

# L2-Basics of Programming

Special class

# **L2 - Basics of Programming**

- Variables and Operators**
- Write your 1st Program**

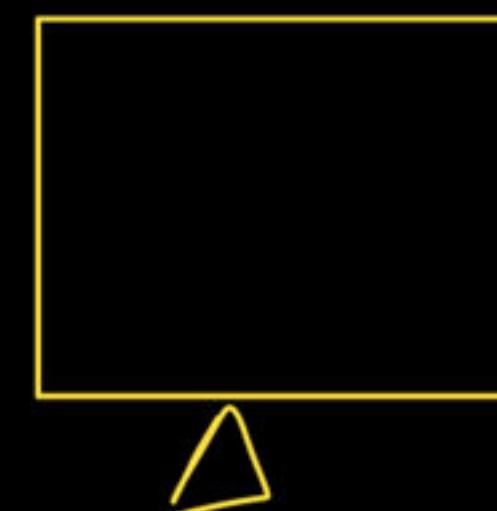
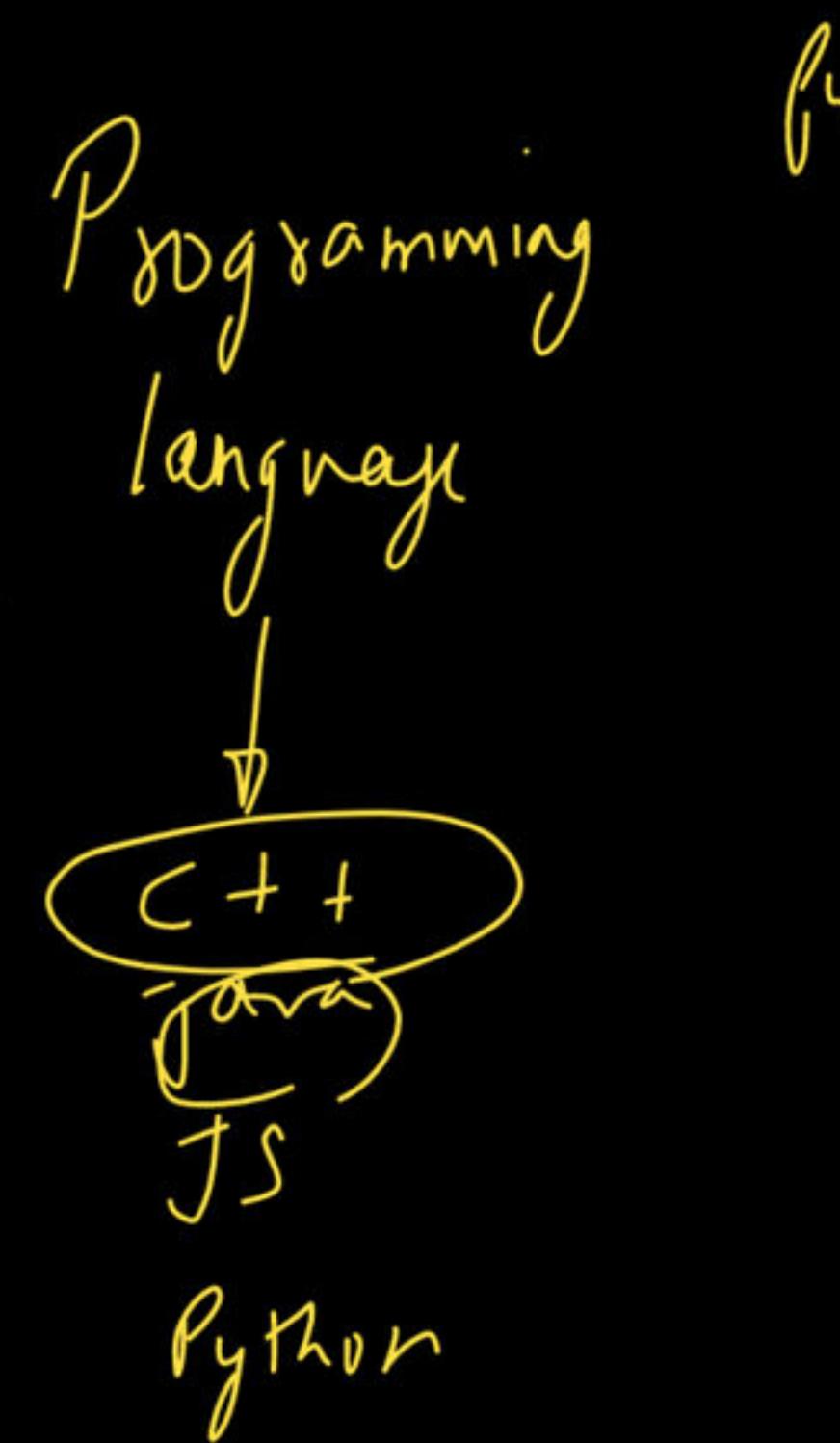
—> by **Codehelp**

# Programming Language ?

What ?

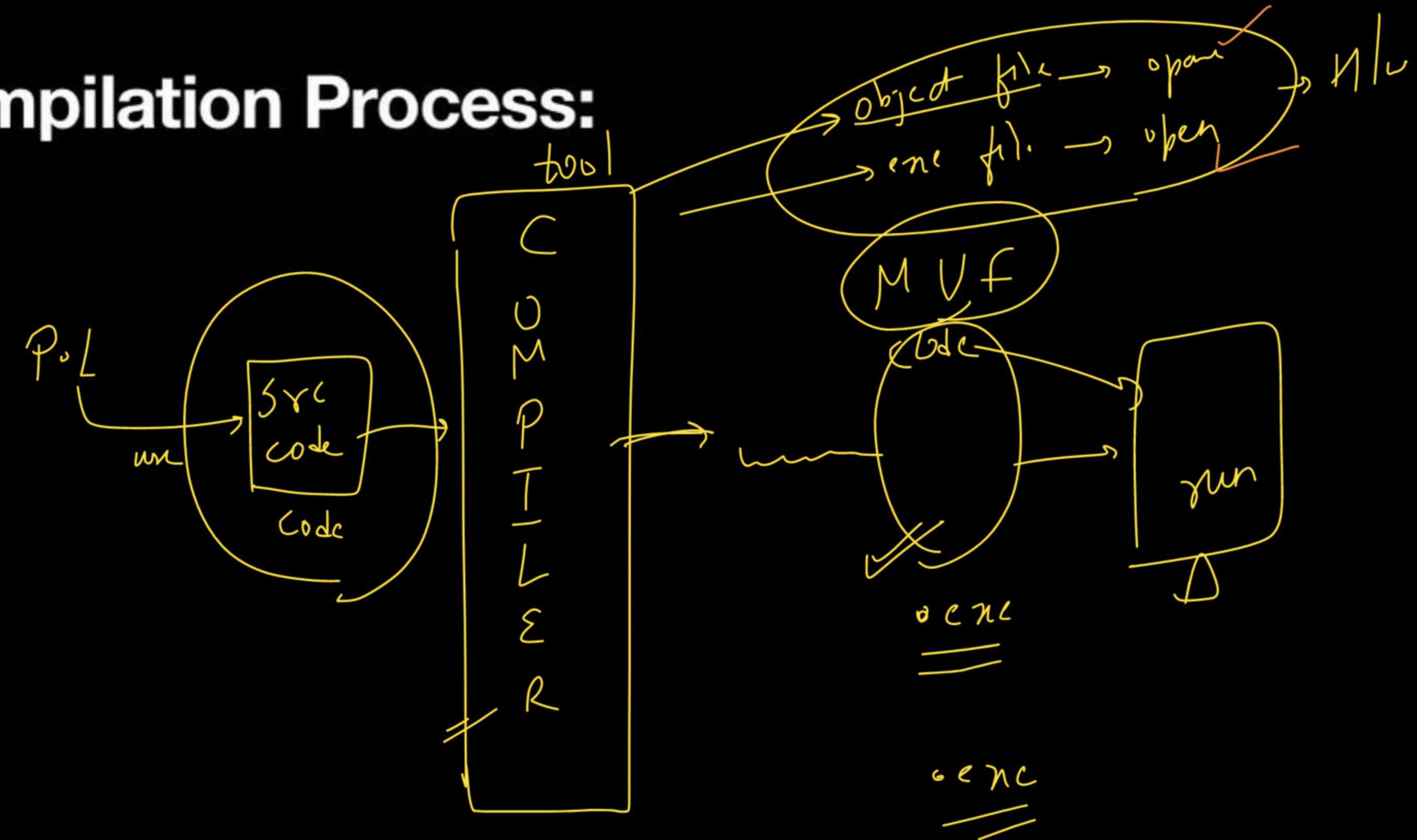
Why ?

