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NEP 2020

CODING



CYBERWAVE

Foundations of Information & Communication Technology

COVERS

INFOBITS

EXERCISES

LAB ACTIVITY

PROJECT WORKS



Updated to
Windows 10
MS Office
2010

MS Paint
&
Tux Paint

3

LEVEL



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CYBERWAVE

Foundations of Information & Communication Technology



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computer education

CYBERWAVE : Level - 3

(Foundations of Information & Communication Technology)

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Preface

We are living in a world powered by computers. Today, computers are present in all sectors of our society. Thus, knowledge of Computer Science is increasingly becoming an essential skill for staying competitive in the future.

Cyber wave Computers is a series of 10 books for classes 1 to 10. The series introduces concepts in a step-by-step manner using simple language. The content provides the latest facts and figures. The screenshots included in the series are of **Windows 7**, updated to **windows 10** and **Microsoft Office 2010** version.

In Books 1 and 2, the basics of computers, including its various parts, have been introduced. MS Paint software, which will help students to acquire skills for using mouse and keyboard, has been introduced. In Books 3 to 10, **programming language** software, **animation software** and **coding** have been introduced in respective classes.

Most of the topics/chapters have been covered in a child-friendly manner along with sufficient definitions, diagrams and tables.

Activities are designed to bring out the joy of learning by discovering. Exercises, Worksheets, lab questions have been developed keeping in mind the learning ability of the students.

We sincerely welcome constructive feedback and suggestions to improve the series which will be incorporated in further publication.

Email: informatix4u@gmail.com

*With regards
Informatix & Team*

Contents

1.	History of computers	05 - 15
2.	Smart machine	16 - 23
3.	Computer - Buttons, Sockets & Slots	24 - 30
4.	Keyboard & Mouse	31 - 43
5.	Tuxpaint	44 - 53
6.	More on Tuxpaint	54 - 62
7.	Introduction to MS Paint	63 - 71
8.	Drawing in MS Paint	72 - 82
9.	Wordpad	83 - 88

1

History of Computers



Earlier, man used fingers for counting because there was no number system. After knowing the number system, man invented many calculating devices which further took the shape of a computer. Let us learn about the history of computers.

Abacus



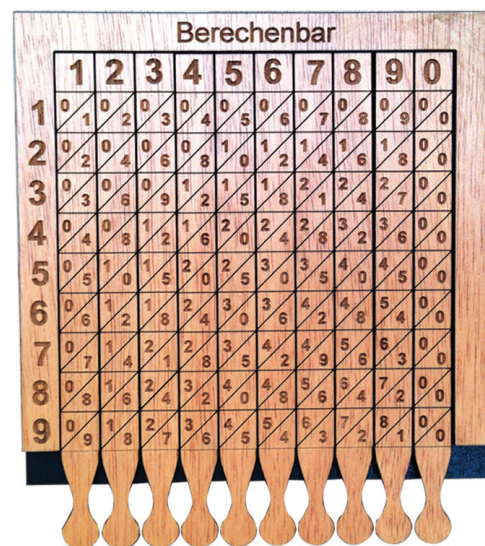
Abacus was the first calculating device. Simple calculations like addition and subtraction could be easily performed using abacus.



Napier's Bones



In 1616, Sir John Napier invented a calculating device which was made up of rectangular rods. It was called Napier's bones and could do calculations such as addition, subtraction, multiplication and division. Later, an improved version was developed that could be used for division and finding square roots.



