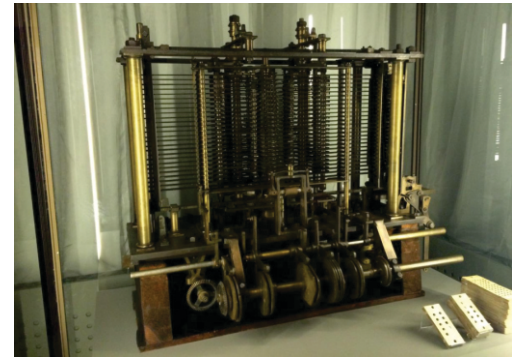
**Analytical Engine** is known as the world's first special-purpose mechanical computer and set the blueprint for the modern computer. It was designed by famous English mathematician named **Charles Babbage** in 1833. Charles use brass gears to



Computer-5



build the Analytical Engine. This machine could store 1000 numbers of 50 decimal digits each. The machine could perform all arithmetic operations such as addition, subtraction, multiplication, division and many more functions.



Analytical Engine



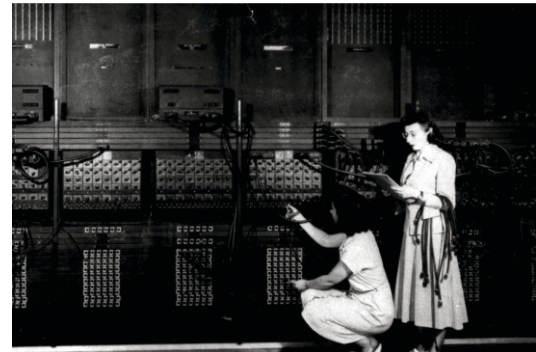
**Herman Hollerith**, an army engineer, built a machine called the Tabulating Machine in 1890 which read and stored data from punched cards. Later in 1924, his company became a part **International Business Machines (IBM) Corporation**.

## FIRST ELECTRONIC COMPUTER

### ENIAC

John Mauchly and John Presper Eckert together built the first successful electronic digital computer known as **ENIAC (Electronic Numerical Integrator And Computer)**. It was made operational in 1946.

ENIAC was the first electronic computer which was used for general purposes like solving numerical problems. The first task done by ENIAC was performing calculations for the manufacturing of a hydrogen bomb.



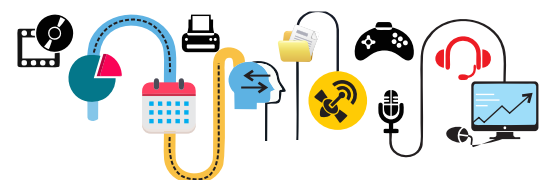
ENIAC

### UNIVAC



In 1951, **John Mauchly and John Presper Eckert** developed another successful computer known as **UNIVAC (Universal Automatic Computer)**.

The UNIVAC is the first computer which can handle both alphabetic and numerical data to reach full scale operation so far, its operating record and a review of the types of problems to which it has been applied, provide an interesting milestone in the ever-widening field of electronic digital computers.



## Personal Computer

In 1981, IBM introduced its first **Personal Computer (PC)** and in 1984, they introduced the advanced version called **PC-AT (Personal Computer – Advanced Technology)**. These computers were smaller in size, faster in speed, more accurate and reliable. There are several types of personal computers available nowadays. Desktop computer, laptop computer and tablet computer are some of its examples.




Personal Computer

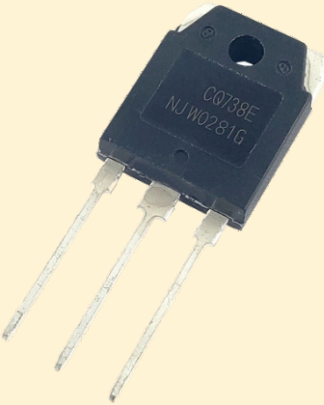
## GENERATIONS OF COMPUTERS

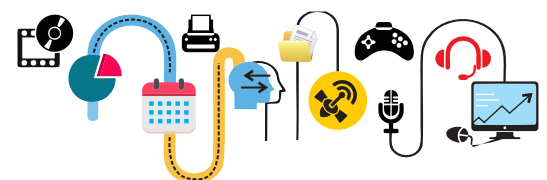
In terms of computer, **generation** implies significant development and growth in computer technology. The timeline of the history of computers can be studied with reference to five generations of computers. The different computer generations are categorized according to their technology and features.

