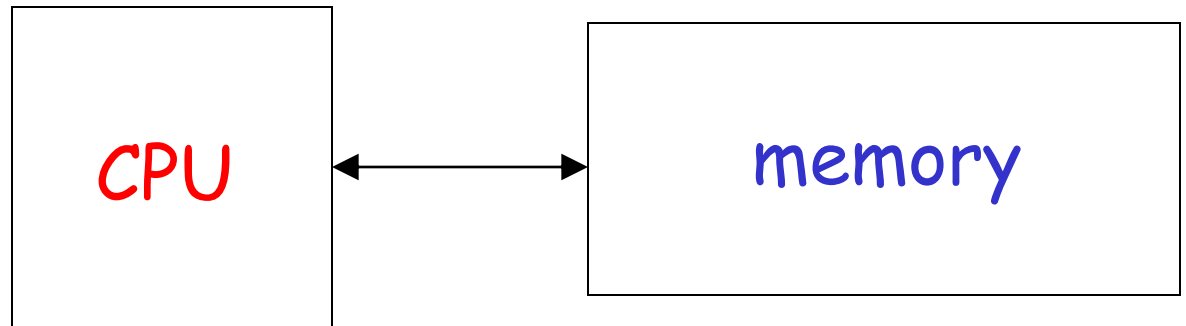
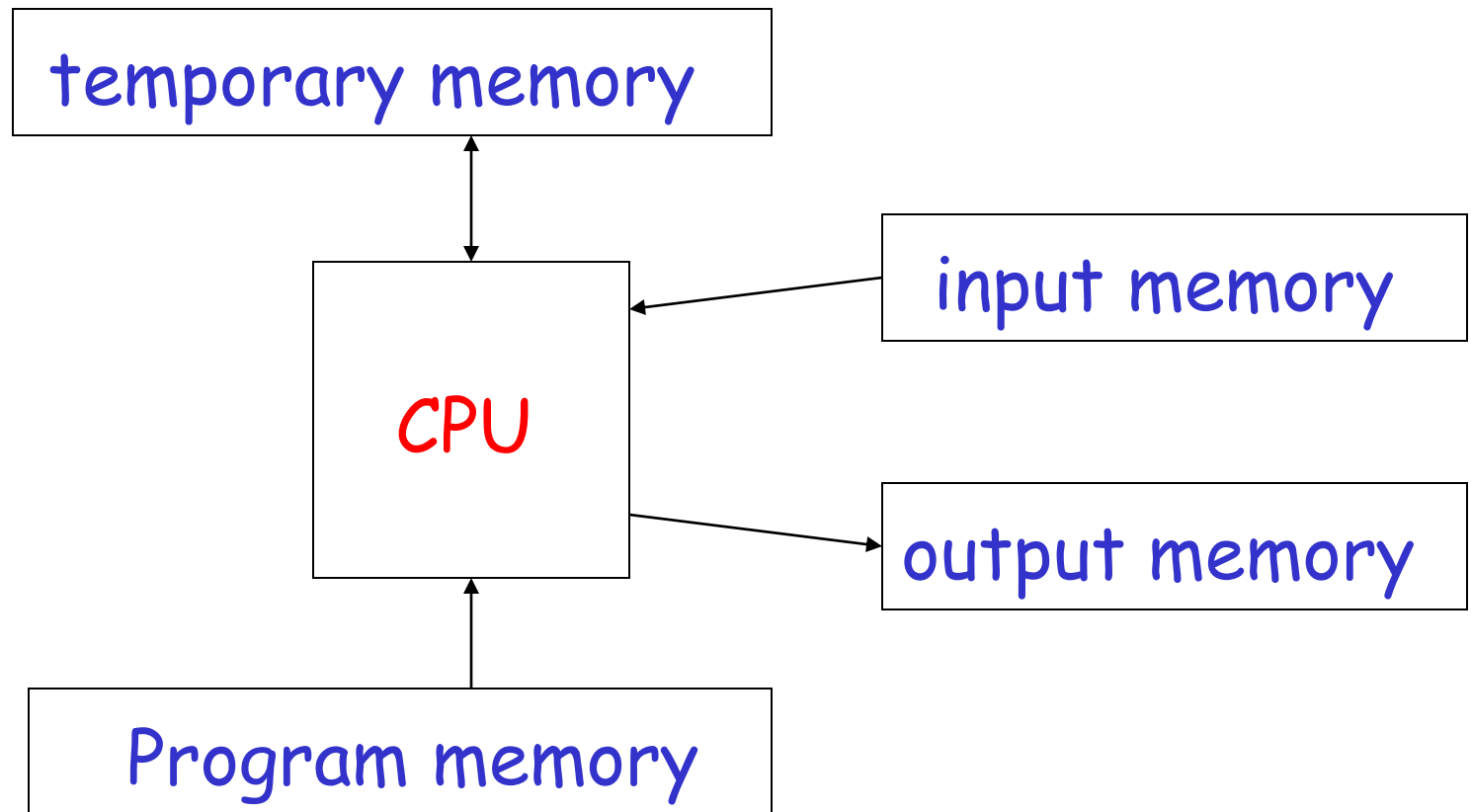