standard

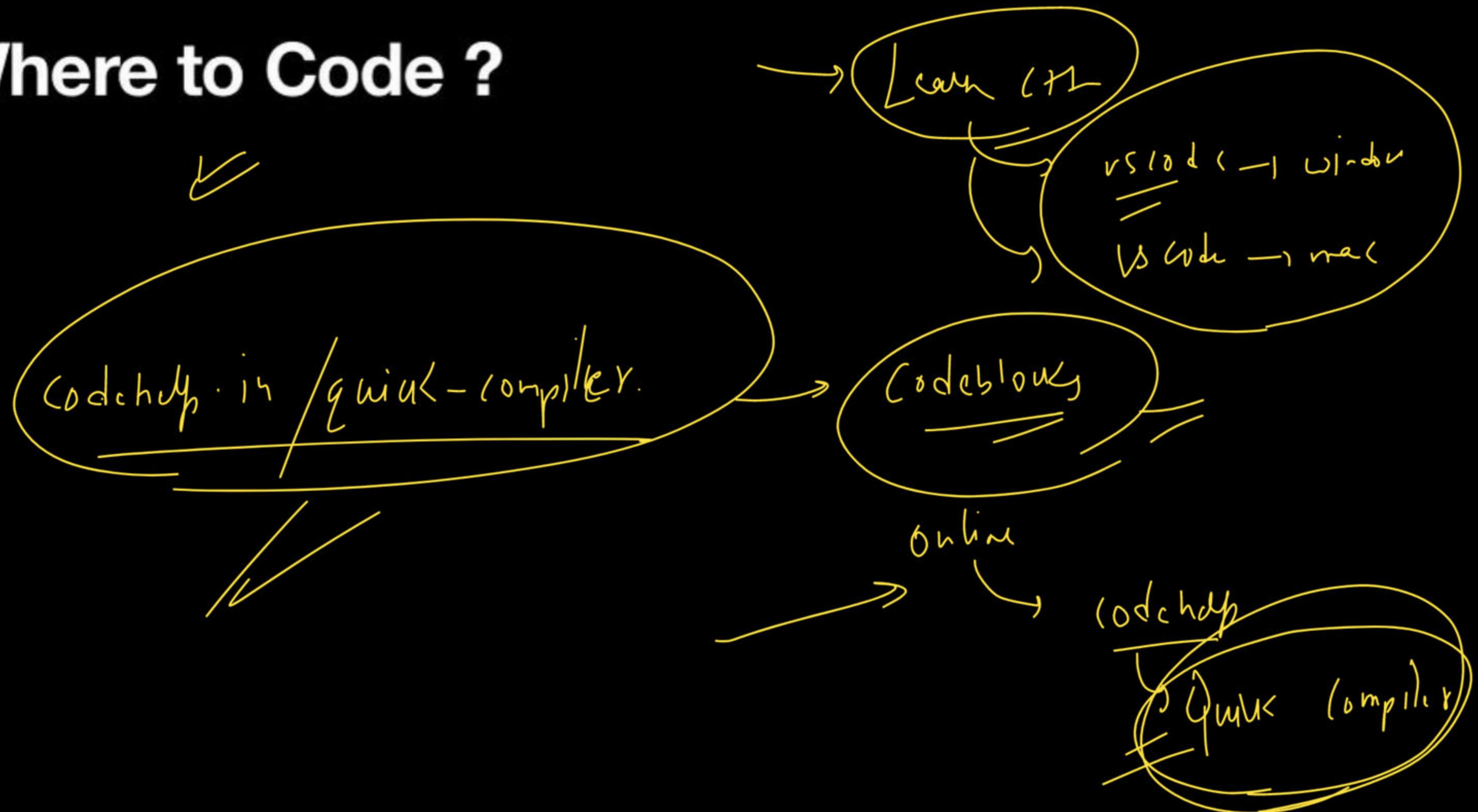


task

# Compilation Process:



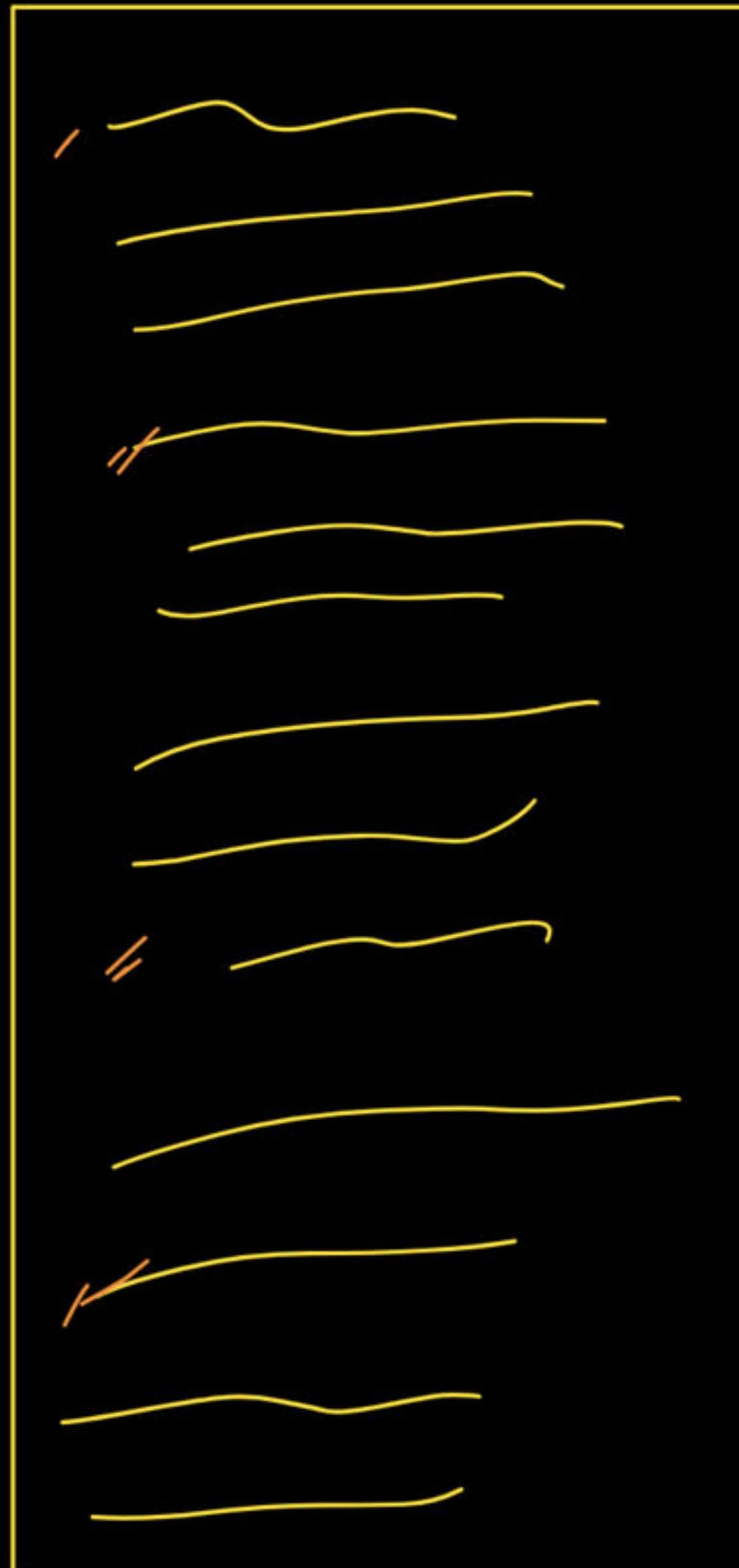
# Where to Code ?



# Your 1st Code:

C++  
  \u2192 Starting point  
int main

Starting point



Starting point

yellow type

a function name

int main ()

