THINKING ABOUT YOUR CODE

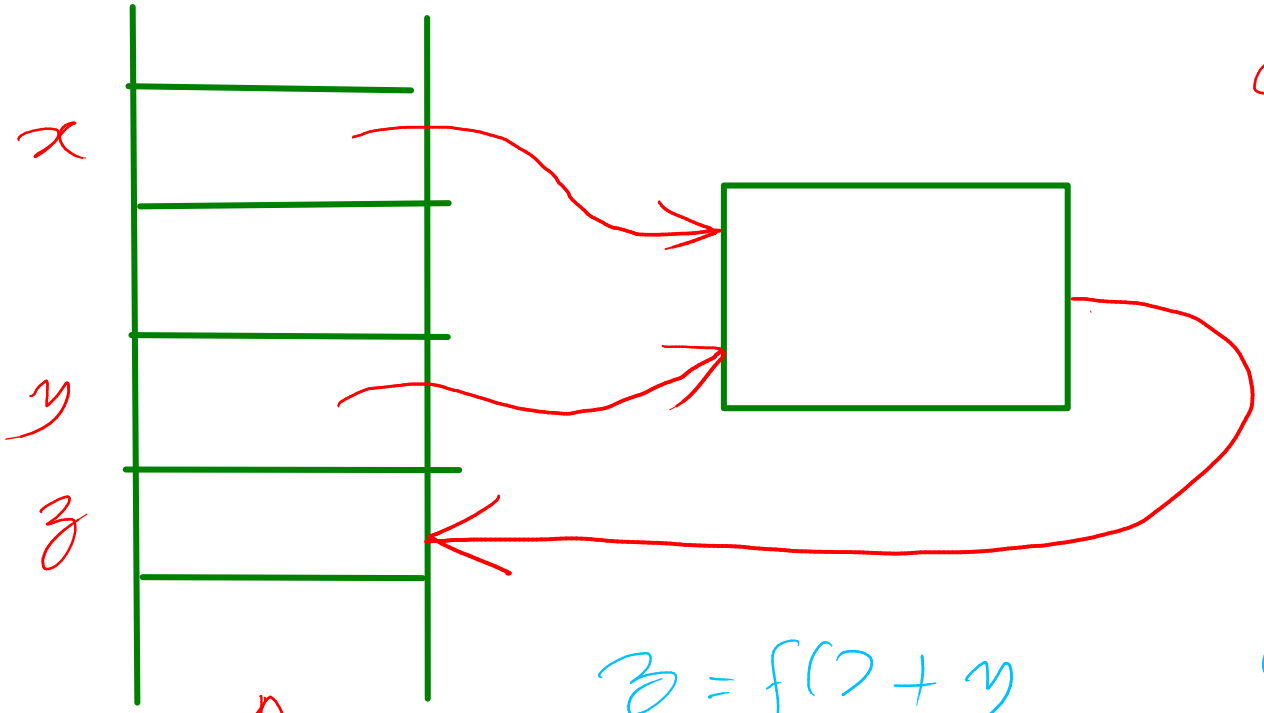
TALK THEIR

MATHEMATICAL METHODS

- Data structures and algorithms ✓
- Theory of computation, complexity theory
- Discrete math
- Graph theory
- Combinatorics

Formal

SIDE-EFFECT



→ If a piece of code changes the contents of a memory location

Memory store

$z = f(x + y)$

$z \underset{\uparrow}{=} x + y$

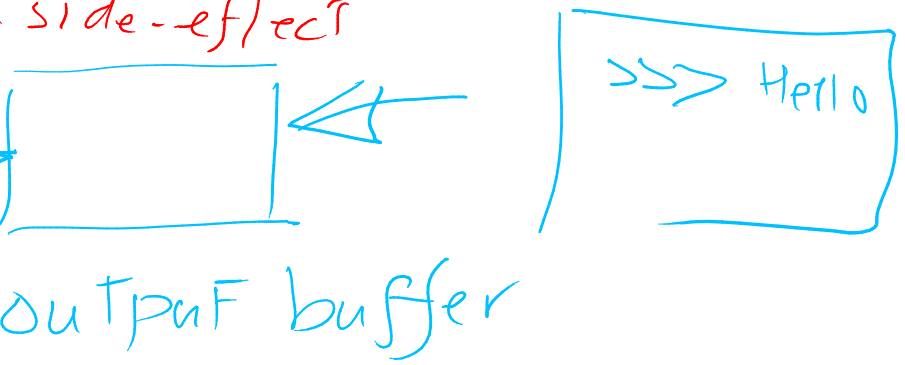
SE

not a side-effect

Should be avoided -

Can't be avoided

→ print("Hello")



output buffer

A5 Submission.