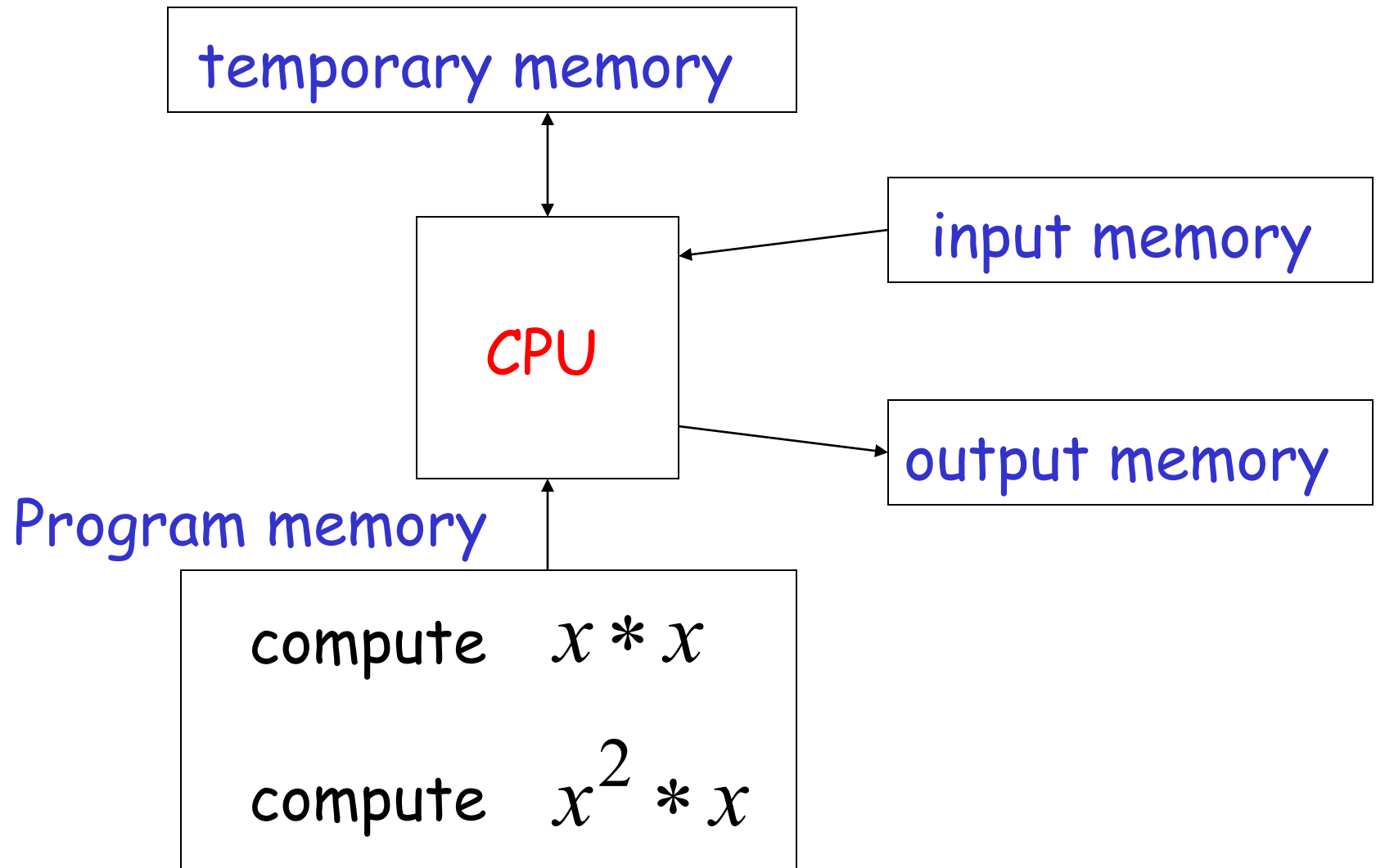
"Theory of Computation"