{

→ function

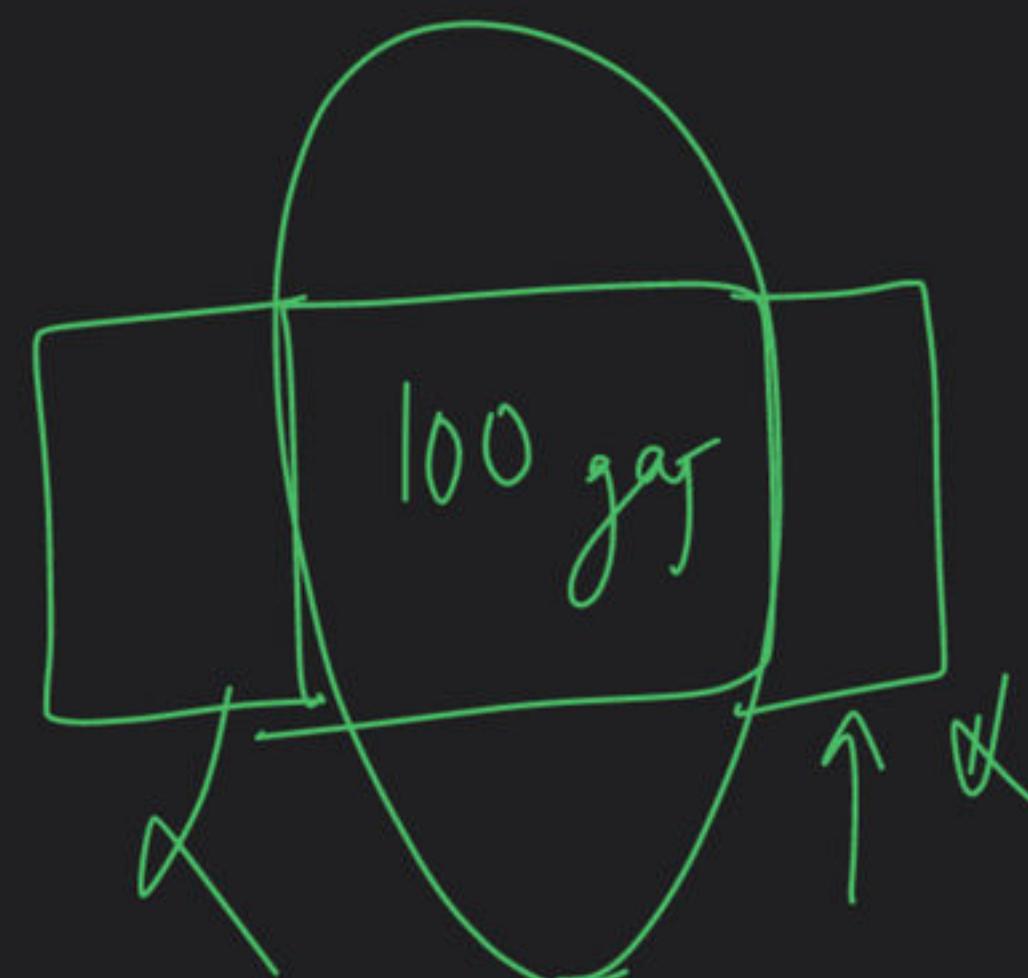
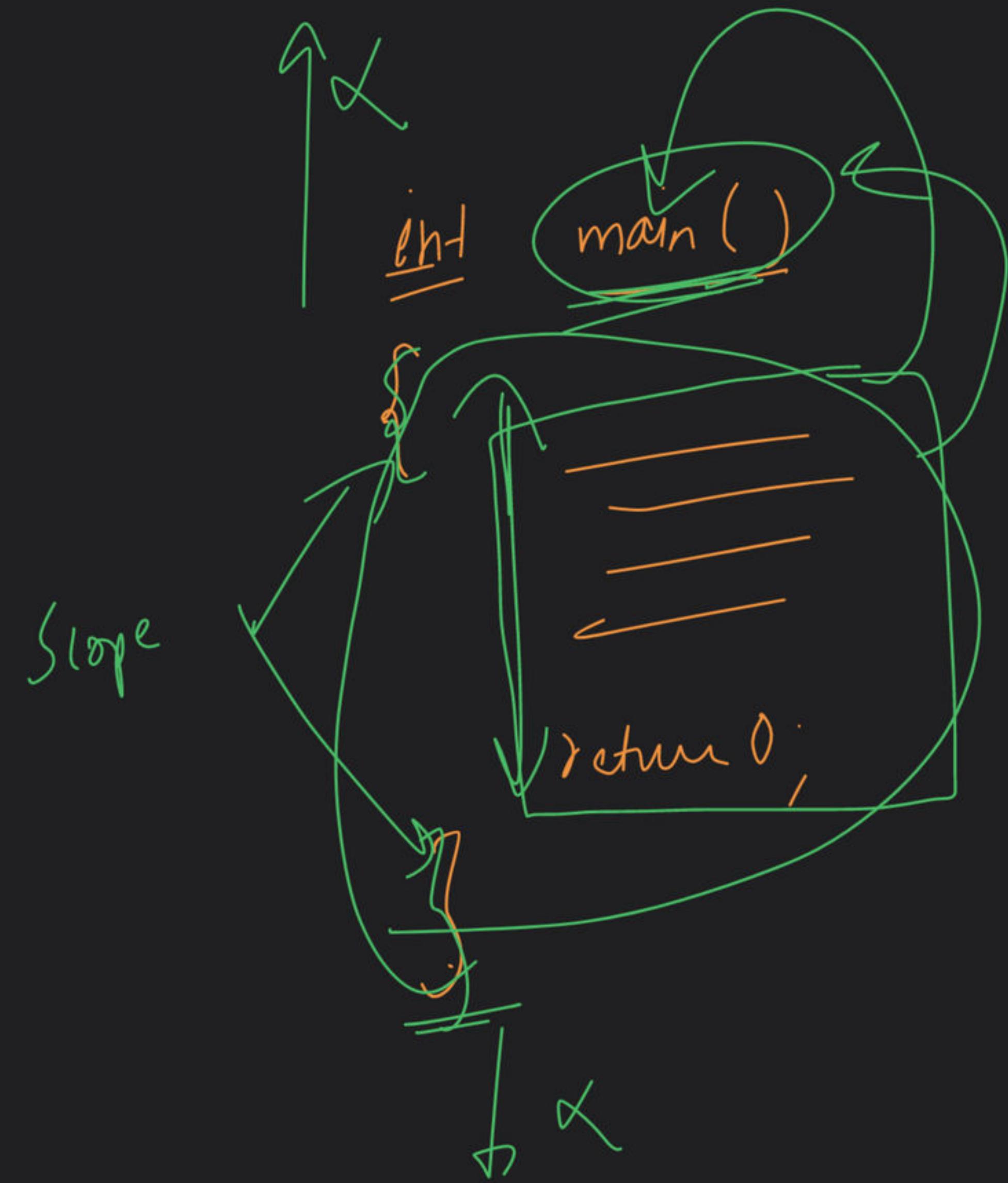
integer →

praying

may or  
may not be

Call

Output



1

0.5

C++ p/g

successfully

execution

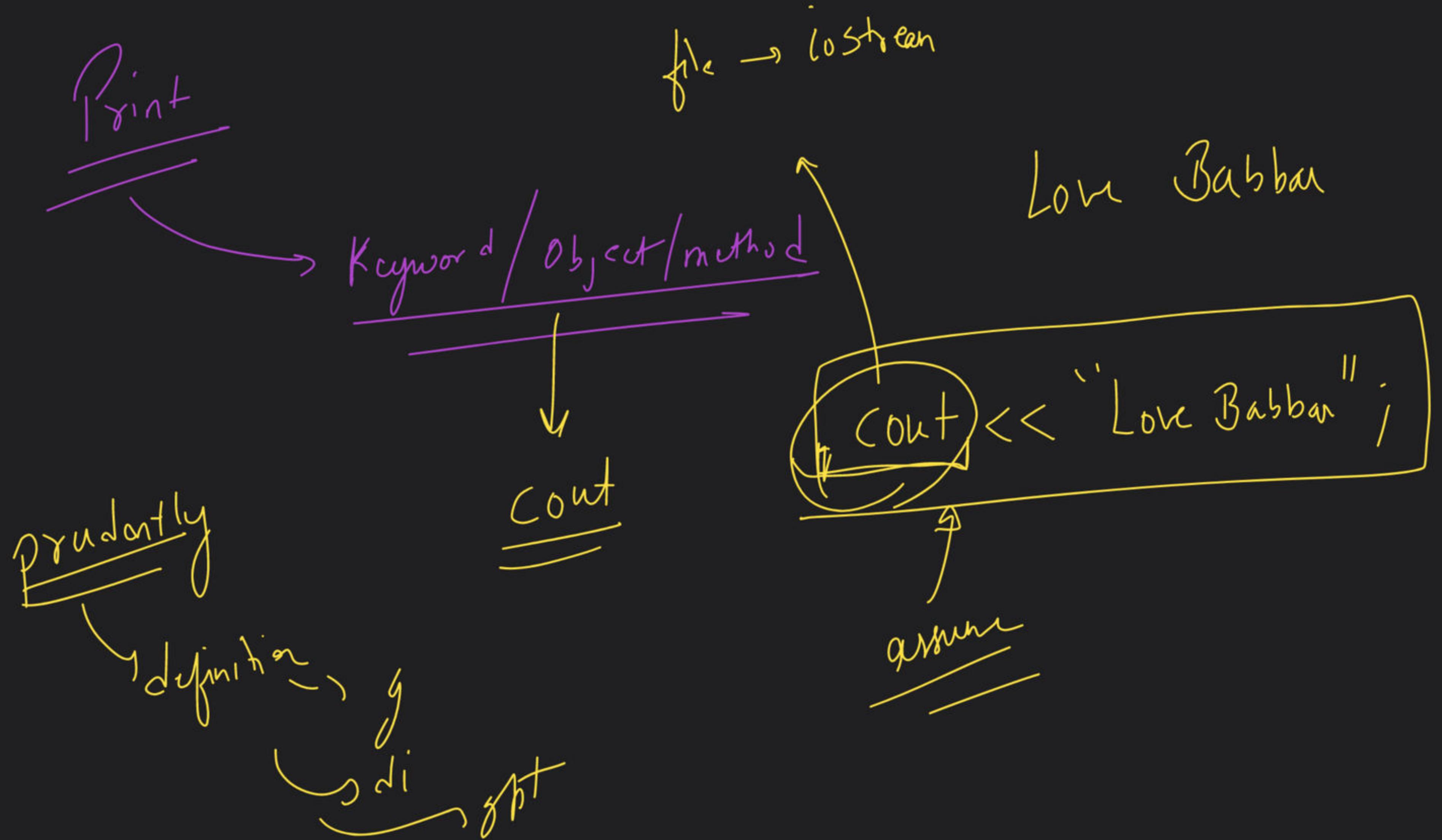
main()

