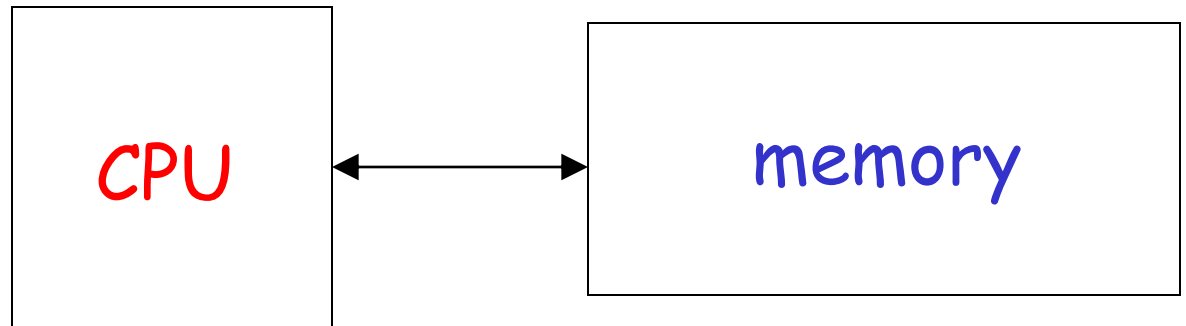
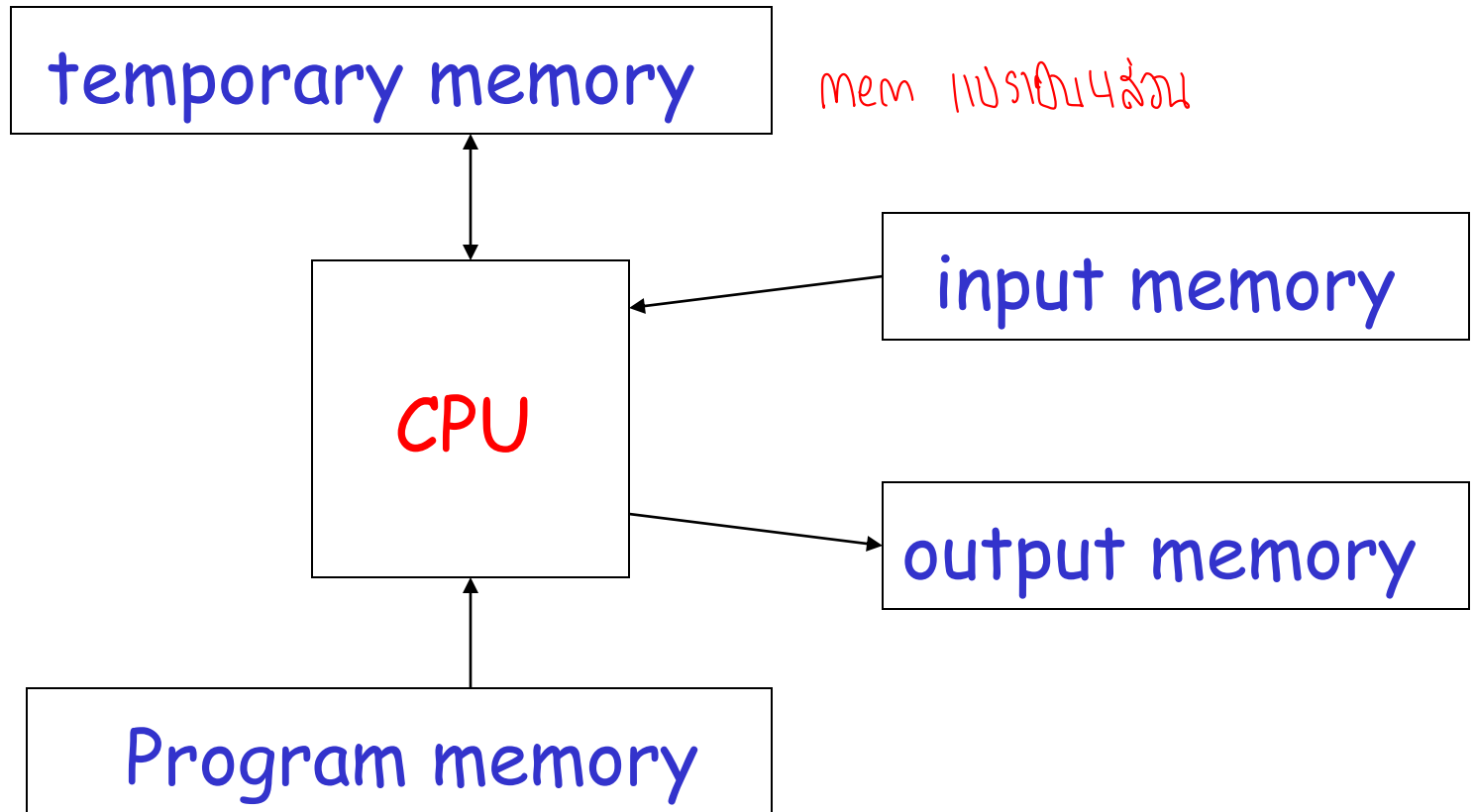