Computation

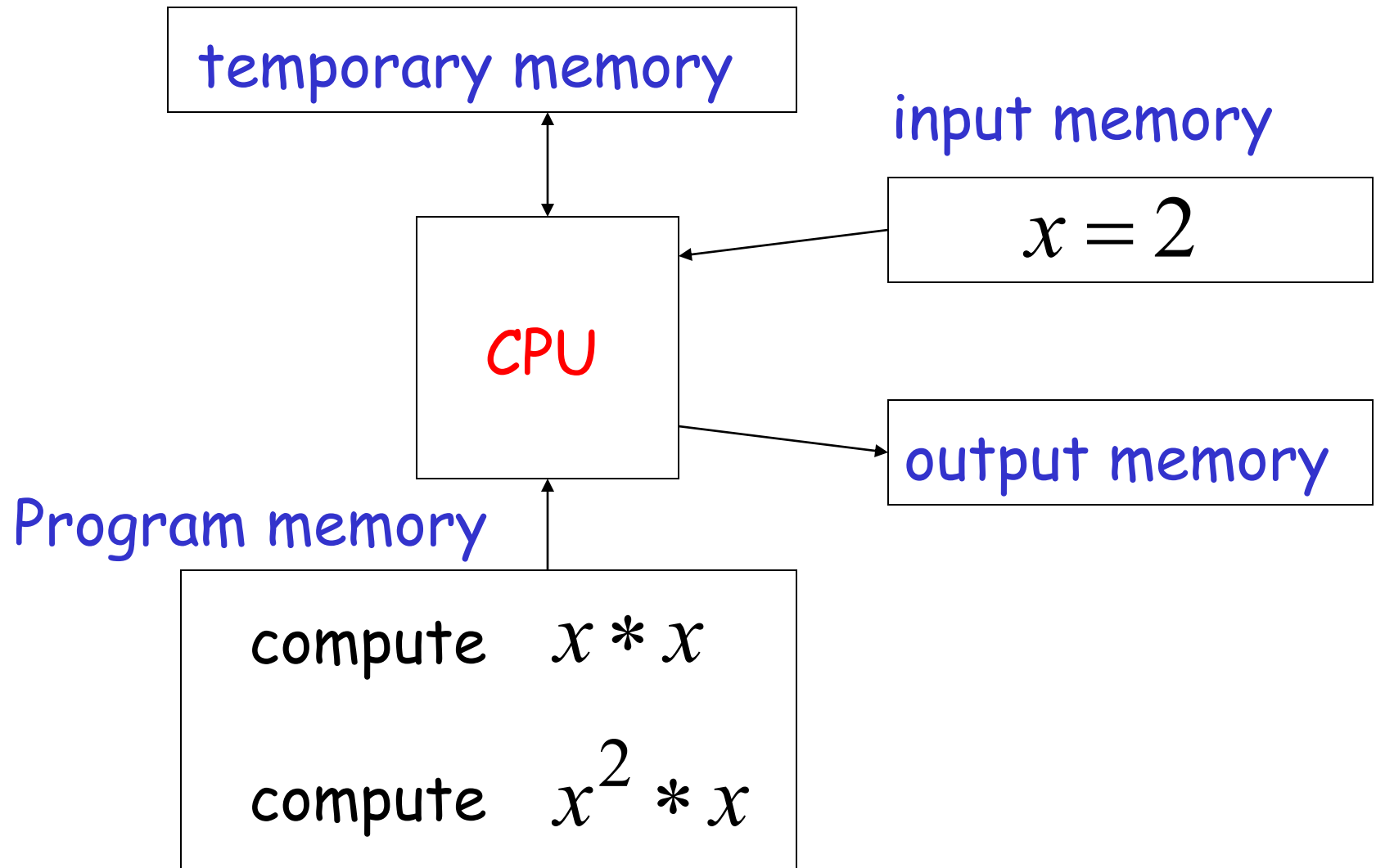




Example: $f(x) = x^3$



$$f(x) = x^3$$



temporary memory

$$z = 2 * 2 = 4$$

$$f(x) = z * 2 = 8$$

$$f(x) = x^3$$

input memory

$$x = 2$$

CPU

output memory

Program memory

compute $x * x$

compute $x^2 * x$