### First Generation Computers (1940 to 1956)

Technology	Features	Examples
Vacuum tubes 	<ul style="list-style-type: none"> <li>input based on punched cards and paper tape</li> <li>occupies a lot of space</li> <li>expensive to operate</li> <li>very slow speed</li> </ul>	ENIAC, EDVAC, EDSAC, UNIVAC-I and MARK-I

### Second Generation Computers (1956 to 1963)

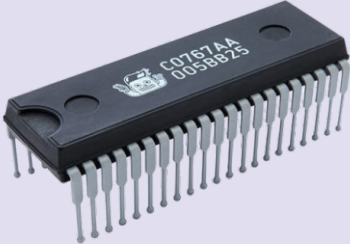
Technology	Features	Examples
Transistors 	<ul style="list-style-type: none"> <li>smaller and faster as compared to first generation computers</li> <li>programming languages COBOL and FORTRAN were used at this time</li> <li>cheaper to maintain as compared to first generation computers</li> </ul>	UNIVAC-III, IBM 1401, IBM 700 and NCR 300 series






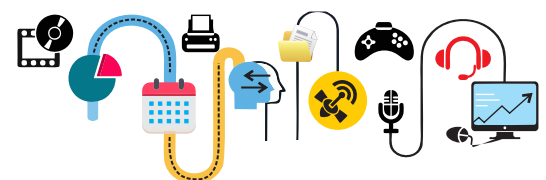
In 1944, Prof. Howard Aiken built the first electro-mechanical computer named Mark-I.

### Third Generation Computers (1964 to 1971)

Technology	Features	Examples
Integrated Circuits (ICs) 	<ul style="list-style-type: none"> <li>faster, efficient and cheaper than second generation computers</li> <li>used operating system, allowing many different applications to run at the same time</li> <li>users communicated through computers using peripheral devices</li> </ul>	IBM 360, ICL 1900, UNIVAC 1108 and UNIVAC AC 9000

### Fourth Generation Computers (1972 to Present)

Technology	Features	Examples
Microprocessors 	<ul style="list-style-type: none"> <li>smaller, energy efficient and more reliable as compared to third generation computers</li> <li>very large storage capacity</li> <li>extremely powerful and can process millions of instructions in a fraction of a second</li> <li>modern day computers can be linked together to form computer networks called 'Internet'</li> </ul>	IBM PC (1981) and Apple Macintosh (1984)






## FACT FOLDER

Microprocessors were/are developed by combining together thousands of ICs onto a single silicon chip using **VLSI (Very Large Scale Integration)** and **ULSI (Ultra Large Scale Integration)** technology. Intel introduced the Intel 4004, the first microprocessor in 1971. In 1983, IBM introduced the PC-XT, which had more memory and space. In 1985, Microsoft released the first version of Microsoft Windows.

### Fifth Generation Computers (Present and Beyond)

Technology	Features	Examples
Popular technology includes Artificial Intelligence, Quantum computation, Nanotechnology, and Parallel processing. 	<ul style="list-style-type: none"> <li>❖ high capability and large memory capacity, faster and multitasking</li> <li>❖ the power of Human Intelligence and reasoning</li> <li>❖ able to understand natural language (spoken words) and respond using different types of sensors</li> </ul>	Robots and Humanoids

### Fetching Time

Complete the following table :

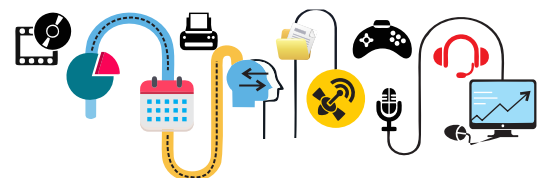
[Conceptual Learning]

Generation	Technology	Features	Examples
		occupies a lot of space	
Second			
	Integrated Circuits (ICs)		
			Robots and Humanoids



Computer-5

12



## CHARACTERISTICS OF COMPUTERS

*A computer has certain characteristics that make it different from other machines. They are as follows :*

**Speed :** All the operations can be performed very fast just because of its speed which otherwise take a long time.

**Accuracy :** A computer always gives accurate results. If the correct data is fed into the computer, it produces correct results.

**Diligence :** A computer does not get tired. It can keep working for long hours, and can do the same work repeatedly with accuracy and speed.

**High Storage :** Today, computers are capable of storing large amounts of data and programs which can be used in future. This data can be retrieved as and when required.

**Versatility :** Multitasking is one of the major advantages of computer. Person can perform variety of tasks from complex mathematical problems to performing simple task.

**Connectivity :** Computers all over the world have been connected to form a global network called the Internet. This has enabled people to communicate and search for information easily.

**Data Security :** Protecting digital data is known as **data security**. Computer provides security from destructive forces and from unwanted actions performed by unauthorized users like cyberattack or access attack.

## LATEST TECHNOLOGICAL ADVANCEMENTS

### Wearable Technology

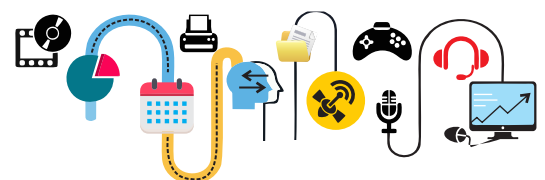
From watches to rings, we are in the midst of an electronic wearable revolution. Wearable gadgets are the latest buzz word in the field of technology. Most of the wearable gadgets available nowadays are wrist worn but there are others that can be hung around the neck or can be worn as a piece of jewellery.

