

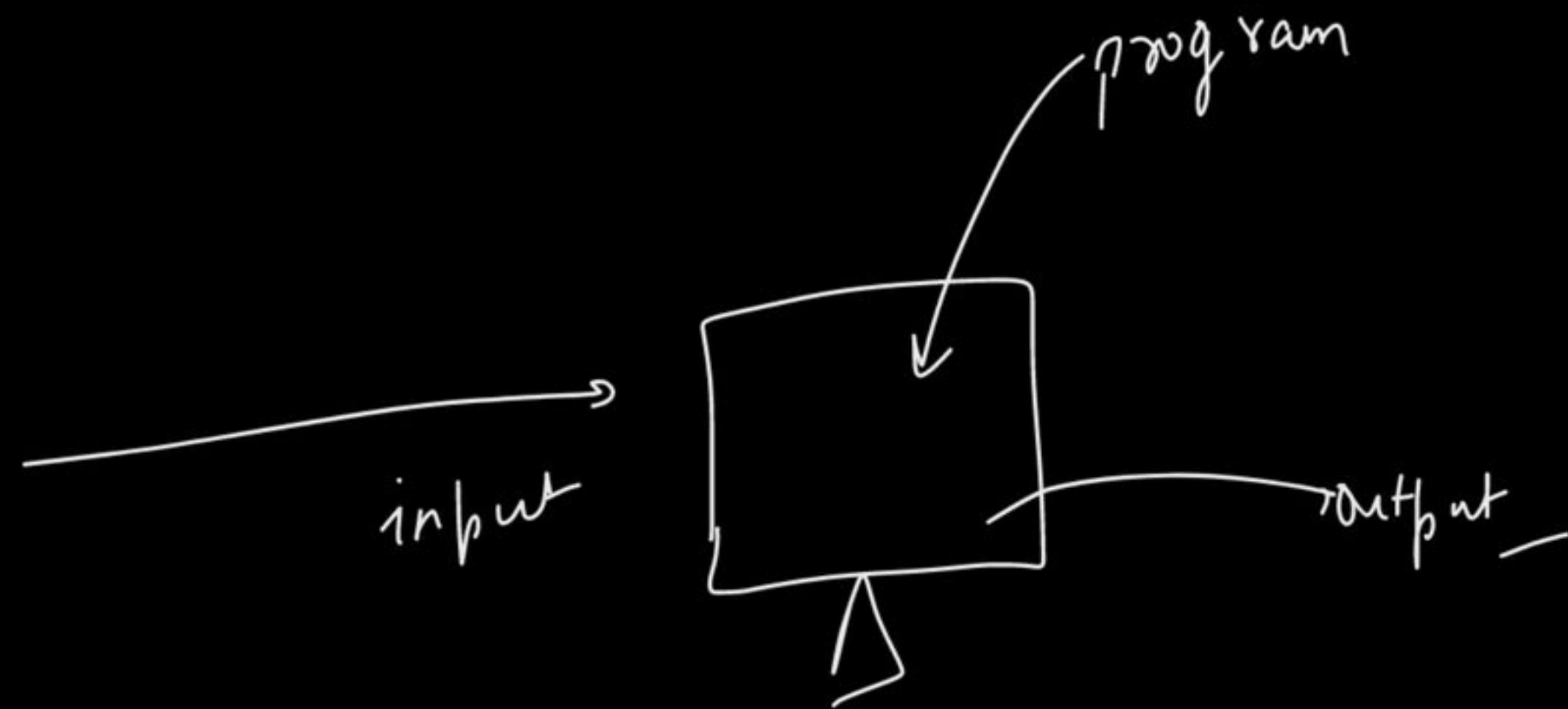
# L1-Basics of Programming

Special class

# L1 - Basics of Programming

Flowcharts and PseudoCode

# What is Programming ?



# What is Algorithm ?

Maggi →

Shrey Vohra  
Algorithm → sequence of steps to solve problem

- Step 1 → Water → Boil
- 2 → Maggi → Pan
- 3 → Masala → Pan
- 4 → 2 min wait
- 5 → plate —
- 6 →

Algorithm

Namkeen  
chawal



5i oil → Jeera

onion →

tomato

→ haldi / Lahsun / Spice /

→ chawal

→ Water

→ salt

Algorithm

Pasta → ?

==



# How to approach a Problem ?

Thought process

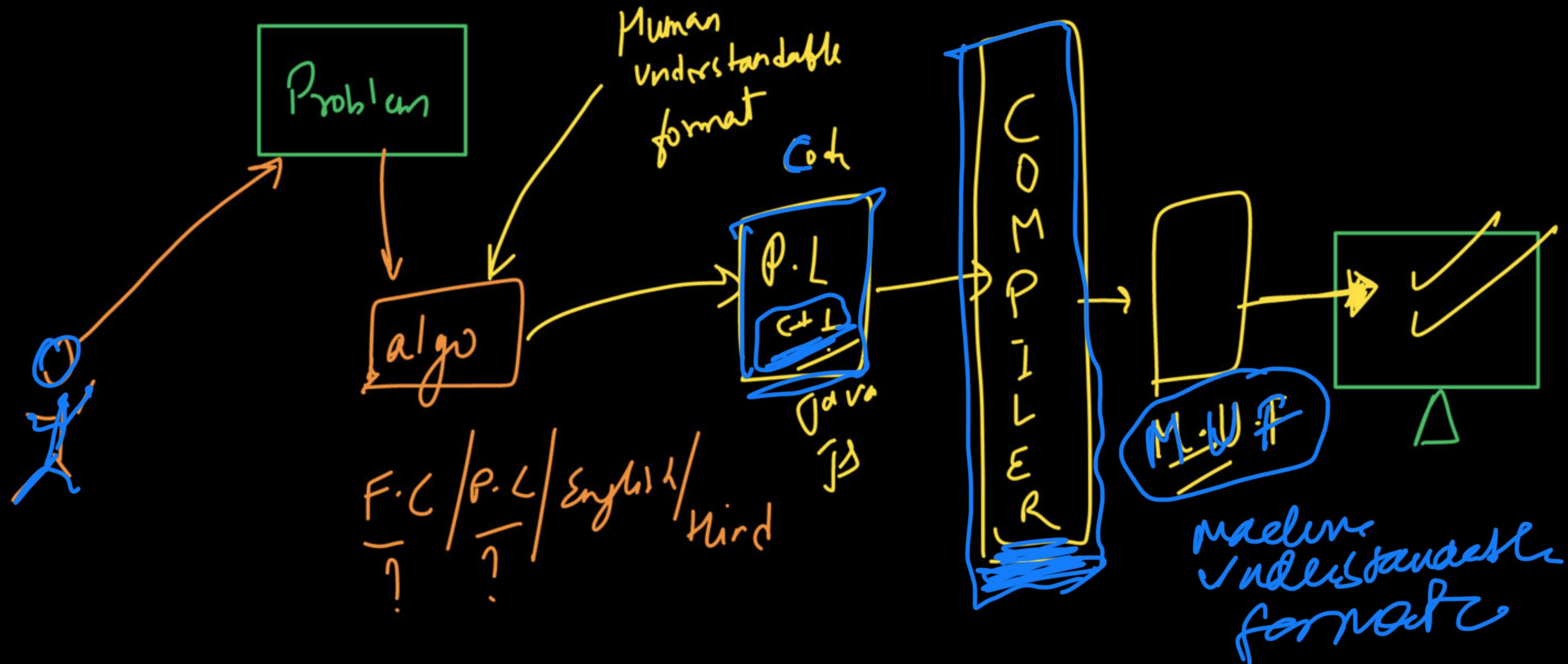
- ① Let's understand the Problem
- ② Analyse problem →
  - given values
  - useful formulae
  - constraints

$\text{side} = 4 \text{ cm}$
- ③ Create a approach →
  - Algorithm
  - ~~Flowchart~~
  - Optimisation

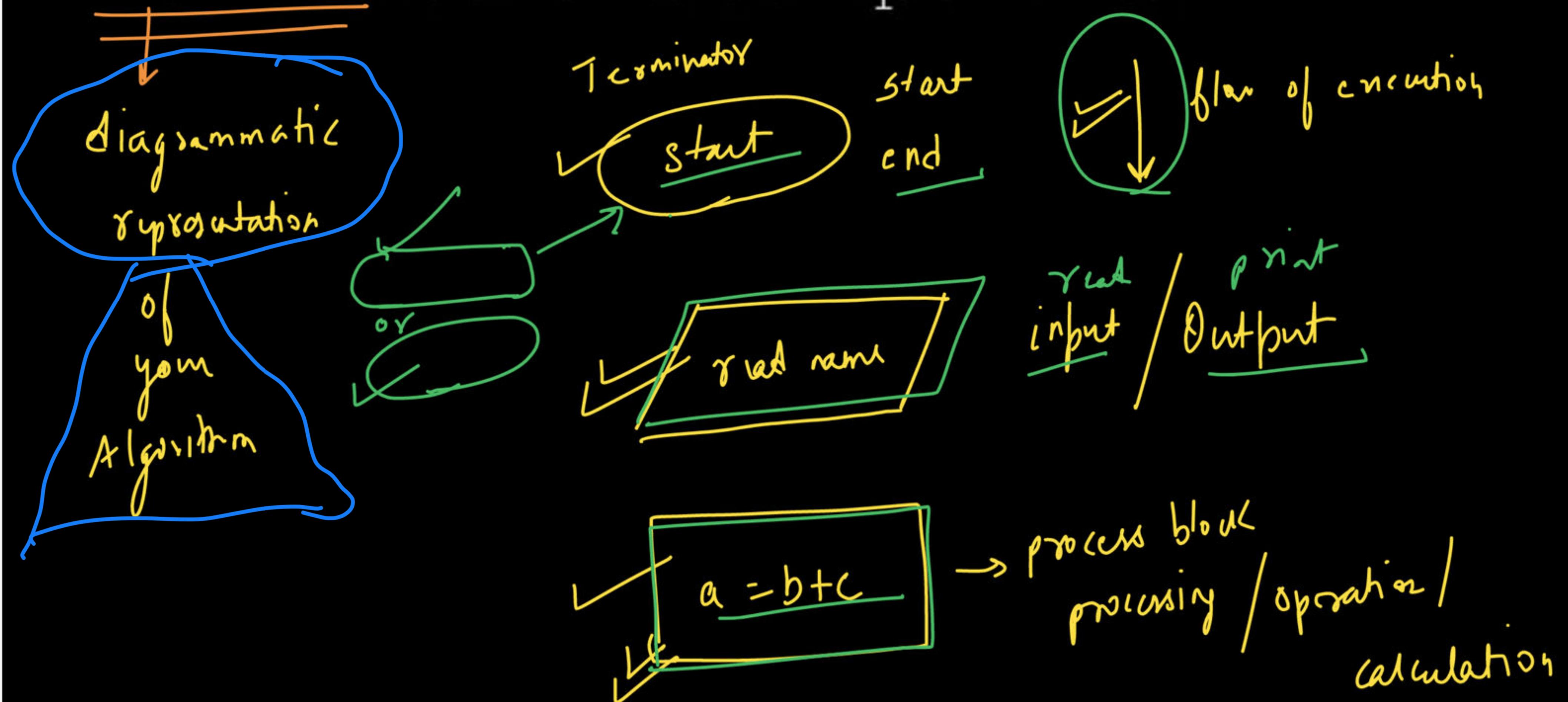
$\text{area} = s \times s$   
 $= 4 \times 4$   
 $= 16$

# Using a computer to solve a problem

↳ ?



# Flowchart and its components:



1

•

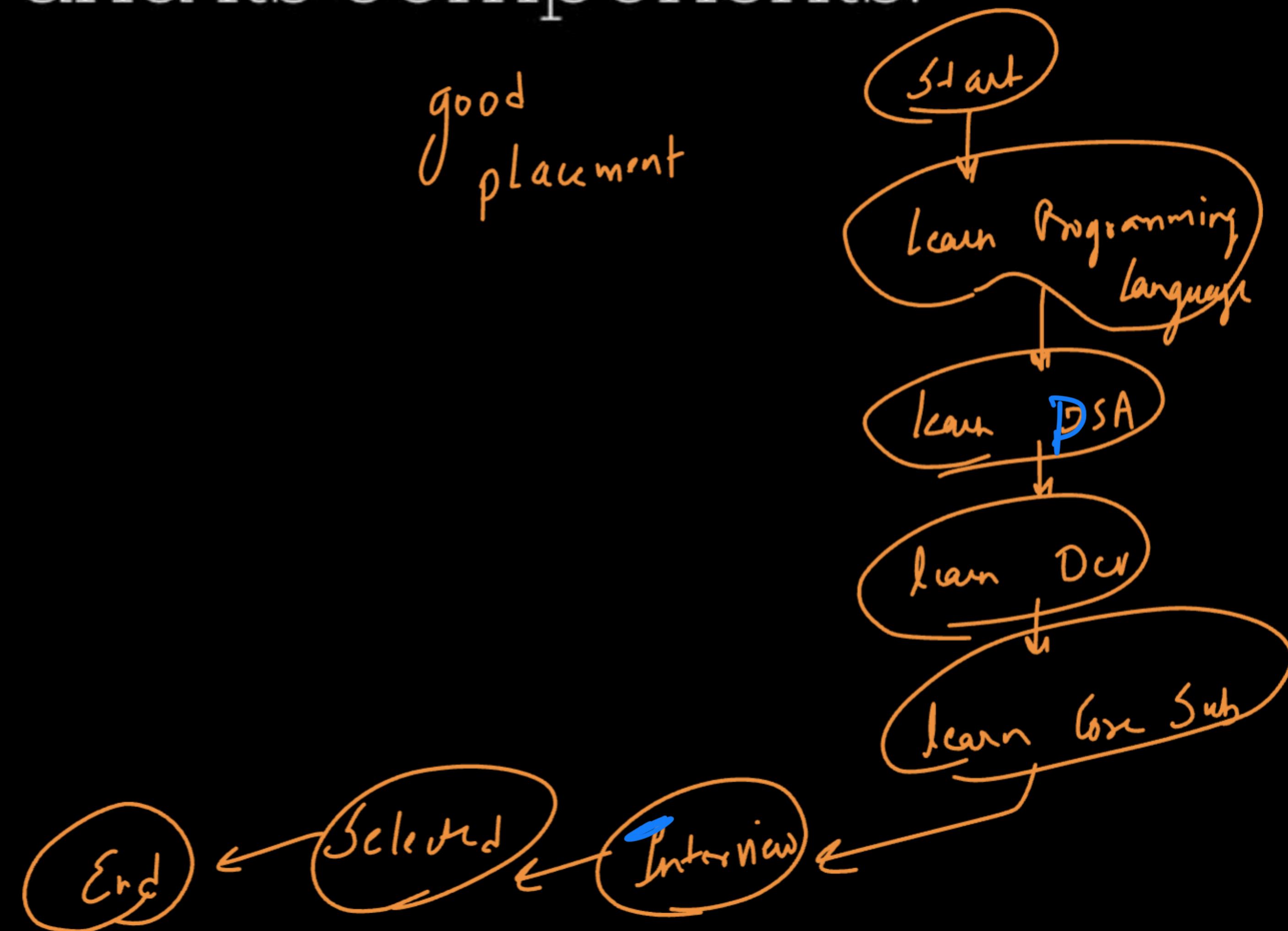
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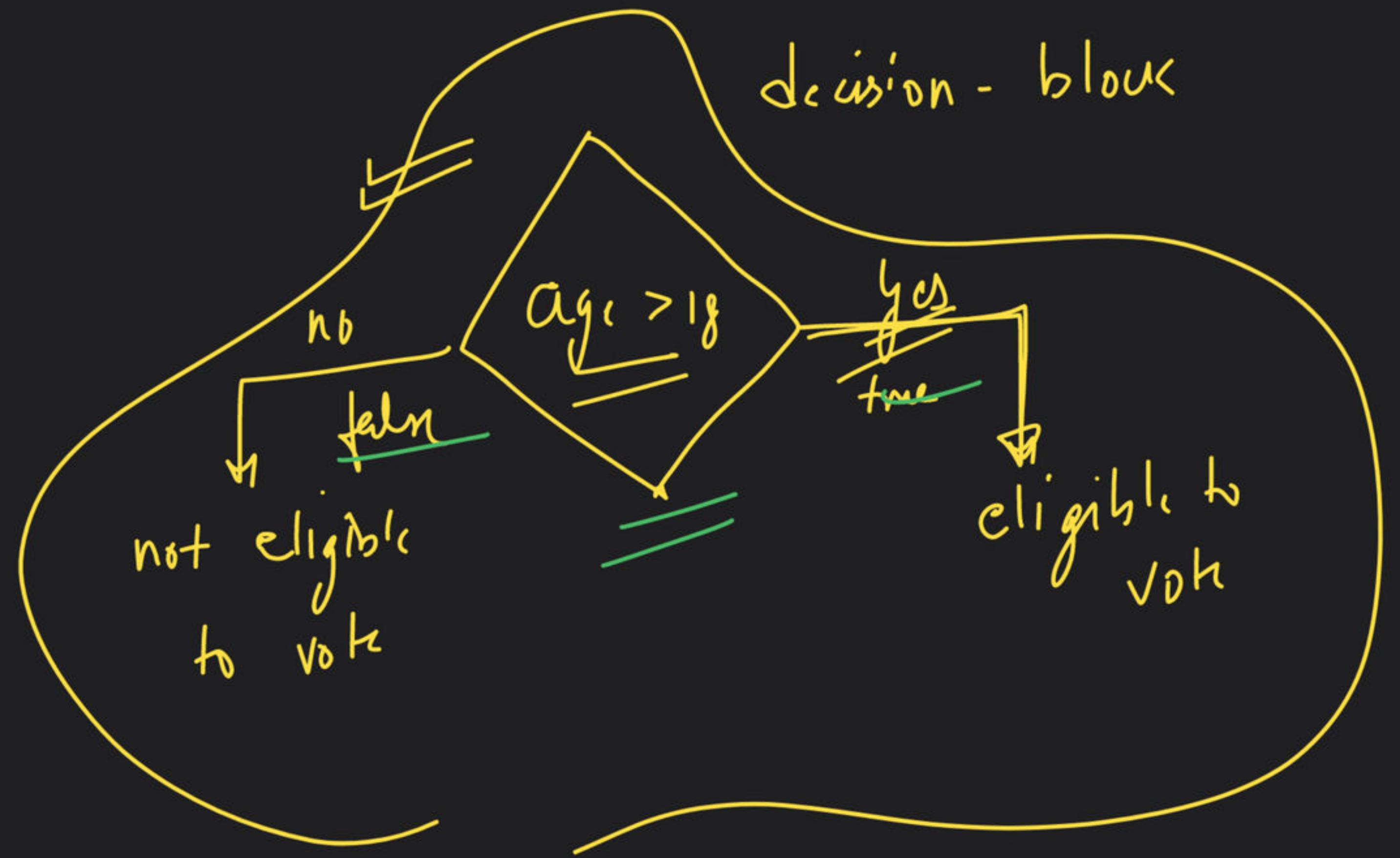
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# Flowchart and its components:



