

ccNAME:CLASS:

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SECOND TERM: E-LEARNING NOTE

JS 1 (BASIC 7)

SUBJECT: COMPUTER STUDIES

SCHEME OF WORK

WEEK TOPIC

1. Revision of last terms work
2. Information Evolution; Evolution of Information technology and communication Technology(ICT); (i) Invention of printing (ii)Invention of radio and television (iii)Invention of Computer.(iv)Linking up of computers with Information Communication Technology (ICT).
- 3&4. Data Processing: (a)Definition (b)Data Processing Cycle (i)Data Gathering,(ii)Data Collation,(iii)Input Stage,(iv)Processing Stage,(v)Storage stage,(vi)Output Stage.(c)Importance of the Computer as a tool for processing data:(i)Increased Accuracy(ii)Efficient storage facilities (iii)Fast Access to information.(iv)handles repetitive tasks.
- 5&6 Data Processing: (a) Definition (b)Data processing cycle (i)Data gathering,(ii)Data collation,(iii)Input Stage,(iv)Processing stage,(v)Storage stage and (vi)Output stage.(c)Importance of Computers as tools for processing data(i) Increased accuracy (ii)Efficient storage facilities (iii) Fast access to information.(iv)Handles Repetitive tasks.
7. Historical Development of computers (a)Early Counting Devices-Fingers, stones sticks, pebbles, cowries, etc.(b)Mechanical counting and calculating devices: Abacus, Slide rule, etc.
8. Historical Development of computers:(c)Electro-mechanical counting devices:(i)John Napier Bone,(ii)Blaise Pascal machine,(iii)Gottfried Leibnitz machine,(iv)Joseph Jacquard loom,(v)Charles Babbage analytical machine.(vi)Philip Emeagwali.
- 9 Historical Development of computers :(d)Electronic counting device and modern computers (i)Herman Hollerith punch cards (ii)John Von Neuman machine.(iii)Modern Machines (e)Generation of computers- First, second, third, fourth, and fifth generations
10. Revision
11. Examination

WEEK 1 Revision of Last Term's work

WEEK 2

DATE.....

Topic: Information Evolution: Evolution of Information and Communication Technology (ICT),

- (i) Invention of Printing
- (ii) Invention of Radio and Television
- (iii) Invention of Computer
- (iv) Linking up of Computer to Information and Communication Technology.

CONTENT:

1. Information Evolution; Evolution of ICT; Invention of Printing; Invention of Television and Radio; Invention of Computer
2. Linking up of Computer to Information and Communication Technology

Information Evolution:

The processing and transmission of information has gone through many stages. There are certain features of information that are associated with each stage. They are as follows:

1. Writing: This is a mode of communication between two parties using conventional signs and symbols. It is the representation of languages in a text form using a set of symbols and signs. The emergence of writing occurred at different dates in different parts of the world.
2. Printing: This is a process for reproducing texts and images with ink on paper using a printing press. Printing is an important part of publishing. Printing gave rise to the growth and accumulation of knowledge. It brought about a broader range of reader's access to knowledge. Books, journals, newspapers, and magazines are now made accessible to people.
3. Radio: Many people contributed their and inventions in what became radio of today. Radio development began as "wireless telegraphy". Some of those that contributed to the invention of radio are Jagadish Chandra Bose and Guglielmo Marconi.
4. Television: The television was not invented by a single person. Like the radio, many people contributed to its invention. However, the first person that put down on paper his ideas about a television was a 14 years old farm boy called Philo T. Fansworth. He was named one of the TIME magazine's 100 Greatest Scientists and Thinkers of the 20th century. January 7, 1927 is considered the official date of the invention of television.
5. Computer: Like the radio and television there is no one person that invented the computer. The present day computer is the outcome of many scientist that contributed ideas. The computer has aided information communication. It is through the use of computers the Information Communication Technology (ICT) is made possible.

Evaluation:

1. What do you understand by communication

Sub-Topic 2: Evolution of ICT; Linking up of Computer to Information and Communication Technology

Evolution of ICT:

Communication is the process whereby a message is sent from one source called the sender and another source the receiver. When the receiver gets the message sent

and understands the information sent, communication is said to be effected or effective.

