



BREEDING
A R E N A
College

THE BREEDER'S GUIDE

ICT

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Year Seven (JSS1)

Term Sow 2022/2023

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ICT (Year Seven)

SCHEME OF WORK

ICT		
Information & Communication Technology		April 18 – July
WEEK	TOPIC	SUB-TOPICS
1	Basic Computer Concepts	Definition, IPO, Parts of a computer, Input and Output devices, Processing unit.
2	Technology of different information age	Different Information age and their tools
3	Historical development of computers	<ul style="list-style-type: none">- Early counting devices,- Problems they faced- Mechanical, electro-mechanical- Electronic counting devices.
4	Generations of computers	<ul style="list-style-type: none">- Computer generation- Year of development- Technology used- Environment requirement
5	Data and Information	<ul style="list-style-type: none">- Data and Information- Sources of data and information- Qualities of good information
6	Information transmission	<ul style="list-style-type: none">- Definition of Information transmission- Ancient methods of transmitting information
7	Continuous assessment/Mid Term Break	
8	Classification of means of transmitting information	<ul style="list-style-type: none">- Information transfer- Uses of computer and radio information transfer- Differentiate between television and computer- Differentiate between computer and mobile phone...
9	ICT Application in everyday life	<ul style="list-style-type: none">- Description of ICT- Uses of ICT- ICT and the society
10		<ul style="list-style-type: none">- Demonstrate different mouse technique- Explain each mouse technique
11	Revision	
12	Examination	

WEEK	TOPIC	SUB-TOPICS
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1. BASIC COMPUTER CONCEPTS

Objective: By the end of this class, a student should be able to define a computer and state the types of devices.

Duration: 40mins

Week: 1

Teaching Method/Strategy: Method

Entry Behaviour (*How you plan to start your Class*): **Engaging their minds**

DEFINITION OF A COMPUTER

A computer can be defined as an electronic machine that accepts data as **input**, **processes** the data and gives **out information**.

DESCRIPTION OF A COMPUTER AS INPUT – PROCESS – OUTPUT (IPO) SYSTEM

IPO stands for **Input**, **Process** and **Output**.

IPO means inputting data into the system, doing something with the data and then displaying the results.

PARTS OF A COMPUTER SYSTEM

1. System unit
2. Monitor (VDU)
3. Keyboard
4. Mouse
5. Printer
6. Speakers

INPUT DEVICES

Input devices can be defined as devices used for sending information or data into a computer for processing.

Examples of input devices are as follows:

1. keyboard
2. Mouse
3. Joystick
4. Light pen
5. Scanner
6. Camera

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OUTPUT DEVICES

Output devices can be defined as devices used for receiving information or data that is processed by and sent out from a computer or other electronic device.

Examples of output devices are as follows:

1. Monitor (VDU)
2. Printer
3. Speakers, etc.

PROCESSING UNIT

Processing units can be defined as devices that process data inside the computer.

Process data input through the system unit and memory unit.

2. TECHNOLOGY OF DIFFERENT INFORMATION AGE

Objective: By the end of this class, a student should be able to define and state the various information age

Duration: 40mins

Week: 2

Teaching Method/Strategy: Method

Entry Behaviour (How you plan to start your Class): **Class Discussion**

A computer is an electronic device that manipulates information or data. It can store, retrieve, and process data. You may already know that you can use a computer to type documents, send an email, play games, and browse the Web.

Technology is the skills, methods, and processes used to achieve goals. People can use technology to:

Produce goods or services. Carry out goals, such as scientific investigation or sending a spaceship to the moon. Solve problems, such as disease or famine.

Different Information Age

1. STONE AGE
2. IRON AGE
3. MIDDLE AGE
4. INDUSTRIAL AGE
5. ELECTRONIC AGE

Stone age: The Stone Age was a broad prehistoric period during which stone was widely used to make implements with an edge, a point, or a percussion surface. It is called the Stone Age because the most common edged tools humans had were made of stone.

Stone age tools: hammer stone, sharp stone flakes, stone scrapers.

Some of the animals of the Stone Age are:

1. Woolly Mammoth (Extinct)
2. Woolly Rhinoceros (Extinct)
3. Cave Bear (Extinct)

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4. Giant Dear (Extinct)

5. Wild Boar.

Iron Age: The Iron Age was a period in human history that started between 1200 B.C. and 600 B.C. During the Iron Age, people across much of Europe, Asia and parts of Africa began making tools and weapons from iron and steel.

Iron age tools: Hoes, cutlass, iron weapons, hammers etc

Middle Age: The period saw major technological advances, including the adoption of gunpowder, the invention of vertical windmills, spectacles, mechanical clocks, and greatly improved water mills, building techniques (Gothic architecture, medieval castles), and agriculture in general (three-field crop rotation).