good  
placement





Pseudocode: friends

Nakli

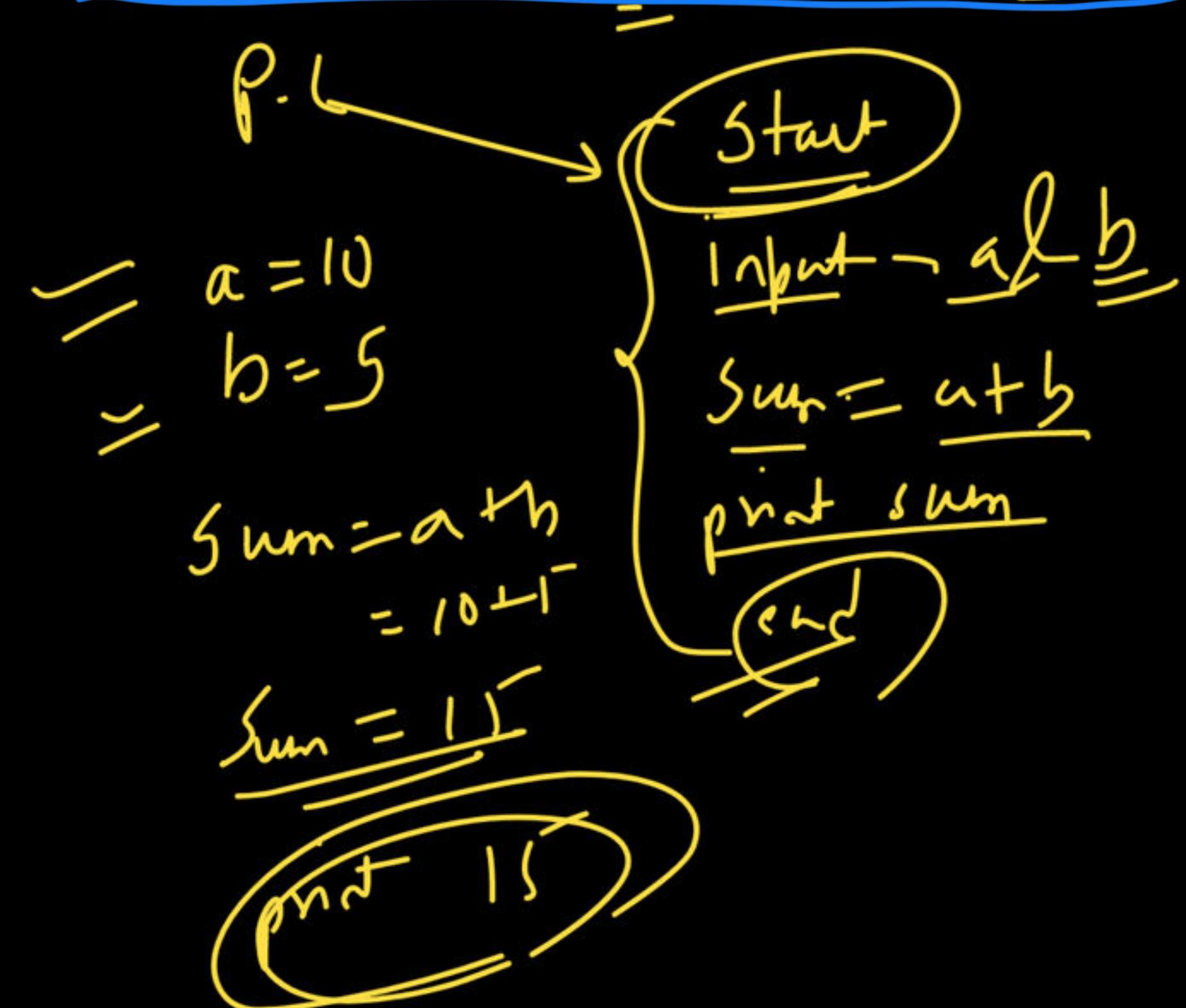
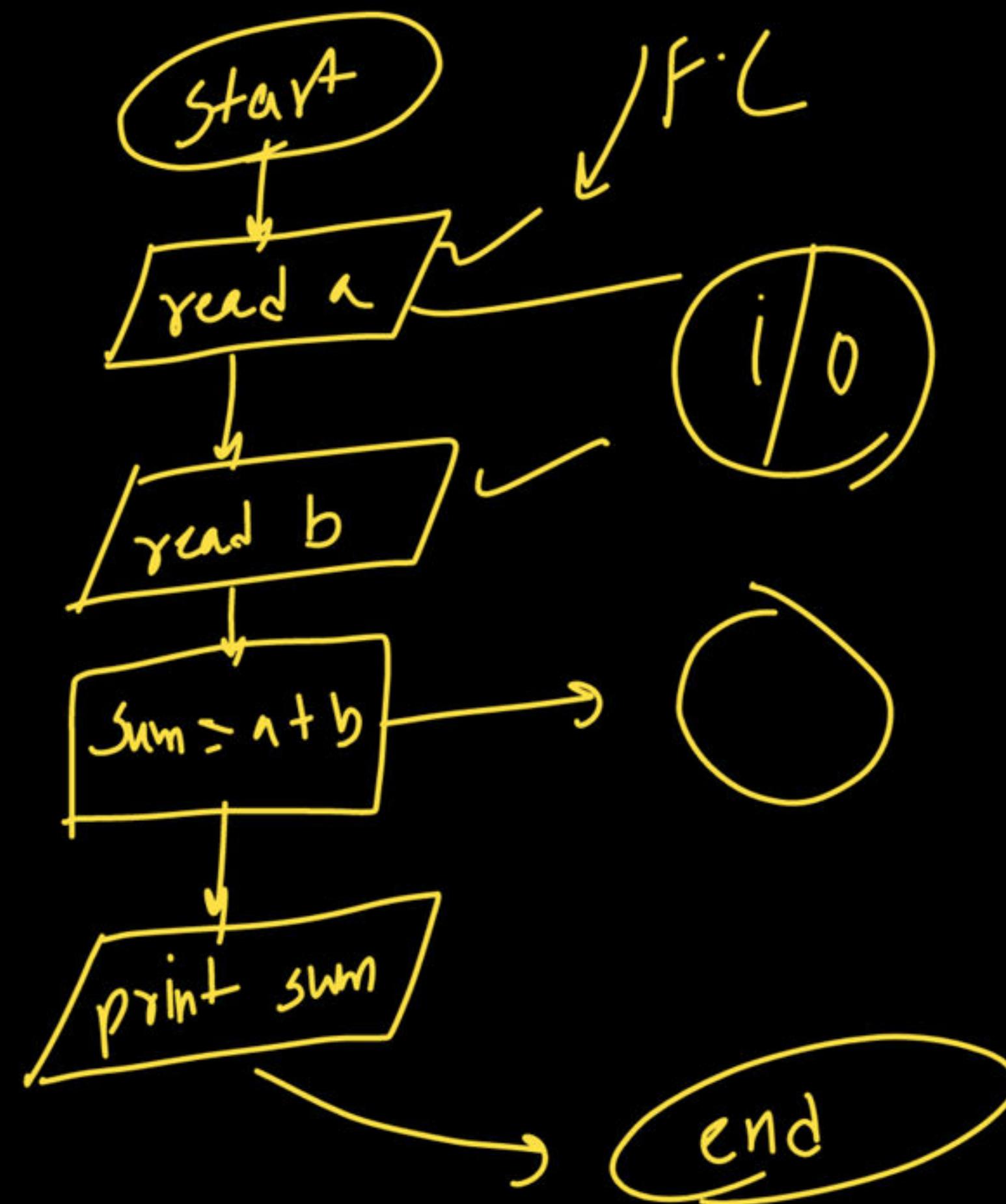
Code  $\rightarrow$  denote  $\rightarrow$  dui bhasha

Sum of 2 no.

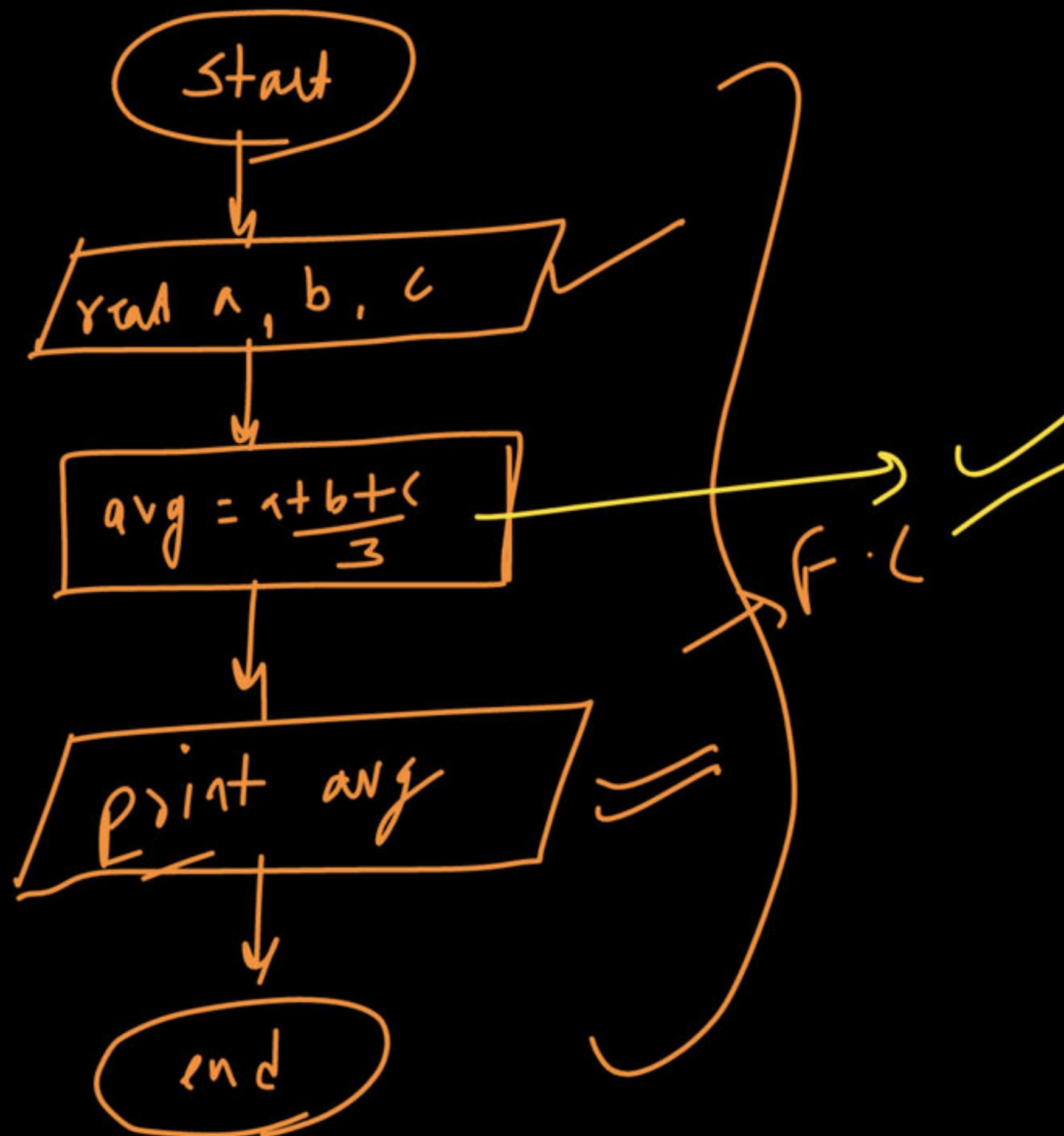
{  
→ Start  
→ read the value of a & b  
→ sum = a + b  
→ print sum  
→ end}

→ Start  
→ read first name  
→ read middle name  
→ read last name }  
→ f·n = f + m + l  
→ print full name  
→ end