Information and communication technology involves the use of modern communication channels to convey information. The Global System Mobile-telecommunication (GSM), Fax, Computers, Television, satellite communication, cellular networks and the Internet are among the gadgets used for this.

Linking up of Computer to Information and Communication Technology:

Computer technology has resulted in a variety of communication methods. Some of these include: facsimile transmission, mobile phones, video conferencing, e-mail and the use of networks. The computer is used in the information and communication technology. Through the network which is a group of two or more computers linked together, resources are shared and can be communicated with others. All computer networks fall into one of the following categories:

- (1) Local Area Networks (LANs)
- (2) Wide Area Networks (WANs)
- (3) The Internet
- (4) Intranets
- (5) Extranets

A LAN consists of a collection of microcomputers, for example in a building, department or school that can share peripherals, share information and communicate with each other on the network.

A WAN can connect networks across a large geographical area such as a city, a state or a country.

The Internet also called the 'net' is a network of networks which connects computers worldwide via a huge set of telecommunications links. It connects universities, research facilities, governmental organizations, business co-operations, non-profit organizations and individuals, allowing them to access, share and exchange information.

ICT is used to send information across to people with e-mail through the internet. Many people use the GSM (mobile phone) to communicate. Video conferencing is also made possible through the Internet. Electronic transaction such as e-banking and e-commerce has been enhanced by ICT. ICT has really widened the scope of education also. Educational materials are available on the Internet.

Evaluation:

1. List 4 gadgets used for ICT

Reading Assignment

A hand book on computer studies for schools and colleges, Book One, by 'Niyi Adekolegan, Chapter 4, pages 33 - 37

Weekend Assignment:

1. What is the full meaning of ICT?
 - (a) Information Calculation Technology
 - (b) Information and Communication Technology
 - (c) Information Communicated Technology
 - (d) Information Calculated Technology

2. ____ is a collection of microcomputers, for example in a building, department or school that can share peripherals, share information and communicate with each other on the network.
- (a) WAN
 - (b) LAN
 - (c) Internet
 - (d) Network
3. Another word for Internet is _____
- (a) Wide Area Network
 - (b) Local Area Network
 - (c) Net
 - (d) Intranet
4. One of the following is not a gadget for ICT.
- (a) GSM
 - (b) Typewriter
 - (c) Computer
 - (d) Fax
5. ____ connects networks across a large geographical area such as a city, a state or a country.
- (a) LAN
 - (b) Computers
 - (c) WAN
 - (d) Telephone

WEEK 3 & 4

DATE.....

TOPIC: Data Processing: Definition, Data Processing Cycle

- (i) Data Gathering
- (ii) Data Collection
- (iii) Input Stage
- (iv) Processing Stage
- (v) Storage Stage
- (vi) Output Stage

CONTENT:

- 1. Definition of data processing
- 2. Data processing cycle

Sub-Topic 1: Definition of Data Processing

Data processing is the act of converting or manipulating data into information. Data processing is any process that uses a computer program to enter data and summarise, analyse or otherwise convert data into usable information. It involves recording, analysing, sorting, summarising, calculating, dissemination and storing data. Data processing systems are often referred to as information systems. Data may be processed singly or in batches (groups).

DATA PROCESSING CYCLE

Data processing cycle includes the following:

Data Gathering

Data gathering has to do with the sourcing, and bringing together of data required to solve a problem.

Data Collection

Data collection is a term used to describe a process of preparing and collecting data - for example as part of a process improvement or similar project. The purpose of data collection is to obtain information to keep on record, to make decisions about important issues, to pass information on to other. Primarily, data is collected to provide information regarding a specific topic.

This involves writing out, sorting, summarizing or classifying data into groups, structures or files.

Evaluation:

1. What is data processing?
2. Three activities involved in data processing are _____, _____ and _____.

Sub Topic 2: Data Processing Cycle (Cont.)

Input Stage:

All information is entered into the computer through an input terminal. Input devices are devices that accept data in its original format, examples includes keyboard and mouse. Data is entered through input devices. This is the process through which collected data is transformed into a form that computer can understand. It is a very important step in the data processing cycle because correct output result totally depends on the input data.

Three steps are involved when inputting data into the computer: **collection, verification, and coding.**

Collection refers to gathering the data from a variety of sources and assembling it. *Verification* means checking the data to determine whether it is accurate and complete, and if it should be included for processing.

