Theory Of Computer Arithmetic

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Chapter 1

Classical logic

The most basic part of executing a computation on a machine is to describe the most basic information, which is true/false, and then compose them into a statement or a proposition.

informally, given a sentence, it is said to be a *statement* if
- its declaritive, either affirmative or negative.
- its possible truth values are true or false.
- its verifiable in reality.

on those statements, we have some rules to give them truth values
- law of identity: $A = A$ is a true statement.
- law of non-contradiction: $\neg(A \wedge \neg A)$ is false statement.
- law of excluded middle: either $\neg A$ or A is true statement.

1.1. Transistors

One of the biggest advancements in our modern world is the creation of a transistor, in principle the idea is simple, a transistor is simply an electrically affected button. It is represented as follows in electrical circuits

multiple basic operations can be made using these transistors, from a baasic memory to some logic gates and then bigger sequential circuits.

- AND OR NOT
- NOR XOR
- Data Latch