Dannelly's Very Short History of Computing

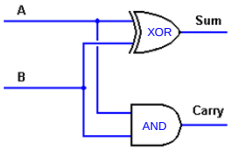
CSCI 101

Charles Babbage (1791-1871)

- Math Tables Problem
- Difference Engine and Analytical Engines
  - Abilities
    - add
    - subtract
    - loop (repeat instructions over and over)
    - compare two numbers
    - etc…

Digital Electronics 101

- Transistors can perform AND, OR, NOT, etc
- Example - Half Adder:



Apple's iPad uses the A4 system chip with 177 million transistors

Generations of Computing

First Generation

- based on **vacuum tubes**
- ENIAC
  - 1946 - Univ of Pennsylvania
  - programmed via wires
- UNIVAC
  - 1951
  - first commercial machine

Second Generation

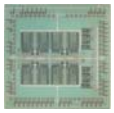
- 1955-1964
- based on **transistors**

Generations of Computing

Third Generation

- based on **Integrated Circuits**
- mainframes and minicomputers

Forth Generation



- based on **VLSI**
  - very large scale integration
- IBM PC released in 1981

Fifth Generation

- maybe it's big server farms
- maybe it's lots of small mobile devices

Future of Computing

- Quantum Computing
- Internet of Things

Moore's Law