Coding is translating the data into machine-readable form. Data punched into IBM cards is one example of coding.

Processing Stage:

After receiving instruction from the main memory to send signal and commands, the Control Unit sends signals and commands to various part of the computer system to prepare and accept the data. After completing the processing step, output is generated. The main purpose of data processing is to get information that has value. During processing or manipulation, one or more of the following tasks may be performed on the input data.

- (a) *Classifying*: data are organized by characteristics meaningful to the user. For example, a student may be identified by the admission number and class.
- (b) *Sorting*: in this step, the data may be arranged in a particular sequence to facilitate processing.
- (c) *Calculating*: Calculations may be required to determine a patient's account balance or a student's grade point average.
- (d) *Summarizing*: This involves reducing a large document into a smaller size containing important points.

Sub Topic 3 Data Processing Cycle (Cont.)

Storage Stage:

All computers need to store and retrieve data for processing. Storage can be grouped into two categories primary storage and secondary storage.

Primary Storage: the primary storage, also called main memory or Immediate Access Store (IMAS), resides in the computer. This is necessary since the processing unit can only act on data and instructions that are held in primary storage. Primary storage consists of two types of memory chips. These are Random Access Memory (RAM) and Read Only Memory (ROM) chips.

Secondary Storage: This is needed to store data and information on a permanent basis for later use. Examples of secondary storage devices are floppy disk, hard disk, zip drives.

Sub Topic 4 Data Processing Cycle (Cont.)

Output Stage:

After completing the processing step, output is generated. The result of the data processed is printed out from the printer. Mostly, the output is stored on the storage media for later use. If the output result is accurate, the data processing cycle is completed.

Output activities include retrieving, converting, storing, and communicating.

- Retrieving* involves pulling information from storage device for use by the decision-maker.
- Converting* means translating information from the computer form used to store it, to a form understandable by the user (such as, a CRT display or printed report).
- Storing* involves transferring the data onto a storage medium, such as a disk or tape file for future use.
- Communication* takes place when the relevant accurate information is in the right place at the right time.

Evaluation:

1. List the steps involved in the data processing cycle.
2. Two types of storage are _____ and _____

Reading Assignment:

Browse through the Internet for Importance of Computer.

Weekend Assignment:

1. Data gathering involves _____
 - (a) Sourcing for data
 - (b) Analysing data
 - (c) Summarising data
 - (d) Editing data
2. The stage at which data is manipulated is called _____
 - (a) Data collection
 - (b) Input stage
 - (c) Processing stage
 - (d) Output stage
3. To store data on a permanent basis is called _____
 - (a) Permanent storage
 - (b) Primary storage
 - (c) Secondary storage
 - (d) First storage
4. Data preparation involves the following except _____

- (a) Sorting (b) classifying (c) processing data (d) summarizing
5. _____ devices receive data in its original format.
(a) Output (b) input (c) storage (d) processing
6. _____ are the raw material or input to the computer.
(a) Input (b) data (c) words (d) documents
7. The three stages of data processing is _____, _____ and _____.
(a) Processing (b) input (c) output (d) classifying
8. The two steps involved in inputting data into the computer are _____ and _____.
(a) Collection (b) sorting (c) coding (d) Analysing
9. _____ means checking the data to see whether it is accurate or complete.
(a) Coding (b) coding (c) Verification (d) Manipulation
10. _____ is translating the data into machine-readable form.
(a) Input (b) coding (c) processing (d) checking

WEEK 5

DATE.....

Topic: Importance of the Computer as a Tool for DATA Processing

Content: 1. Importance of a computer

Sub Topic 1. Importance of a computer

The computer is a very unique electronic device and has certain features and characteristics that distinguish it from other machines. These include:

1. *Speed* - Computers are very fast; they can perform tens of millions of operations per second. This is necessary for predicting weather forecasts, performing scientific research and even producing thousands of bills for utility companies.
2. *Accuracy* - computers are very accurate. Errors only occur if there is an error in hardware, software or data. When errors occur it is usually because of some human error, since computers can only do what they are programmed to do.
3. *Storing large amounts of information in a small space* - there are many storage media that can be used to store large volumes of data and information. For example, a single CD-ROM disk can save the equivalent of a shelf of books in the library.
4. *Working continuously* - computers can work continuously for long periods without much maintenance.
5. *Quality* - The type of output produced by the computer is far better than other electronic machines. Document is best prepared by the use of the computers.

