

Introduction to Information and Communication Technology

Week 1: Lecture 2 History of Computers

History of Computers

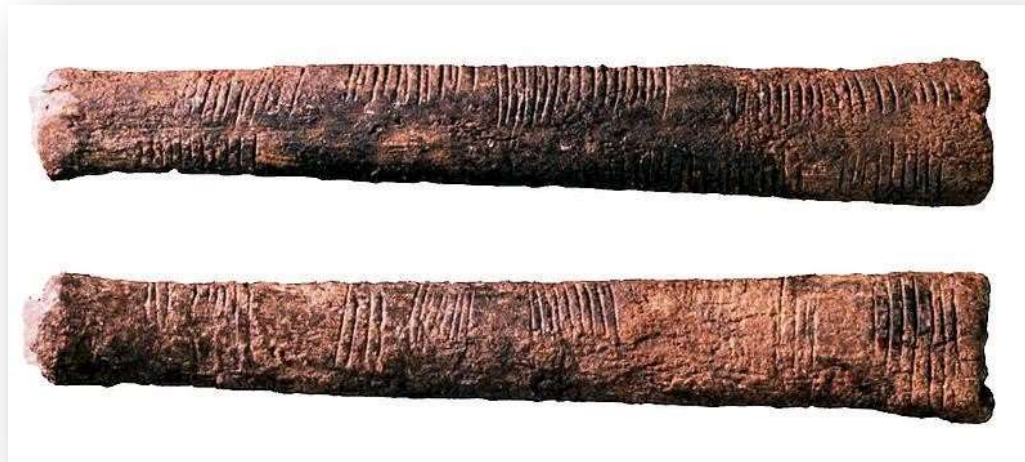
Earliest Computer

- Originally calculations were computed by humans, whose job title was computers.
- These human computers were typically engaged in the calculation 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, referring to a person who carried out calculations, or computations, and the word continued to be used in that sense until the middle of the 20th century.

History of Computers

Tally Sticks

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



Tally sticks

History of Computers

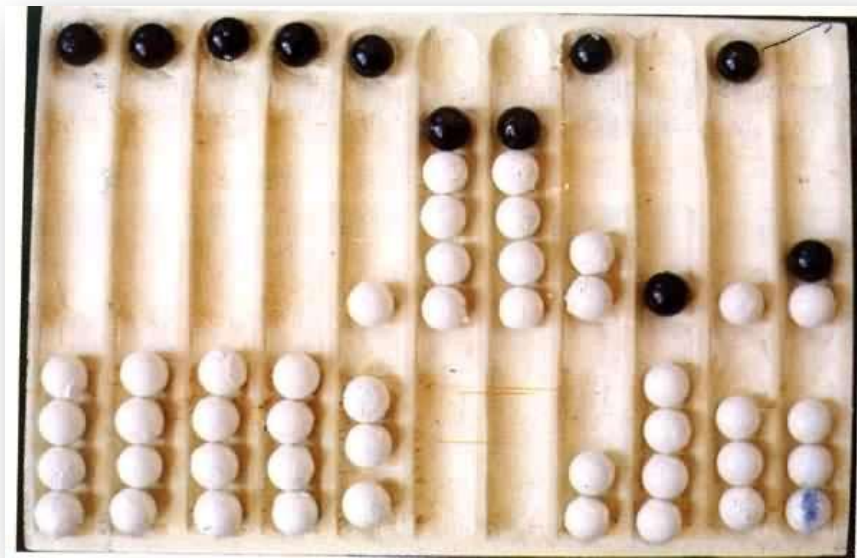
Abacus

- 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.

<https://www.youtube.com/watch?v=SYRyKYmOJwM>

History of Computers

Abacus



Earlier Abacus



Modern Abacus

History of Computers

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.

<https://www.youtube.com/watch?v=y8HKGr77EVc>



John Napier



Napier's Bones

History of Computers

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**.