# Design Flowchart - Print Sum of a and b



# Design Flowchart - Print Average of a, b and c



Start

Given  $a=10, b=12, c=14$

$$\text{avg} = \frac{a+b+c}{3}$$

$$= \frac{10+12+14}{3} = \frac{36}{3} = 12$$

A vpath  
path

avg = 12

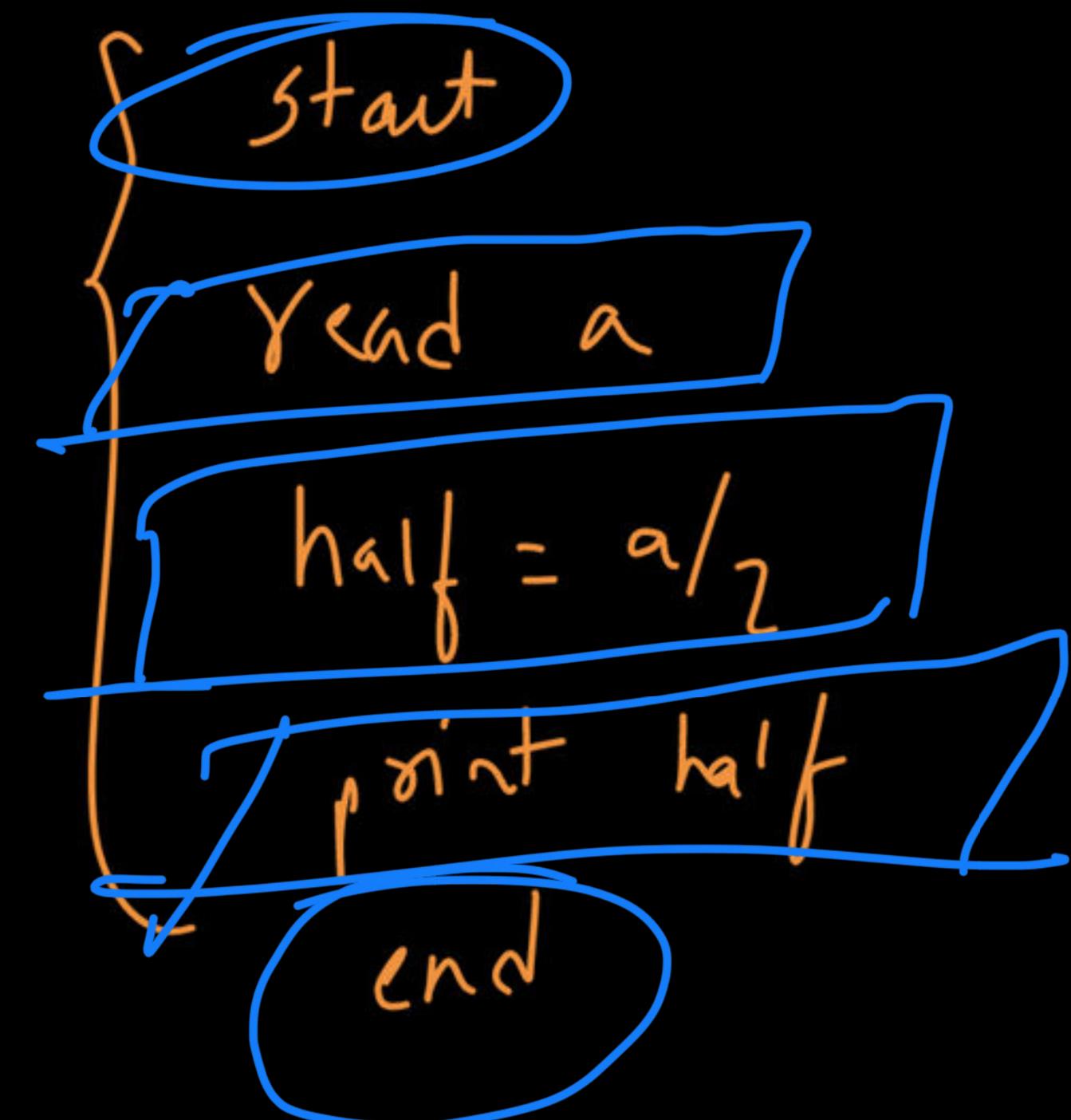
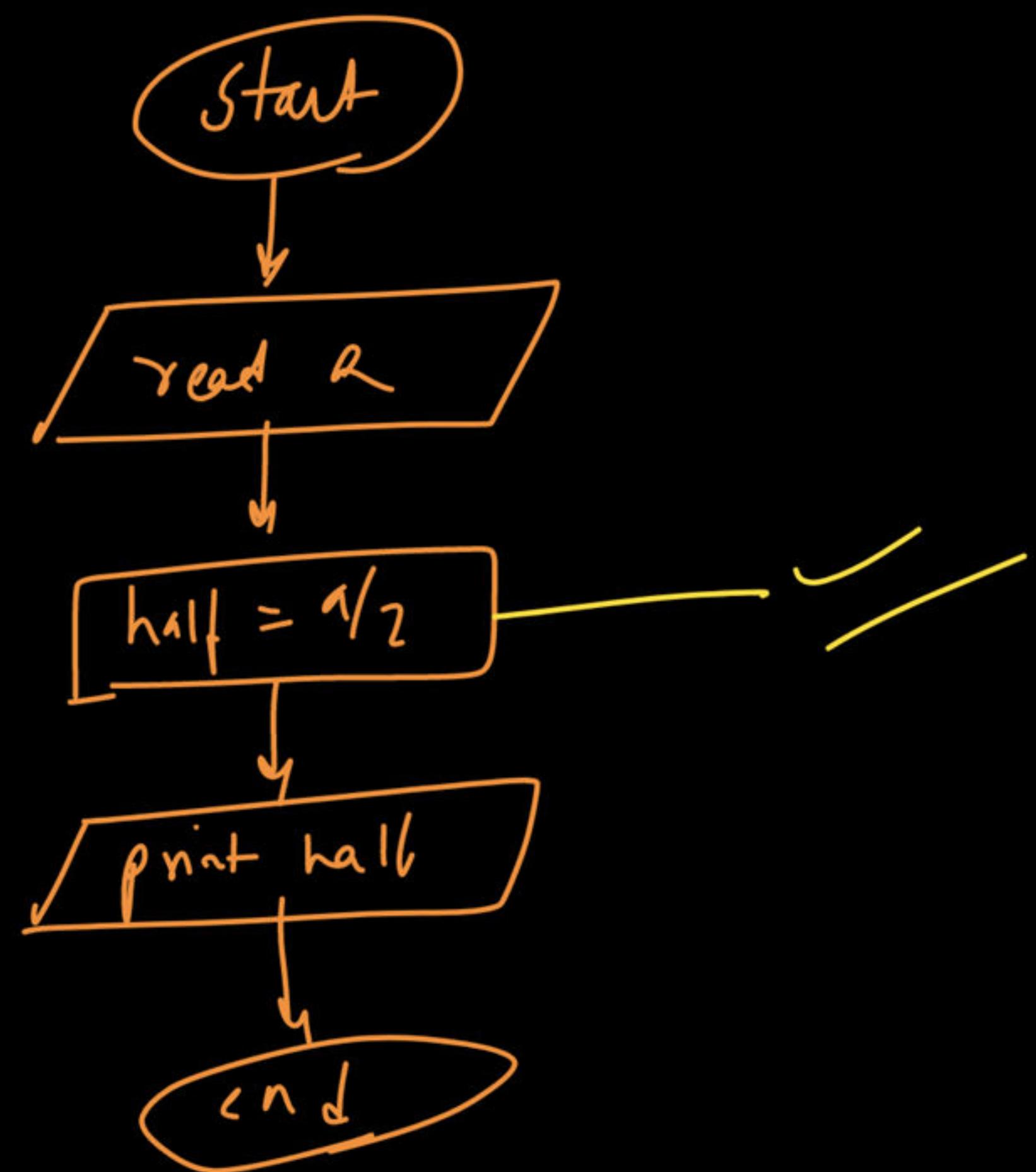
Print avg

end

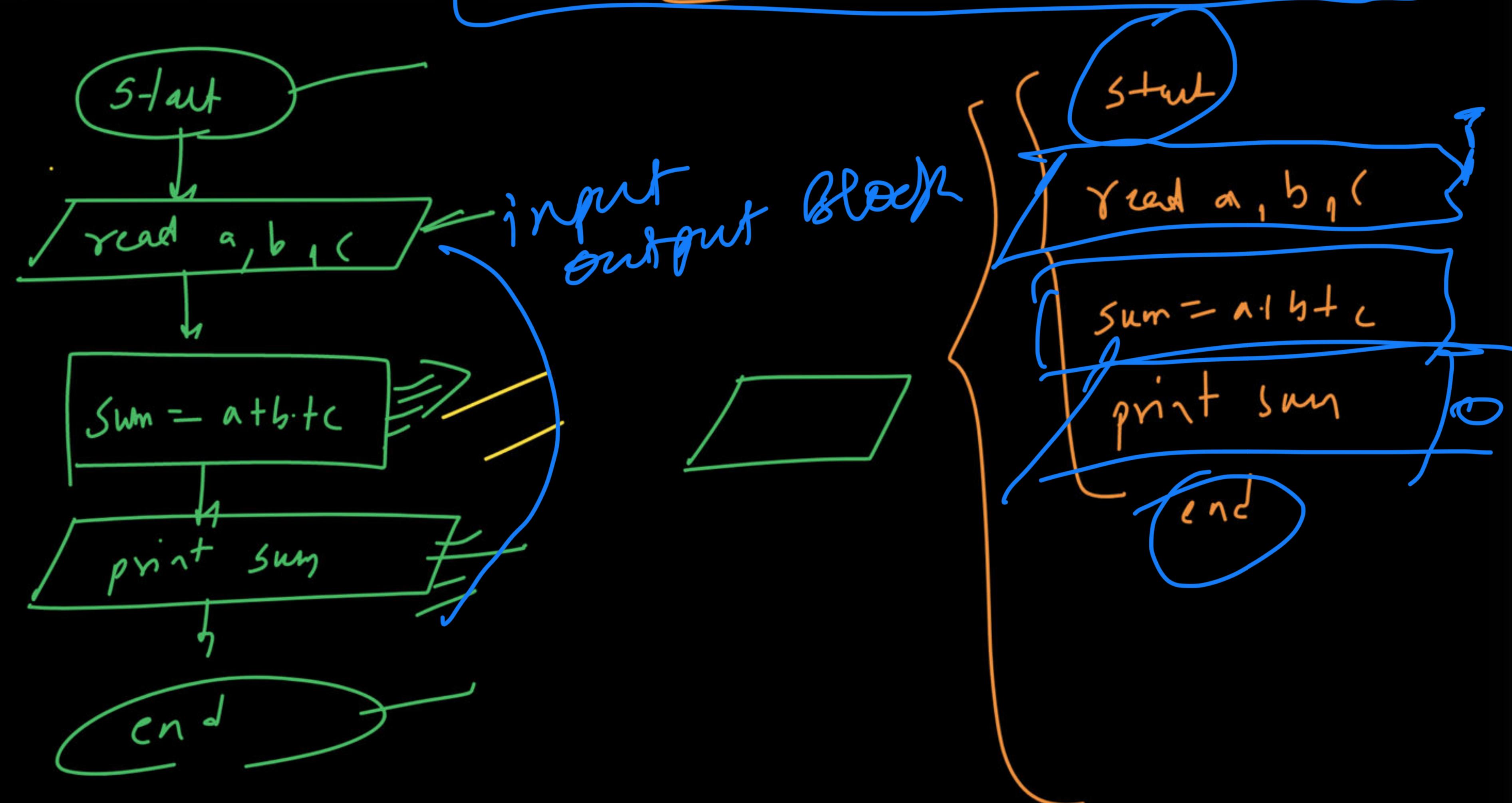
A handwritten note on the right side of the flowchart shows the calculation of the average. It starts with "Start" and "Given a=10, b=12, c=14". Below this, the formula "avg = (a+b+c)/3" is circled. To its right, the calculation "(10+12+14)/3 = 36/3 = 12" is shown. Further down, the result "avg = 12" is circled, followed by "Print avg" and "end". A blue bracket on the far right groups the "A vpath" and "path" notes.

# Design Flowchart - Print half of a

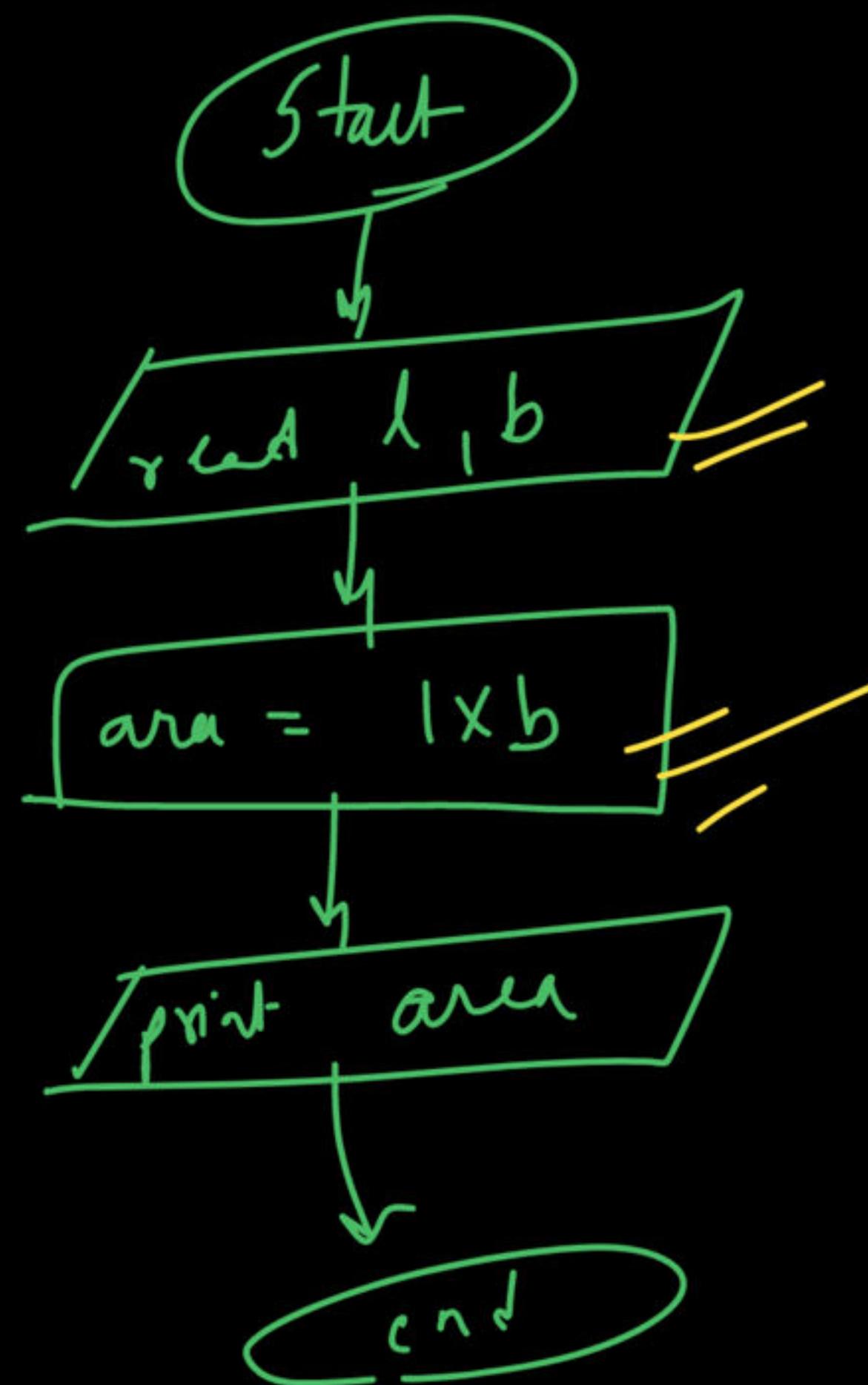
u1  
u2



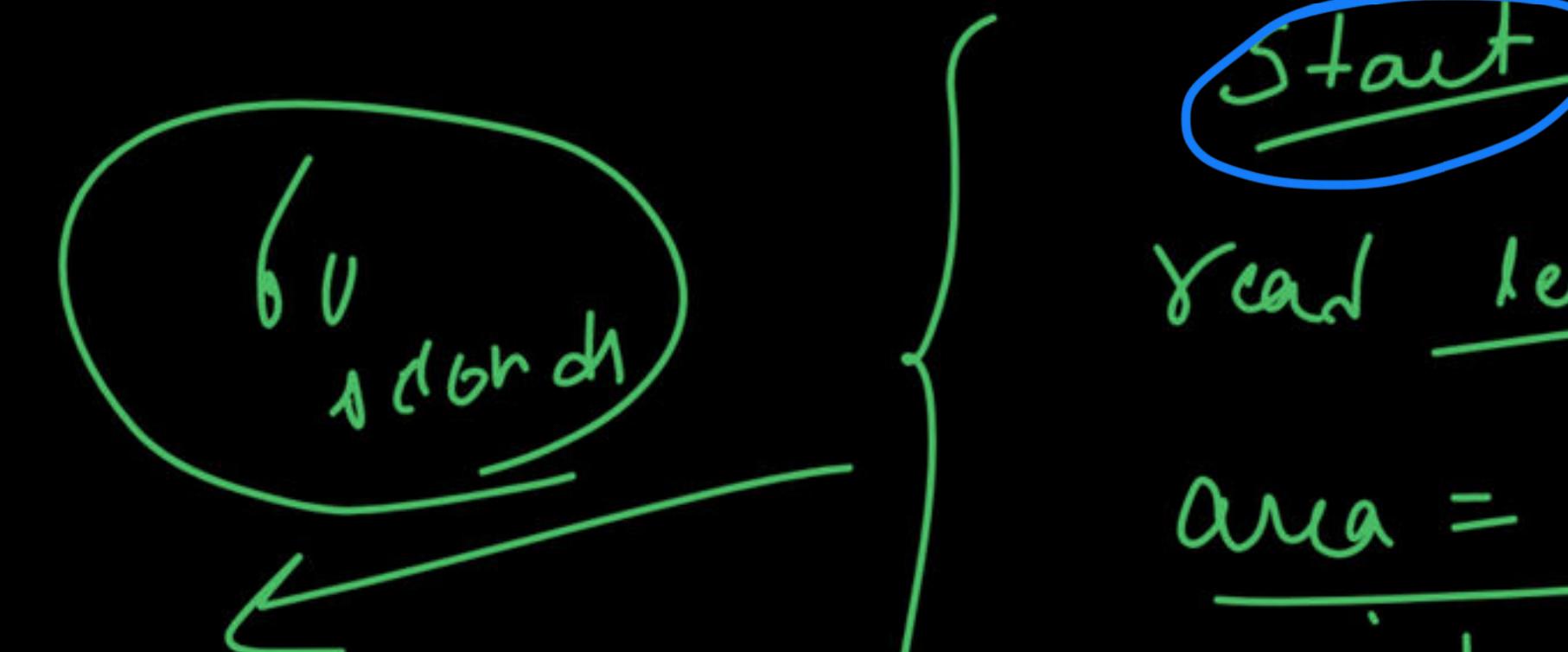
# Design Flowchart - Take Input and add 3 numbers