Sub Topic 2. Importance of a computer (Cont.)

6. *Control and consistency* - the computer has automatic control and can operate for a very long time without getting exhausted. This is because a computer works under the guide of a program, and has an in-built cooling fan, or heat sink that makes it work all day long.

7. **Reliability:** the computer responds to the instruction keyed into it without any alteration, as a result of this, it gives no room for doubt over output. Therefore, the operator relies on it for effectiveness.
Example include a program computer device to ring alarm to alert workers of any emergency, a programmed entry and exit door used in big companies and supermarkets, offices, etc.
8. **Versatility:** The computer is used in different fields of human endeavour ranging from business, education, technology, engineering, law, commerce, agriculture, medicine, sports, etc. It can perform different types of tasks provided such tasks can be stated in logical way for the computer to execute. The computer is used to type letters, watch films, play music, etc.
9. **Large Storage Capacity:** vast quantities of data stored in paper files would become extremely bulky and require substantial storage space. Furthermore, the job of manually extracting data from such files would become increasingly tedious and time consuming as the size of the files increases. But with the computer, data can be stored electronically in considerable less space, and retrieve in a fraction of the time needed by the manual method. The ability of the computer to store, retrieve and process data, all without human intervention gives it power and advantage over that of human beings. So, while human can perform the same function as the computer, the difference and major benefits is that the computer can reliably execute millions of instructions in a second and stored the result in an almost unlimited memory.
10. **Programmability:** The computer can be programmed to do all forms of activities of man so long as the task is reduced to a series of logical steps. Programming in computer means the act of writing computer programs and this involves the use of special set of characters, signs, symbols, to supply instruction to the computer for execution towards achieving specific tasks (motives). This opportunity gave room for the computer to be a versatile system.

Evaluation:

1. What do we mean when it is said that the computer is programmable?
2. Explain the versatility of the computer.
3. Can computers make mistake? No/Yes

Reading Assignment:

Lay your hands on the Use Mavis Beacon for typing.

Weekend Assignment:

1. The characteristic of the computer that makes it to carry out various activities is called _____
(a) Versatility (b) Accuracy (c) Speed (d) Consistency
2. Computers can work continuously for a long time.
(a) True (b) False (c) Sometimes (d) Always

3. Some places the computer can be used include the following except

_____ (a) Hospitals (b) Street (c) Market (d) Schools

4. The computer works under the guide of _____

(a) Human beings (b) Control unit
(c) A program (d) a keyboard

5. Can computers make mistake? _____

(a) Yes (b) No (c) Sometimes (d) Always

WEEK 6

DATE.....

Topic: Practical Week on the use of computer

Reading Assessment

Read the History Development of Computer from 'A hand book on computer studies by Niyi Adekolegan, Page 38-54

WEEK 7

DATE.....

TOPIC: HISTORICAL DEVELOPMENT OF COMPUTERS

Content: i. History Of Computer: Early Counting Methods - Fingers, Stones, Pebbles, Grains Etc
ii. Mechanical counting and calculating devices: Abacus, Slide rule etc.

Sub-Topic 1: Early Counting Methods

The history and development of computer can be traced back to the studies of Mathematics which started with counting. The history of Mathematics is the history of civilization. Early man counted by means of matching one set of object with another set i.e. stones and sheep, the use of finger and toes, pebbles and grain etc. The problems posted by these early counting and data processing method were enormous. The major problem with these devices was that they could not be used for counting large numbers efficiently.

These has led to various computing inventions in search for a tool that could enable man meet his computational and data processing needs until we have the computer today.

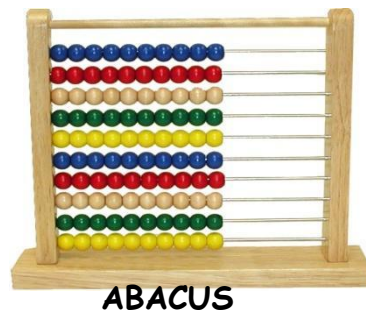
Stone Age: This was a period when stone was used for making different kinds of tools. For example, clay was used for pottery while basalt and sandstone was used for making grinding stones.

