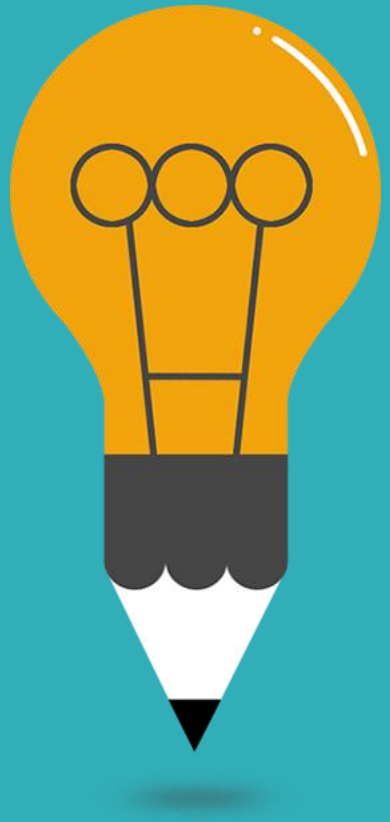
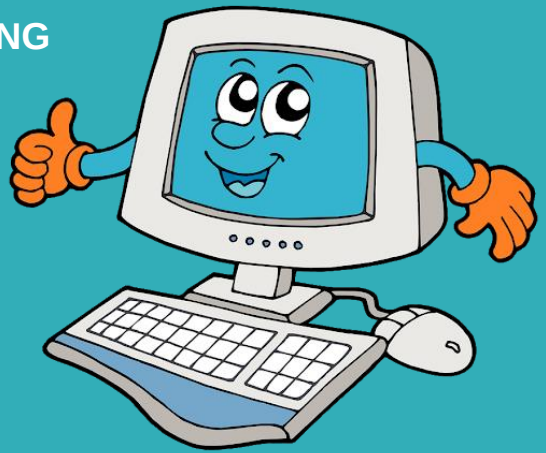


COLLEGE of COMPUTER STUDIES

HISTORY OF COMPUTER

CC101 INTRODUCTION TO COMPUTING

KEZIA ABEGAIL VELASCO
Instructor I



Computer

- ✓ Computer is a programmable machine.
- ✓ Computer is a machine that manipulates data according to a list of instructions.
- ✓ Computer is any device which aids humans in performing various kinds of computations or calculations.

Three principles characteristic of computer:

- ✓ It responds to a specific set of instructions in a well-defined manner.
- ✓ It can execute a pre-recorded list of instructions.
- ✓ It can quickly store and retrieve large amounts of da ta.

Earliest Computer

- ✓ Originally calculations were computed by **humans**, whose job title was computers.
- ✓ These human computers were typically engaged in the calculat ion of a mathematical expression.
- ✓ The calculations of this period were specialized and expensive, requiring years of training in mathematics.
- ✓ The first use of the word "computer“ was recorded in 1613, refe rring to a person who carried out calculations, or computations, and the word continued to be used in that sense until the middl e of the 20th century.

Earliest Computer

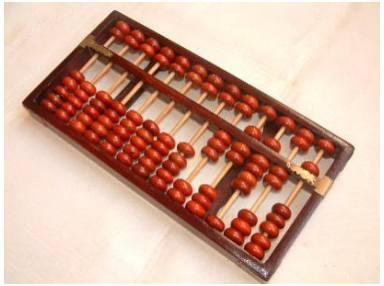
Tally Sticks

- ✓ A tally stick was an ancient memory aid device to record and document numbers, quantities, or even messages.

Earliest Computer

Abacus

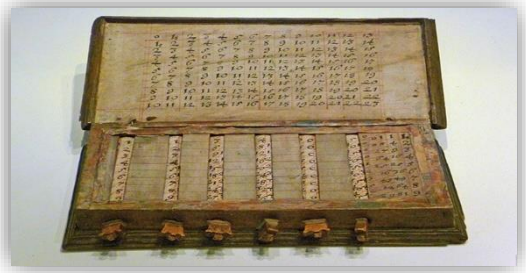
- ✓ An abacus is a mechanical device used to aid an individual in performing mathematical calculations.
- ✓ The abacus was invented in Babylonia in 2400 B.C.
- ✓ The abacus in the form we are most familiar with was first used in China in around 500 B.C.
- ✓ It used to perform basic arithmetic operations.