# Design Flowchart - Area of Rectangle



$$\text{area} = \underline{\text{len}} \times \underline{\text{br}} =$$



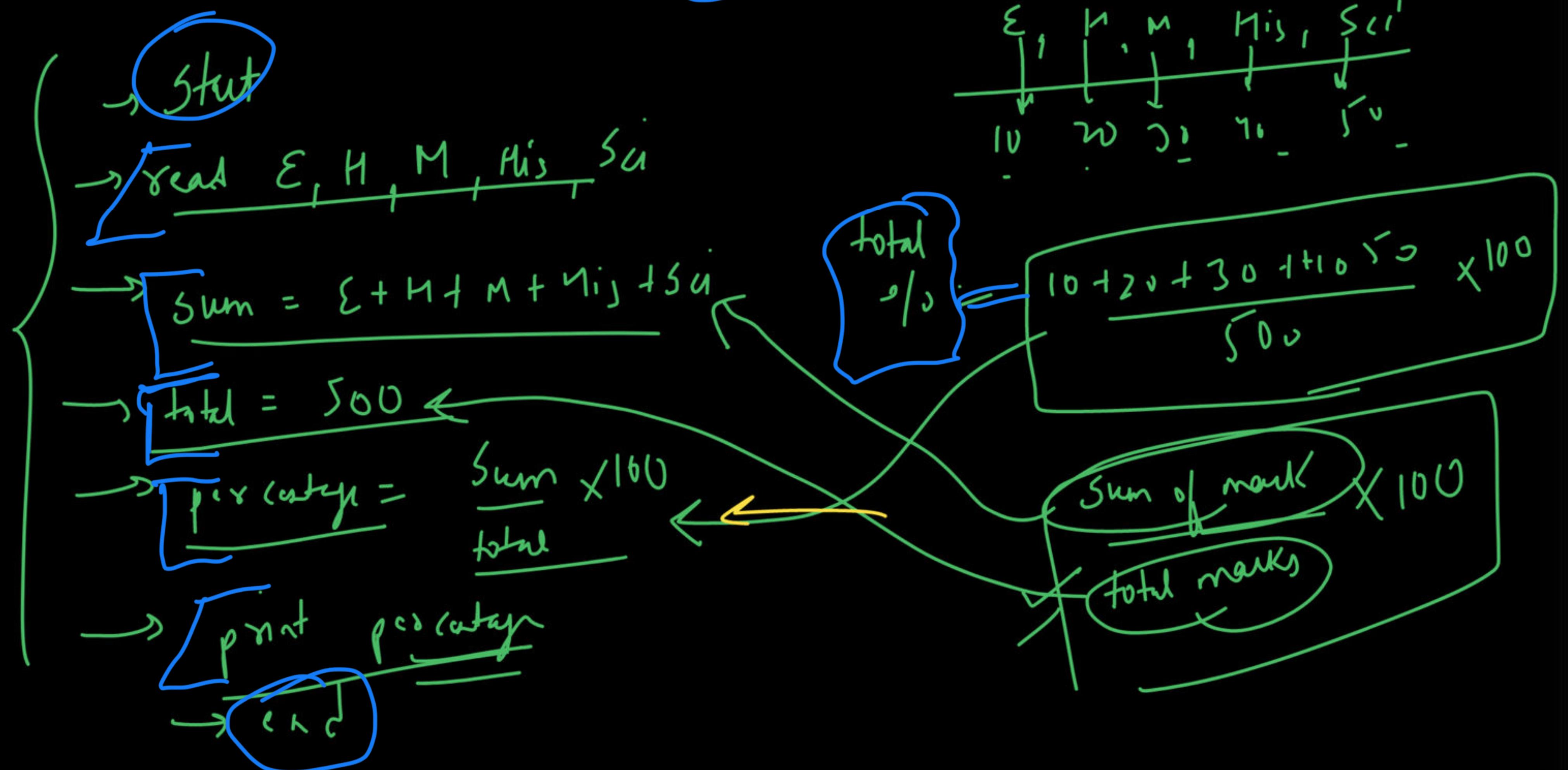
Start  
read len, br  
 $\text{area} = \underline{\text{len}} \times \underline{\text{br}}$   
print area