Sub-Topic 2: Early Mechanical counting and calculating devices

THE ABACUS

The Abacus was made up of beads threaded on iron rods. The iron rods were fixed on a rectangular wooden frame. The Abacus was used for addition and subtraction.

It could not carry out complex mathematics. The Abacus was early used for arithmetic tasks. The Abacus was developed in China about 5000 years ago. The Abacus was successful that its use spread from china to many other countries.

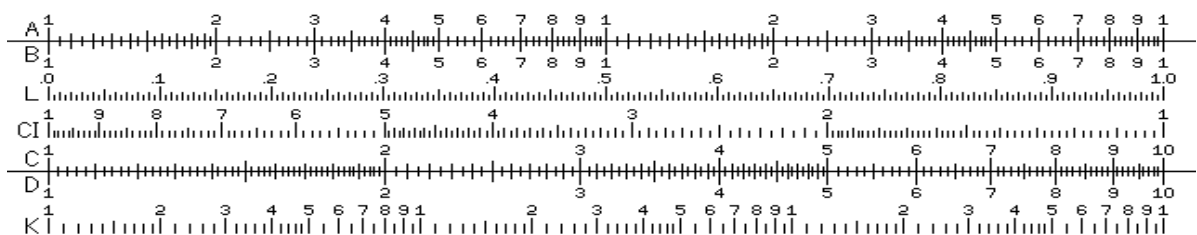


SLIDE RULE

The slide rule also known as a slip-stick is a mechanical analogue computer. The slide rule is used primarily for multiplication, division, and also functions such as roots, algorithms and trigonometry, but is not normally used for addition or subtraction.

Slide rules come in diverse range of styles and generally appear in a straight or circular form with a standardized set of markings (scales) essential to performing mathematical computations.

William Oughtred and others developed the slide rule in the 1600s based on the emerging work on logarithms by John Napier. The use of slide rule continued to grow through the 1950s and 1960s even as digital computing devices were being gradually introduced.



NAPIER'S LOGARITHM

John Napier discovered that multiplication and division of numbers could be performed by addition and subtraction respectively, of logarithm of those numbers. While producing the first logarithmic tables, Napier needed to perform many multiplications, and it was at this point that he designed Napier's bones, an abacus-like device used for multiplication and division.

BLAISE PASCAL'S CALCULATING MACHINE

Blaise Pascal was a French man who developed the first true adding machine in 1642. He was a mathematician as well as a philosopher. In 1642, he began working on calculating machines and after 3 years invented the mechanical calculator. He built 20 of these machines (called the Pascaline) in the following 10 years.

Blaise Pascal was born in France in 1623 and died in Paris in 1662. His machine was based on Abacus principle.



EVALUATION

1. List two types of computing instruments known to you.
2. The slide rule was invented by_____

READING ASSIGNMENT

Read on Electro-mechanical counting devices, 'A hand book on computer studies Chapter 6, Pages 41-42

WEEKEND ASSIGNMENT

1. The Pascaline machine was invented by
 - (a) William Pascal
 - (b) John Napier
 - (c) Blaise Pascal
 - (d) Charles Babbage
2. _____ invented the logarithm.
 - (a) Ada Lovelace
 - (b) Herman Hollerith
 - (c) Blaise Pascal
 - (d) John Napier
3. _____ is a rectangular wooden frame.
 - (a) The Pascaline
 - (b) The Logarithm
 - (c) Punch card
 - (d) The Abacus
4. The first true adding machine was invented in _____
 - (a) 1922
 - (b) 1642
 - (c) 1932
 - 1852
5. _____ developed the slide rule
 - (a) John Napier
 - (b) Ada Lovelace
 - (c) William Oughtred
 - (d) Charles Babbage

THEORY

1. What was the major problem of the Abacus?
2. Describe any two of the following: (i) Abacus (ii) Logarithm (iii) The Pascaline

WEEK 8

DATE.....