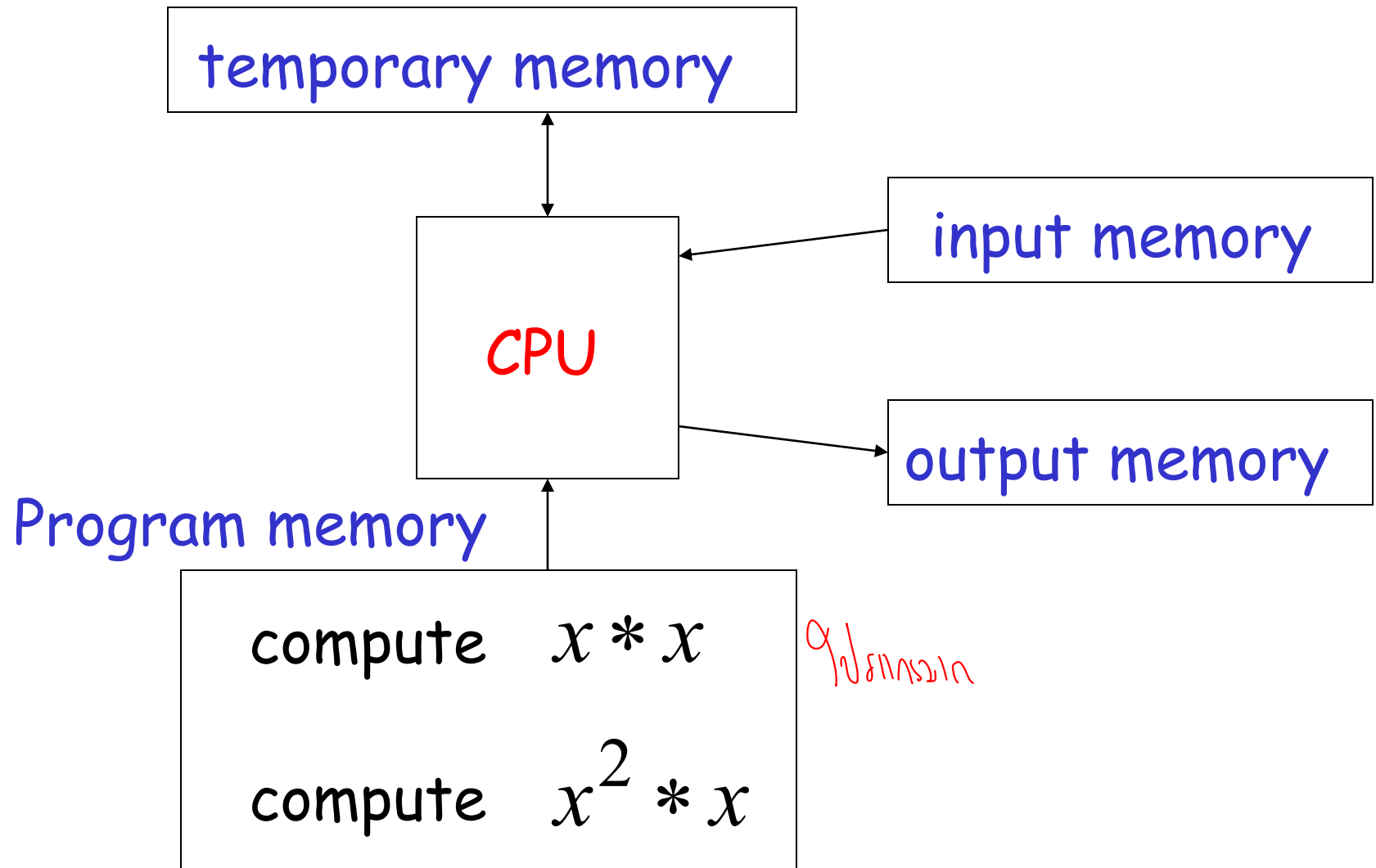
"Theory of Computation"