*Following are some of the most popular gadgets in this category :*

**Fitness Trackers :** Fitness trackers are wristbands or watches that keep a count of the number of steps we take each day and the calories we burn. Some may also



Computer-5



monitor physical activity and vital signs followed with parameters such as pulse rate and heart rate. Example : Fitbit.



Fitness Tracker

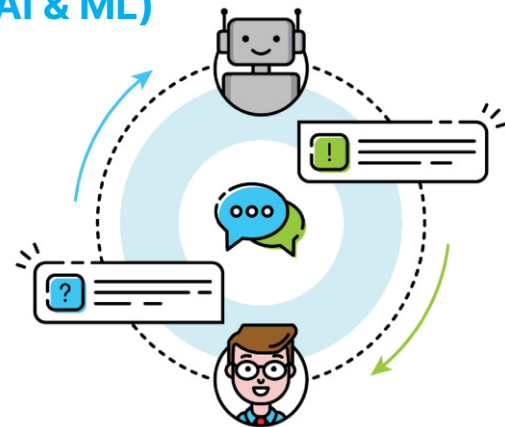


Smartwatch

**Smartwatches :** Smartwatches can be connected with smartphones and keep us updated with notifications and messages. We can make calls, send message, read news and listen to music using a smartwatch. They may also include functions of fitness trackers. Example : Apple Watch.

## Artificial Intelligence and Machine Learning (AI & ML)

A lot of developments are happening which has led to the development of improved technology used in chatbots, voice-based assistants (Siri, Alexa, etc.) and robots. AI-driven platforms have been bounced to automate their business and develop at breakneck speed.

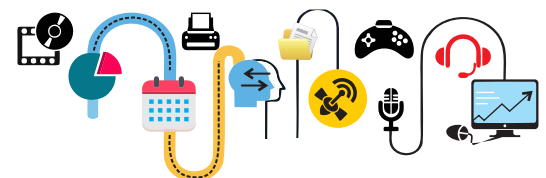


## THROWBACK

- ❖ Abacus was the earliest counting device invented about 5,000 years ago.
- ❖ Blaise Pascal invented a mechanical calculator known as Pascaline that used moving parts such as gears to add and subtract.
- ❖ Charles Babbage designed the first automatic calculating engine called the Difference Engine in the 1800s.
- ❖ Analytical Engine is known as the world's first special-purpose mechanical computer.
- ❖ ENIAC was the first electronic computer which was used for general purposes like solving numerical problems.
- ❖ IBM introduced the first Personal Computer in 1981.
- ❖ The development of computer technology took place in five distinct phases.
- ❖ Speed, accuracy, diligence, high storage, versatility, connectivity and data security are the certain characteristics of a computer.
- ❖ AI-driven platforms have been bounced to automate their business and develop at breakneck speed.



Computer-5





**Transistor** : A basic electrical component that alters the flow of electrical current.  
**Integrated Circuits (ICs)** : A chip with collection of many electronic components fabricated on a small piece of semiconductor material.  
**Microprocessor** : An electronic component that is used by a computer to do work.  
**Data Security** : Protecting digital data.  
**Artificial Intelligence (AI)** : A branch of computer science that deals with making the computers think and take smart decisions.

## Exercise

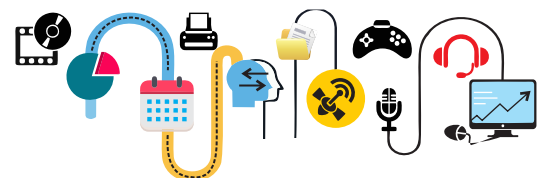
### A. Tick (✓) the correct option :

- The earliest counting device invented about 5,000 years ago by the Chinese.
  - Abacus
  - Pascaline Calculator
  - Analytical Engine
- It consists of nine bones or sticks with numbers marked on them.
  - Analytical Engine
  - Napier’s Bones
  - Difference Engine
- He developed UNIVAC.
  - Herman Hollerith
  - John Napier
  - John Mauchly
- Name the component that was used in the fourth generation of computers.
  - Integrated Circuits
  - Transistors
  - Microprocessors
- We can make calls, send messages, read news and listen to music using it.
  - Smartwatch
  - Fitness Tracker
  - Digital watch

### B. Fill in the blanks :

data security    Third    Second    Herman Hollerith    Blaise Pascal

- \_\_\_\_\_ invented the mechanical calculator in 1642.
- \_\_\_\_\_ invented Tabulating machine in 1890.
- The \_\_\_\_\_ generation computers were developed by using transistor technology.