TOPIC: HISTORICAL DEVELOPMENT OF COMPUTERS

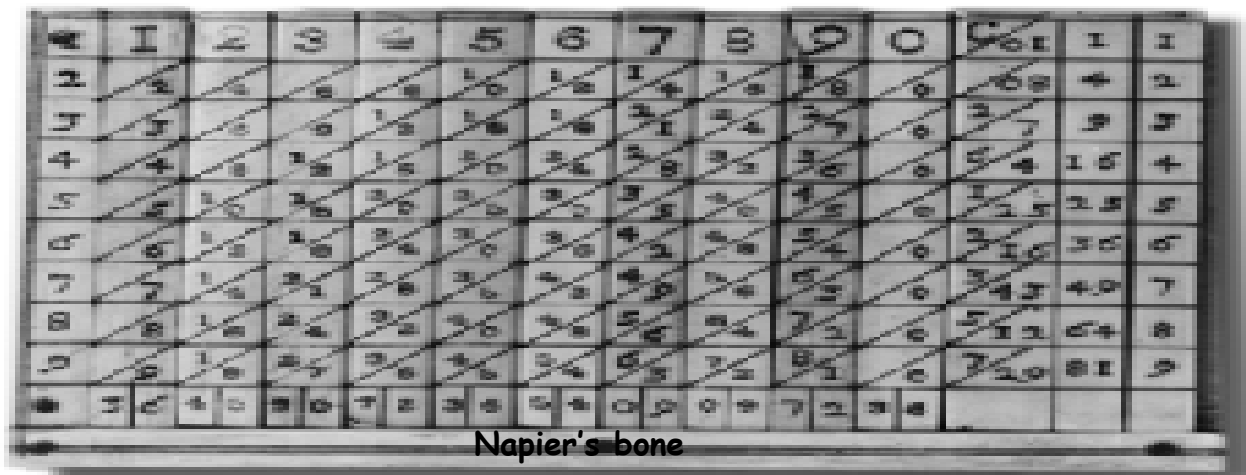
Content: i. Electro-mechanical counting devices: John Napier bone, Gottfried Leibniz machine, Herman Hollerith, Joseph Jacquard loom, Charles Babbage etc.

Sub-topic 1: Electro-mechanical counting devices: John Napier bone, Gottfried Leibniz machine, Herman Hollerith.

Gottfried W. Von Leibnitz carried out further development on the work of Blaise Pascal so that multiplication and division could be carried directly out. He invented a machine called "THE STEPPED RECKONER" in 1694. The machine is a mechanical calculator which can do multiplication, division and calculate square roots.

JOHN NAPIER BONE

While producing the first logarithmic tables, Napier needed to perform many multiplications, and it was at this point that he designed Napier's bones, an abacus-like device used for multiplication and division.



$7 \times 1 =$
 $7 \times 2 =$
 $7 \times 3 =$
 $7 \times 4 =$
 $7 \times 5 =$
 $7 \times 6 =$
 $7 \times 7 =$
 $7 \times 8 =$
 $7 \times 9 =$

Hollerith was born at Buffalo, New York in 1860 and died in Washington in 1929. He developed the "PUNCHED CARD" in 1890. He used punched cards and a tabulating machine to collate the 1890 census in the United States of America. This was the first basic input medium. He joins his company with two other companies to form

the Computing Tabulating and Recording Company, which in 1924 is known as International Business Machine (IBM) Corporation.

Sub-Topic 2: Electro-mechanical counting devices: Joseph Jacquard loom, Charles Babbage, Lady Augusta Ada Lovelace etc.

JOSEPH JACQUARD LOOM

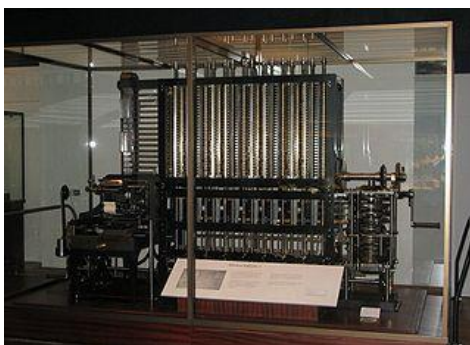
Jacquard Loom is a mechanical loom invented by Joseph Marie Jacquard in 1801. The loom simplifies the process of manufacturing textiles with complex patterns such as brocade and damask. The loom is controlled by paste board cards with punched holes, each row of which corresponds to one row of the design. Multiple rows of holes are punched on each card and the many cards that compose the design of the textile are strung together in order.

The Jacquard loom was the first machine to use punch cards to control a sequence of operations.

