

# Computer Organization and Architecture

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## Turing Machines

1. Turing's Thesis: Every computation can be represented with a Turing Machine.
2. Turing Machine: A mathematical model of a device that can perform any computation.
3. Universal Turing Machine: A machine to implement any and all Turing Machines.

Beyond models, real world constraints include time, financial cost, power, security, thermal dissipation, space, etc.

## Bits, Data Types, and Operators

The electro-magnetic field is not digital, yet all of modern computing is represented digitally. To compromise, 0 is a representation of the absence of voltage and 1 is a representation of the presence of voltage.

0V	0.5V	"Illegal"	2.4V	2.9V
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