Copy all answer files.
Paste into submission.

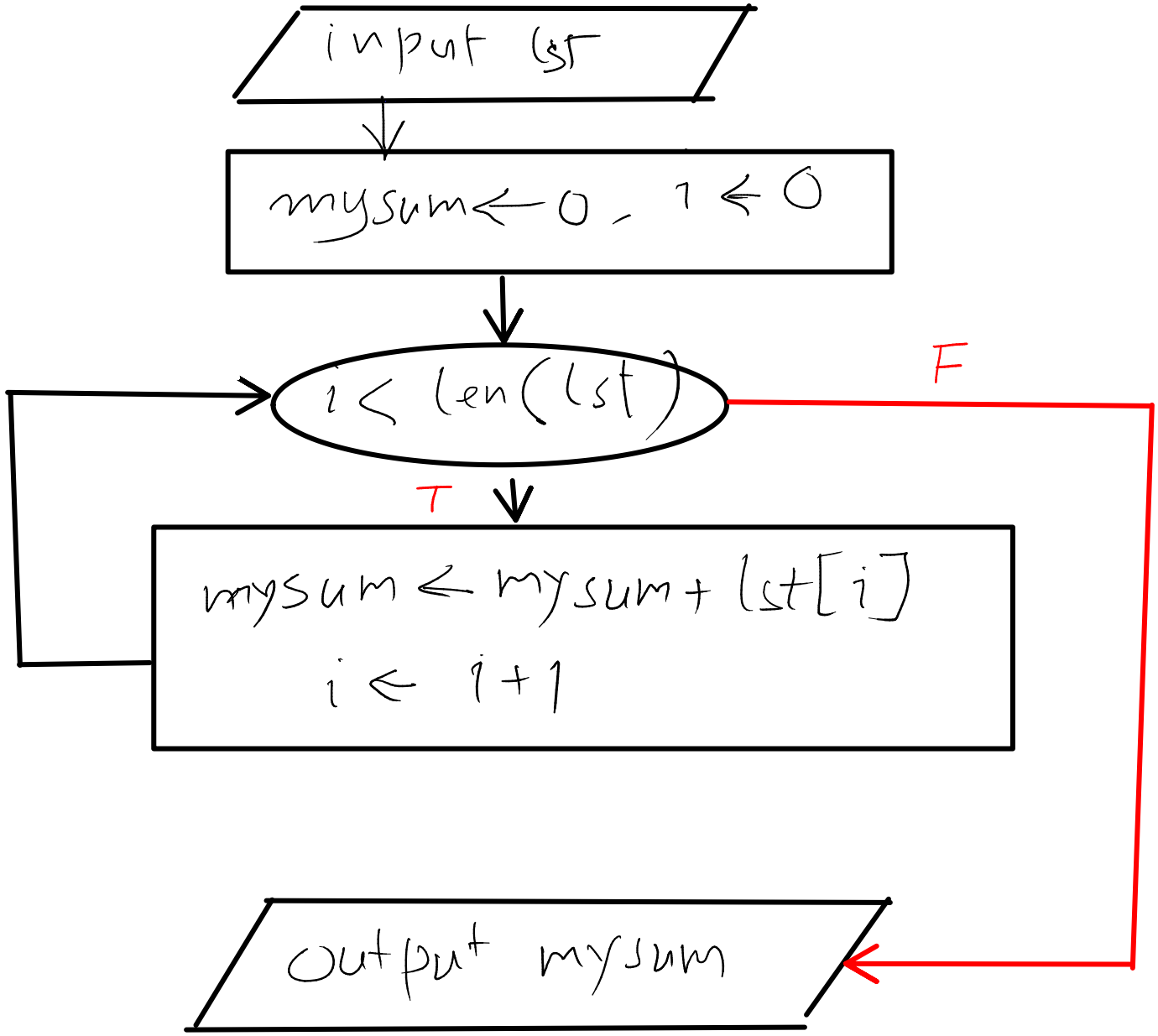
THINKING ABOUT YOUR CODE

SEMIFORMAL METHODS

- Block diagrams - Data flow notation
- Function call graph
- Computational tree
- Program stacks
- Control flow graph / flowchart CF notation
- Type signatures
- Function headers

sum_list : list $\longrightarrow$ num .

add : num $\times$ num $\longrightarrow$ num .