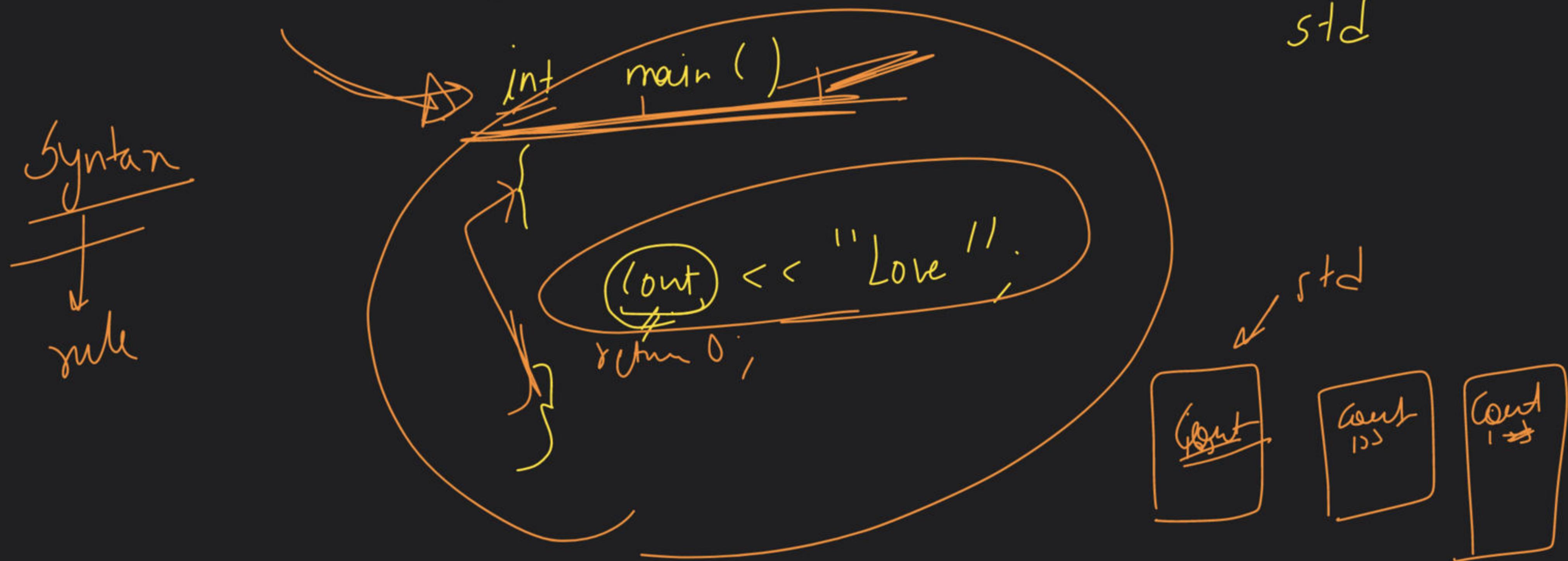
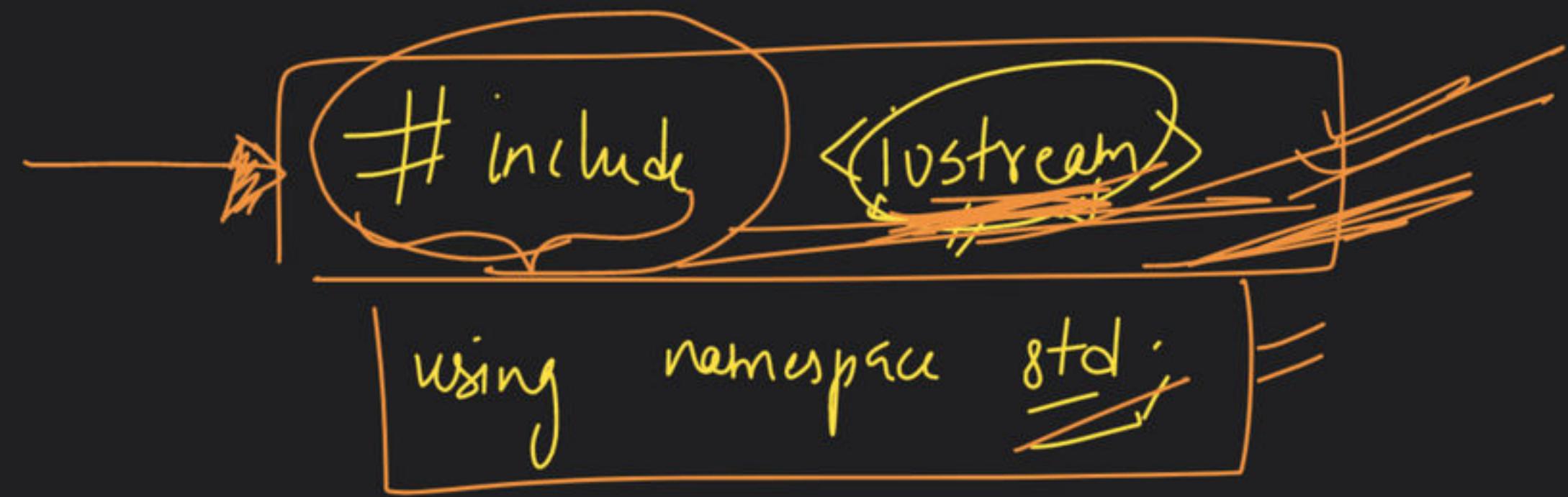
{