Middle Age tools:

1. Mechanical Clock. 2. Printing Press. 3. Water and windmills. 4. Coffee House. 5. Public Library.

6. Wall board and chalk 7. Clothing tools 8. Ink 9. Quill

Industrial Age: The Industrial Age is a period of history that encompasses the changes in economic and social organization that began around 1760 in Great Britain and later in other countries, characterized chiefly by the replacement of hand tools with power-driven machines such as the power loom and the steam engine.

Electronic (computer) Age: The electronic age is also known as the information age or the digital age. It began around the 1970s and continued until the present day. The information age creates a knowledge-based society.

Electronic age tools: 1. Mobile phones 2. Video camera 3. Television 4. Radio 5. Internet tools

3. HISTORICAL DEVELOPMENT OF COMPUTERS

Objective: By the end of this class, a student should be able to mention all of the historical development of computers.

Duration: 40mins

Week: 3

Teaching Method/Strategy: Method

Entry Behaviour (*How you plan to start your Class*):

Early Counting Devices are devices used for performing basic arithmetic operations such as addition and subtraction before the invention of the computer.

Examples of Early Counting Devices

1. Fingers and toes
2. stones
3. wooden sticks
4. pebbles
5. cowries
6. notch sticks
7. Bottle tops (local name – counter)
8. Seeds of plants such as agbalumo seeds (local name – koro or station) and palm kernel.
9. Straw – each straw is cut into smaller pieces for counting.
10. Beads such as rosary which are still commonly used by Catholics and Muslim for Prayer.

MECHANICAL COUNTING AND CALCULATING DEVICES

1. Abacus

The first computer was called the Ancient counting machine. The first computer was called the Abacus counting machine. Abacus can be used for addition, subtraction, division and multiplication.

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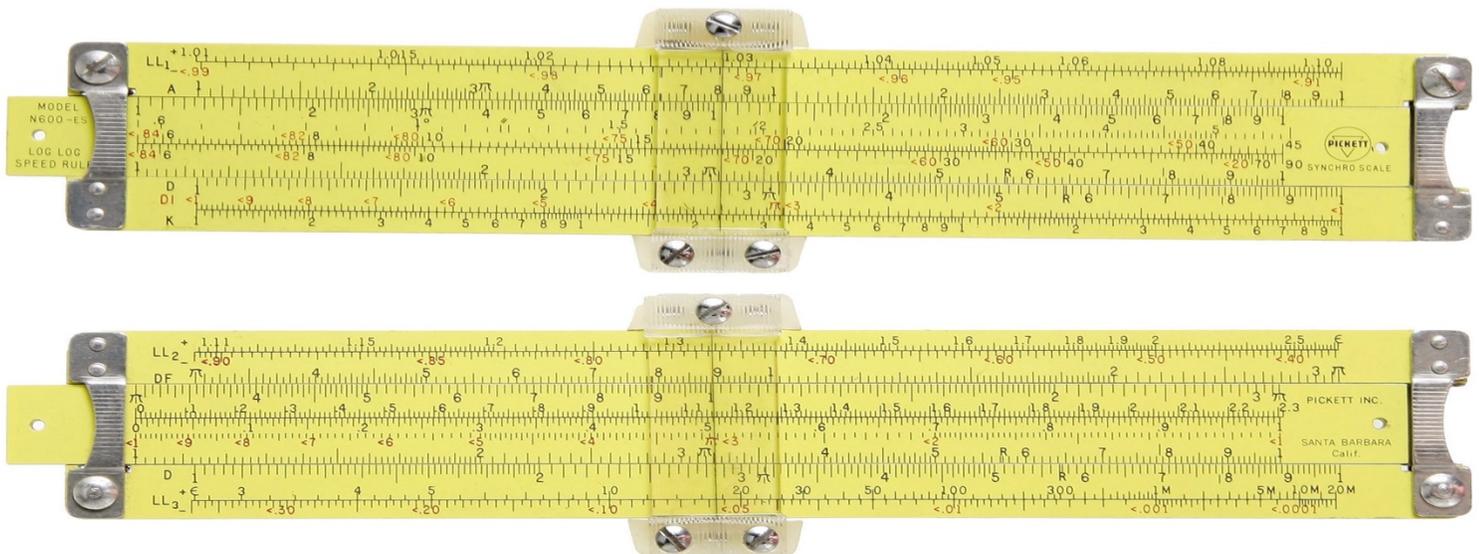
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2. Slide Rule

Slide Rule is a ruler that functions as a mechanical analogue computer used for computing multiplication or division, roots, logarithms, and the result of trigonometric functions. It is also called a slipstick.



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ELECTRO-MECHANICAL COUNTING DEVICES

1. John Napier bone

In 1617 John Napier, a Scottish mathematician, invented Napier's bones. These were rods on which numbers were marked.