Pascline



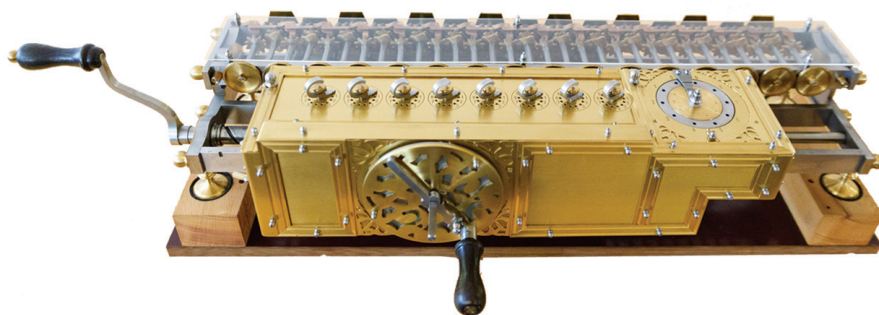
In 1642, Blaise Pascal invented a calculating machine and called it Pascaline. It consisted of a rectangular box with eight movable wheels which could calculate upto eight figures.



Leibniz Calculator



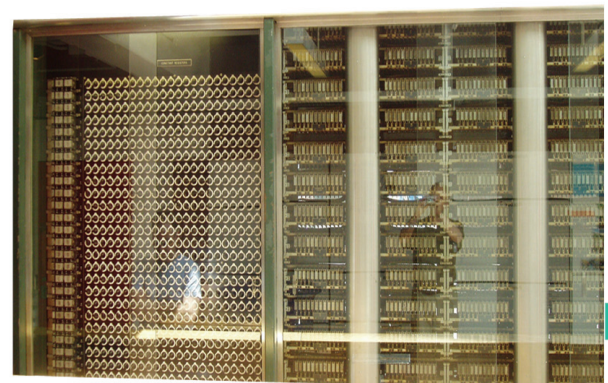
Gottfried Wilhelm Von Leibniz, a German mathematician and philosopher, designed a mechanical calculating device called Step Reckoner in 1671. This device could add, multiply, subtract and divide numbers.



Harvard Mark 1



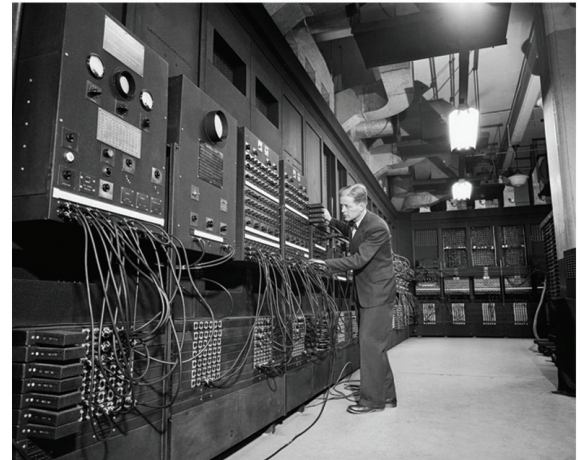
Howard Aiken, a professor, designed an electro-mechanical calculator in 1945. It is also known as ASCC (Automatic Sequence Controlled Calculator).



ENIAC



ENIAC stands for **Electronic Numeric Integrator And Computer**. It was the first general purpose electronic computer. It was invented by J Presper Eckert and John Mauchly. It was used for solving numerical problems. The ENIAC used about 1,800 square feet area, 17,468 vacuum tubes and weighed 50 tons.



UNIVAC



UNIVAC I, stands for Universal Automatic Computer, which was also designed by J Presper Eckert and John Mauchly. It was the first commercial electronic computer. It handled both numbers and textual data very well.



Difference Engine



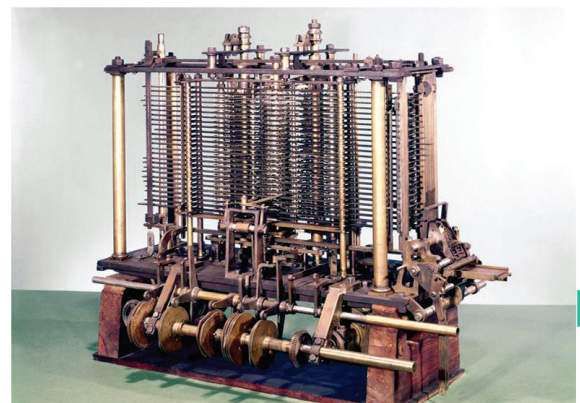
In the 19th century, Charles Babbage invented the first mechanical computer. It was called the Difference Engine. It was designed to calculate polynomial functions.



