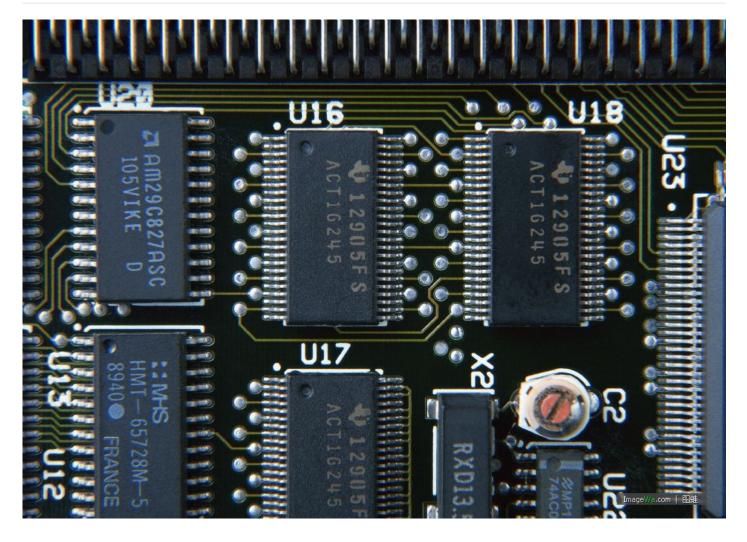
## The Assembler



Starting from basic chips,we build a general-purpose computer. For some implementation details,we choose to simplify the architecture of the machine, enabling a limited set of operations. We take the rather complicated part of logic and arthmetic operations from the hardware layer, and implement these operations by software layer-the first step to do so is to create a notation for the machine language, that is, the Assembly language. Assembler is the program that we build to translate text written in assembly language

## **Content**

- 1. Logic Model
- 2. From Hardware to Software
- 3. Deal with symbols-Two main passes
- 4. Translation to Machine Code

## **Logic Model**

**Background**: we encounter our first software practice:building a assembler for hack machine language

**Goal**: build the assembler for Hack computer using a high-level programming language

**Input**: nand2tetris reference,language specification material,e.g,Mathematica reference

**Output**: learn the basic procedure of dealing with string and text and how to build an assembler for certain platform.

## **Process:**

- 1. learn the specification of Hack machine language and assembly language
- 2. learn the specification of a high-level language and corresponding libraries or functions to deal with string and text.
- 3. implement the assembler.

**Effects**: know exactly how to build an assembler for a specific hardware implementation. **Outside factors**:We don't need to build an assembler using machine code.Carrying the building process on another computer is OK.