temporary memory

$$z = 2 * 2 = 4$$
$$f(x) = z * 2 = 8$$

$$f(x) = x^3$$

input memory

$$x = 2$$

CPU

$$f(x) = 8$$

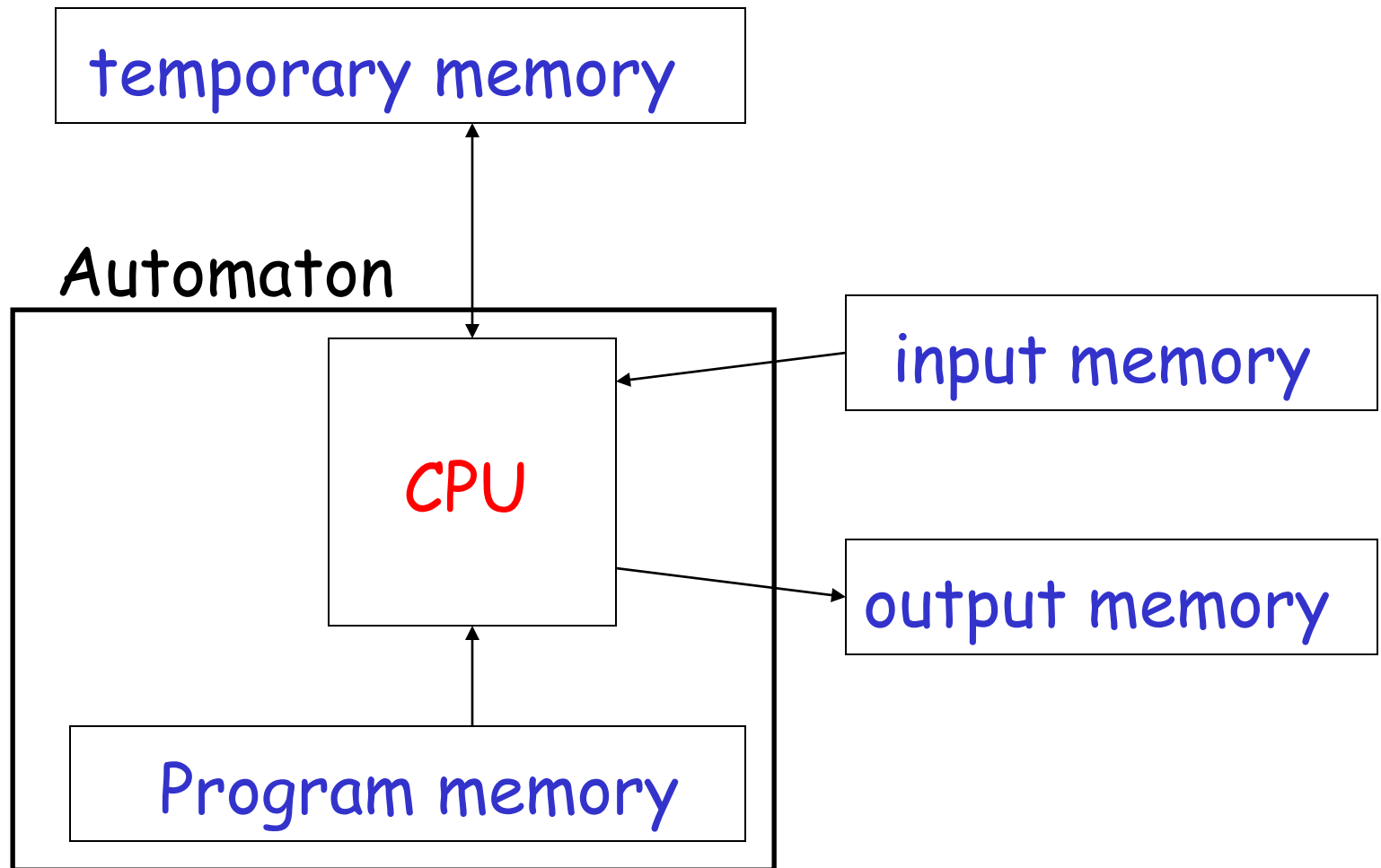
output memory

Program memory

compute $x * x$

compute $x^2 * x$

Automaton

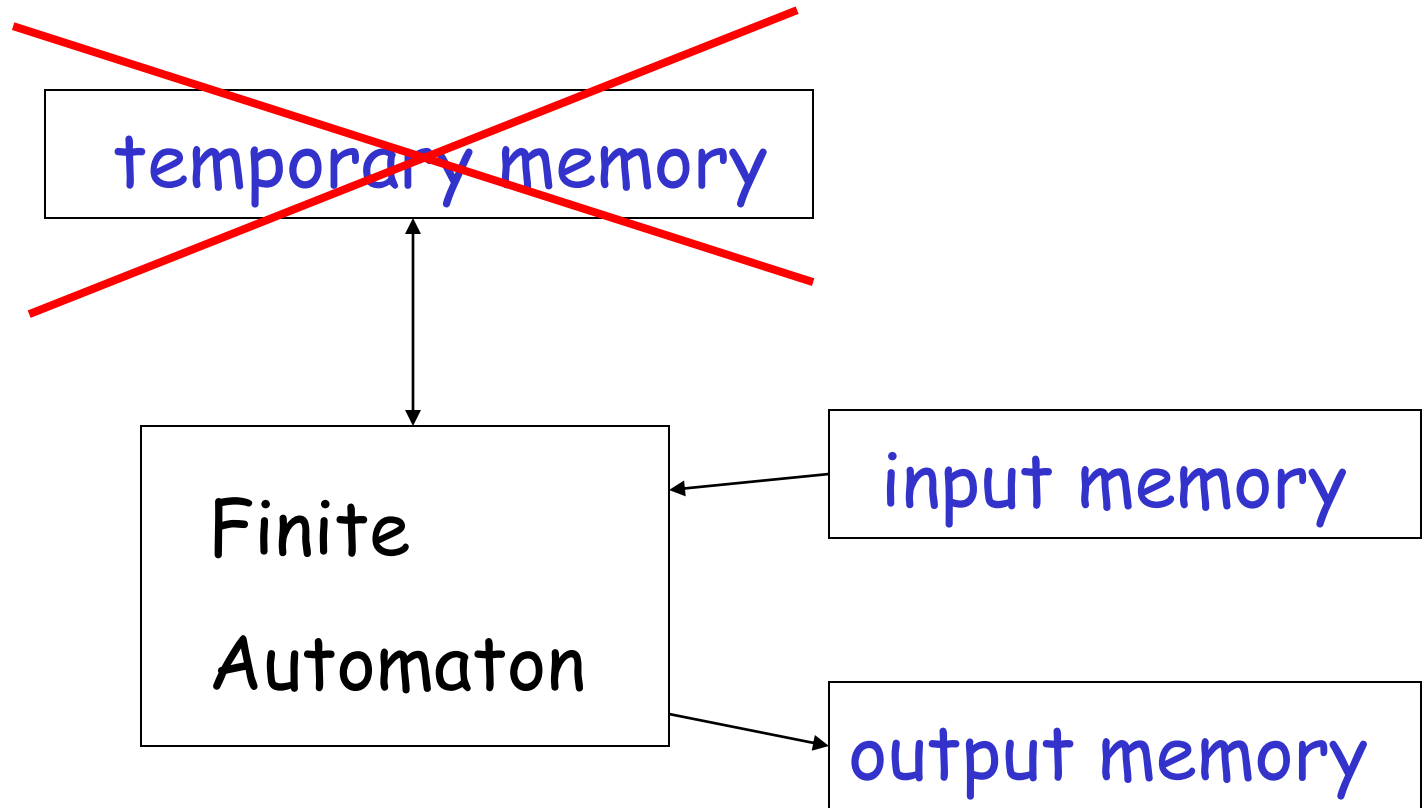


Different Kinds of Automata

Automata are distinguished by the temporary memory

- **Finite Automata:** ^{พื้นที่จำกัด} no temporary memory
- **Pushdown Automata:** ^{จัดจำกัด from access 1 ทิศ: Last-in-First-out} ^{ได้จำนวนตามจำนวน} stack
- **Turing Machines:** ^(RAM) random access memory