Analytical Engine



In 1833, Charles Babbage invented the Analytical engine, which could generate tables. It was the first general purpose computer and had the basic concept of input, output and memory devices that are found in modern computers.



Computer Generations



There are five generations of computers each of which is characterised by a major technological development.

First Generation (1945-1956)



The first generation computers are characterised by the use of vacuum tubes.

Characteristics

- Used magnetic drums
- Punched tape was used both as an input device and output device
- Had 1,000 circuits per square feet
- Heavy and large in size
- Very expensive



Example : ENIAC, EDSAC, UNIVAC I, UNIVAC II

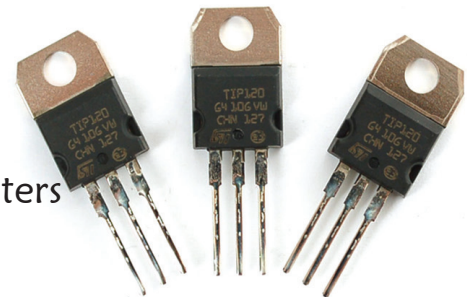
Second Generation (1956-1963)



The second generation computers used transistors for circuitry in place of vacuum tubes.

Characteristics

- About 1,00,000 circuits per square feet
- Smaller in size than the first generation computers
- Faster than the first generation computers
- Less expensive



Example : IBM 1400 series, 1600 series

Third Generation (1964-1975)



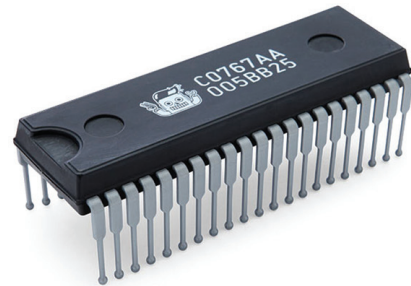
The third generation computers used integrated circuits.

Characteristics

- 10 million circuits per square feet
- Smaller in size than the second generation computers

- Faster and more accurate than the second generation computers
- Less expensive than the second generation computers

Example: Honeywell 200, IBM System 360, ICL1900



Fourth Generation (1971-Present)



The fourth generation computer used microprocessors.

Characteristics

- Thousands of integrated circuits on a single chip
- Smaller in size
- Cheaper and faster
- Very easy to handle
- Laptops and hand-held devices were invented



Example : IBM System 4300, ICE 2900

Fifth Generation (Present and Beyond)

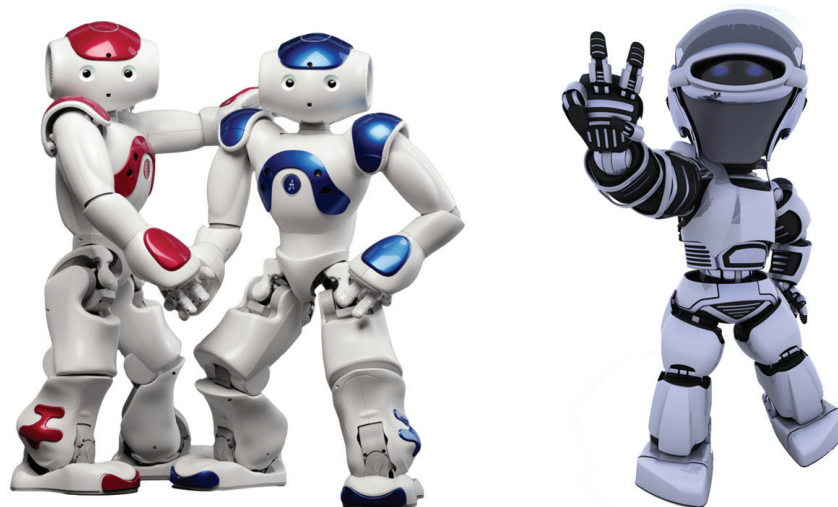


The fifth generation computers were based on artificial intelligence. This generation is still in development.