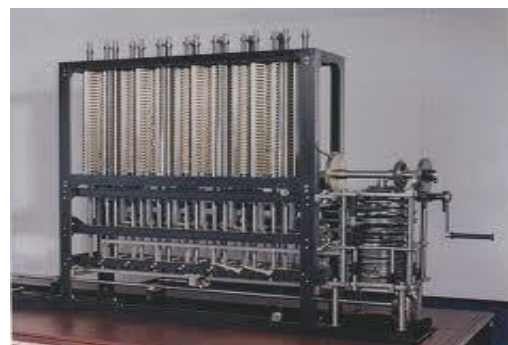


CHARLES BABBAGE ANALYTICAL MACHINE

He was the first person to design a computer that is different from a calculator. In 1822, he developed 'different engine' that could perform intricate calculations correctly and rapidly on the principle that anticipated the modern electronic computer. In 1837, the 'analytical engine' was developed and it could be programmed. That means it can receive instructions and solve problems given to it. Charles Babbage is referred to as the father of modern day computers because all his ideas are contained in modern computers.



The Difference Engine



Analytical Engine

LADY AUGUSTA ADA LOVELACE

Ada Lovelace was an English Mathematician and a friend to Charles Babbage. She documented the work of Babbage in her 'observation' on Mr. Babbage's Analytical Engine, her contributions to Babbage's work was by convincing him to use binary system in his analytic engine which Babbage never completed by Lovelace. She was a forerunner of modern computer program. And historians have credited her as the first lady programmer.

Evaluation

1. Explain two points on each of the following
 - i. Jacquard Loom
 - ii. Charles Babbage
 - iii. Ada Lovelace

READING ASSIGNMENT

Read on Electronic counting devices, 'A hand book on computer studies Chapter 6, Pages 43-46

WEEKEND ASSIGNMENT

1. Charles Babbage is called _____
 - (a) Engineer
 - (b) Mathematician
 - (c) Father of computers
 - (d) Programmer
2. Who is the first lady programmer? (a) Charles Babbage (b) Ada Lovelace
(c) Jacquard Loom (d) Napier bone

WEEK 9

DATE.....

TOPIC: HISTORICAL DEVELOPMENT OF COMPUTERS

Content:

- i. Electronic counting devices and modern computer: William Bill Gate, Philip Emeagwali, John Von Neuman etc
- ii. Generation of Computers - First, second, third, fourth and fifth generations.

Sub-Topic: Electronic counting devices and modern computer: William Bill Gate, Philip Emeagwali, John Von Neuman

William Bill Gate

Bill H.W. Gates is the founder and the chairman of Microsoft Corporation. Microsoft is a software services and solution industry and the fastest growing company in the PC industry. Bill Gate is the richest businessman in the world today.

NHJ He was born on October 28, 1955 to the family of William H. Gates II (father), who was a sea little attorney and his late mother Mary Gates was a schoolteacher. He grew in sea little with his sisters.

He entered Harvard University as a freshman in 1973 and was dropped out of Harvard to create what eventually becomes Microsoft. While at Harvard, Gate developed a version of programming language BASIC for the first microcomputer. His foresight and vision for personal computing has been the central to the success of Microsoft and the software industry. He was guided by a belief that the computer would be valuable tool on every desktop and in every home; he therefore began to develop software for personal computers.

Philip Emeagwali

He is a Nigerian, a pride of Africa and the Black race was born on August 23, 1954 in Akure and now base in US. In April 1967, he was displaced from school due to the civil war which claimed the lives over 50,000 Igbo indigenes.

Philip was determined and by 1973, he earned his first diploma from the University of London through self study and subsequently got a scholarship to Oregon State University. This marked the beginning of his fine career. Philip Emeagwali has received more than 100 prizes, awards and honours.

He applied the power of networked computers to the analysis of oil field services. In the 1980's, he worked on advanced formulas in networked computers. This achievement led him to win the Gordon Bell Super Computing prize in 1989. Apart from this, he has won several awards including a 1998 Distinguished Scientist Award from the World Bank.

Sub-Topic 2: Generation of Computers – First, second, third, fourth and fifth generations.

GENERATIONS OF COMPUTER:

Generation of computers are the developmental stages that the computer has gone through. There are 5 generations of computers and their accompanying innovations.