These numbers enable the user to easily work out the answers to a restricted set of the multiplication tables. The numbers to be multiplied are positioned on the top row and the left column.



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2. Blaise Pascal Machine

In 1642 Blaise Pascal invented the first calculating machine when he was 19 years old. This machine was developed to assist his father's work as a government auditor of accounts.

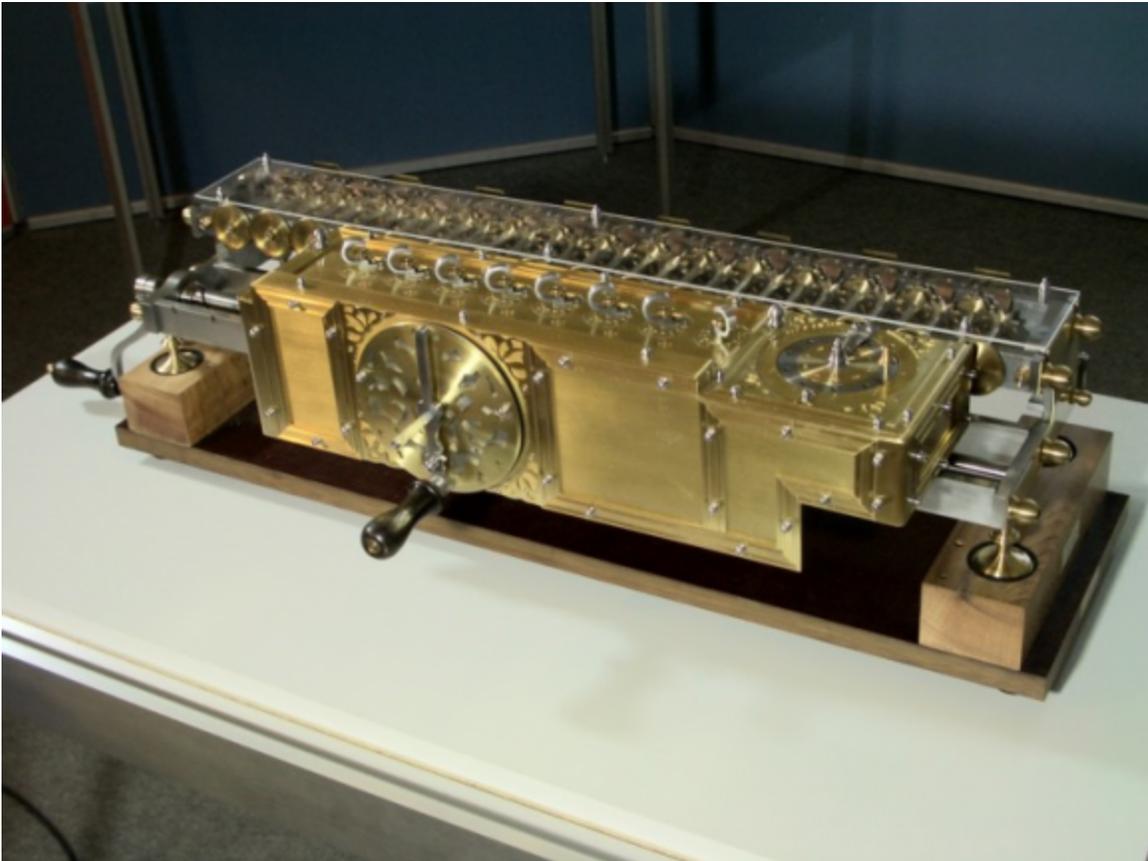


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3. Gottfried Leibniz Machine

A famous German mathematician, Gottfried Von Leibniz made the most significant contribution to the mechanical calculator in 1671 when he invented the Leibniz calculating machine. The machine can perform 4 arithmetic operations.