Earliest Computer

Napier's Bones

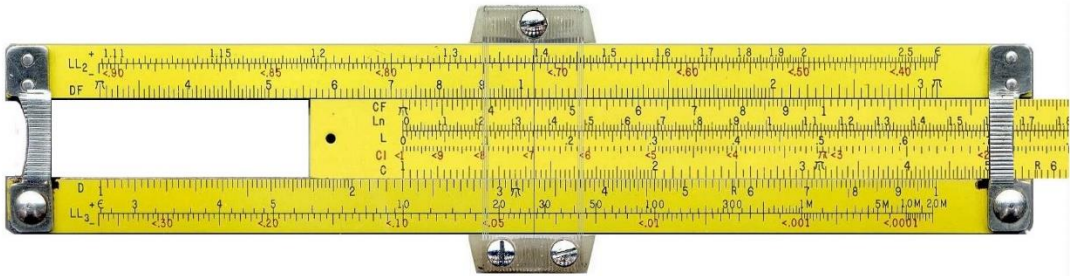
- ✓ Invented by John Napier in 1614.
- ✓ Allowed the operator to **multiply, divide** and **calculate square** and **cube roots** by moving the rods around and placing them in specially constructed boards.



Earliest Computer

Slide Rule

- ✓ Invented by **William Oughtred** in**1622**.
- ✓ Is based on Napier's ideas about **logarithms**.
- ✓ Used primarily for
  - **multiplication**
  - **division**
  - **roots**
  - **logarithms**
  - **Trigonometry**



- ✓ Not normally used for **addition** or **subtraction**.

Earliest Computer

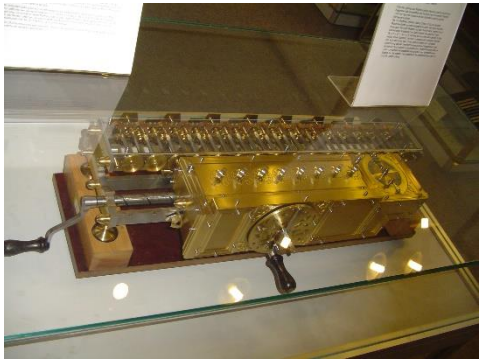
Pascaline

- ✓ Invented by **Blaise Pascal** in 1642.
- ✓ It was its limitation to addition and subtraction.
- ✓ It is too expensive.

Earliest Computer

Stepped Reckoner

- ✓ Invented by **Gottfried Wilhelm Leibniz i**n 1672.
- ✓ The machine that can add, subtract, multiply and divide automatically.



Earliest Computer

Jacquard loom

- ✓ The **Jacquard loom** is a mechanical loom, invented by **Joseph-Marie Jacquard** in1881.
- ✓ •It an automatic loom controlled by punched cards.

Earliest Computer

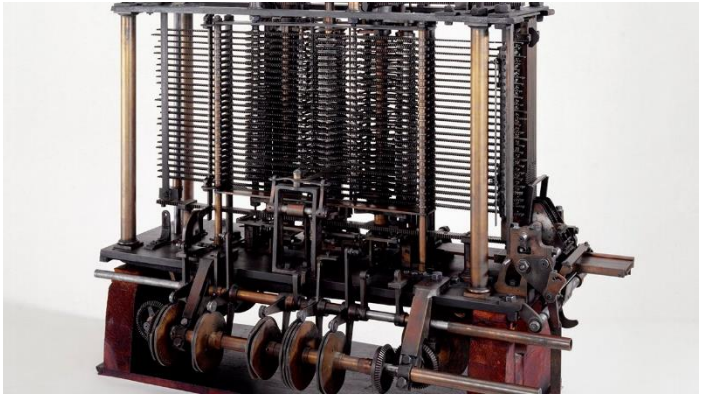
Arithmometer

- ✓ A mechanical calculator invented by **Thomas de Colmar** in 1820,
- ✓ The first reliable, useful and commercially successful calculating machine.
- ✓ The machine could perform the four basic mathematic functions.
- ✓ The first mass-produced calculating machine .

Earliest Computer

Difference Engine and Analytical Engine

- ✓ It is an automatic, mechanical calculator designed to tabulate polynomial functions.
- ✓ Invented by **Charles Babbage** in **1822 and 1834**
- ✓ It is the first mechanical computer.