Computation

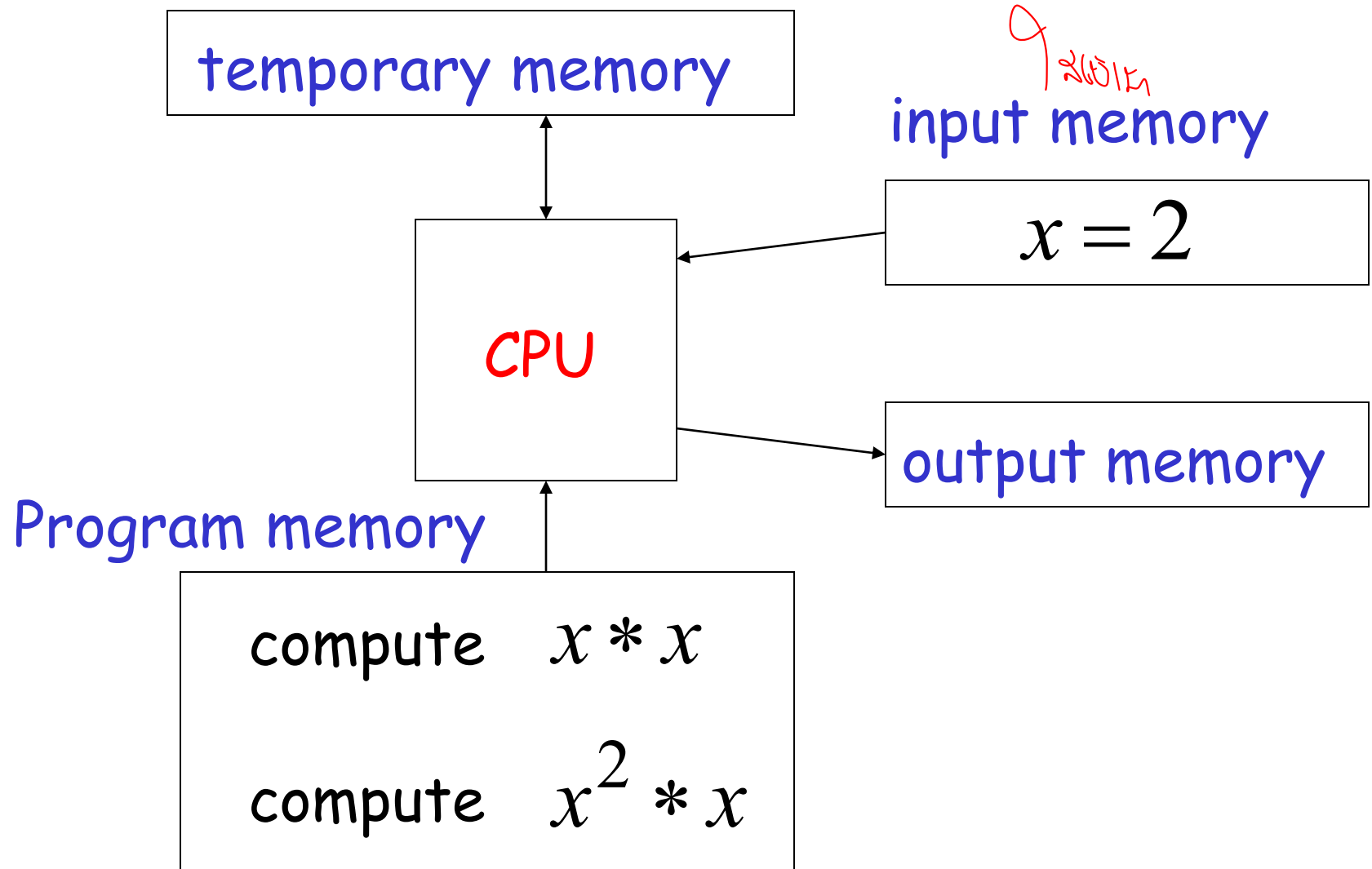




Example: $f(x) = x^3$



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



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 $x^2 * x$