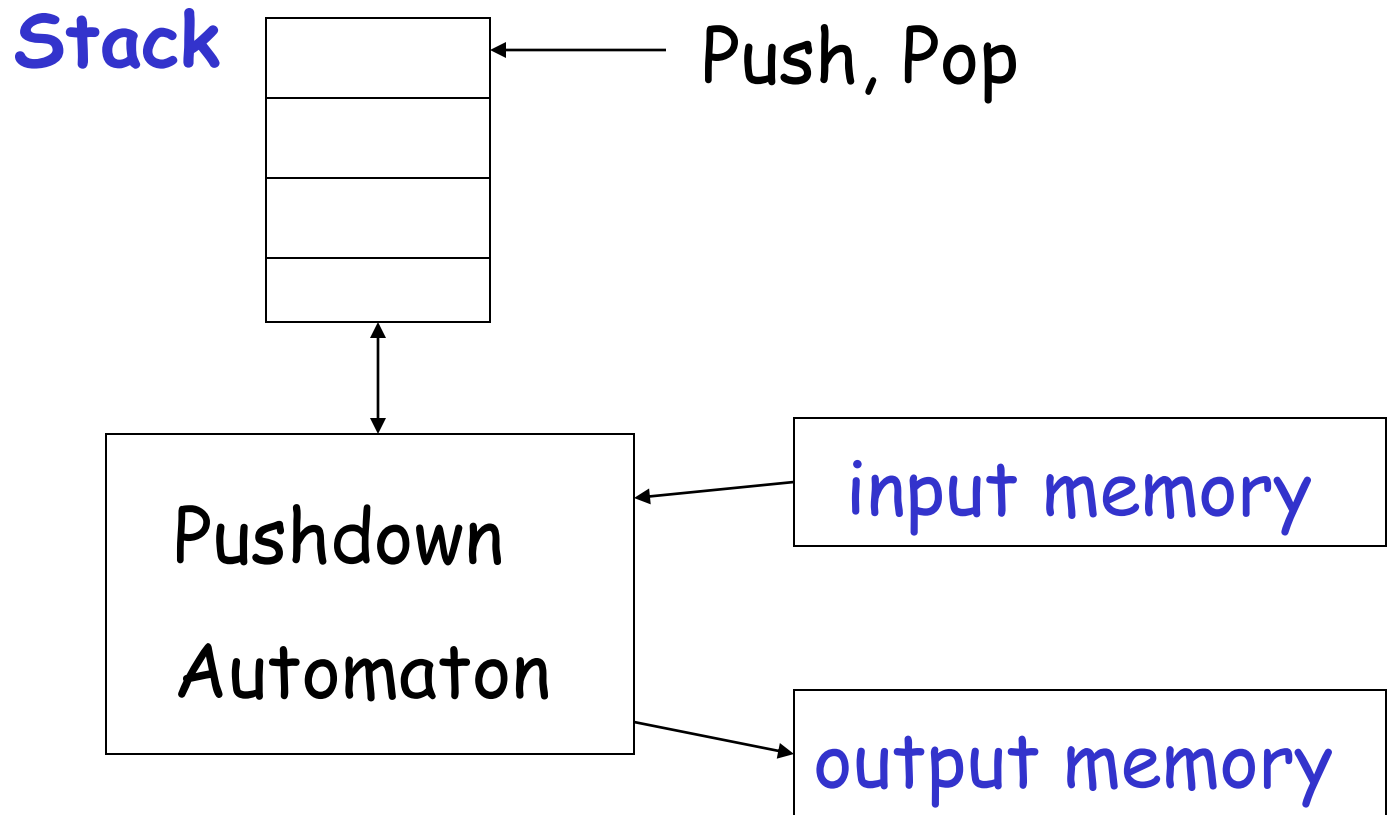
Finite Automaton



Example: Vending Machines

(small computing power)