Earliest Computer

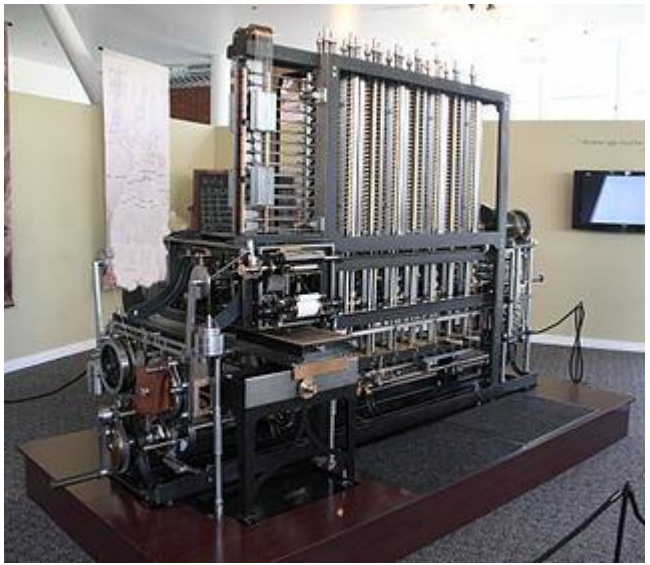
First Computer Programmer

- ✓ In **1840, Augusta Ada Byron** suggests t o Babbage that he use the binary system.
- ✓ She writes programs for the **Analytical Engine**.

Earliest Computer

Scheutzian Calculation Engine

- ✓ Invented by **Per Georg Scheutz** in 1843.
- ✓ Based on Charles Babbage's difference engine.
- ✓ The first **printing calculator.**



Earliest Computer

Tabulating Machine

- ✓ Invented by **Herman Hollerith** in 1890.
- ✓ To assist in summarizing information and accounting.

Earliest Computer

Havard Mark 1

- ✓ Also known as IBM Automatic Sequence Controlled Calculator (ASCC).
- ✓ Invented by **Howard H. Aikenin** 1943
- ✓ The first electro-mechanical computer.

Earliest Computer

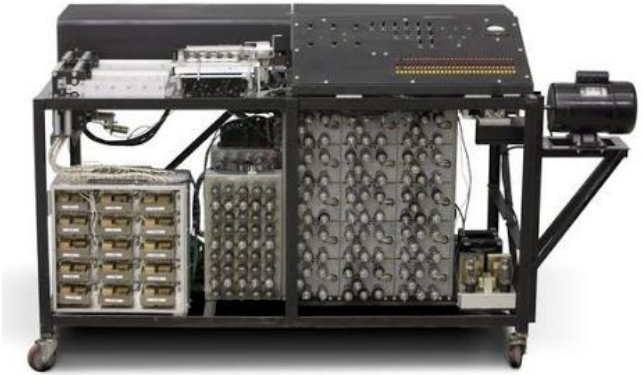
Z1

- ✓ The first programmable computer.
- ✓ Created by **Konrad Zuse**in Germany from **1936 to 1938.**
- ✓ To program the Z1 required that the user insert punch tape into a punch tape reader and all output was also generated through punch tape.

Earliest Computer

Atanasoff-Berry Computer(ABC)

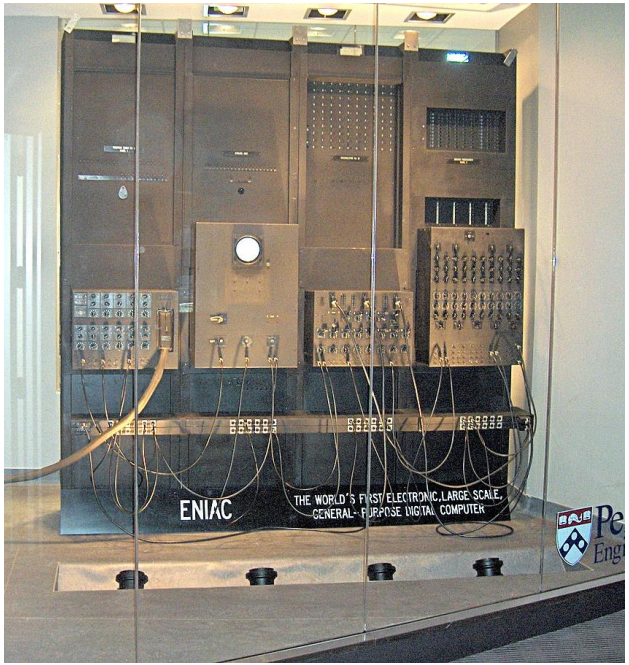
- ✓ It was the first electronic digital computing device.
- ✓ Invented by Professor **John Atanasoff** and graduate student **Clifford Berry** at Iowa State University between 1939 and 1942.