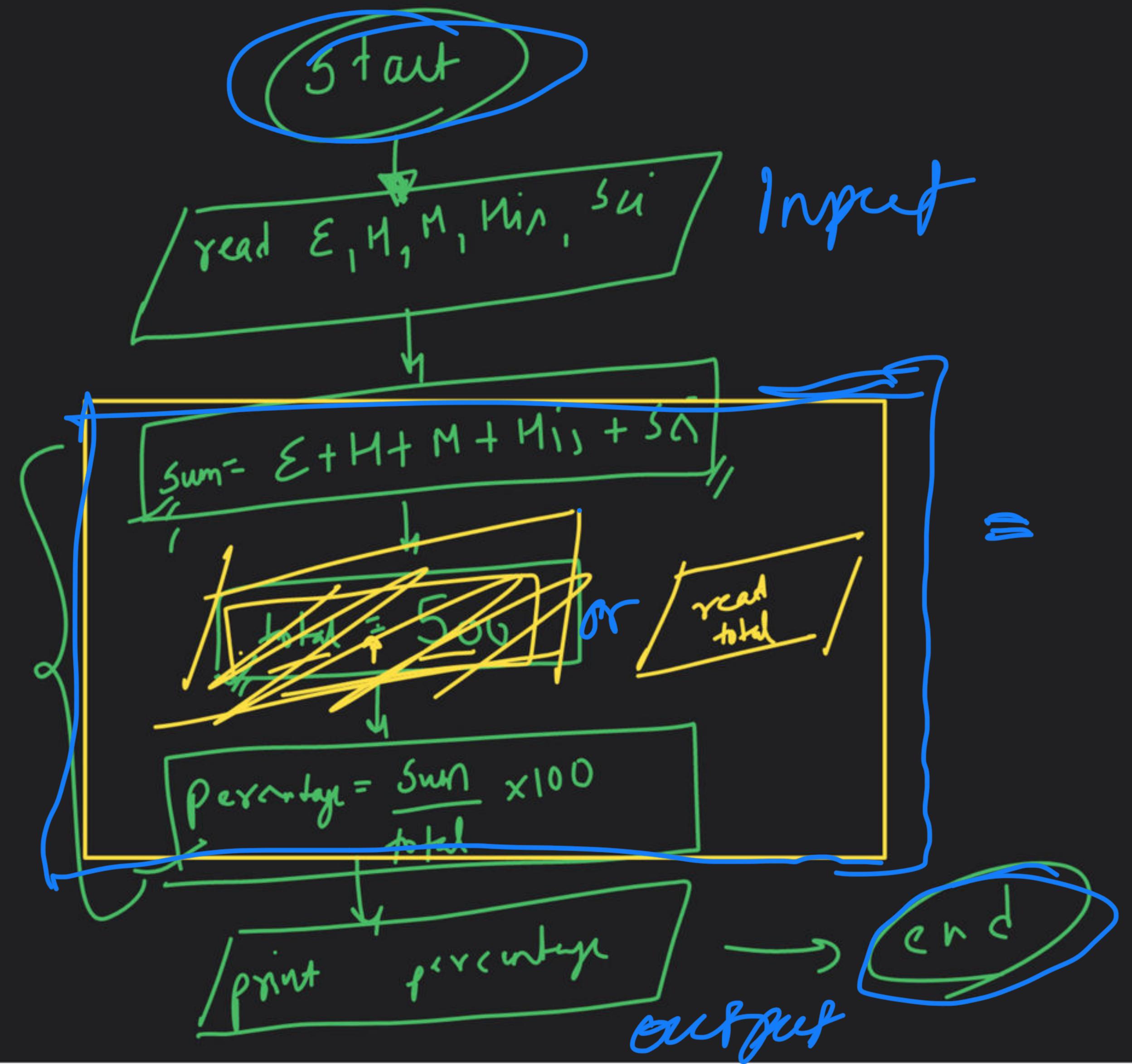
end

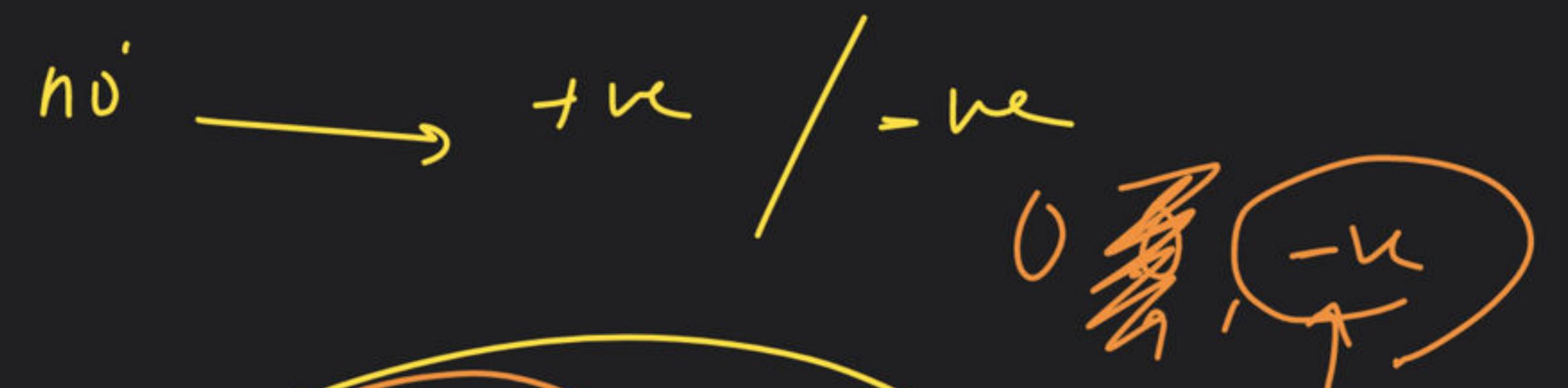
2 min

# Design Flowchart -

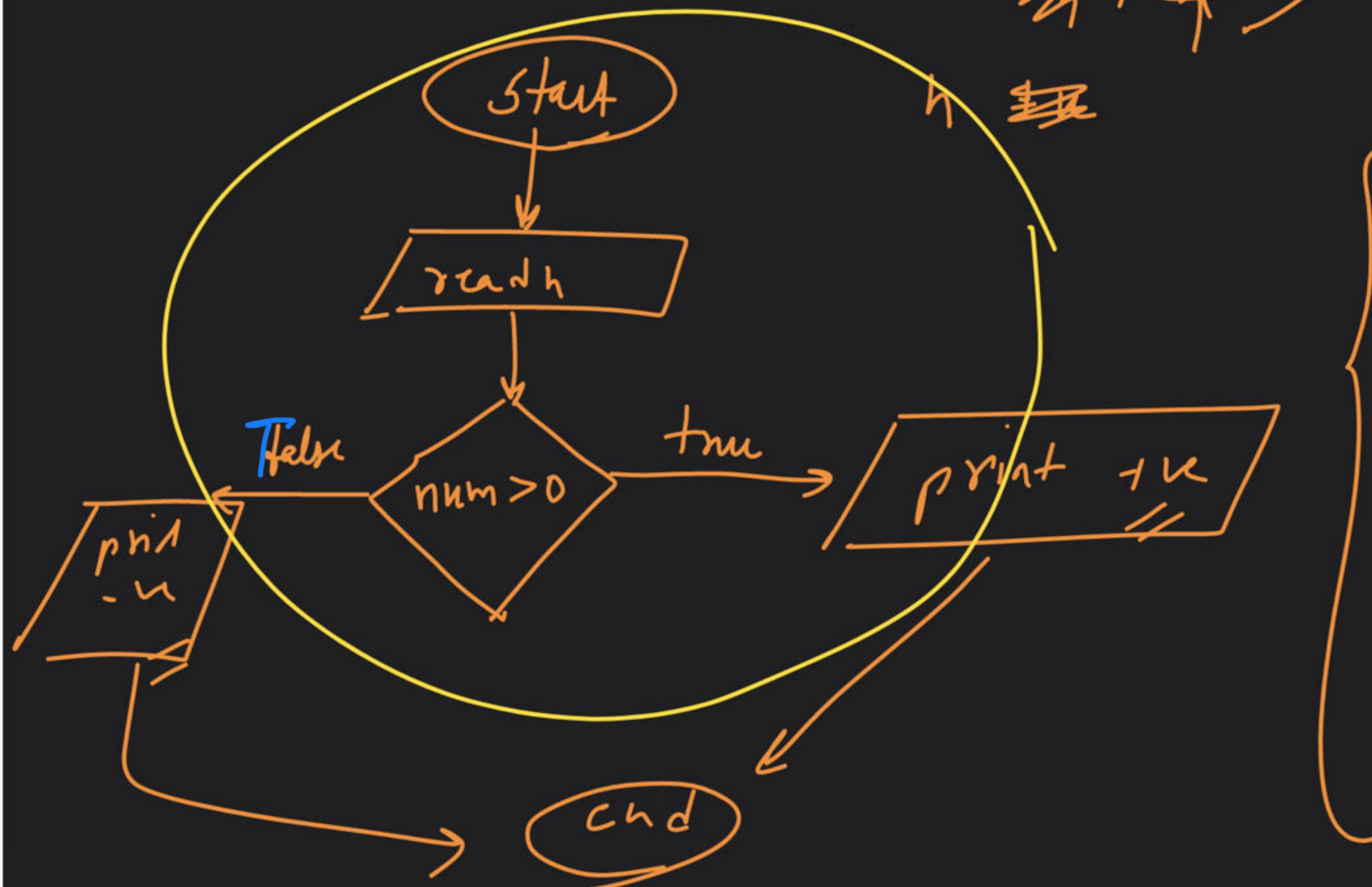
## Calculate Percentage



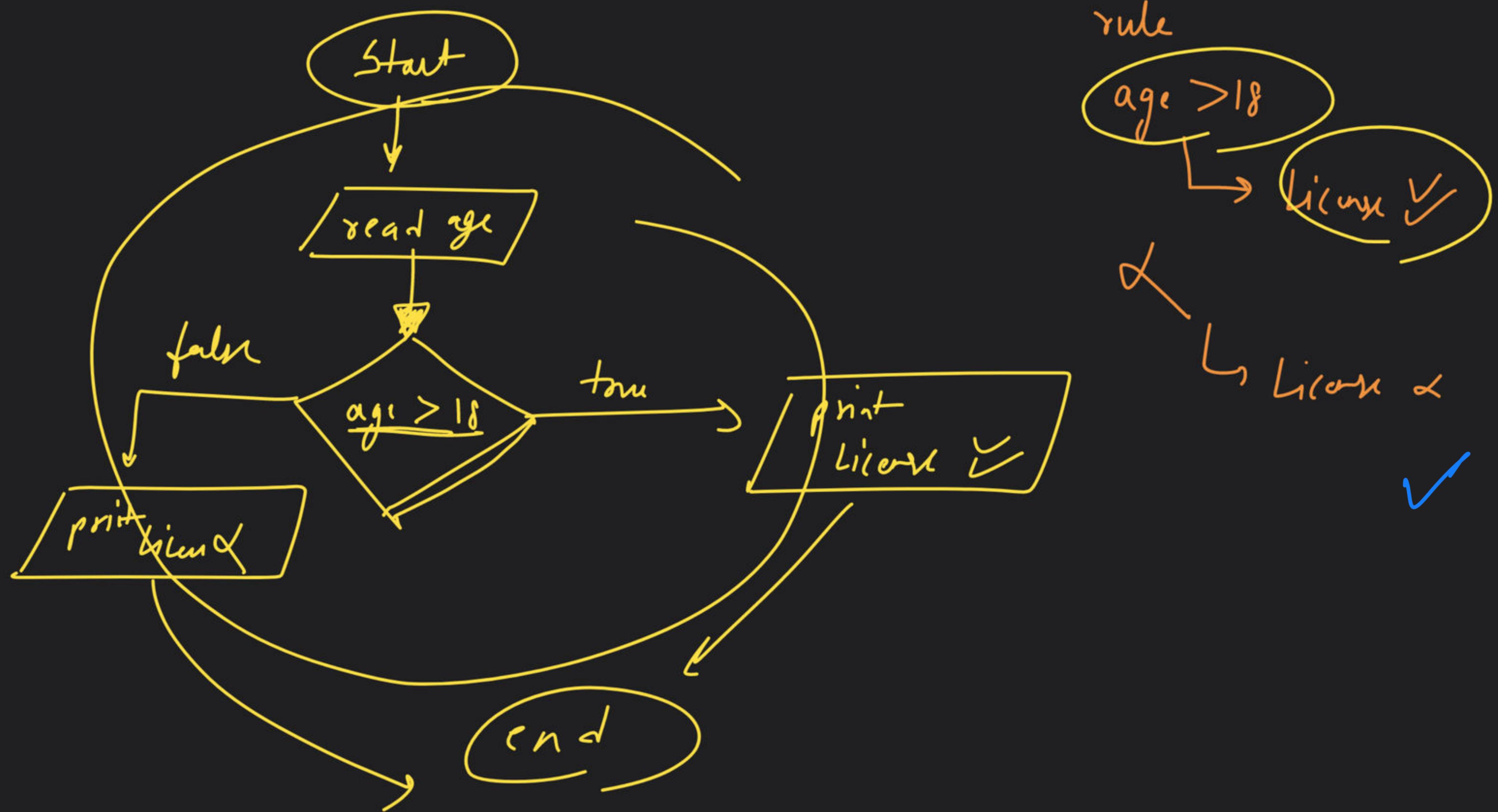




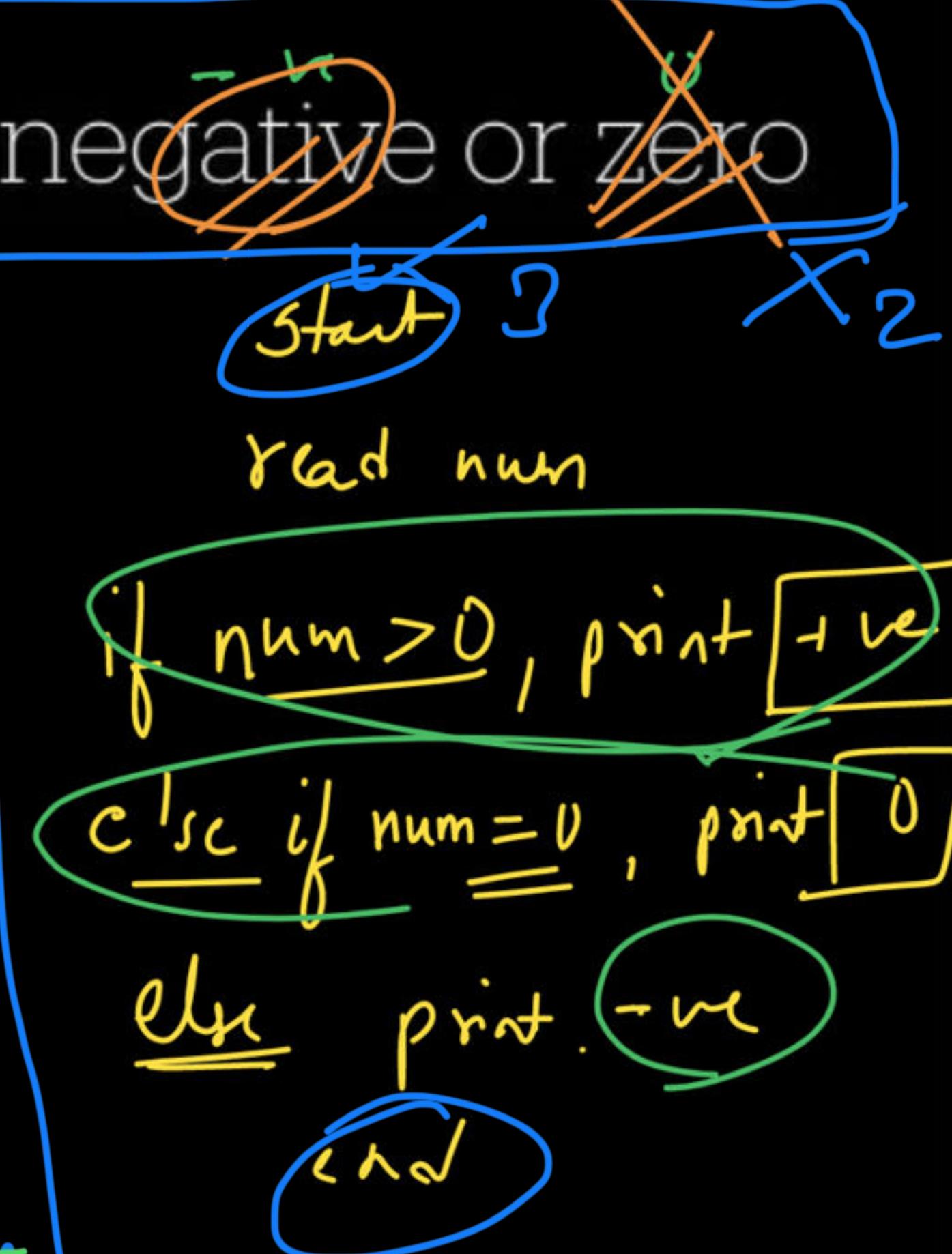
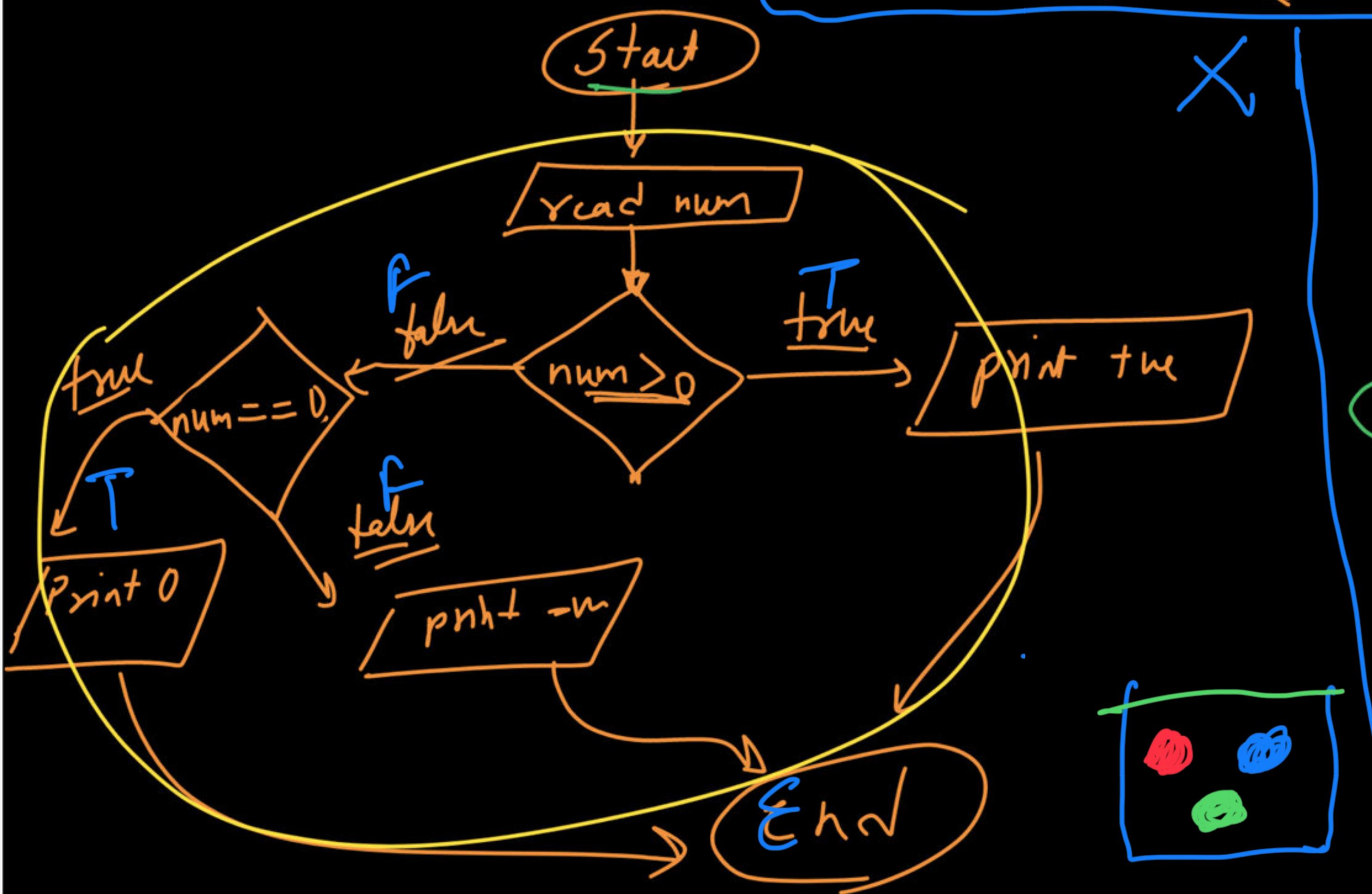
✓

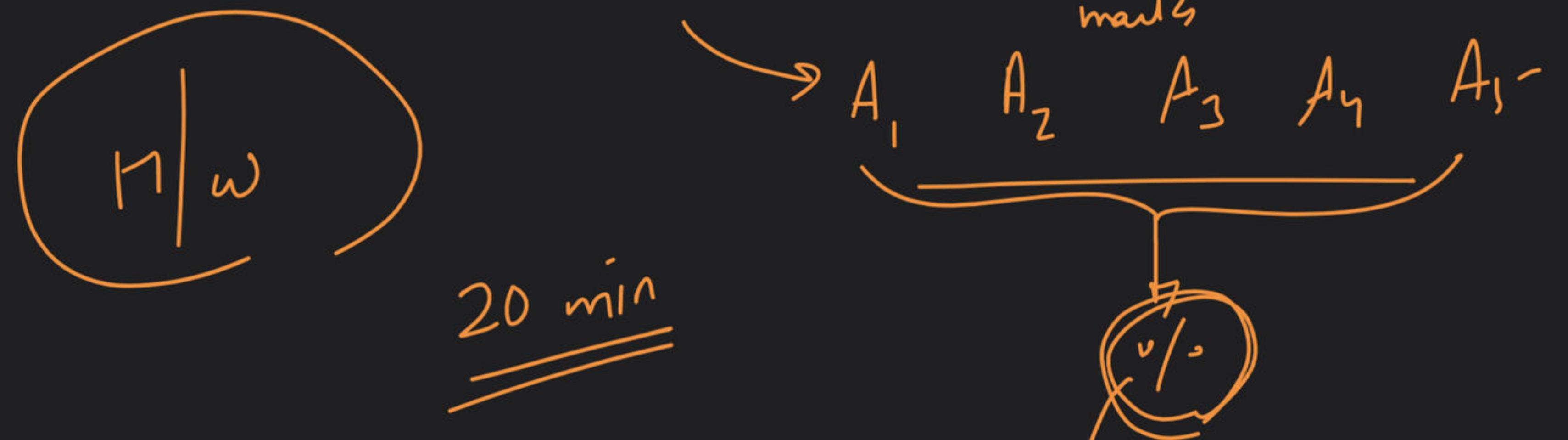


Start  
Read num  
if num  $> 0$ , print +ve  
if num  $< 0$ , print -ve  
End

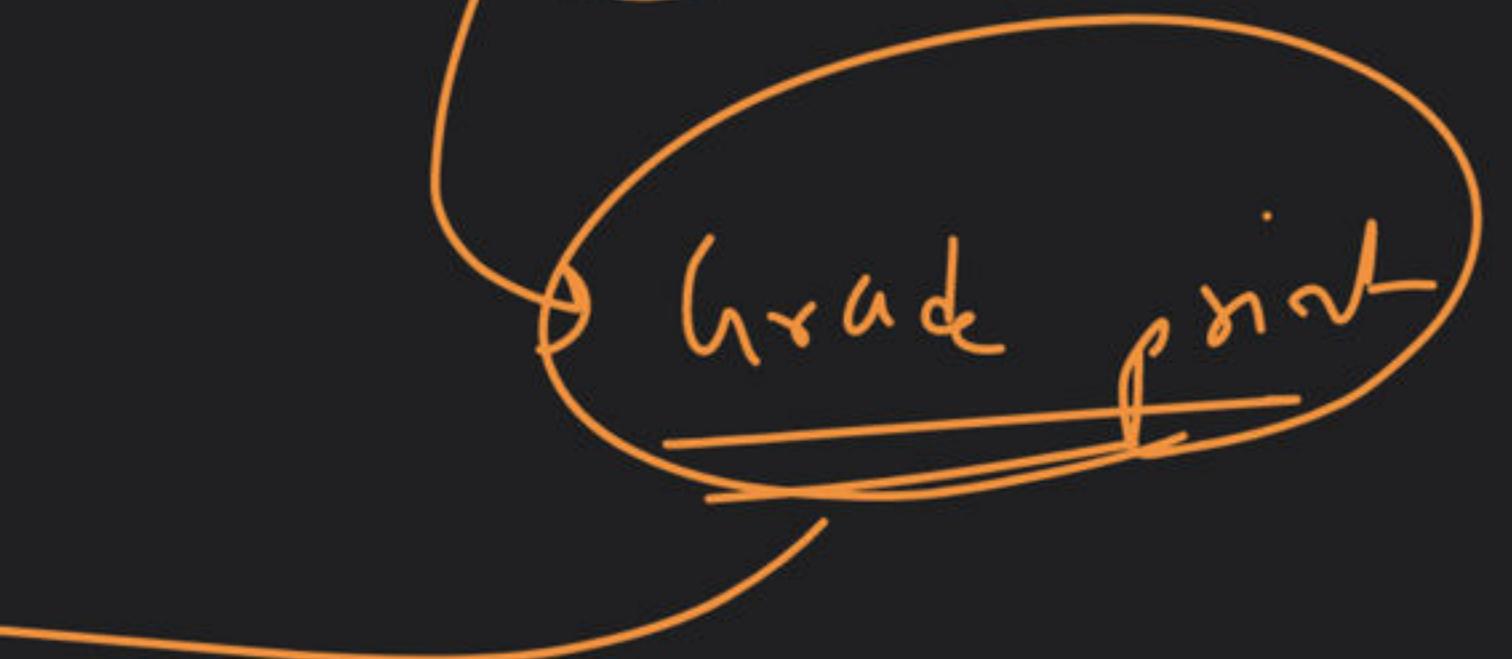


# Design Flowchart - Check positive, negative or zero





$\alpha$  }  $A \rightarrow > 90\%$   
 $\beta \rightarrow 80 - 90$   
 $\gamma \rightarrow 70 - 80$   
 fail  $\downarrow < 70$