1ST GENERATION

First generation computers were those manufactured between 1946 and 1960. The computers used the stored program concept. First generation computers were associated with the vacuum tubes or valves technology.

CHARACTERISTICS:

- They were very bulky and heavy.
- They measured between 50 - 100ft long and about 80ft high.
- The computers weighed up to 200 tons and occupied 3000 cubic ft.
- They used vacuum tubes to store and process data.
- Examples of first generation computers are ENIAC, EDSAC, and UNIVAC.

PROBLEMS OF FIRST GENERATION COMPUTERS

1. The vacuum tubes also generated a lot of heat. Therefore they needed a cooling system.

2ND GENERATION TRANSISTOR

Second generation computers were developed between 1960 and 1964. The computers used transistors. The transistor was invented by William Shockley in 1948. Magnetic tapes were used for storage.

CHARACTERISTICS:

1. They were smaller in size than first generation computers.
2. They occupied smaller space than the first generation computers.
3. Second generation computers used less electricity and generated less heat.
4. The transistors could do all that the vacuum tubes did.
5. The computers were faster and lighter in weight than first generation computers.

Examples of second generation computers are NCR, 315, IBM, 7030.

3RD GENERATION INTEGRATED CIRCUIT

Third generation computers were manufactured between 1964 and 1970.

During this period, the integrated circuit was invented.

They were first used in space ships and electronic military equipment.

CHARACTERISTICS:

1. The computers used integrated circuits.
2. They were faster than second generation computers.
3. They were smaller in size and also more powerful.
4. The computers had fast memory access.

4TH GENERATION VERY LARGE INTEGRATED CIRCUIT

The computers were manufactured between 1974 and 1984. One of the most important results of large-scale integration was the introduction of the microprocessor in the fourth generation by an American company - Intel Corporation. A microprocessor is a central processing unit fabricated on a chip. This generation of computers had optical readers and graphic display terminals. The use of floppy diskette as a storage facility was introduced in this generation.

CHARACTERISTICS:

1. The computers were smaller in size.
2. They were very powerful computers.
3. They had high processing speed.
4. They had high storage capacity.

Examples are Intel 4004, Intel 8085, Pentium 1, 2, 3, etc

5TH GENERATION ARTIFICIAL INTELLIGENCE

From the 1990s, the fifth generation computers entered into the computer world through the application of fibre optics technology. This generation of computers evolved as a result of the need for computers to take decisions in various circumstances. This generation is witnessing the influx of super microcomputers through artificial intelligence whose main attraction over previous computers is speed and power. Expert systems have the capacity of making decisions and judgements.

These are computers that will be able to mimic many things that are done by human beings. For example, fifth generation computers will be able to accept spoken word instruction (voice recognition) and assist doctors in carrying out diagnosis.

EVALUATION

1. The fifth generation computers made use of _____
2. The means by which a computer receives spoken word instruction is called _____
3. The 3rd generation computers were manufactured between ____ and _____
4. List two characteristics of 3rd generation computers.

5. First generation computers were manufactured between ___ and _____
6. One of the problems of the first generation computers was that they generate a lot of _____
7. _____ were used for storage in the 2nd generation computers.
8. List two examples of 2nd Generation computers.
9. What is a microprocessor?
10. List two software tools developed during the 4th generation.

WEEKEND ASSIGNMENT

1. We have _____ generations of computers.
(a) 2 (b) 3 (c) 4 (d) 5
2. The characteristics of first generation computers include the following except _____
(a) They were very bulky and heavy.
(b) They measured between 50ft and 100ft long.
(c) The computers weighed up to 200 tons and occupied 3000 cubic ft.
(d) They used transistors to store and process data.
3. Fourth generation computers used _____
(a) Vacuum tubes (b) Transistors (c) Artificial Intelligence
(d) Large scale integrated circuits
4. _____ generation computers used fibre optics.
(a) First (b) Second (c) Fourth (d) Fifth
5. Second generation computers were _____ than 3rd generation of computers.
(a) Smaller (b) Faster (c) More reliable (d) Slower

THEORY

1. What do we mean by 'generation of computers'?
2. Compare and contrast the characteristics of the 3rd and 4th generation computers.

10. Revisions
- 11 & 12. Examination