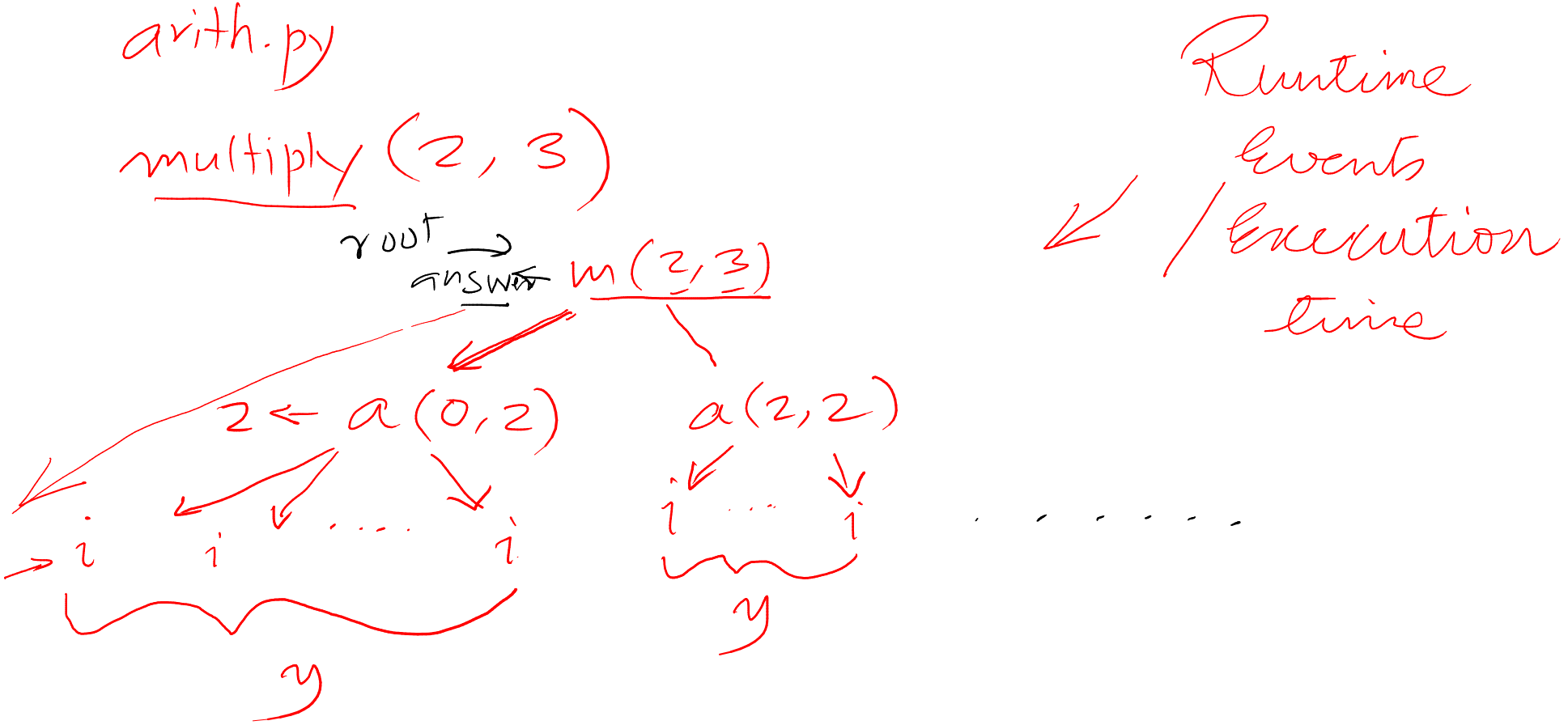


Control Flow Graph / Flowchart.

Computational Tree.

arith.py

multiply(2, 3)



Runtime / Execution time

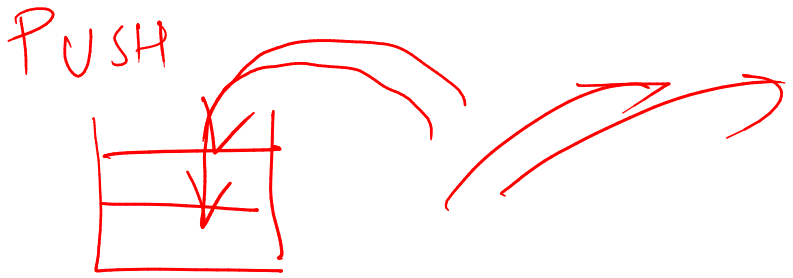
Block Diagram
control flow graph
Computational tree

A Static ✓

B Dynamic ✓

PROGRAM STACK

Stack



LIFO — Last In First Out.