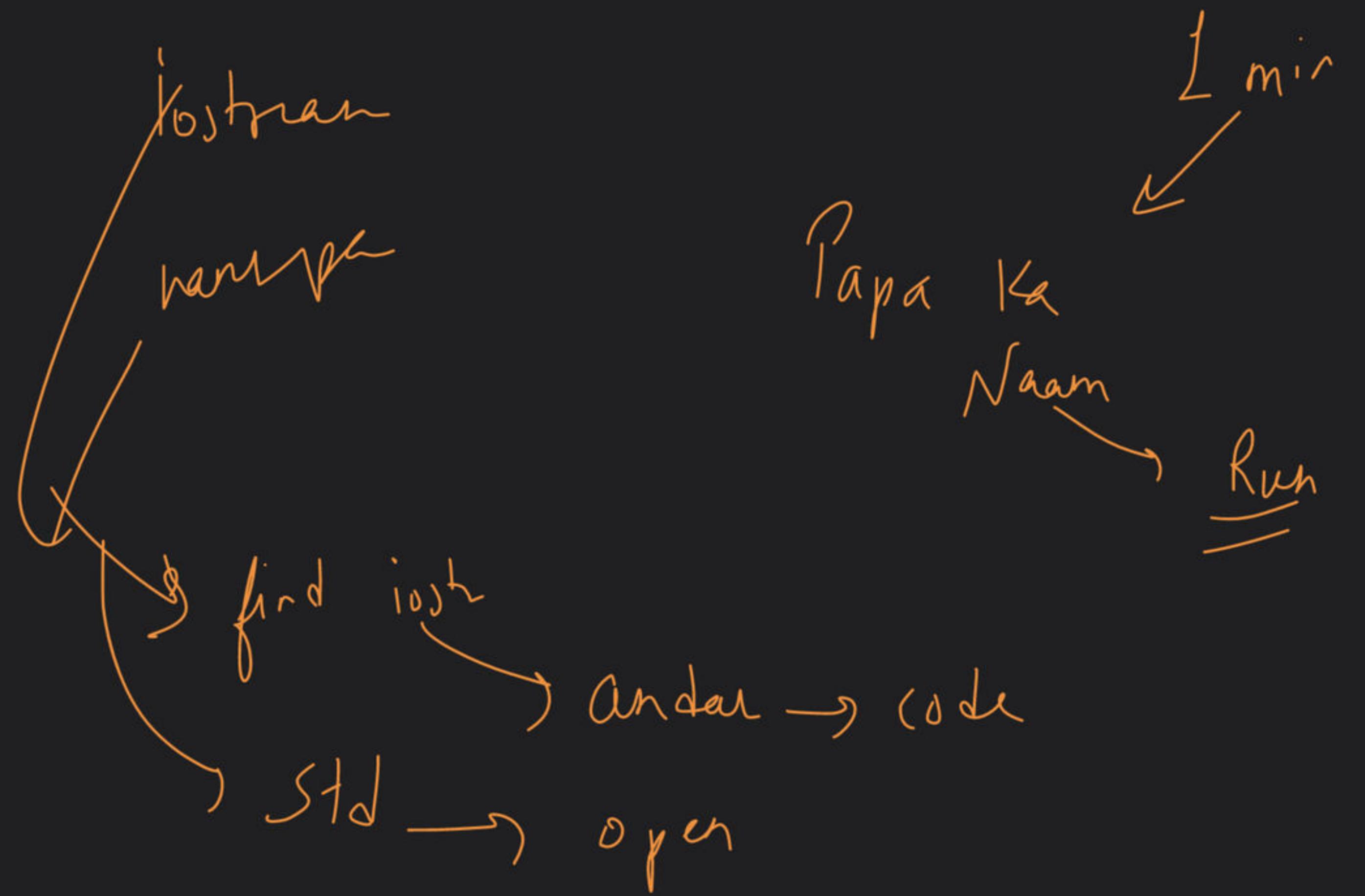
}

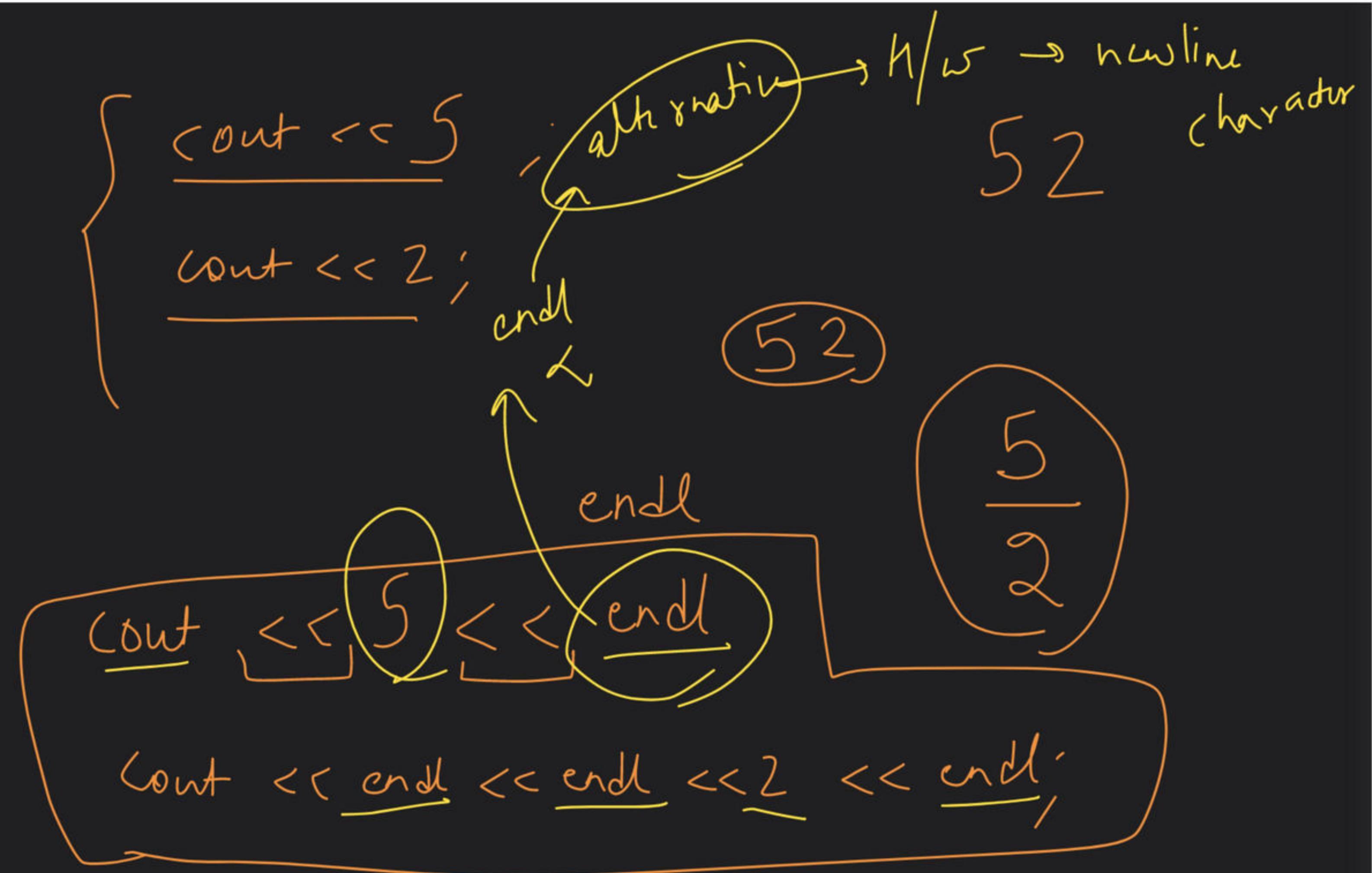
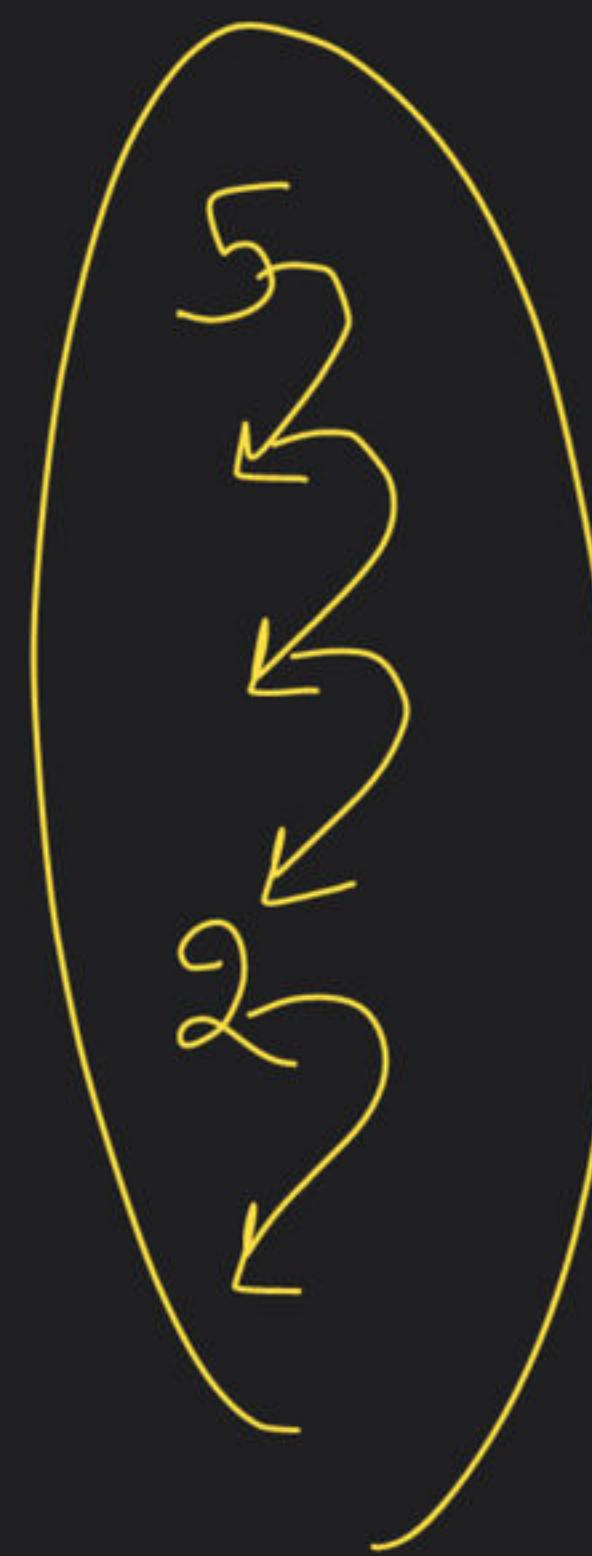
return 0





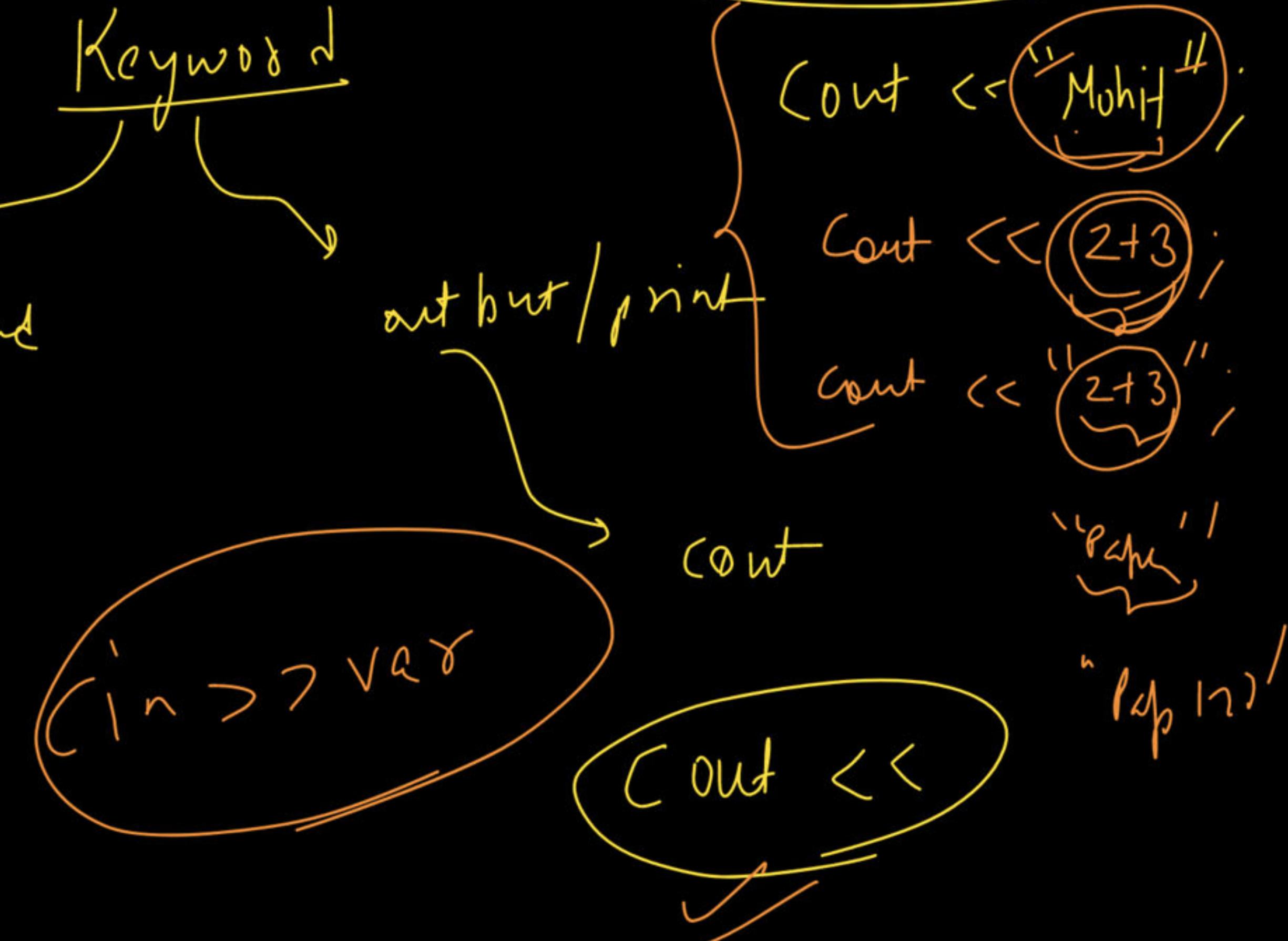
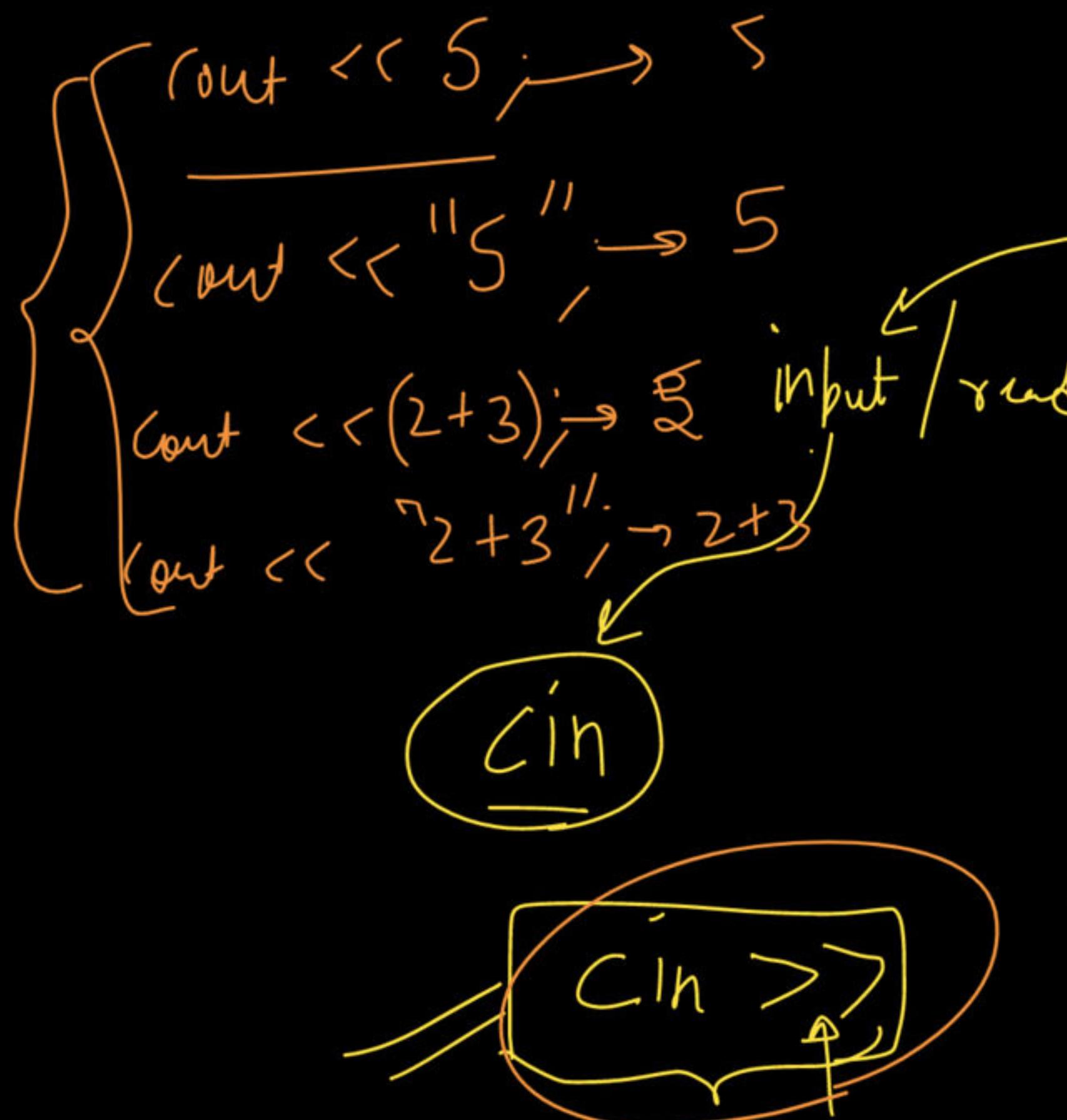