Earliest Computer

ENIAC

- ✓ **ENIAC** stands for **Electronic Numerical Integrator and Computer**.
- ✓ It was the first electronic general-purpose computer.
- ✓ Completed in 1946.
- ✓ Developed by **John Presper Eckert** and **John W. Mauchl**.



Earliest Computer

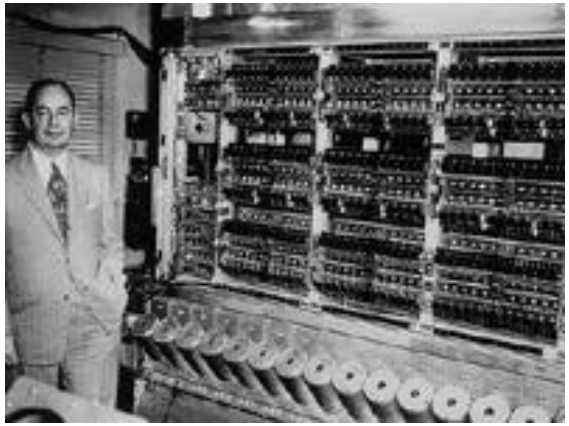
UNIVAC 1

- ✓ The UNIVAC I(UNIVersal Automatic Computer 1) was the first commercial computer.
- ✓ •Designed by J. **Presper Eckert** and **John Mauchly.**

Earliest Computer

EDVAC

- ✓ **EDVAC** stands for **Electronic Discrete Variable Automatic C omputer**
- ✓ **The First Stored Program Computer**
- ✓ Designed by **Von Neumann** in 1952.
- ✓ It has a memory to hold both a stored program as well as data.



Earliest Computer

Osborne 1

- ✓ the first portable computer.
- ✓ Released in 1981 by the Osborne Computer Corporation.

Earliest Computer

The First Computer Company

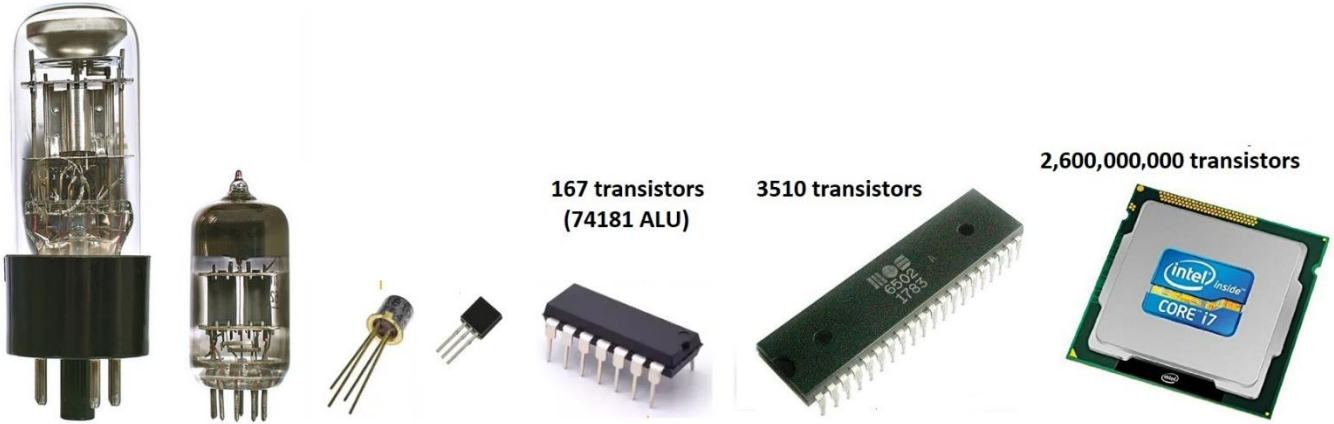
- ✓ The first computer company was the **Electronic Controls Company.**
- ✓ Founded in 1949 by **J. Presper Eckert** and **John Mauchly**.