↑
load
; x = 2

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

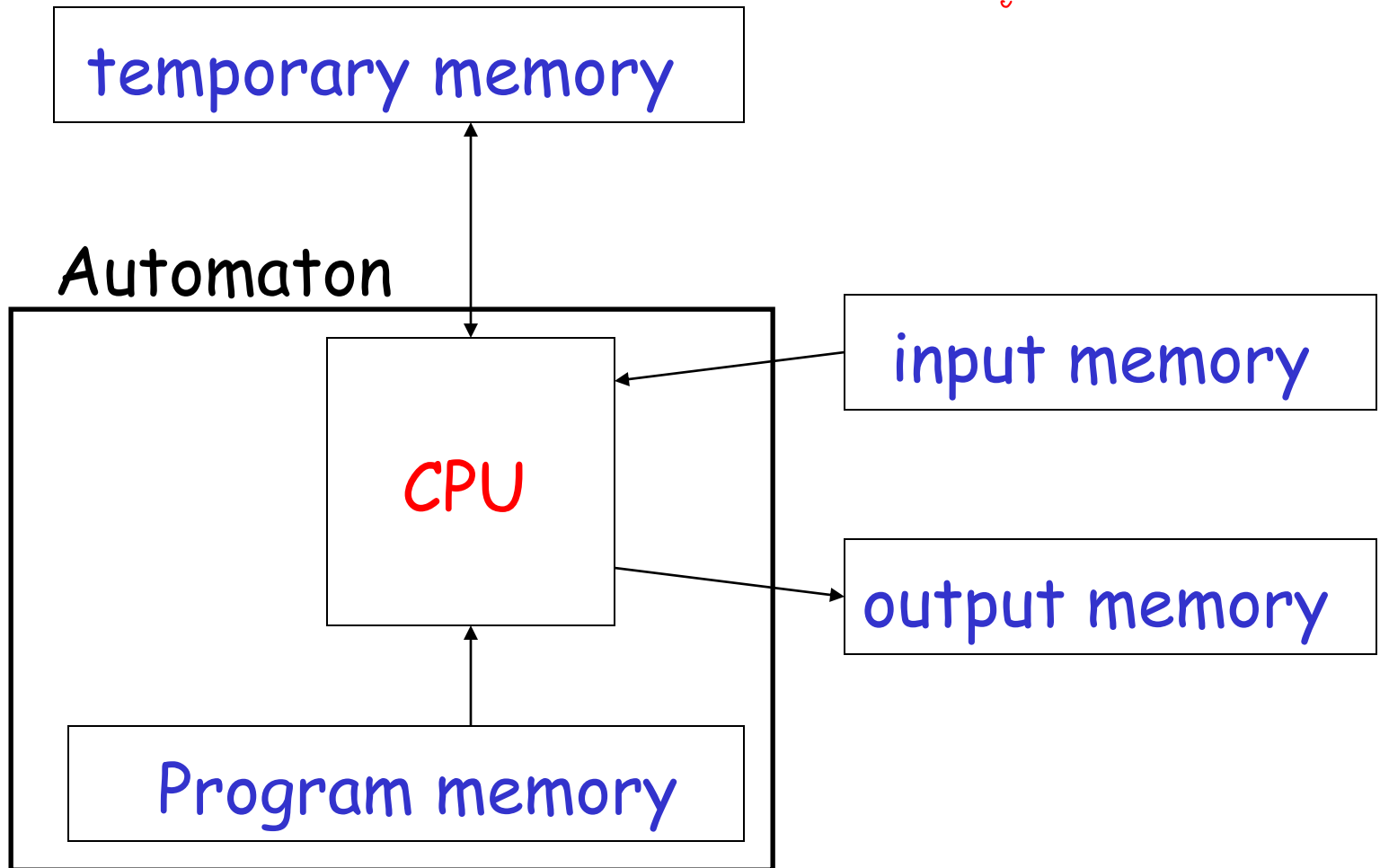
Program memory

compute $x * x$
compute $x^2 * x$

← *အသုံးပြုသည့် memory*

Automaton