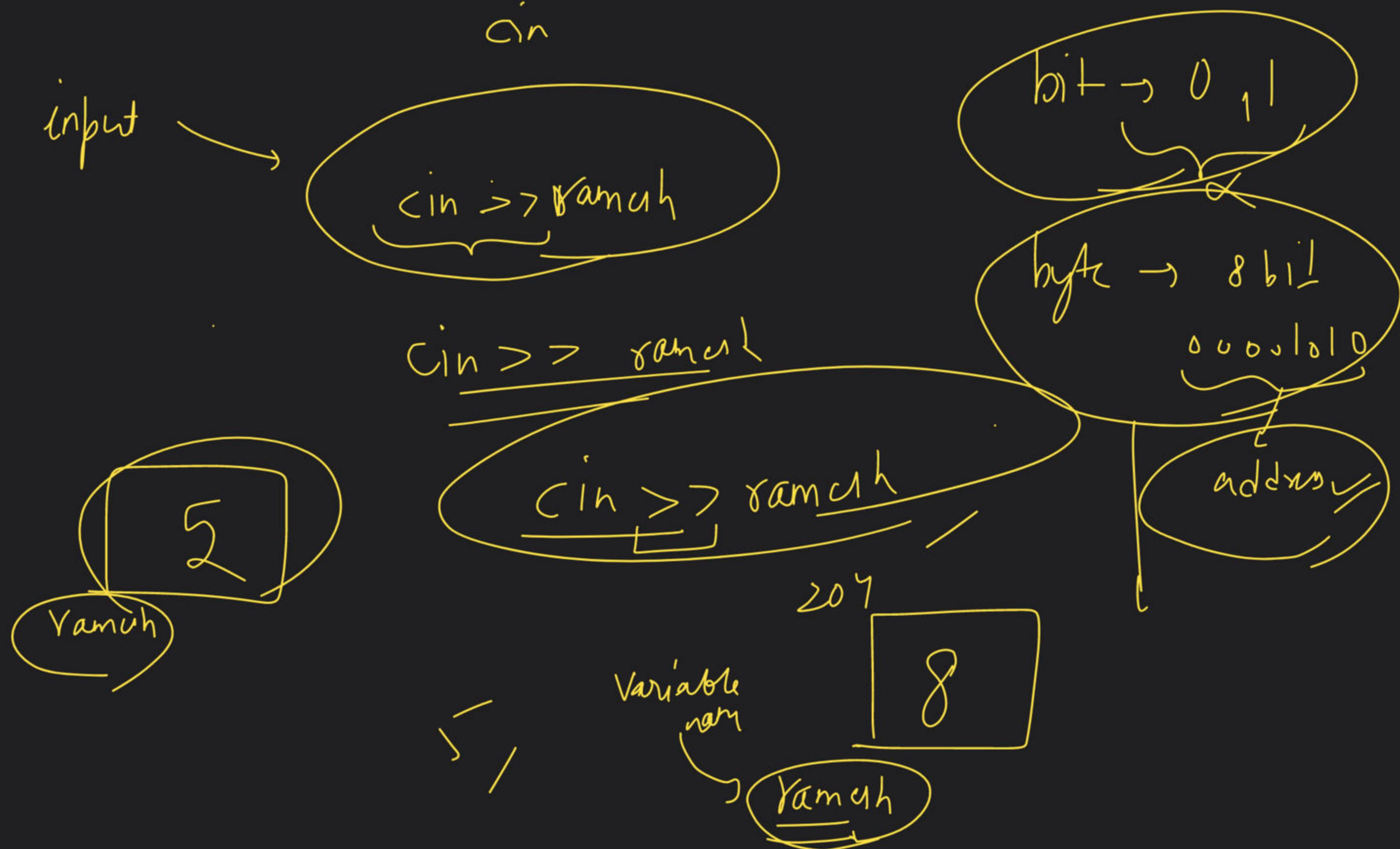




# Input / Output in C++ :

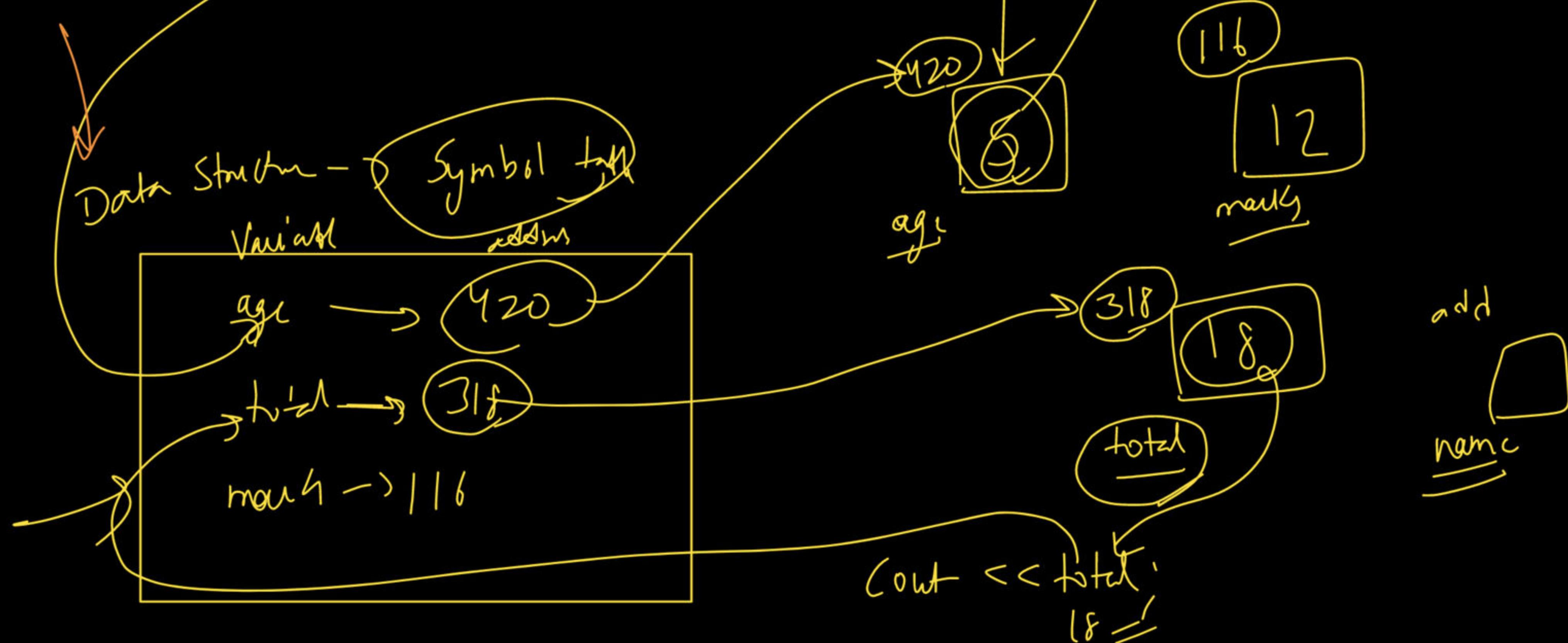
a → character  
ab → string





# Variables:

Variables are containers for storing data values.