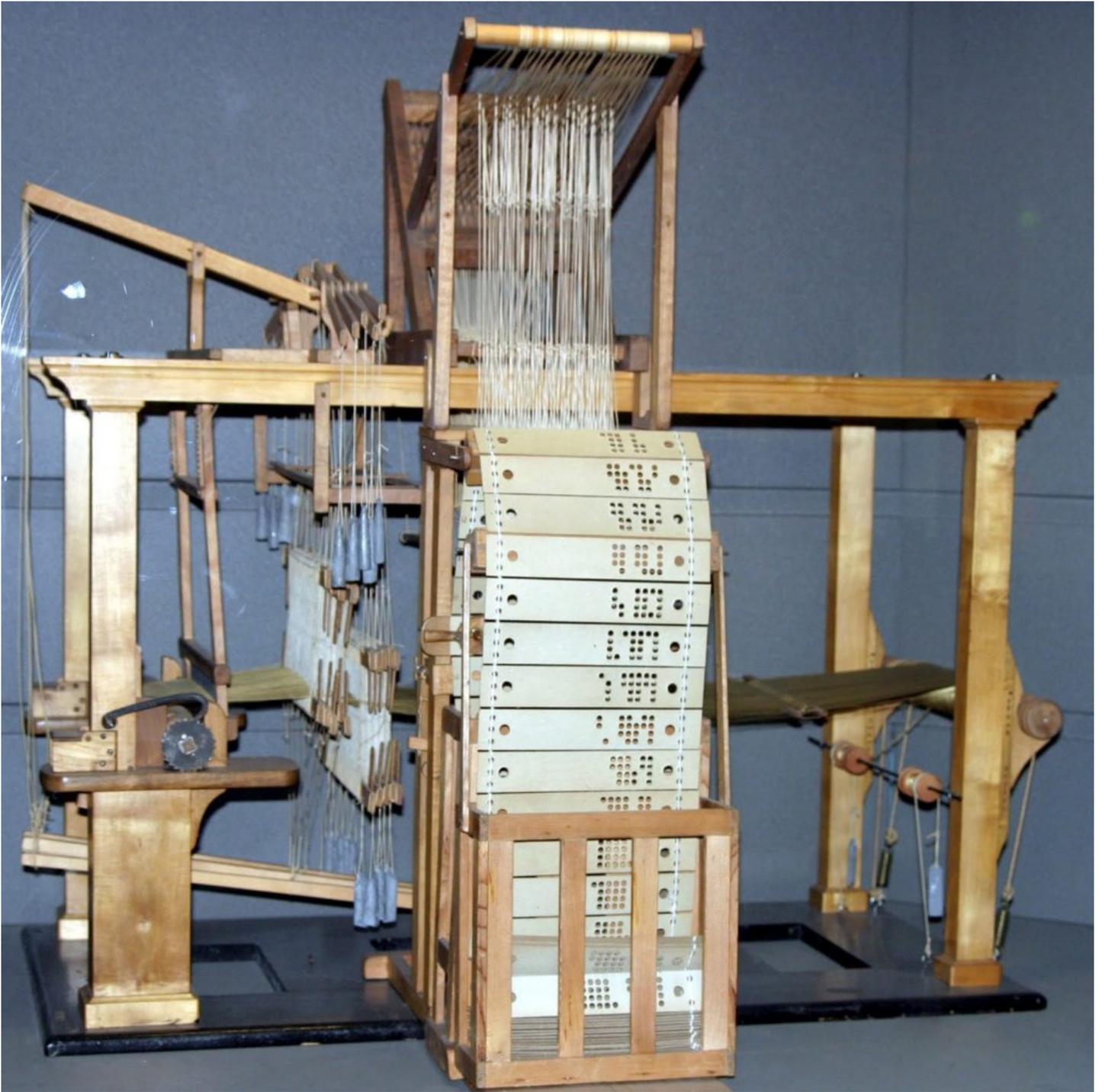
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4. Joseph Jacquard Loom

The Jacquard loom is a mechanical loom, invented by Joseph Marie Jacquard in 1800. The loom simplifies the process of manufacturing textiles with complex patterns such as brocade, damask, and matelasse.