Characteristics

- High speed logic and memory chips
- High performance
- Intelligent and has ability to take decisions on its own

Example : Robots



GENERATIONS OF COMPUTER

No.	Generations	Component
1.	First	Vacuum tube
2.	Second	Transistors
3.	Third	Integrated circuit chip
4.	Fourth	Large scale Integrated circuits.
5.	Fifth	Very large Scale Integrated circuits

Wearable Computers



with rapid advancement in technology, we have evolved from mainframe computers to desktops, laptops, smartphones and to wearable computing devices.

Wearable technology, commonly referred to as wearable, are usually small electronic devices worn somewhere on your body such as watches, wristbands and can even be embedded into clothing. You can do lots of different things with this type of technology including: listening to music, keeping tabs on your health and wellbeing and staying connected on the go.



Smart Watches



Watches that are used to show only time have now become smart with a variety of added functionality. Today's smart watches are the most popular among all wearable computing devices. They offer a lot of functions such as in built GPS, Pedometer, Heart rate monitor, BP monitor, calling, messaging, physical training monitor, gesture control, etc.



Do you know?



Smart bracelets, smart clothing and fitness trackers are also examples of wearable computers.

Google Glass



Google glass is a smart eyewear that a person can wear like a pair of normal glasses. It uses a hands free information access mechanism. A touchpad is located on the side of the Google Glass, allowing users to control the device by swiping through an interface displayed on the screen. Input given is in the form of touch, gestures, speech, head motion, etc. It can even connect to the Internet.



Info Bits

- *Charles Babbage is regarded as the father of computer.*
- *Babbage designed difference engine and analytical engine.*
- *Lady Ada Lovelace is regarded as first computer programmer.*
- *Fifth generation of computer is based on Artificial Intelligence (AI) technology.*
- *Sophia is a social humanoid Robot developed by Hongcong based company Hanson Robotics, activated on 14th Feb 2016.*



Let us Practice



I. Answer the following questions.

1. Write a few lines on Abacus.

2. Explain briefly about Pascaline.

3. Write about Napier Bones.

4. Write a short note on ENIAC and UNIVAC.

5. What do you understand by the Difference Engine ?

6. Write about the first generation computers.

7. Write about the fourth generation computers.

8. Describe about the fifth generation computers ?

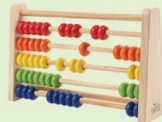
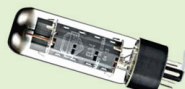
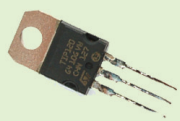


II. Fill in the blanks.

1. _____ was the first calculating device.
2. _____ invented a calculating device, made up of rectangular rods.
3. Blaise Pascal invented a calculating machine called _____
4. _____ was designed to calculate polynomial functions.
5. IC stands for _____.
6. UNIVAC means _____
7. IC's are used in _____

III. Tick (✓) the correct answer.

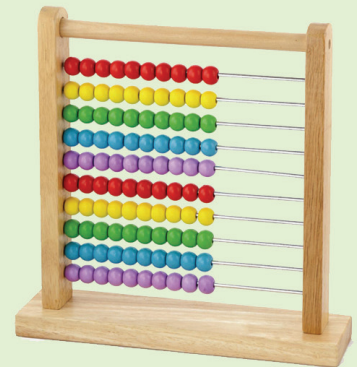
1. Who is known as the father of the computer
 - a) John Napier ()
 - b) Blaise Pascal ()
 - c) Charles Babbage ()
 - d) Bill Gates ()
2. Electronic Numerical Integrator and Computer short form is
 - a) ECNIA ()
 - b) ENIAC ()
 - c) EINCA ()
 - d) EINAC ()
3. Who is known as the first lady programmer
 - a) Angelina ()
 - b) Squaslina ()
 - c) Lady Ada Lovelace ()
 - d) Serena ()
4. International Business Machine is referred as _____
 - a) IMB ()
 - b) BMI ()
 - c) IBM ()
 - d) All of these ()
5. Artificial intelligence is a technology used in this generation of computer.
 - a) First ()
 - b) Second ()
 - c) Fifth ()
 - d) Fourth ()

