

Class Notes

History of Computation

Timeline of Events

- 1600 - John Napier and Napier Bones
- 1670 - Gottfried von Leibniz (Step Reckoner)
- 1820 – Blaise Pascal’s Calculating machine
- 1833 – Charles Babbage (Development of a machine with input, storage, output.)
- 1886 – Herman Hollerith (Punched Cards)
- 1943 – Alan Turing (Turing Machine)
- 1945 – John von Neuman (First Draft)

Summary of side show presented in class

This is a Brief history of Mathematicians who were instrumental in the development of electronic machines and computers.

Gottfried von Leibniz

In 1671 Leibniz introduced the Step Reckoner, a device that could perform addition, subtraction, multiplication, and, division, as well as evaluate square roots.

Charles Babbage

- Babbage created tables of trigonometric and logarithmic values that were generated by teams of mathematicians.
- Proposed building a machine called the Difference Engine to calculate these tables. The Difference Engine was only partially completed when Babbage conceived another idea of a machine called the Analytical Engine.
- Babbage never did complete either of these machines

Blaise Pascal

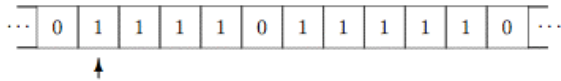
- Pascal developed a calculating machine that could perform calculations with 8 figures.

Alan Turing

- A famous British cryptographer
- During War II, Turing decoded the now-famous ENIGMA code use by the German Navy.
- In 1937 Turing developed notes which describe what is called a Turing Machine while he was a graduate student Princeton University.
- Turing played a major role in developing a electronic machine called the COLOSSUS.

Components of a Turing Machine

- A paper tape that is marked out in squares
- A “head” which can move left or right that reads symbols on the tape and writes new symbols



- A memory that records the “state” of the Turing Machine
- A set of instructions

What is a Turing Machine

Turing machines are extremely basic symbol-manipulating devices which—despite their simplicity—can be adapted to simulate the logic of any computer that could possibly be constructed.

Other Key Terms

The Enigma- A computer developed by the Germans that could generate a constantly changing code that was impossible for the code breakers to decipher in a timely fashion.

COLOSSUS- Alan Turing along with a group of British Scientist developed an electronic machine that could decipher the German codes created by the Enigma.