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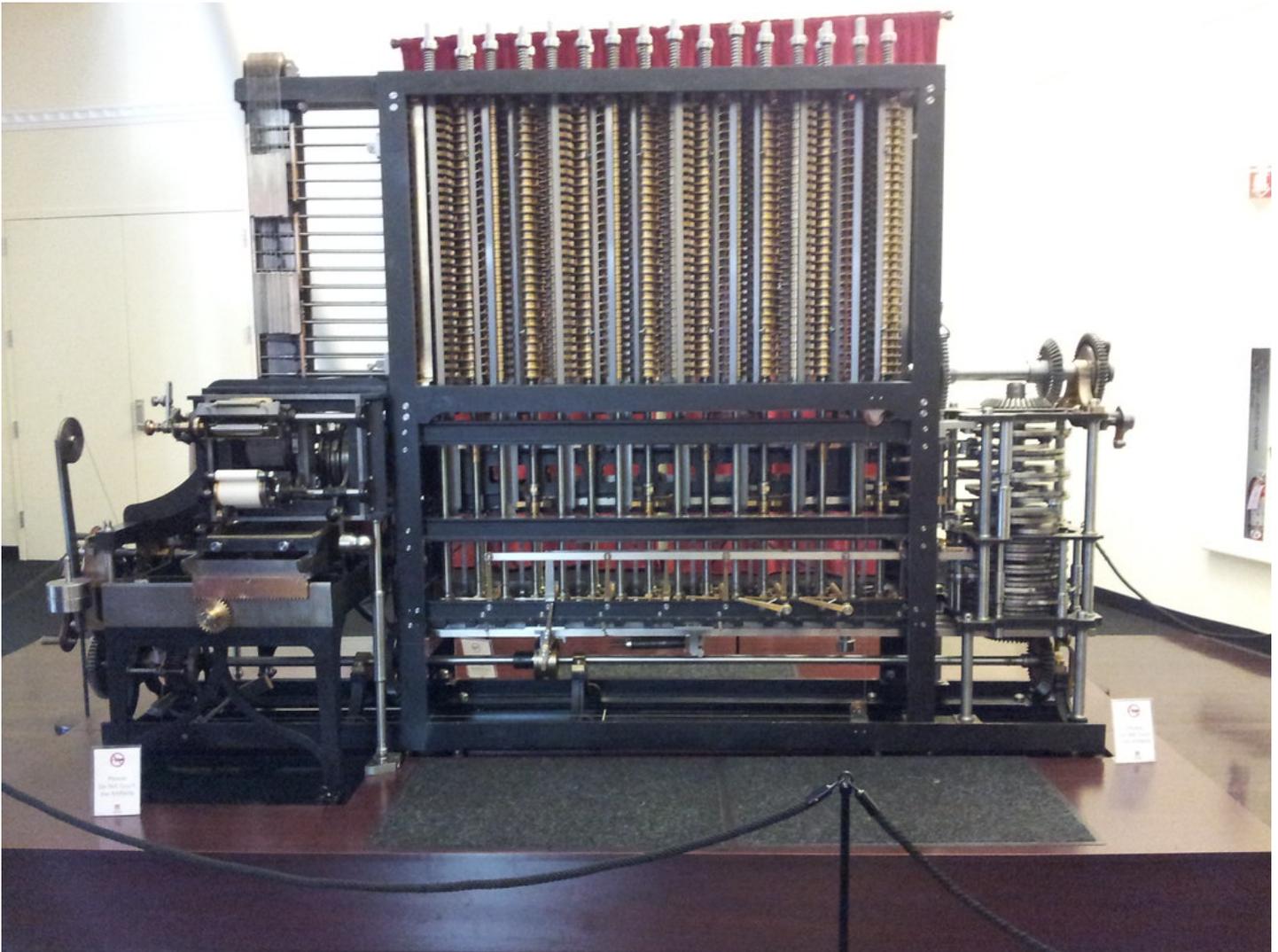
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5. Charles Babbage Analytical Machine

Charles Babbage was a mathematics professor at Trinity College in Cambridge, England. After several unsuccessful attempts at building a mechanical calculating machine, Babbage developed the analytical engine in 1834.



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6. Philip Emeagwali

Philip Emeagwali is a Nigerian-born engineer and computer scientist/geologist. He is called the Bill Gates of Africa. He invented the world's fastest computer. He was one of two winners of the 1989 Gordon Bell Prize, a

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prize from the IEEE, for his use of a Connection Machine supercomputer to help analyze petroleum fields.



4. GENERATION OF COMPUTERS

Objective: By the end of this class, a student should be able to state and explain various generations of computer

Duration: 45mins

Week: 4

Teaching Method/Strategy: Method

Entry Behaviour (How you plan to start your Class): Engagement, Question and Answers

1. First Generation

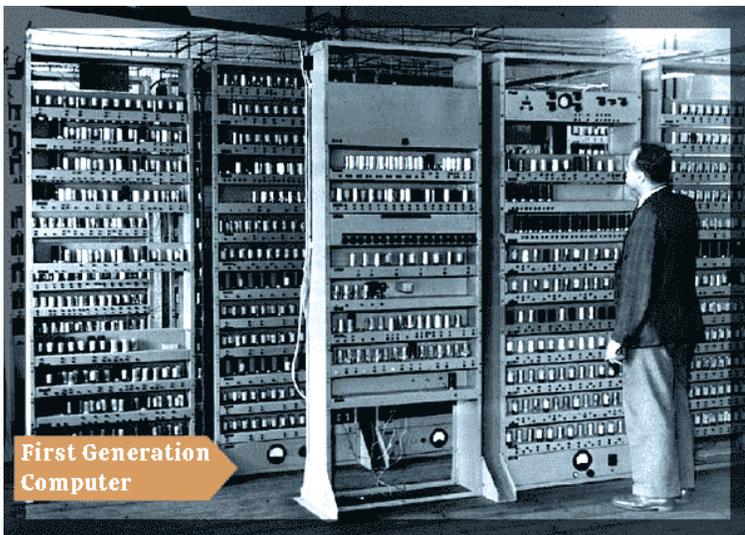
First-generation computers are the first computers. They used vacuum tubes. The first generation needed much electricity before it could be used. They are slow and can only store little information.