IV. Match the following.

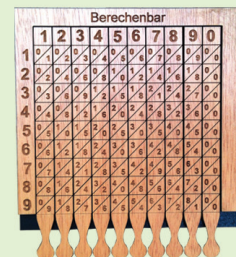
1.  () a) Fifth Generation
2.  () b) First Calculating device
3.  () c) Third Generation
4.  () d) Second Generation
5.  () e) First Generation

Activity Zone

I. Make a model of Abacus with Ice cream sticks, broom sticks, beads and glue.



II. Name the following.

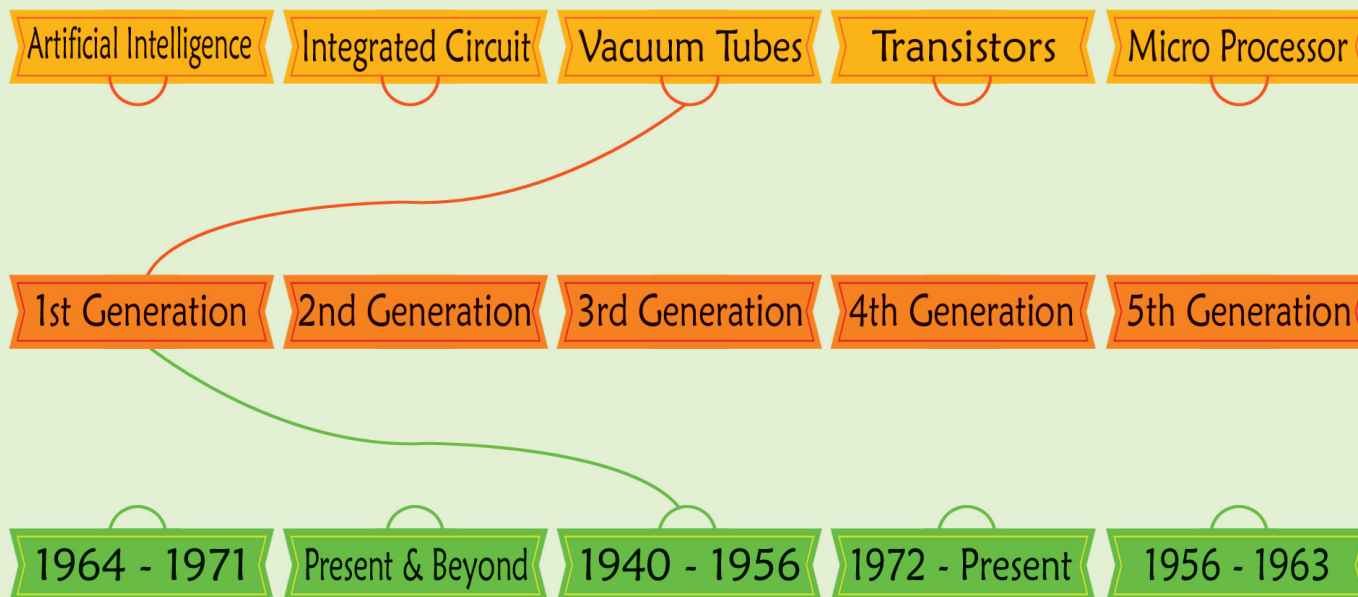


III. Match the early computing or calculating devices in the order they were invented.



Napier's Bones Mark I Leibniz Calculator Abacus Pascaline

IV. Match the generations of computers with the correct step.



V. Make a project title the "computer generations" by pasting the pictures of various technologies used in the computers.