garbage Value

Variable

declaration

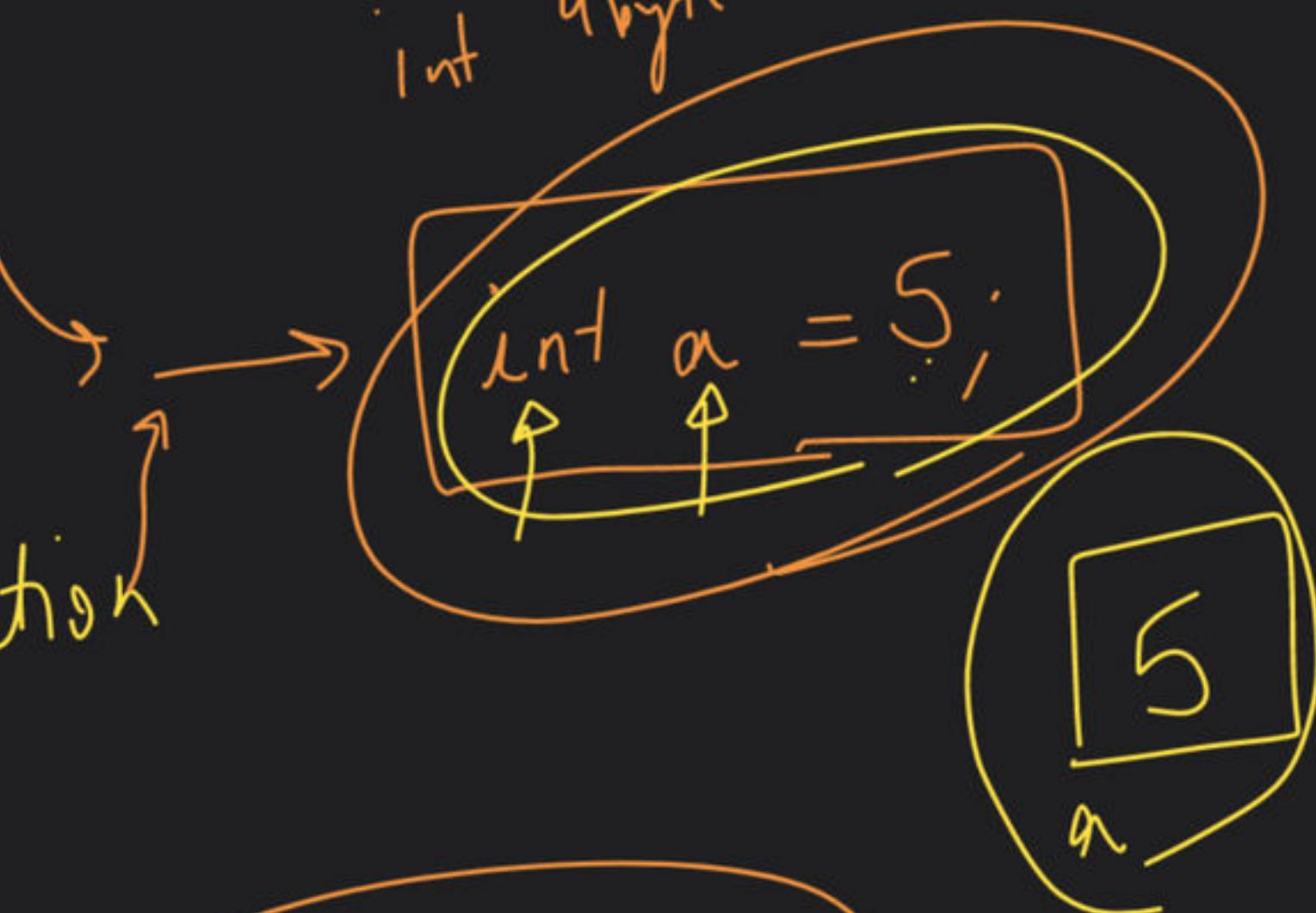
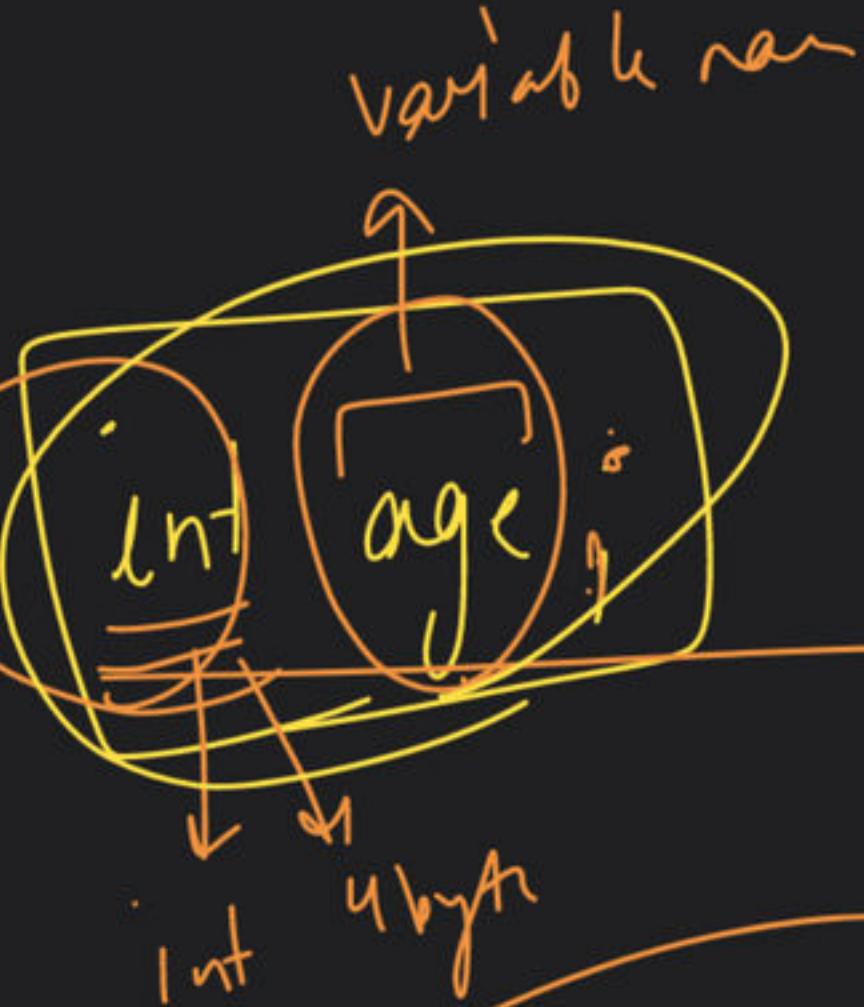
age

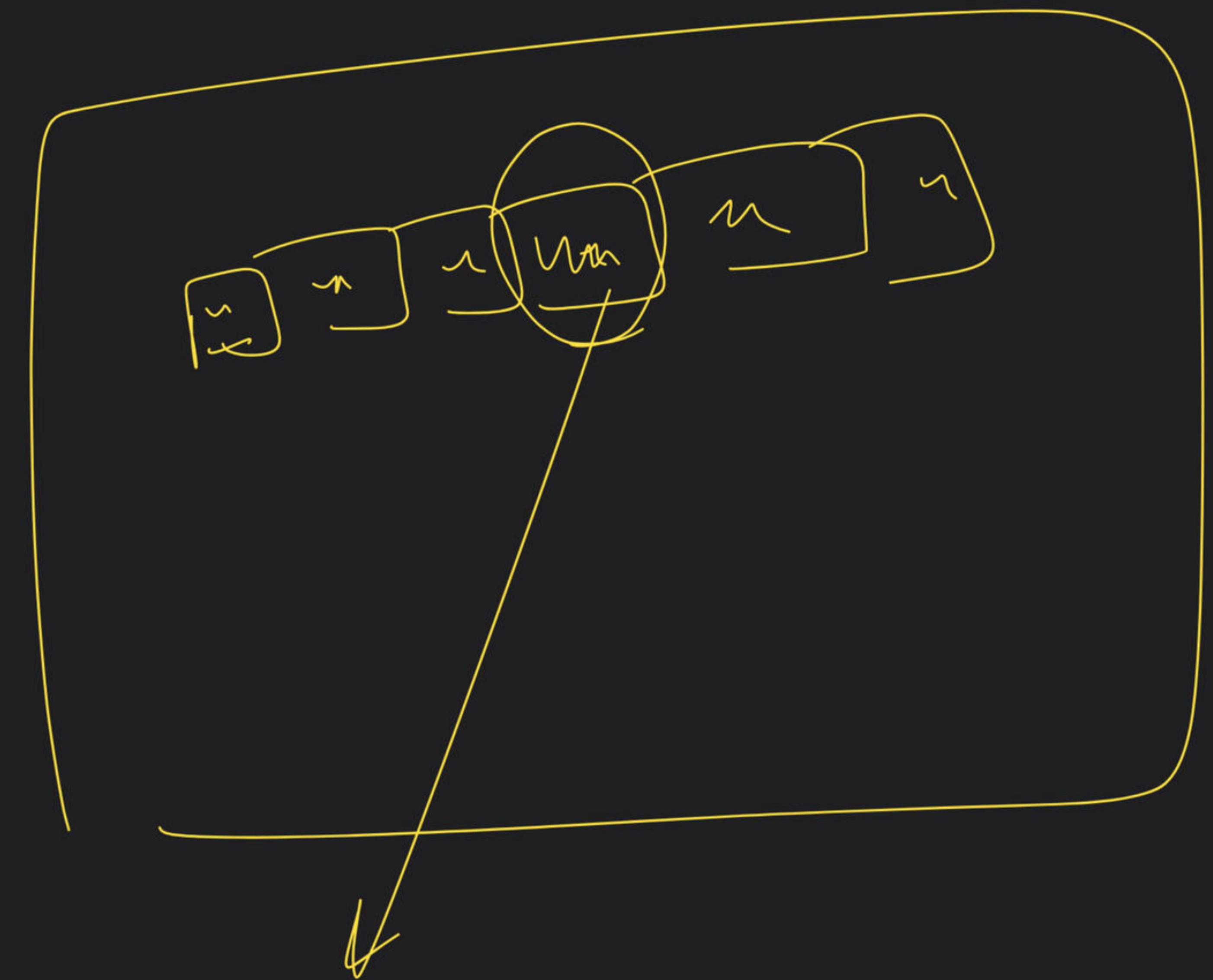
float marks;