~~count = 0 + 1 <= 5~~

~~limit = 5~~

Babbar

Babbar

Babbar

Babbar

Bath

Name  $\rightarrow$  5 print

① start

② read name = Babbar

③ limit = 5,  $2 \leq i \leq 5$

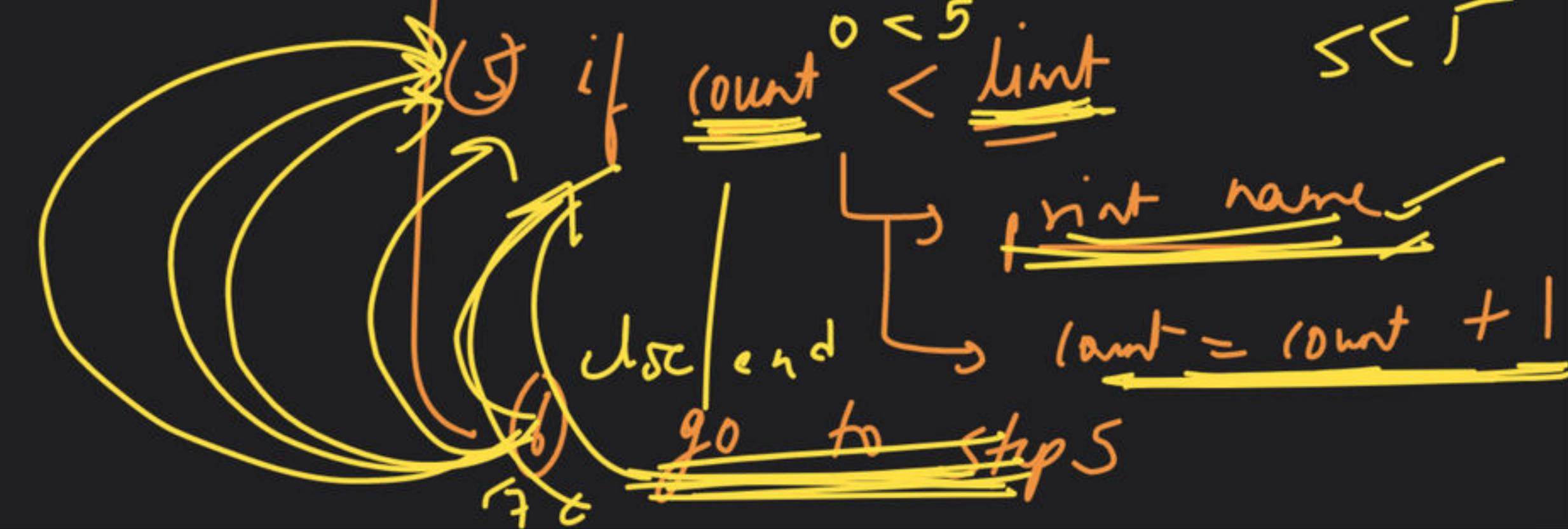
④ count = 0,  $1 \leq j \leq r$

⑤ if  $count < limit$ ,  $0 \leq j \leq 5$

    print name

    count = count + 1

    step 5



① Start  
② read name  
③ limit = 5  
④ ~~count = 0~~

⑤ if count < limit  
    → print name  
    → count = count + 1  
    use go to step 7  
⑥ go to step 5  
⑦ end

name = Babbar

limit = 5



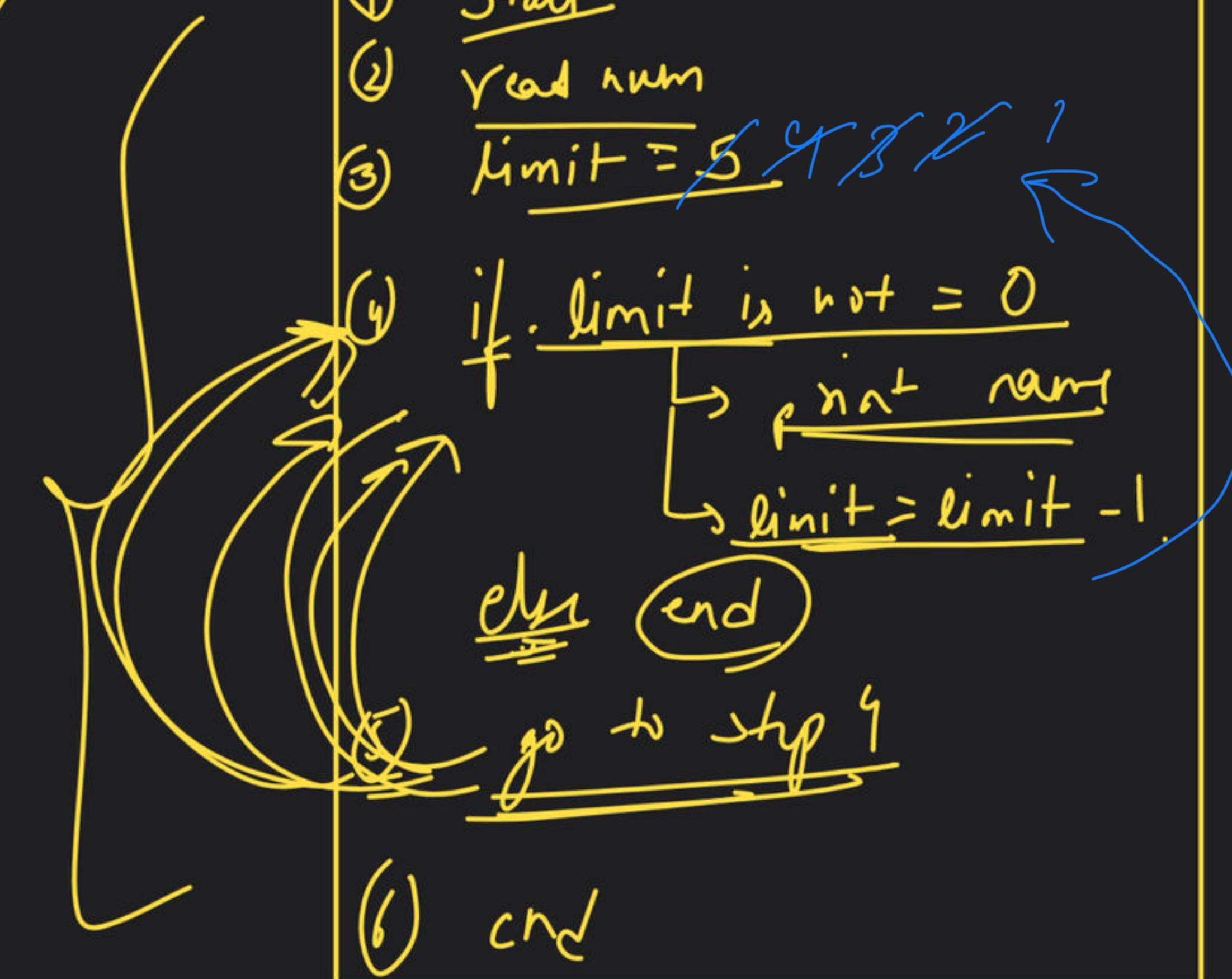
Babbar

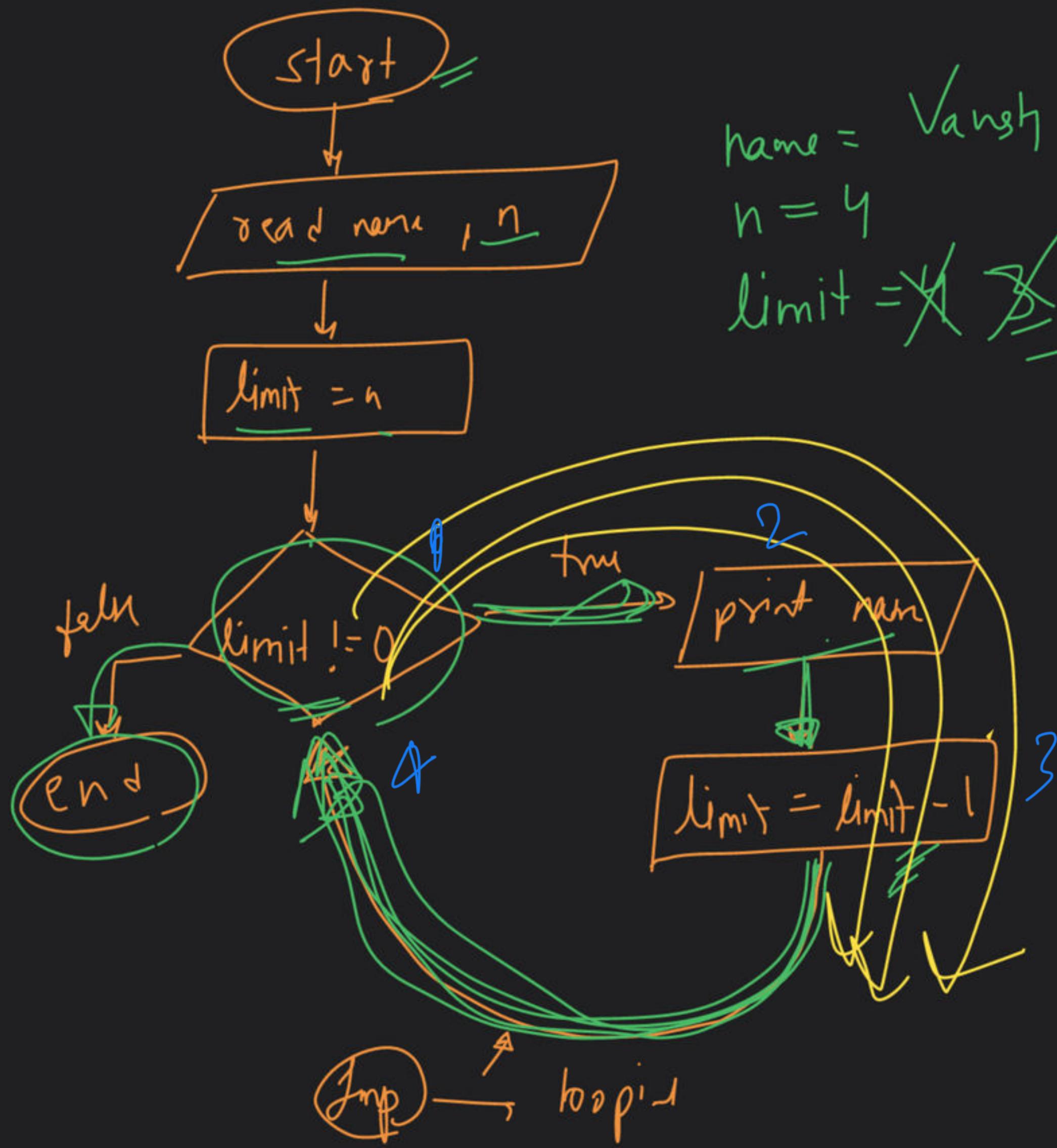
Babbar

Babbar

Datler

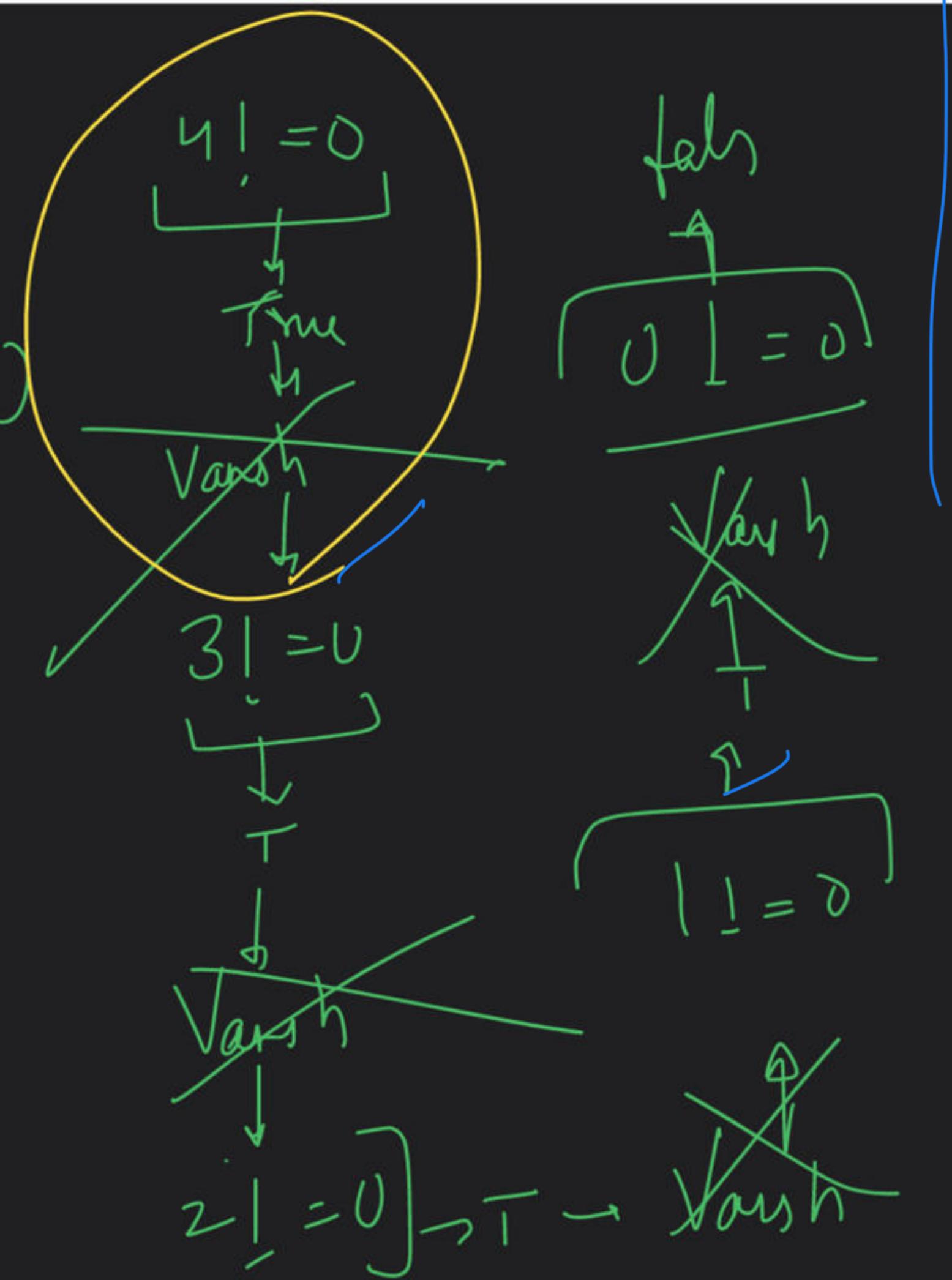
Babbar





Variables:

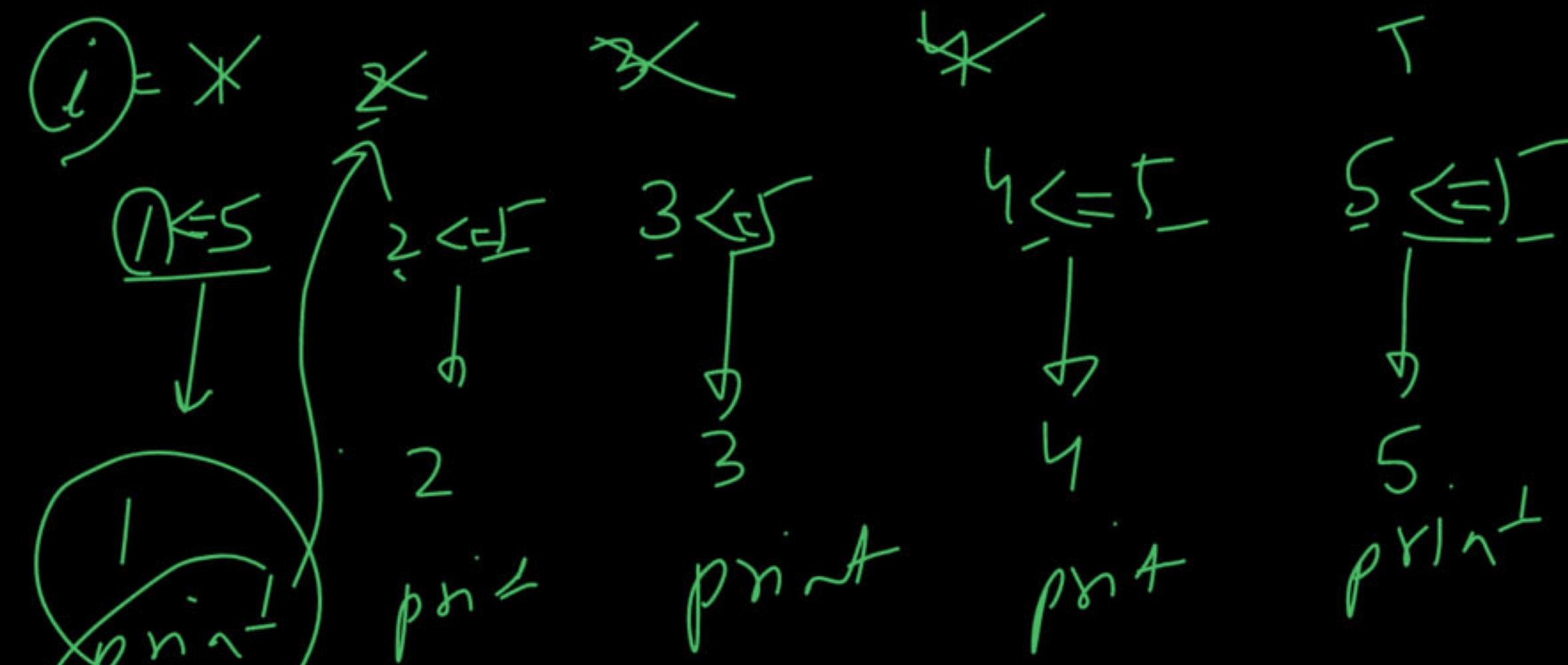
- name = Vansh
- n = 4
- limit = ~~4~~ ~~3~~ ~~2~~ ~~1~~ ~~0~~