William Oughtred



Slide Rule

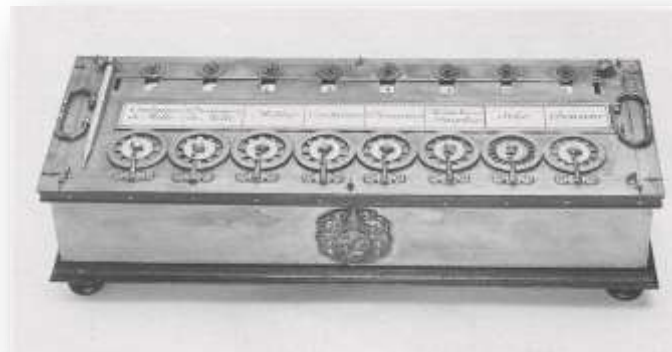
History of Computers

Pascaline

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



Blaise Pascal



Pascaline

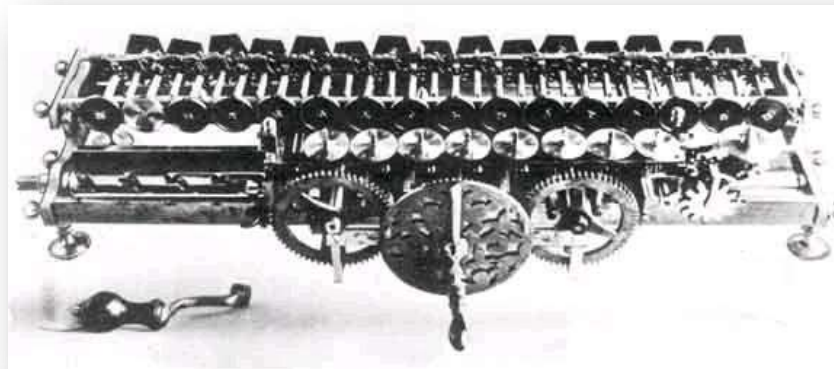
History of Computers

Stepped Reckoner

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



Gottfried Wilhelm Leibniz



Stepped Reckoner

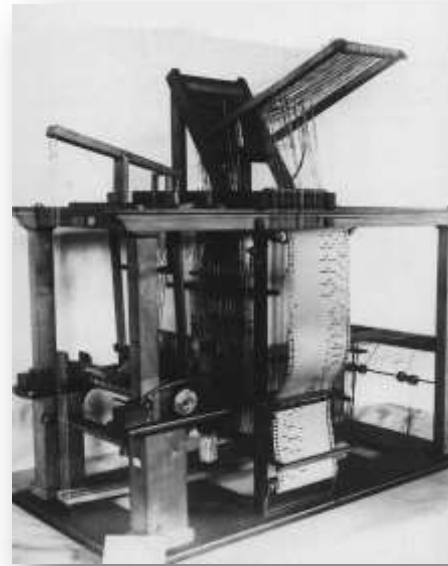
History of Computers

Jacquard Loom

- The **Jacquard loom** is a mechanical loom, invented by **Joseph-Marie Jacquard** in 1881.
- It an automatic loom controlled by punched cards.



Joseph-Marie Jacquard



Jacquard Loom

History of Computers

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.



Thomas de Colmar



Arithmometer

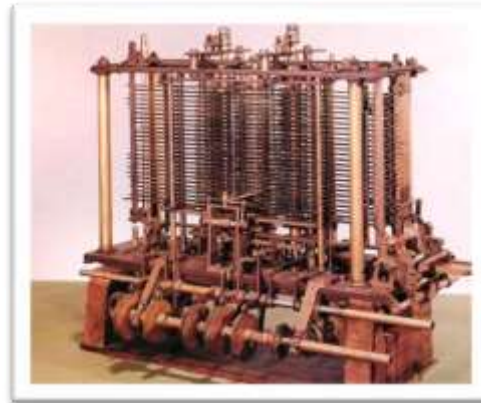
History of Computers

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.



Charles Babbage



Difference
Engine



Analytical
Engine

<https://www.youtube.com/watch?v=lv2rCMqW-tg>

<https://www.youtube.com/watch?v=be1EM3gQkAY>

kashif.nth@aup.edu.pk

History of Computers

First Computer Programmer

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



Augusta Ada Byron

<https://www.youtube.com/watch?v=PQsvDrnik4E>

History of Computers

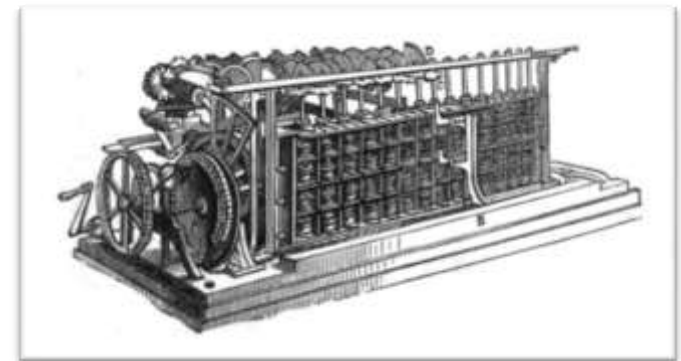
Scheutian Calculation Engine

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



Per Georg Scheutz

<https://www.youtube.com/watch?v=XSkGY6LchJs&t=141s>



Scheutian Calculation Engine

History of Computers

Tabulating Machine

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



Herman Hollerith



Tabulating Machine

<https://www.youtube.com/watch?v=9HXjLW7v-II>

History of Computers

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.

<https://www.youtube.com/watch?v=zE-HtMsJnBI>

<https://www.youtube.com/watch?v=duOBNyUdT2M>



Konrad Zuse



Z1

History of Computers

Havard Mark 1

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

<https://www.youtube.com/watch?v=bN7AdQmd8So>



Howard H. Aiken



Mark 1

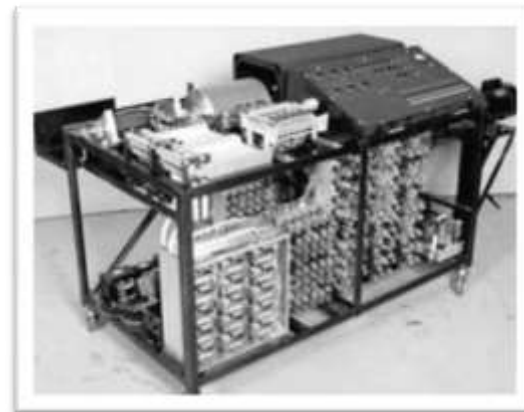
History of Computers

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.



Professor John Atanasoff



Atanasoff-Berry Computer

History of Computers

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**.



ENIAC

https://www.youtube.com/watch?v=k4oGI_dNaPc

History of Computers

UNIVAC 1

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



UNIVAC 1

History of Computers

EDVAC

- **EDVAC** stands for **Electronic Discrete Variable Automatic Computer**
- **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.



EDVAC

History of Computers

The First Portable Computer

- **Osborne 1** – the first portable computer.
- Released in 1981 by the Osborne Computer Corporation.



Osborne 1

<https://www.youtube.com/watch?v=l99XMoxha6E>

History of Computers

The First Computer Company

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