The years of development – 1940 -1956

The technology speed of operation – Very slow Storage capacity – Magnetic Core as Primary Memory

Examples of First-Generation Computers

ENIAC (Electronic Numeric Integrated and Calculator) and UNIVAC (Universal Automatic Computer) are great examples of first-generation computers. The ENIAC was the first successful electronic computer, developed by J. Presper Eckert and J. W. Mauchly. On the other hand, UNIVAC was the first commercial computer invented by them. In 1951, UNIVAC was given to the US Census Bureau.



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Note: The ENIAC was built using approximately 20,000 vacuum tubes, combined with about 10,000 capacitors and 70,000 resistors. A large room was needed to properly place it. The weight of this first-generation computer was measured at over 30 tons.

Some other examples of the first-generation computers are listed below:

- EDVAC
- EDSAC
- IBM-701
- IBM-650

° Manchester Mark 1, Mark 2, Mark 3, etc.

Characteristics of First-Generation Computers

- Use of Vacuum Tubes Technology
- Based on Machine Language only
- Use of Punch Cards as an Input Device
- Use of Magnetic Tapes as Memory Devices
- Use of Paper Tape as an Output Device (output was given in printouts only)

Advantages of First-Generation Computers

- The first-generation computers used vacuum tubes as basic components; the only electronic component available in that period.
- Vacuum tube technology made it possible for the advent of electronic computers.
- The use of machine language made first-generation computers relatively faster in the beginning.

Disadvantages of First-Generation Computers

- First-generation computers were large in size and therefore not portable.
- The storage capacity of computers was very low due to the use of magnetic tape.
- First-generation computers produced too much heat, which required a large cooling system.
- The functioning of input and output devices was slow.

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2. Second Generation

Second-generation computers were used during 1957-1963. They are also known as transistor computers. The second generation of computers consists of two types of devices, transistors, and magnetic core. The transistors helped to develop a better computer than the first-generation computers consisting of vacuum tubes. Some second generation of computers are IBM 1920, IBM 7094, CDC 1604, CDC 3600, IBM 1401, etc.

Characteristics of the second generation of computers are:

Smaller in size: The Second generation of computers are much smaller in size than the first generation computers.

Change in circuits: The main change is the use of transistors in place of vacuum tubes(Vacuum tubes are used in the first generation of computers).

Power/ Energy Requirement: The second generation of computers requires less amount of energy (i.e. electricity) compared to the first generation of computers and produces less heat than the first-generation computer.

Language used: Assembly language is used instead of Machine Language(used in first-generation computers) for programming in computers.

Speed: Calculation of data could be done in microseconds.

Cost: The cost of Second-generation computers is reduced in comparison to first-generation computers.

Advantages of second-generation computers:

- They are smaller in size as compare to the first generation.
- It is more reliable
- Uses less power and generates less heat.
- The speed of the second generation is faster as compared to the first generation.
- Second-generation computers have improved accuracy and offer better portability.

Disadvantages of second-generation computers:

- As we know, they generate less heat but still require a cooling system.
- They require frequent maintenance.
- The commercial production of second-generation computers is difficult.
- They are used only for some specific purpose.
- They use punch cards for input.

Second Generation Computer

Time: 1956 - 1963



3. Third Generation

Third-generation computers are advanced from first and second-generation computers. The third generation computer was started in 1965 and ended around 1971. Third-generation computers started using integrated circuits instead of transistors. The integrated circuit (IC) is a semiconductor material, that contains thousands of transistors miniaturized in it. With the help of IC, the computer becomes more reliable, and fast, requires less maintenance, is small in size, generates less heat, and is less expensive. The third-generation computer uses less electricity but still, they are a little expensive and also use an air conditioner for cooling.

The third generation computers reduce computational time. In the previous generation, the computational time was microsecond which was decreased to the nanosecond. In this generation, punch cards were replaced by mouse and keyboard. Also, multiprogramming operating systems, time-sharing, and remote processing were introduced in this generation. High-level programming language such as BASIC, PASCAL, ALGOL-68, COBOL, and FORTRAN-II was used in third-generation computers.

Third Generation Computer

Time: 1964 - 1971



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4. Fourth Generation

Fourth-generation computers are the four computers made. They contained microprocessors that's large – scale integrated circuits that allow more electricity than third generation.

Fourth-generation computers are cheaper, smaller and faster than the third generation computers. They store more information than the rest, second and third generation. The year of development – 1971 -1980



5. Fifth Generation

Fifth generation are work in progress. They are to contain artificial intelligence.