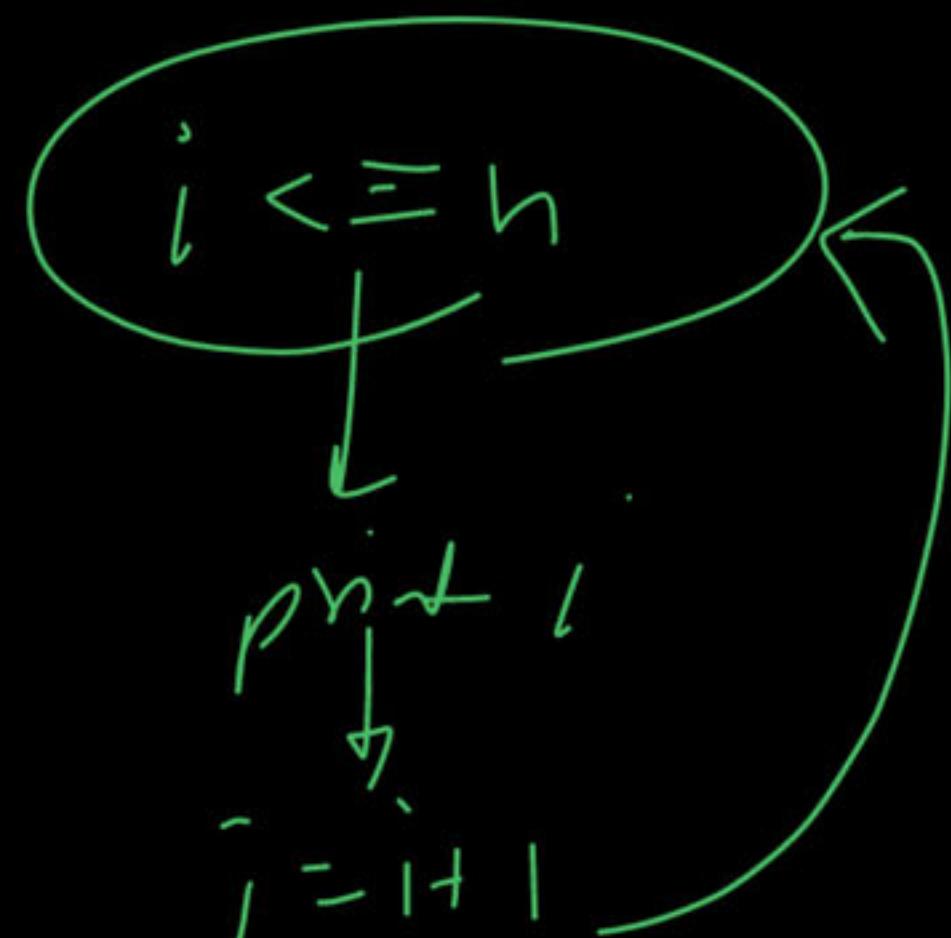
# Design Flowchart - Print counting from 1 to N

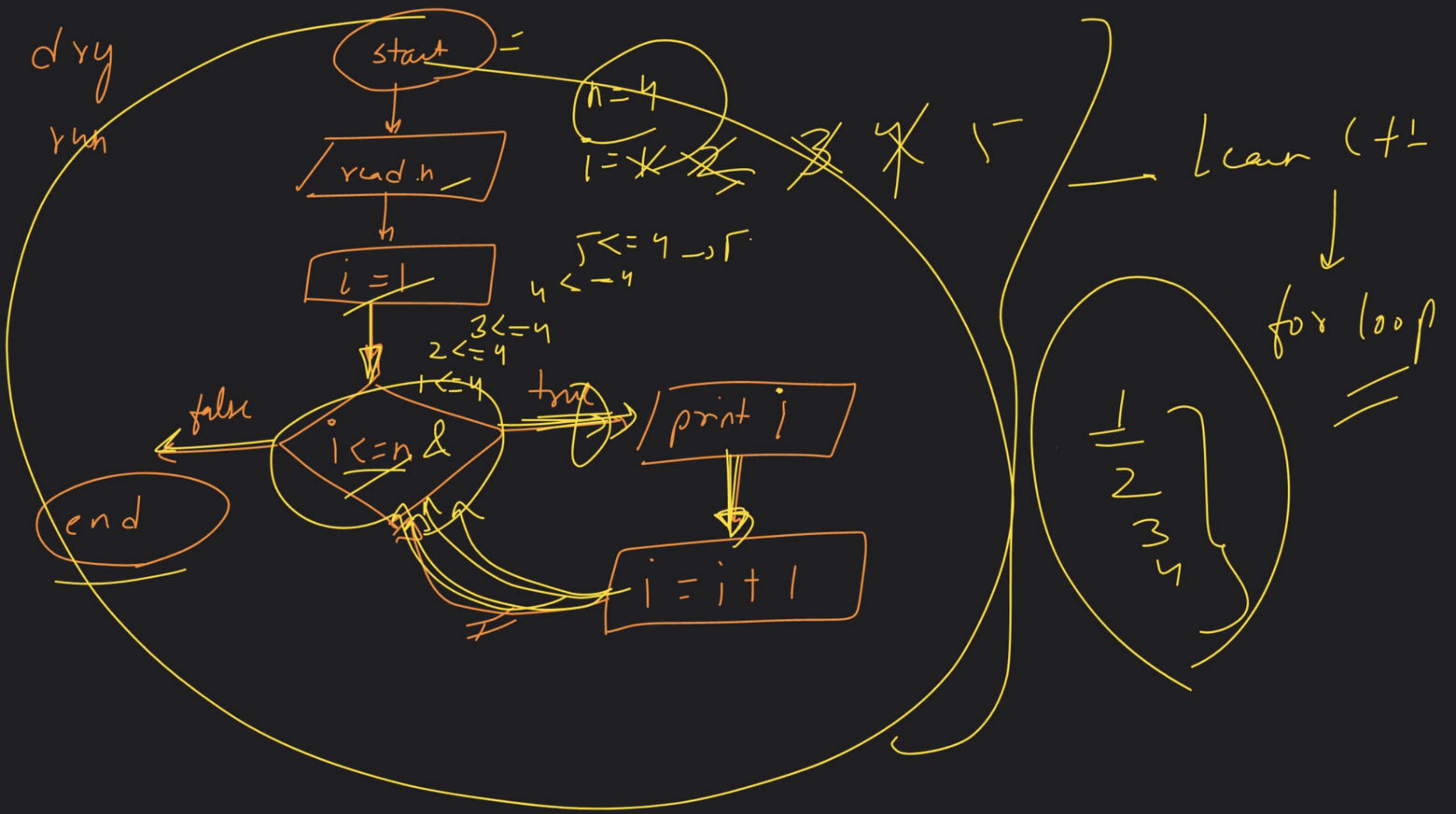
Q1

$h = 5$



Loops





n = 6

Count = ~~11~~

15

4

1

2

$$2 <= 6$$

2

3 ✓ 4 ✗

3<=

1

4

1

1

5

↓

6 7

1

1

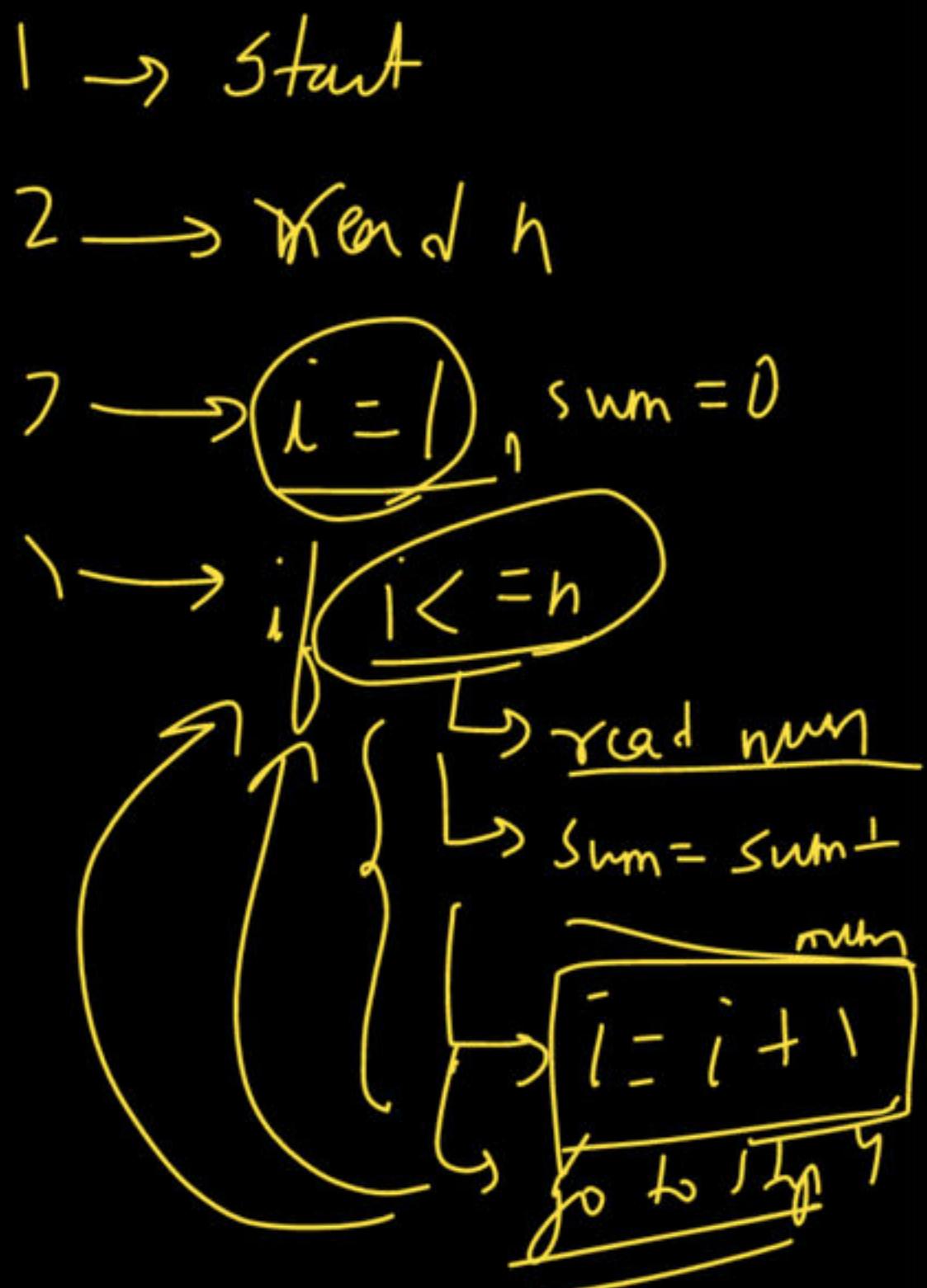
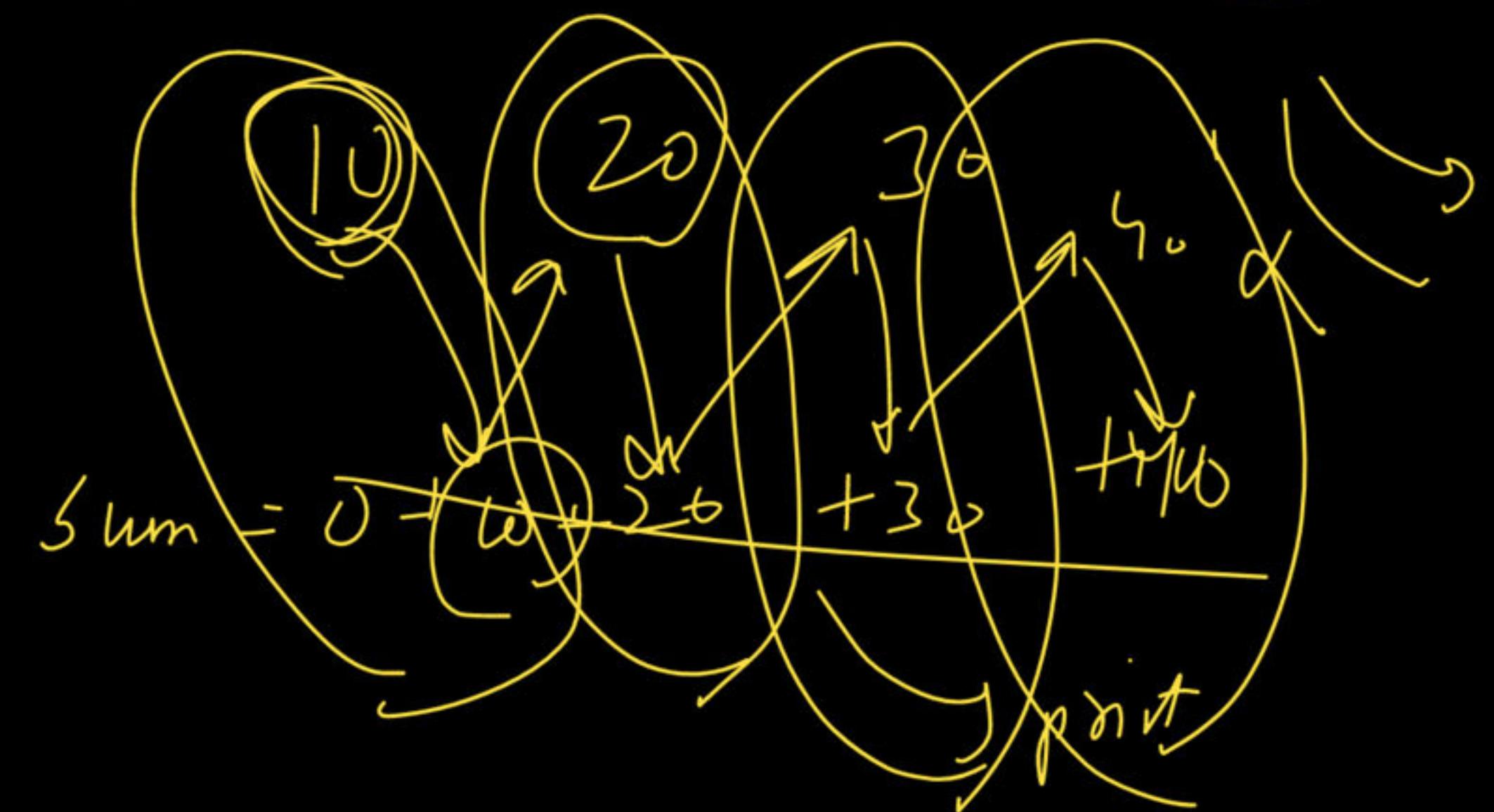
1