66 99
↓ automata (n) system



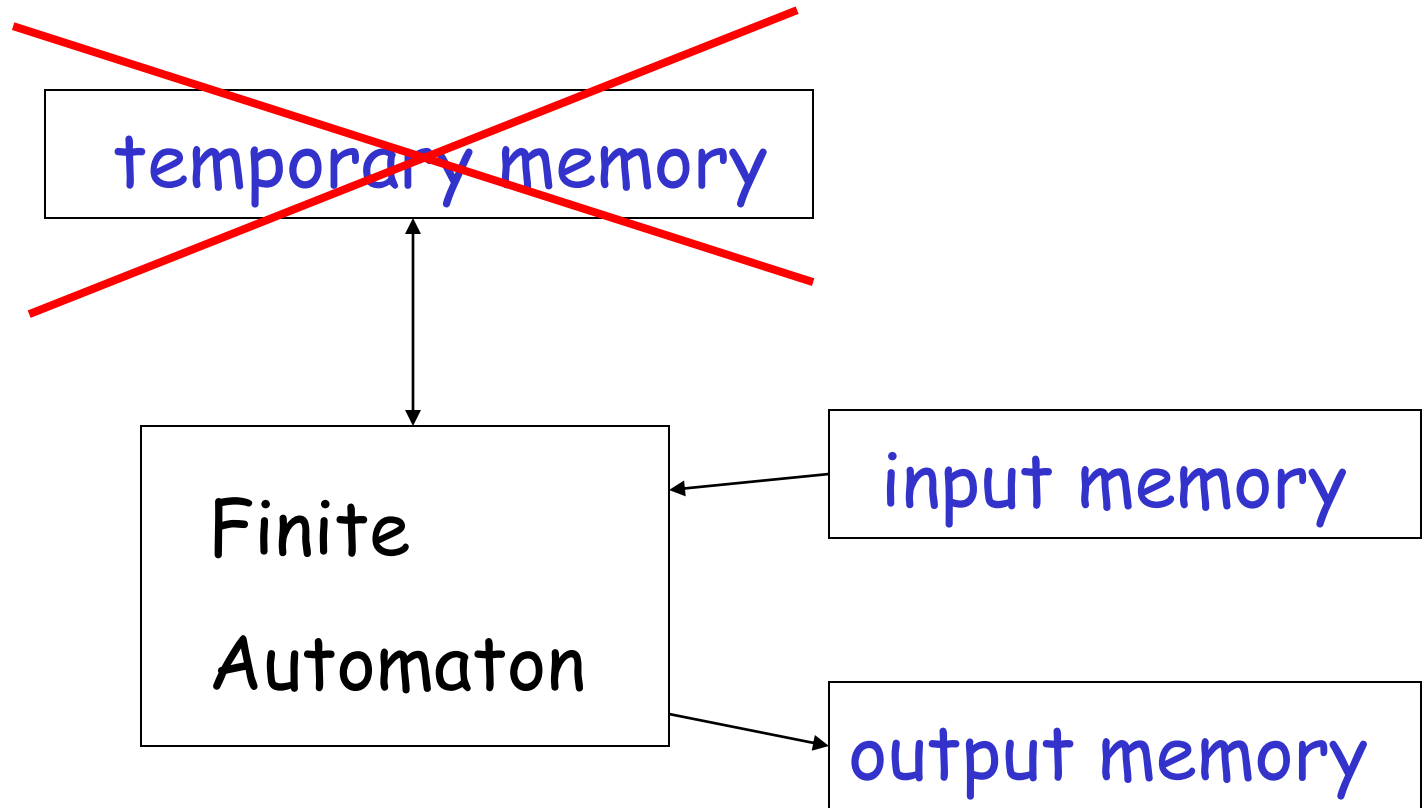
Different Kinds of Automata

Automata are distinguished by the temporary memory

ឧទាហរណ៍ ៣ ប្រភេទ ទំនាក់ទំនង temp. mem ដូចខាងក្រោម