The year of development – 1980 – till date

The technology speed of operation – Logical Interference per Second

Storage capacity – ROM and RAM



5. DATA AND INFORMATION

Objective: By the end of this class, a student should be able to define opportunity

Duration: 45mins

Week: 4

Teaching Method/Strategy: Method

Entry Behaviour (*How you plan to start your Class*):

Introduction

“Data” comes from a singular Latin word, *datum*, which originally meant “something given.” Its early usage dates back to the 1600s. Over time “data” has become the plural of *datum*.

“Information” is an older word that dates back to the 1300s and has Old French and Middle English origins. It has always referred to “the act of informing,” usually in regard to education, instruction, or other knowledge communication.

Data

Data can be defined as a raw fact, data is a raw material which information is produced. *Data* is a set of values of qualitative or quantitative variables. Data is information in raw or unorganised form (such as alphabets, numbers, or symbols) that refer to, or represent, conditions, ideas, or objects.

Data can be defined as a representation of facts, concepts or instructions in a formalised manner which should be suitable for communication, interpretation, or processing by human or electronic machine. Data is represented with the help of characters like alphabets (A-Z,a-z), digits (0-9) or special characters(+,-,/,*,<,>,,= etc.).

Examples of Data

Student Data on Admission Forms: When students get admission to a college. They fill out the admission form. This form contains raw facts (data of student) like name, father's name, address of student etc.

Survey Data: Different companies collect data by survey to know the opinions of people about their products.

Data of Citizens: During the census, raw facts of all citizens are collected.

Students Examination Data: In the examination data about obtained marks of different subjects for all students is collected.

Information

Information is organised or classified data which has some meaningful values for the receiver.

Information is the processed data on which decisions and actions are based.

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Information is data which has been processed to be meaningful and useful to the person who received it. Data as a general concept refers to the fact that some existing information or knowledge is represented *or coded* in some form suitable for better usage or processing. **Information** is stimuli that has meaning in some context for its receiver. When **information** is entered into and stored in a **computer**, it is generally referred to as data. After processing (such as formatting and printing), output data can again be perceived as **information**. *Information* is the summarisation of data. Technically, data are raw facts and figures that are processed into *information*, such as summaries and totals.

For the decision to be meaningful, the processed data must qualify for the following characteristics:

Timely – Information should be available when required.

Accuracy – Information should be accurate.

Completeness – Information should be complete.

Examples Of Information

Student Address Labels: Stored data of students can be used to print the address labels of students.

Result Cards of Individual Students: In the examination system collected data (obtained marks in each subject) is processed to get the total obtained marks of a student. The total obtained marks are Information. It is also used to prepare the result card of a student.

Census Report: Census data is used to get reports/information about the total population of a country literacy rate etc.

Survey Reports and Results: Survey data is summarised into reports/information to present to the management of the company.

Sources Of Data

- **Primary source:** This is the origin of an item of information e.g. eyewitness to an event, place in question, the document under scrutiny etc.
- **Secondary source:** It provides already made information e.g. internet, television, newspapers, magazines, textbooks etc.

Examples of information documents include: Report cards, bank account balances, identity cards, PHCN bills, staff salaries, advertisements of vacancies, C- caution, Zebra crossing the road is an indication for road users to stop for people to cross. Traffic lights show green, red and orange.

Forms of information:

- **Visual:** This is information in graphical or pictorial form e.g. photographic.
- **Oral:** This is any information communicated by mouth.
- **Sensory:** This is any information passed through the five sense organs.
- **Written:** This is a handwritten or printed form.
- **Historical:** This refers to information known and recorded about activities, events or transactions that happened in the past e.g a student's medical history, educational history etc.
-

Qualities of good Information

- A good information should be complete for its purpose.
- It should be relevant.
- It should be accurate.
- It should be meaningful to the user.
- It should be communicated to the right person.
- Its volume should be manageable.
- It should be timely.
- It should be communicated through an appropriate channel of communication.

6. INFORMATION TRANSMISSION

Objective: By the end of this class, a student should be able to state the uses and applications of computer

Duration: 40mins

Week: 5

Teaching Method/Strategy: Method

Entry Behaviour (*How you plan to start your Class*):

Information transmission can be referred to as the various ways or more of spreading or passing information from one place to another.

Ways of Transmitting Information

Ancient Method: The various ways of transmitting information in the ancient time are,
oral

beaten drums

town crier

whistling

drawing diagrams

making representation

Modern Method: Information was able to be passed easily with the concept of modernized form within a short period of time. Examples are

Print out copies

Telephone

Radio

television

Internet

telex

satellite

Classification or means of transmitting information

There are various ways of transmitting information and these can be classified into two which are as follows.

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Basic Science

Electronic Means

Print out copies

Telephone

Radio

television

internet

telex

satellite

Non Electronic Means

oral

beaten drums

town crier

whistling

drawing diagrams

making representation

Mode of Receiving Information

Information can be received through the following means

Audio: Audio information can be received in a sound form, e.g music. Broadcasting, voice recording, audio tape.