Computer Generation

There are five generations of computer:

1. First generation - 1946 -1958
2. Second generation - 1959 -1964
3. Third generation - 1965 -1970
4. Fourth generation - 1971 -today
5. Fifth generation - Today to future

Computer Generation



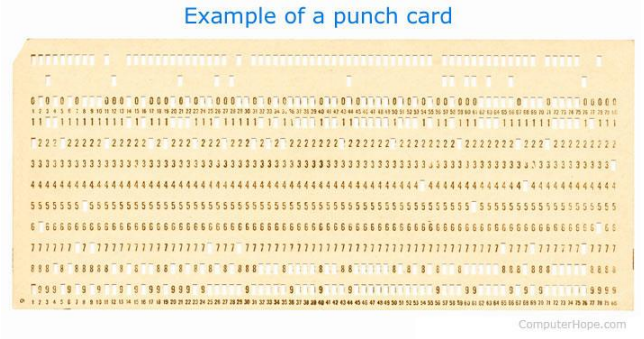
1st generation 2nd generation 3rd generation 4th generation

First Generation

- ✓ The first computers used vacuum tubes for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms.
- ✓ They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions.

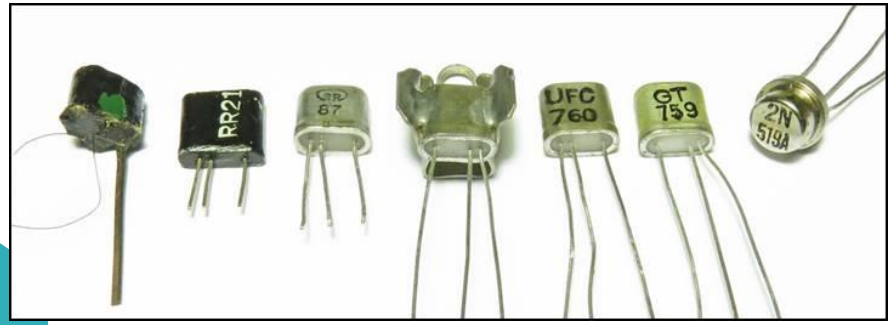
The First Generation

- ✓ First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time.
- ✓ Input was based on punched cards and paper tape, and output was displayed on printouts.



The Second Generation

- ✓ Transistors replaced vacuum tubes and ushered in the second generation of computers.
- ✓ One transistor replaced the equivalent of **40 vacuum tubes**.
- ✓ Allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable.
- ✓ Still generated a great deal of heat that can damage the computer.



The Second Generation

- ✓ Second-generation computers moved from cryptic binary machine language to symbolic, or assembly languages, which allowed programmers to specify instructions in words.
- ✓ Second-generation computers still relied on punched cards for input and printouts for output.
- ✓ These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology.

Assembly Language vs Machine Language

Assembly Language

```
        ST 1,[801]
        ST 0,[802]
TOP:    BEQ [802],10,BOT
        INCR [802]
        MUL [801],2,[803]
        ST [803],[801]
        JMP   TOP
BOT:    LD A,[801]
        CALL PRINT
```

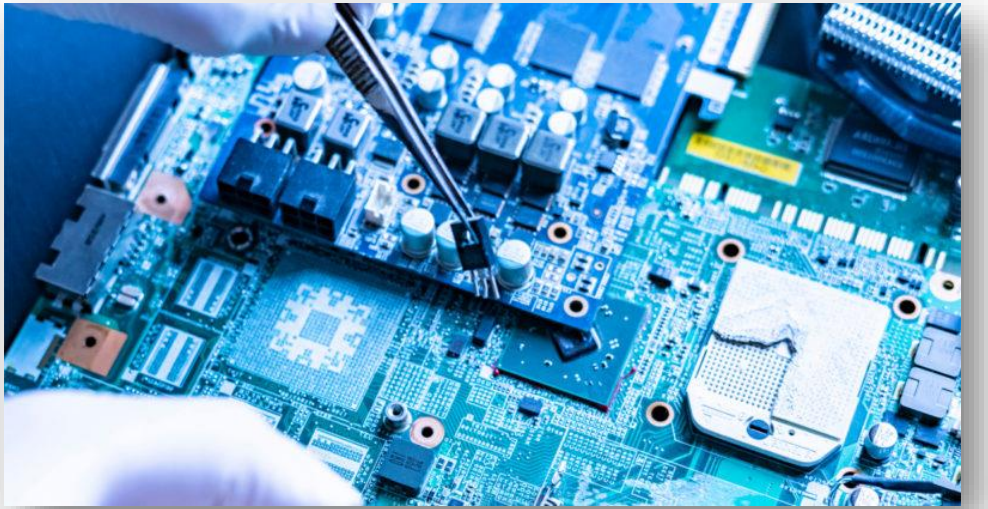
Machine Language

```
00100101 11010011
00100100 11010100
10001010 01001001 11110000
01000100 01010100
01001000 10100111 10100011
11100101 10101011 00000010
00101001
11010101
11010100 10101000
10010001 01000100
```

The Third Generation

- ✓ The development of the **integrated circuit** was the hallmark of the third generation of computers.
- ✓ Transistors were miniaturized and placed on silicon chips, called semiconductors, which drastically increased the speed and efficiency of computers.
- ✓ Much smaller and cheaper compare to the second generation computers.
- ✓ It could carry out instructions in billionths of a second.