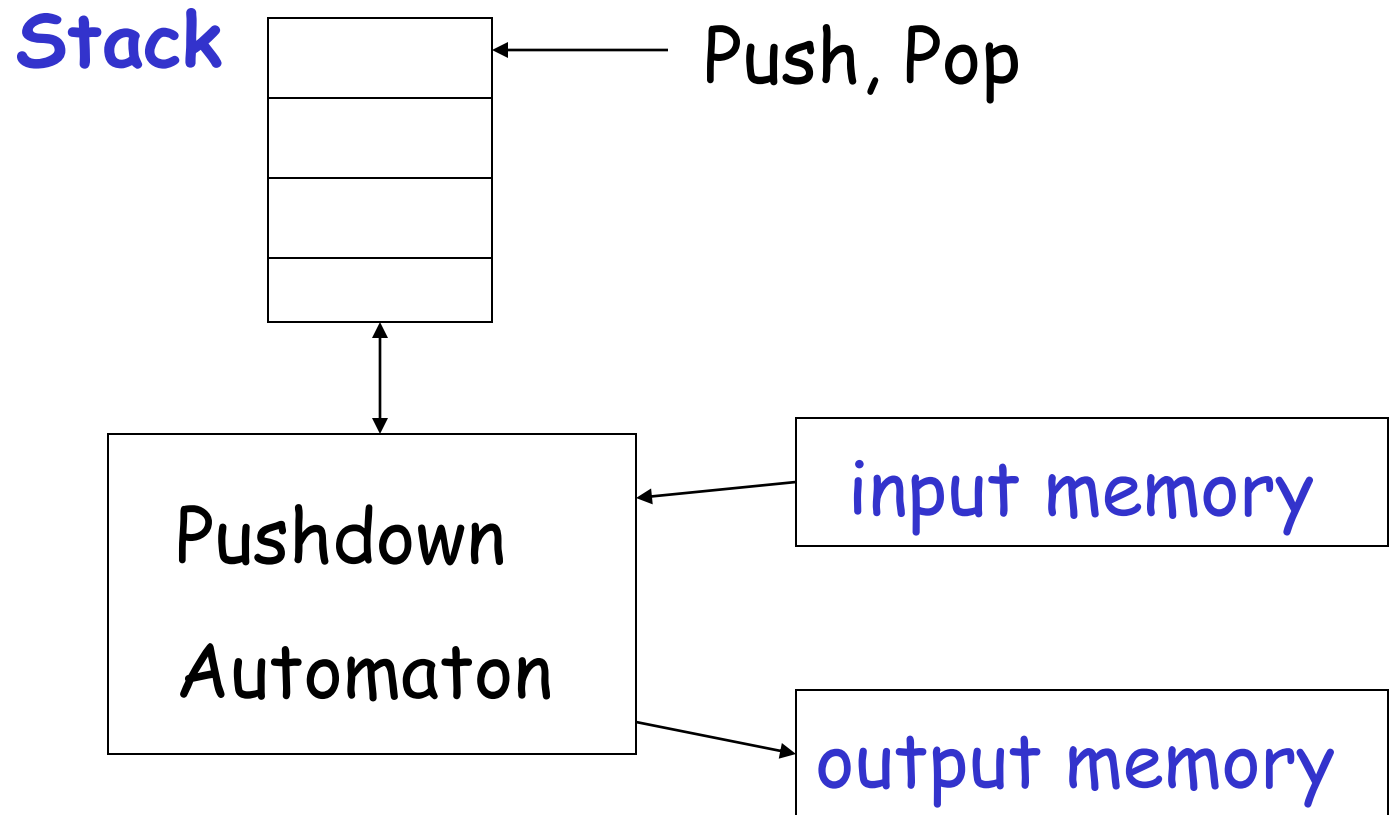
- **Finite Automata:** no temporary memory
↓ គ្មានទំនាក់ទំនង
- **Pushdown Automata:** stack
↓ មានទំនាក់ទំនង
- **Turing Machines:** random access memory

