

# Computer History: Early Computing Devices

## Introduction

This lesson provides an overview of the tools and machines that paved the way for modern computing.

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## 1. Early Computing Device

In 1613, the first use of the word "computer" was recorded. This refers 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.

These human computers were often highly trained in mathematics and engaged in complex calculations. The earliest devices created to aid with these computations included the **tally stick**, an ancient tool for recording numbers and quantities, and the abacus, a mechanical device for mathematical calculations first used in Babylonia around 2400 B.C.

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## 2. Mechanical Calculators and Engines

As the need for faster calculations grew, various mechanical devices were invented:

- **Napier's Bones:** Invented by John Napier in 1614, this device helped with multiplication, division, and finding square and cube roots.
- **Abacus:** This device was invented by the Chinese around 4000 years ago. A wooden rack with metal rods and beads attached to them. The abacus operator moves the beads according to certain guidelines to complete arithmetic computations.
- **Slide Rule:** Developed by William Oughtred in 1622, it was based on Napier's ideas about logarithms and was used for multiplication, division, roots, and trigonometry. It was not typically used for addition or subtraction.
- **Pascaline:** Invented by Blaise Pascal in 1642, this machine was limited to performing addition and subtraction.
- **Stepped Reckoner:** Gottfried Wilhelm Leibniz invented this machine in 1672, which could automatically add, subtract, multiply, and divide.
- **Difference Engine and Analytical Engine:** Considered the first mechanical computer, these were designed by Charles Babbage in 1822 and 1834 to tabulate polynomial

functions. Ada Lovelace, the world's first computer programmer, wrote an algorithm for the Analytical Engine in 1843.

- **Jacquard Loom:** Joseph-Marie Jacquard invented this mechanical loom in 1881, which was controlled by punched cards. This use of punched cards would influence early computers.
- **Tabulating Machine:** Herman Hollerith invented a tabulator in 1885 that used punched cards to process statistical information. He used it to calculate the 1890 U.S. census in just three years, saving the government millions of dollars.