The Third Generation



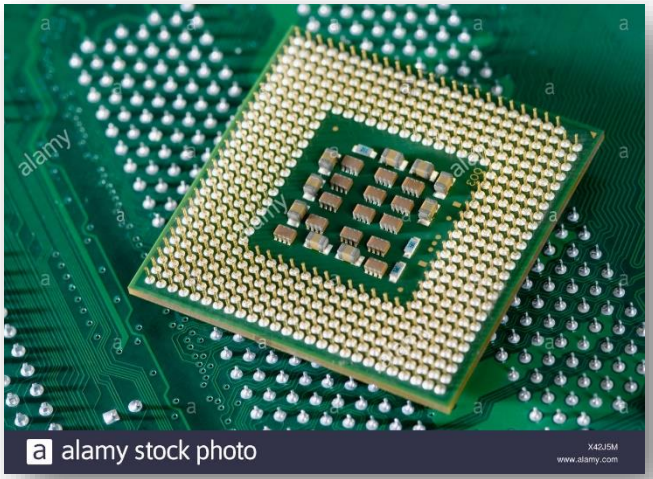
The Third Generation

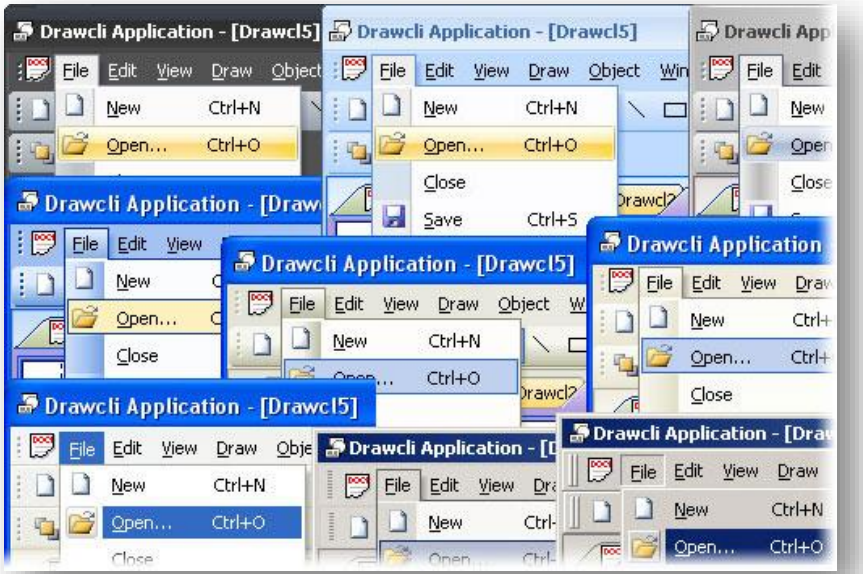
- ✓ Users interacted with third generation computers through **keyboards and monitors** and interfaced with an **operating system**, which allowed the device to run many different applications at one time with a central program that monitored the memory.
- ✓ Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.

The Fourth Generation

- ✓ The **microprocessor** brought the fourth generation of computer s, as thousands of integrated circuits were built onto a single silicon chip.
- ✓ As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet.
- ✓ Fourth generation computers also saw the development of GUIs, the mouse and handheld devices.

The Fourth Generation





Graphical User Interface (GUI)

The Fifth Generation

- ✓ Based on **Artificial Intelligence (AI).**
- ✓ Still in development.
- ✓ The use of parallel processing and superconductors is helping to make artificial intelligence a reality.
- ✓ The goal is to develop devices that respond to natural language input and are capable of learning and self-organization.
- ✓ There are some applications, such as voice recognition, that are being used today.

REFERENCE/S

- ✓ https://ftms.edu.my/v2/current-student/foundation-student/csca0101-computing-basics/

ACTIVITY 1

Answer Activity 1 – **Computer History**