ALU

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Logic Model

- Background
  - We have known the completed of nand, and we have built some basicial combinational gates. So how to build a computer with these gates?
- Goal
  - Build the computing unit of computer architecture.
- Input
  - Content: ADD, REV, ALU.
  - Studying Material: Nand2T course, the element of computing system.
  - Tools: HDL and hardware simulator.
- Process
  - Add two numbers , half adder to full adder
  - Consider about minus.
  - And combine things together to build an ALU.
- Output
  - ALU, to build which we take several steps.
- Effect
  - Understanding the structure of ALU which does all the computing operations
  - Get a clear vision of what to do next looking at ALU.

Content

- Project
  - ADD:
    - Xor here, And for carrier
    - Twice for a full adder
    - 16bit
  - Rev for subtraction
    - As the max of the data is for sure, we can use rev to do that.
  - ALU:
    - Deal with Input
    - Deal with operation
- Questions discussion:
  - University and waste

Connection

- ALU can do almost all the computing operations, as we can see later in as machine language.
- So what else do we need?
  - Where to get Input? Where to store output? (memory)
  - What operation to do? Which operation to choice? (machine language, decode ,PC)