4. The period 1964 to 1971, roughly considered as the period of the \_\_\_\_\_ generation of computers.
5. Protecting digital data is known as \_\_\_\_\_.

**C. Match the following :**

- |                      |                        |
|----------------------|------------------------|
| 1. First Generation  | a) Microprocessors     |
| 2. Second Generation | b) Nanotechnology      |
| 3. Third Generation  | c) Vacuum tubes        |
| 4. Fourth Generation | d) Integrated Circuits |
| 5. Fifth Generation  | e) Transistors         |

**D. Answer the following questions :**

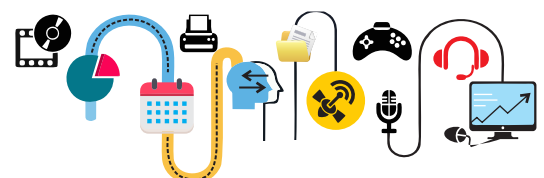
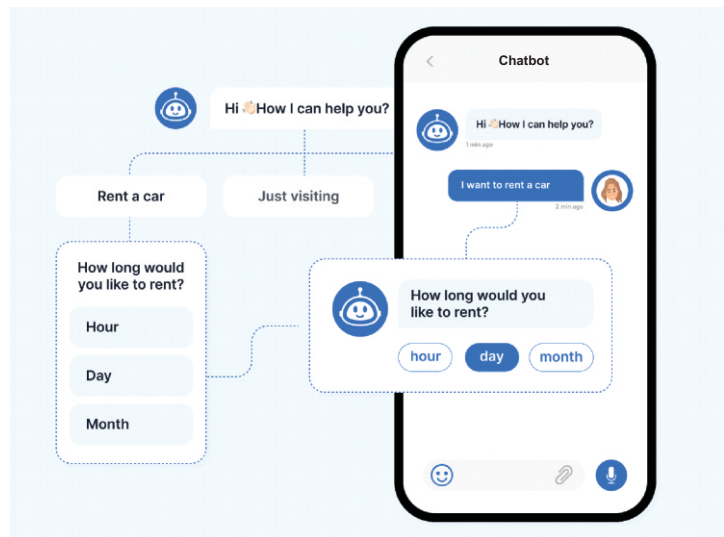
1. How early man used to count ?
2. What is a Step Reckoner ? Who invented it ?
3. Expand the following :
 

a) ENIAC	b) UNIVAC	c) VLSI	d) ULSI
----------	-----------	---------	---------
4. Differentiate between second and fourth generation of computers.
5. Mention three characteristics of a computer.

**Fun Venture**

**A.** Design your own customized smartwatch in Paint 3D. Use the Text tool to type the features of your wearable gadgets. [Creativity]

**B.** A chatbot is a computer program that automates selected tasks by chatting with a user through a conversational interface. Highly advanced bots are powered by AI, constantly learning from user request and improving its knowledge base with each interaction. Prepare a Chatbot Script which outlines sequences of conversational messages to drift your small business. [Vocational Skills]



# HOTS

Who is known as the first computer programmer ?

[Critical Thinking]

## LabTech

- A. Open MS Word, type the name of different calculating devices and their inventors and save the file as 'History of Computer'. [Multidisciplinary Learning]
- B. We've grown to love Apple's smartwatch. It's not just a great fitness tracker, it's that rarest of things : a piece of tech that can actually change your life. The multitude of sensors on-board means the wristwatch can track your heart rhythm and it logs the data on your phone. If it spots any irregularities, it'll suggest you take a trip to the doctor, who can take a look at ECGs recorded by the watch.

It will also keep an eye out if you fall or your pulse stops and alert emergency services if something's awry. There are other variables it'll track like your sleep, blood oxygen saturation and even heart rate variability, which scientists think could be a good indicator of your overall wellbeing. It can predict the onset of flu or COVID-19 before a patient is aware of symptoms.



Which other chronic conditions predictions have been deployed in it ? Surf the net and make a PowerPoint presentation for its features.

[Life Skills]

## HyperLink

Have you ever used Augmented Reality (AR) ? So many people believe that they haven't, but if you've ever tried a filter on your social media stories then the answer is, yes, you have. **AR** is a technology that helps us add graphics, sound and other visual effects to our natural surroundings. In other words, it is a technology that superimposes an image or a sound onto our view of the real world.

[Spatial Intelligence]



Most people are now accustomed to scanning QR codes on their phones to open up a menu or webpage. WebAR's technology works in a similar way. Scan, and the user is directed to a WebAR experience. No app to download, no tools to install on your phone. It's a great way for brands to bring fun interactive 3D experiences to products.



Pizza Hut turned their boxes into an interactive Pac-Man board. Play Pac-Man on Pizza Hut's delivery boxes using AR tech.



Computer-5