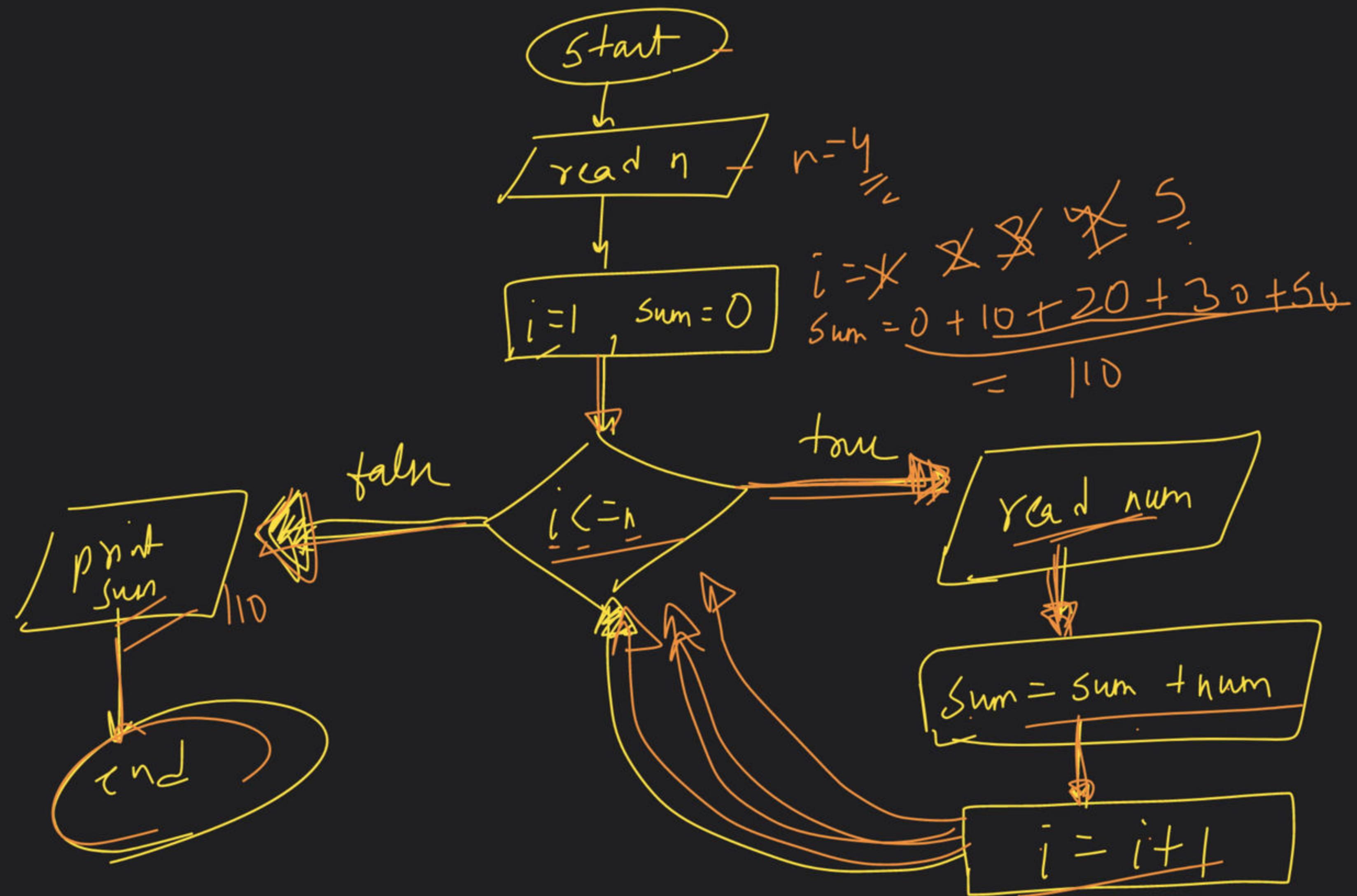
21

✓  
✓  
✓



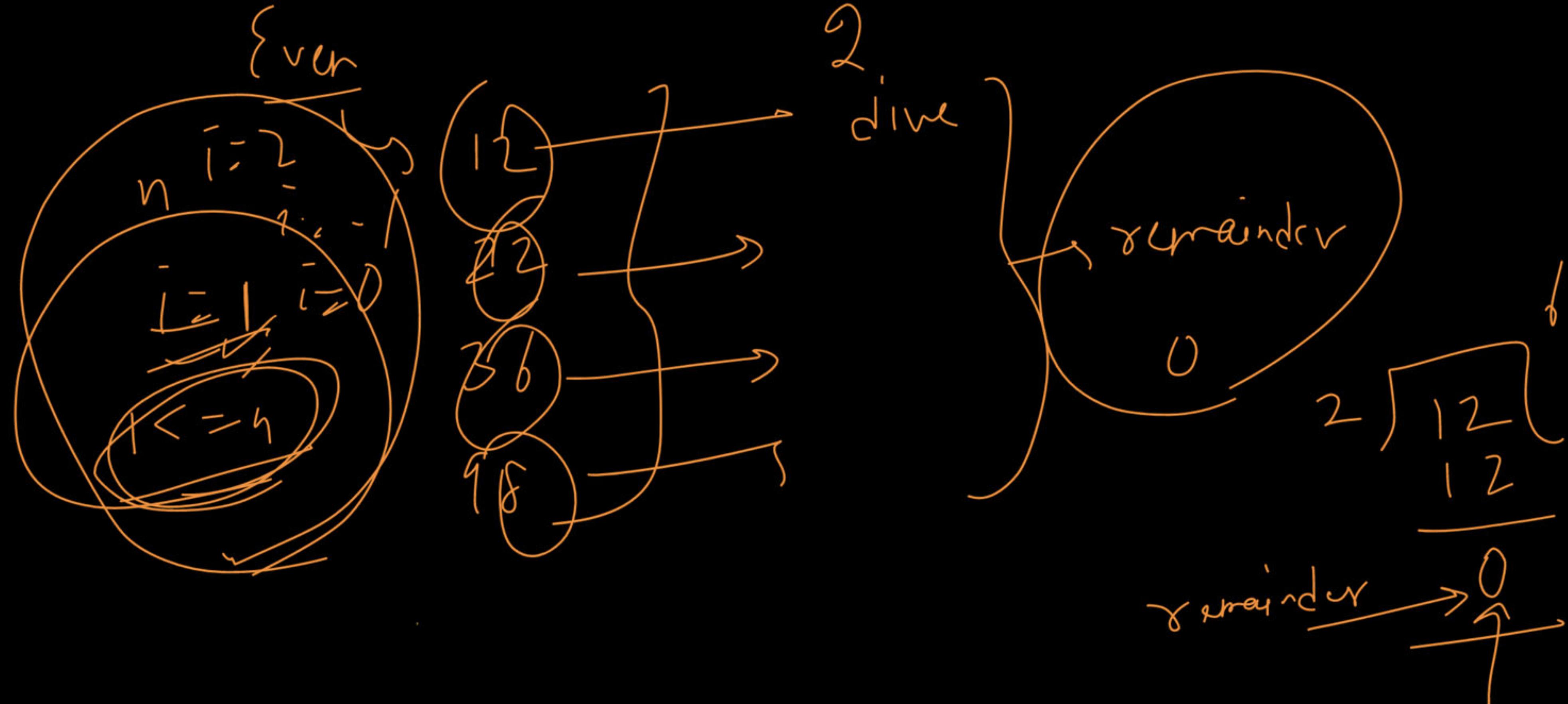
# Design Flowchart - Add N numbers from user





# Design Flowchart - Print Even numbers from 1 to N

1 = 5



$n = 10$

$i = 1$



0.2 L

odd

2  
↓  
0.2

Even  
↓  
P

3  
↓  
0.2

Odd  
↓  
P

4  
↓  
0.2

Even  
↓  
P

5  
↓  
0.2

Odd  
↓  
P

6  
↓  
0.2

Even  
↓  
P

7  
↓  
0.2

Odd  
↓  
P

8  
↓  
0.2

Even  
↓  
P

9  
↓  
0.2

Odd  
↓  
P

10  
↓  
0.2

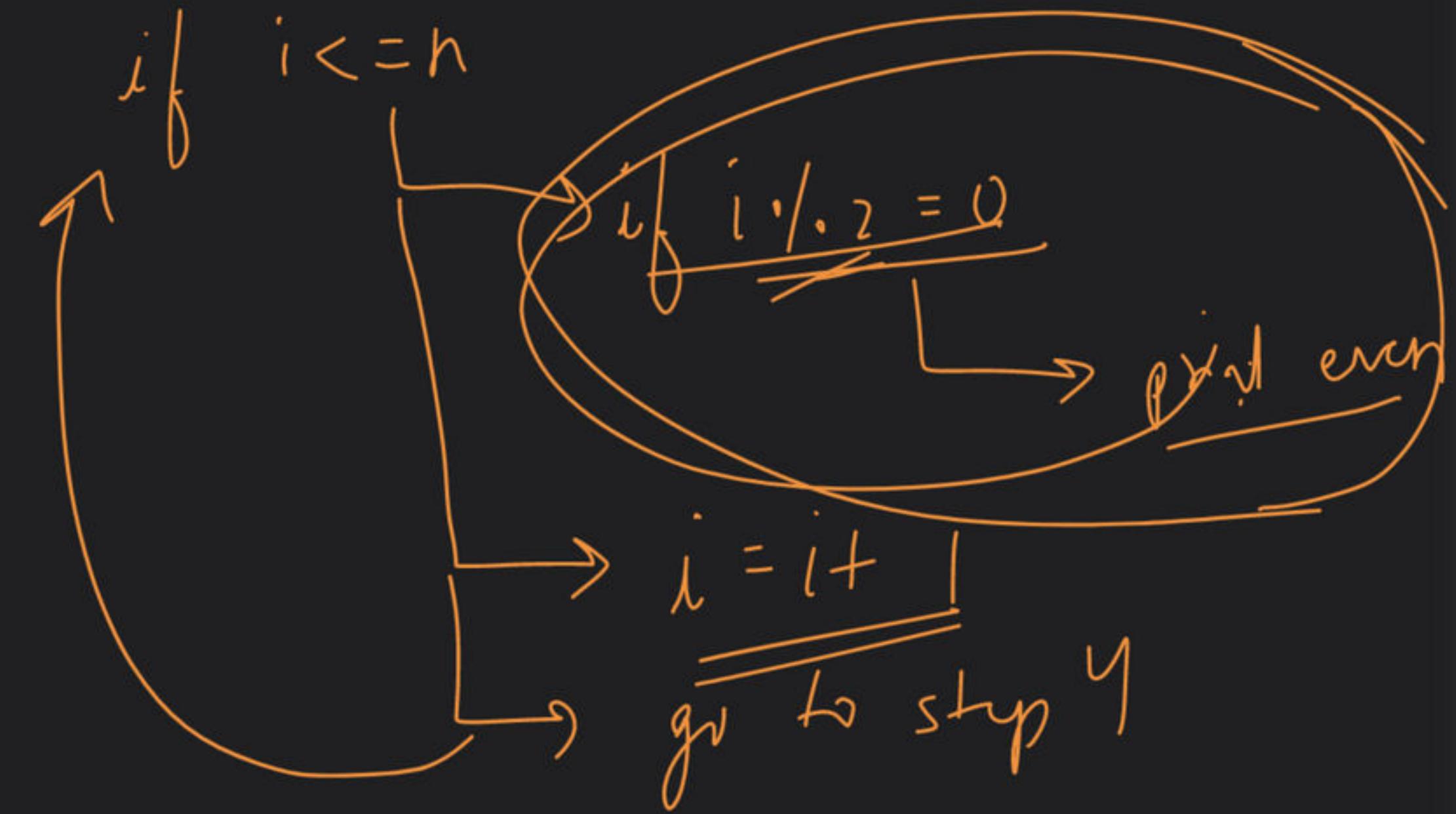
Even  
↓  
P

① Start

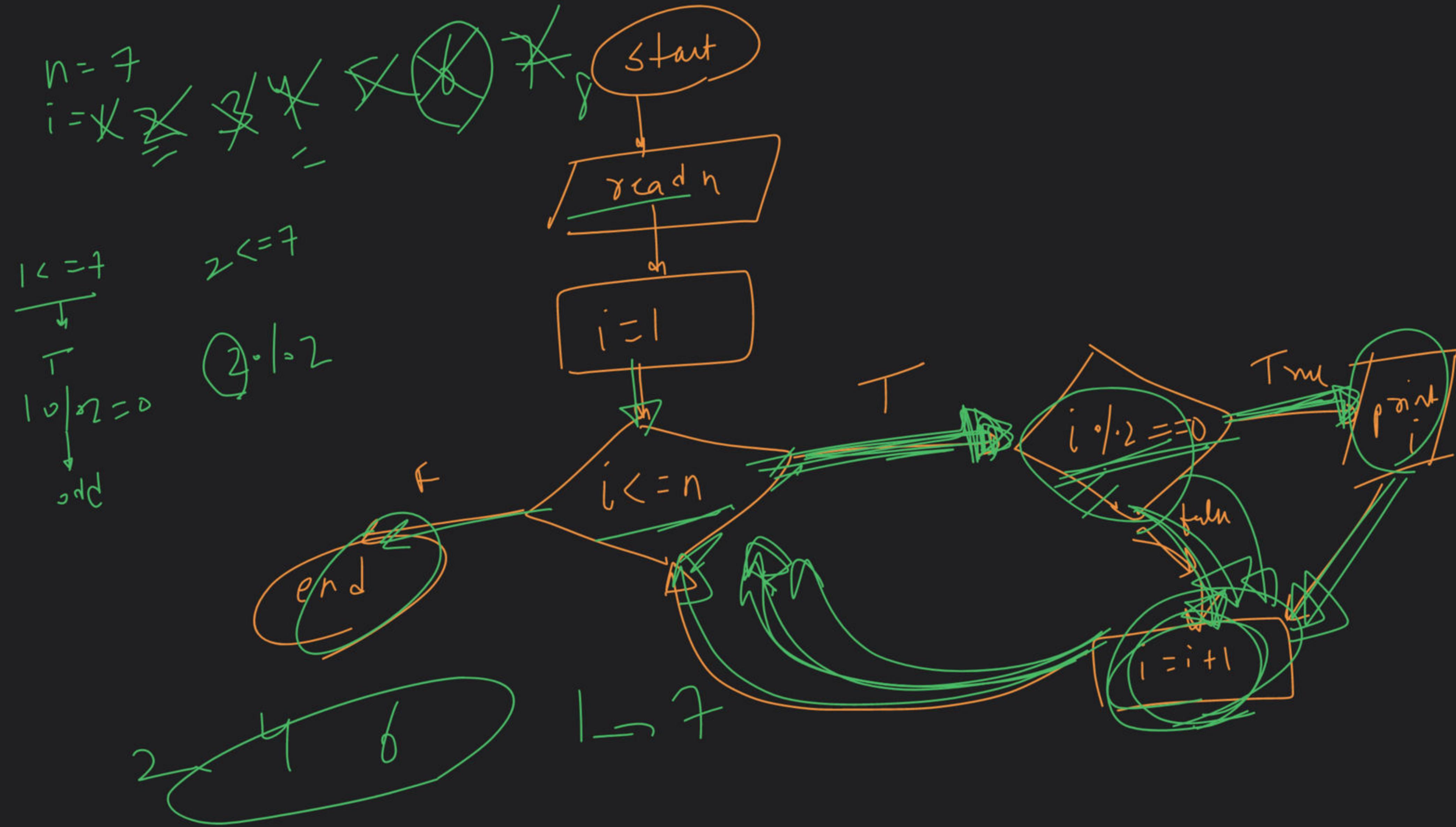
(2) record n

③  $i = 1$

⑨ if  $i \leq h$



D end



$$12 \div 2$$

Modulo

Modulus

remainder

$$12 \div 2 = 0$$

↑  
r cm

$$12 \div 2$$

$$\begin{array}{ccc} \textcircled{D} & \rightarrow & \text{Even} \\ \textcircled{I} & \rightarrow & \text{Odd} \end{array}$$

# Assignment:

Design Flowchart for below:

- • Multiply 2 number after taking input
- • Perimeter of triangle
- • Find Simple Interest
- • Find Compound Interest
- • Print Counting from N to 1
- • Find Factorial of a Number
- • Check if a number is Prime or not
- • Check Valid Triangle or not
- • Print Max of 2 number