Finite Automaton



Example: Vending Machines → အမှတ်အသားပေးစနစ်
(small computing power) → ကွန်ပျူတာအားနည်း

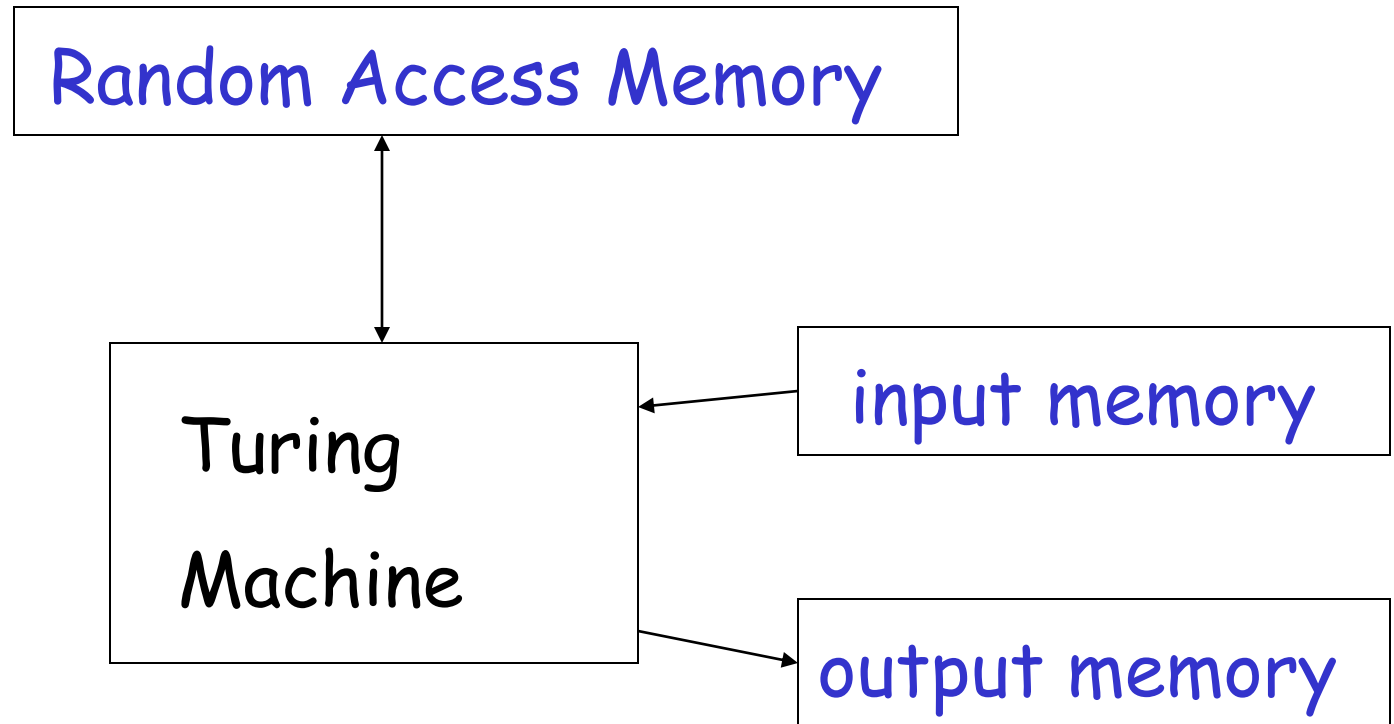
Pushdown Automaton



Example: Compilers for Programming Languages

(medium computing power) → *medium computing power*

Turing Machine



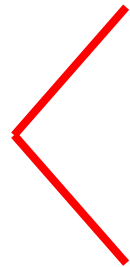
Examples: Any Algorithm

(highest computing power)

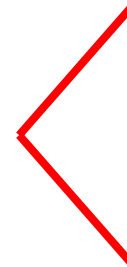
Highly versatile

Power of Automata

Finite
Automata



Pushdown
Automata



Turing
Machine

Less power



More power

Solve more

computational problems