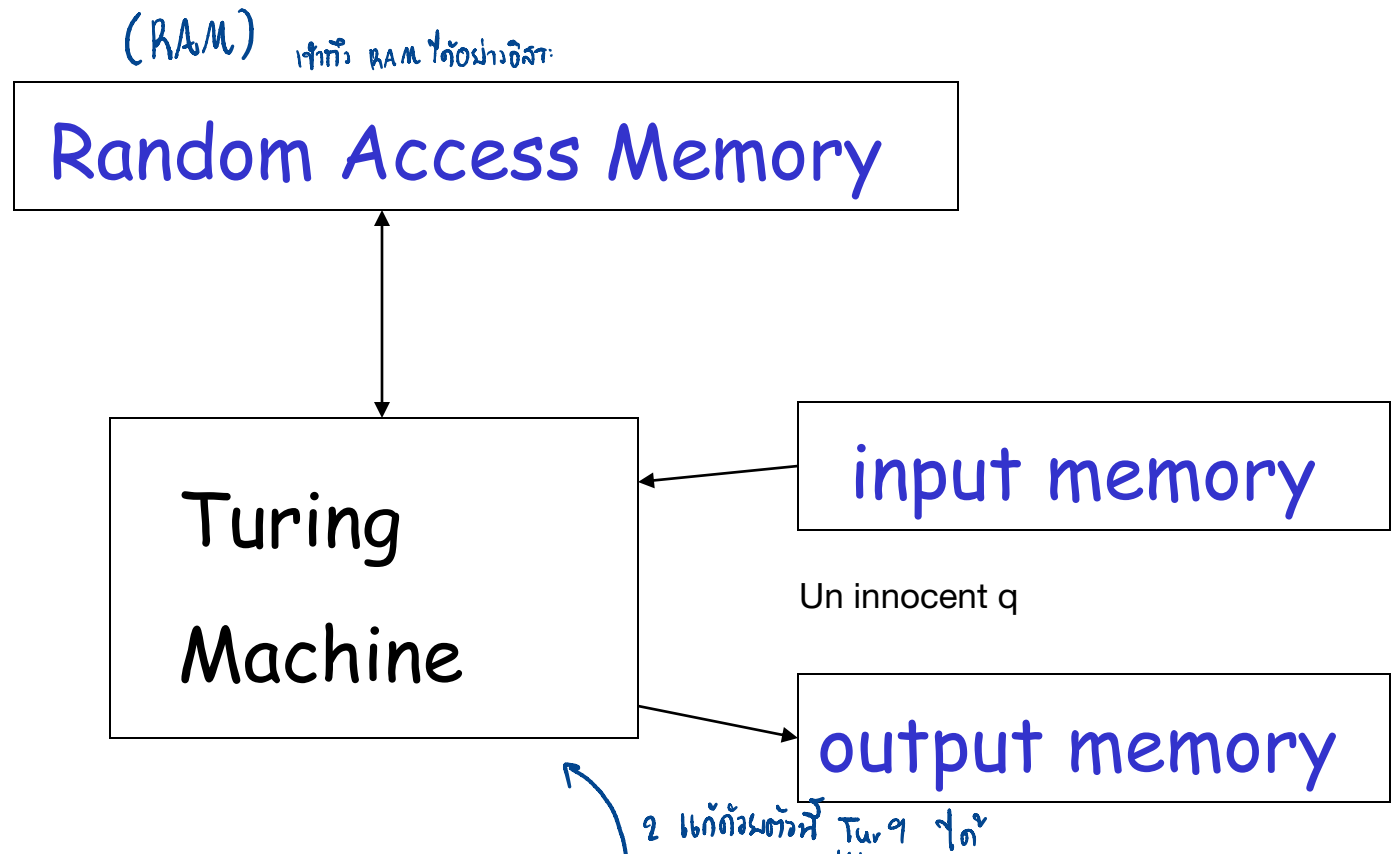
Pushdown Automaton



ยกตัวอย่างเช่น

Example: **Compilers** for Programming Languages
(medium computing power)

Turing Machine



ปัญหาใดก็ตามที่แก้ด้วย 1

Examples: Any Algorithm

(highest computing power)

Power of Automata