Visual: Visual information can be received in form of text, picture, and chart. E.g newspaper, magazines, journals, billboards.

Audio Visual Form: Audio visual information can be received in both sound and picture. E.g movies, music videos, e.t.c

7. CONTINUOUS ASSESSMENT MID-TERM BREAK

8. CLASSIFICATION OR MEANS OF TRANSMITTING INFORMATION

Objective:

Duration: 40mins

Week: 7

Teaching Method/Strategy: Method

Entry Behaviour (*How you plan to start your Class*):

There are various ways of transmitting information and these can be classified into two which are as follows.

Electronic Means

1. Print out copies
2. Telephone
3. Radio
4. Television
5. Internet
6. Telex
7. Satellite

Non-Electronic Means

1. Oral
2. Beaten drums
3. Town crier
4. Whistling
5. Drawing diagrams
6. Making representation

Mode of Receiving Information

Information can be received through the following means

Audio: Audio information can be received in a sound form, e.g music. Broadcasting, voice recording, audio tape.

Visual: Visual information can be received in the form of text, picture, and chart. E.g newspapers, magazines, journals, billboards.

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Audio Visual Form: Audiovisual information can be received in both sound and picture. E.g movies, music videos, e.t.c

9. ICT APPLICATION IN EVERYDAY LIFE

Objective:

Duration: 40mins

Week: 9

Teaching Method/Strategy: Method

Entry Behaviour (*How you plan to start your Class*):

Information Communication Technology (I.C.T)

Information communication technology is often used as an extended synonym for information technology (IT) but it is a more specific term that stresses the role of unified communication and integrated Telecommunication (Telephone lines and wireless signals).

Computer as well as necessary enterprise software, middleware, storage and audio-visual system, which enable a user to access, store, transmit and manipulate information

ICT is beneficial to our everyday lives as the world is fast becoming a global city.

health and medical sciences, education, communication, entrepreneurship e.t.c but our main focus is on Education.

ICT In Education

Educational technology is the effective use of technological tools in learning. As a concept, it concerns an array of tools, such as media, machines and networking hardware, as well as considering underlying theoretical perspectives for their effective application.

Educational technology is not restricted to high technology. Nonetheless, electronic educational technology, also called **e-learning**, has become an important part of society today, comprising an extensive array of digitization approaches, components, and delivery methods.

Benefits To Teachers

ICT facilitates the sharing of resources, expertise, and advice

Greater flexibility in when and where tasks are carried out

Gains in ICT literacy skills, confidence, and enthusiasm.

Easier planning and preparation of lessons and designing materials

Access to up-to-date pupil and school data, anytime, anywhere.

Enhancement of professional image projected to colleagues.

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Students are generally more 'on task' and express more positive feelings when they use computers than when they are given other tasks to do.

Computer use during lessons motivates students to continue learning outside school hours.

Benefits To Students

Higher quality lessons through greater collaboration between teachers in planning and preparation resources.

More focused teaching, tailored to students' strengths and weaknesses, through better analysis of attainment data

Improved pastoral care and behaviour management through better tracking of students

Gains in understanding and analytical skills, including improvements in reading Comprehension.

Development of writing skills (including spelling, grammar, punctuation, editing and redrafting), also fluency, originality, and elaboration.

Encouragement of independent and active learning, and self-responsibility for learning.

Development of higher-level learning styles.

Students who used educational technology in school felt more successful in school, were more motivated to learn and had increased self-confidence and self-esteem

Students found learning in a technology-enhanced setting is more vast than students in a traditional classroom.

Broadband technology supports the reliable and uninterrupted downloading of web-hosted educational multimedia resources

Opportunities to address their work to an external audience

Opportunities to collaborate on assignments with people outside or inside the school

Benefits To Parents

Easier communication with teachers

Higher quality student reports - more legible, more detailed, better presented

Greater access to more accurate attendance and attainment information

Increased involvement in education for parents and, in some cases, improved self-esteem

Increased knowledge of children's learning and capabilities, owing to an increase in learning activity being situated in the home

Parents are more likely to be engaged in the school community

You will see that ICT can have a positive impact across a very wide range of aspects of school life.

Uses of Information Communication Technology

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Communication: Communication has been made so easy a way that people in a global village can communicate with one another across the world, e.g chat rooms, (yahoo messenger, facebook, twitter, e.t.c)

Timing and control: People can communicate with others in different countries using technologies such as instant messaging voice over IP and video conferencing.

Information Processing and Management: Information and communication technology allows the processing and management of data through the use of computer accurate and reliable results.

Information Communication Technology and the Society

In the past few decades, information communication technology has had a great impact on society. Such as

Education

Health sector

Banking sector

Business sector e.t.c

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