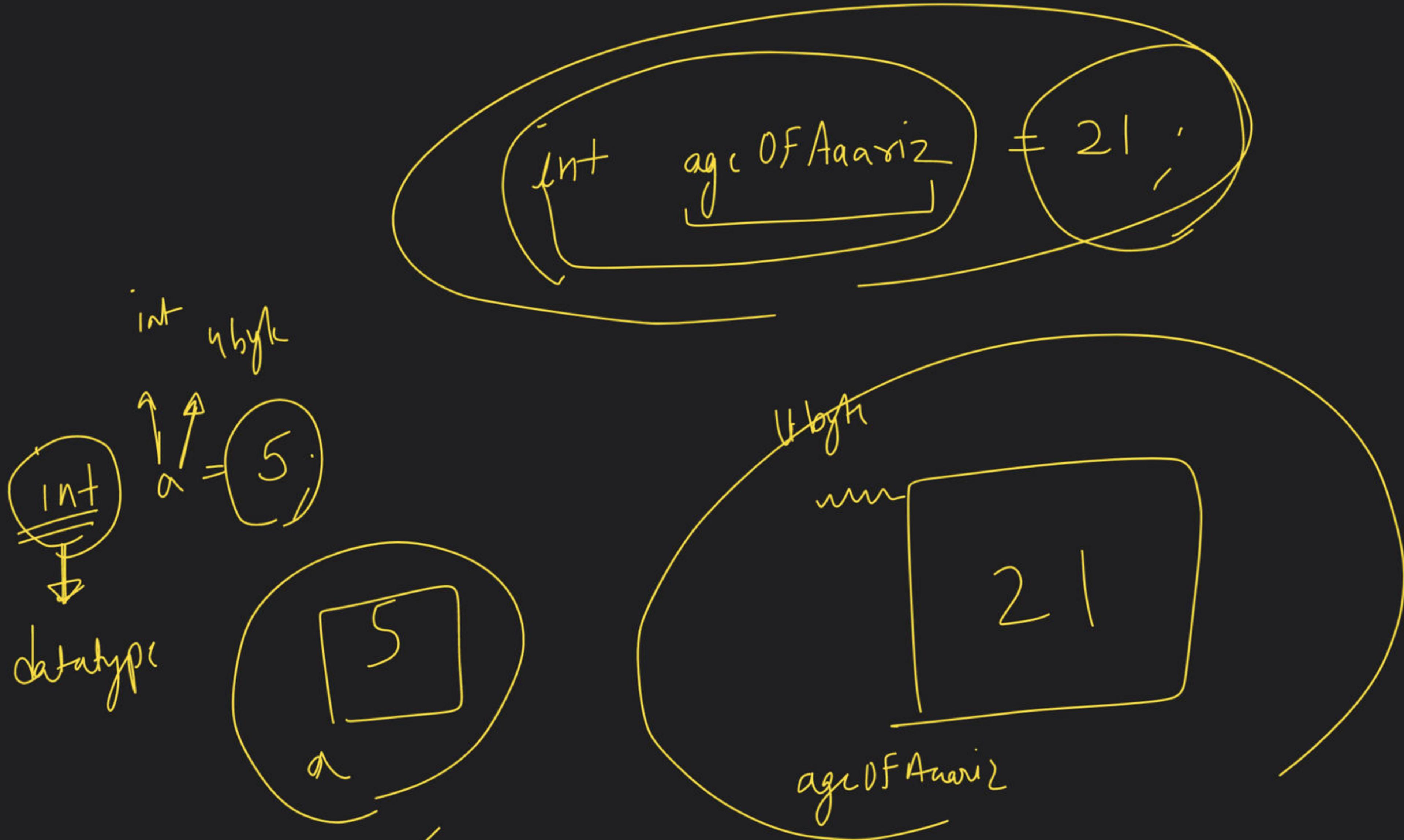
char grade;

bool flag;

definition  
initialisation







datatyp

int, char, bool, long, long long

char → 

boolean → true / false

void → keine

float, double → 1.23, 0.17, 3.141592653589793

bool babban = ~~false~~;  
= true;

true  $\leftrightarrow$  1  
false  $\leftrightarrow$  0

char grade = '+';

# Datatypes:

The data type specifies the size and type of information the variable will store

- Diagram

C Basic Data Types	Size (bytes)	Range	Size (bytes)	Range
char	1	-128 to 127	1	-128 to 127
short	2	-32,768 to 32,767	2	-32,768 to 32,767
int	4	-2,147,483,648 to 2,147,483,647	4	-2,147,483,648 to 2,147,483,647
long	4	-2,147,483,648 to 2,147,483,647	8	9,223,372,036,854,775,808 - 9,223,372,036,854,775,807
long long	8	9,223,372,036,854,775,808 - 9,223,372,036,854,775,807	8	9,223,372,036,854,775,808 - 9,223,372,036,854,775,807
float	4	3.4E +/- 38	4	3.4E +/- 38
double	8	1.7E +/- 308	8	1.7E +/- 308

# ASCII table

char → -128 to 127

a b c d  
+ - -

char grade = 65

cout << grade  
y(a)

A ASCII value  
B 65  
C 66  
D 67  
E 68  
F 69  
G 70  
H 71  
I 72  
J 73  
K 74  
L 75  
M 76  
N 77  
O 78  
P 79  
Q 80  
R 81  
S 82  
T 83  
U 84  
V 85  
W 86  
X 87  
Y 88  
Z 89  
\_ 90

char ch = 'a'

signed



-128 to 127

unsigned char = 'a'

0 to 255

datatype

range

Signed

$$\rightarrow -2^{n-1} \rightarrow 2^{n-1} - 1$$

unsigned

$$\rightarrow 0 \rightarrow 2^n - 1$$

$$0 \rightarrow 2^8 - 1 \rightarrow 0 \rightarrow 2^{15} - 1 \\ 0 \rightarrow 2^{15}$$

$n = \text{no. of bits}$

char  $\rightarrow 1 \text{ byte} \rightarrow 8 \text{ bits}$

$n = 8$

$$\text{Signed} = -2^{8-1} \rightarrow 2^{8-1} - 1$$

$$-2^7 \rightarrow 2^7 - 1$$

$$-128 \rightarrow 128 - 1$$

$$-128 \rightarrow 127$$

# Variable Naming Conventions:

Naming Conventions rules for Variables are:

- ✓ It should begin with an alphabet.
- ✓ There may be more than one alphabet, but without any spaces between them.
- ✓ Digits may be used but only after alphabet.
- ✓ No special symbol can be used except the underscore (\_) symbol. When multiple words are needed, an underscore should separate them.
- ✓ No keywords or command can be used as a variable name.
- ✓ All statements in C++ language are case sensitive. Thus a variable A (in uppercase) is considered different from a variable declared a (in lowercase).

math

int main()

cout

int coutz

float pi = 3.14;

Days  
L

age  
, age 2  
age 3

int a+b+c = 10

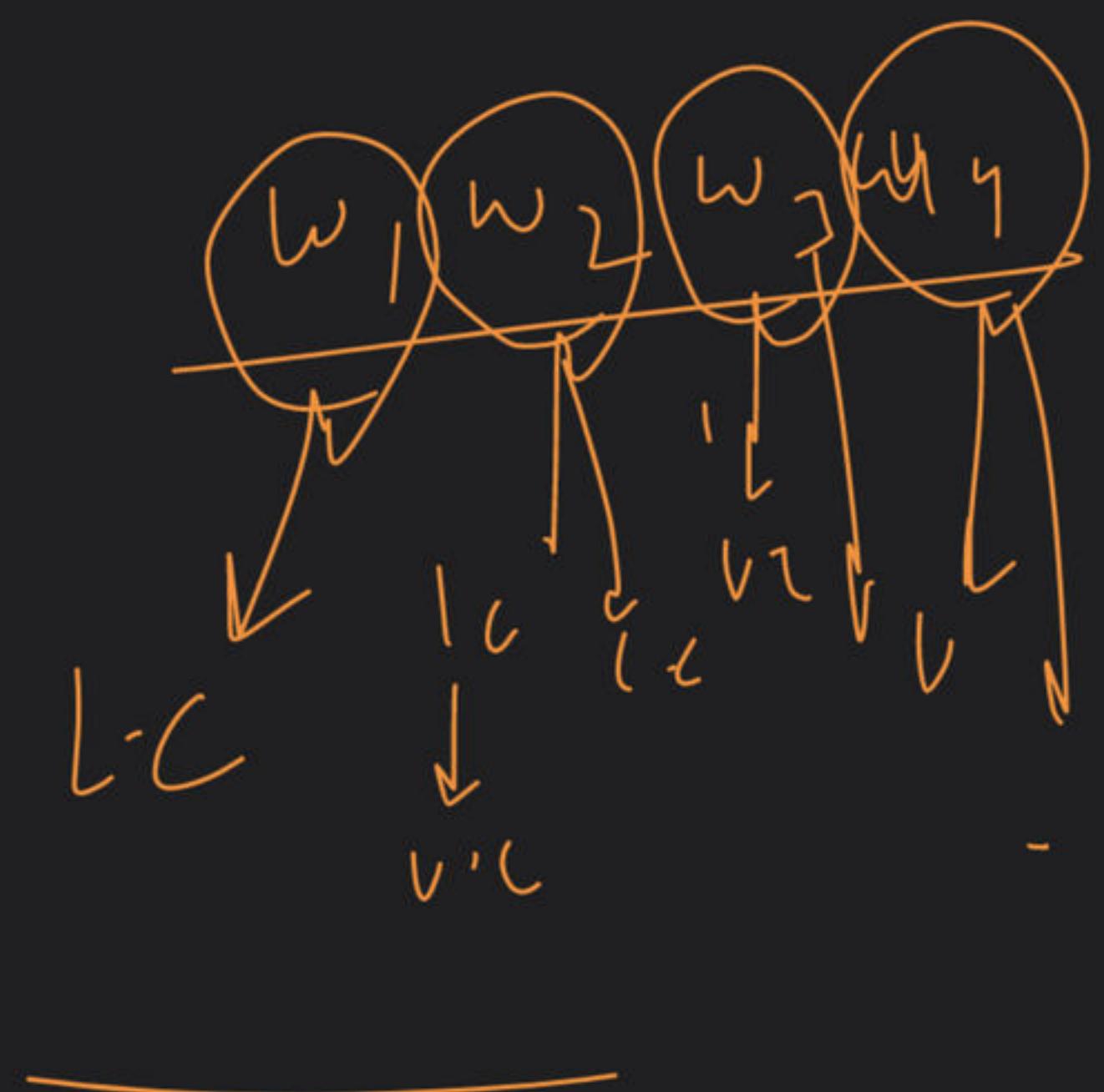
age of + b

age - of - ion

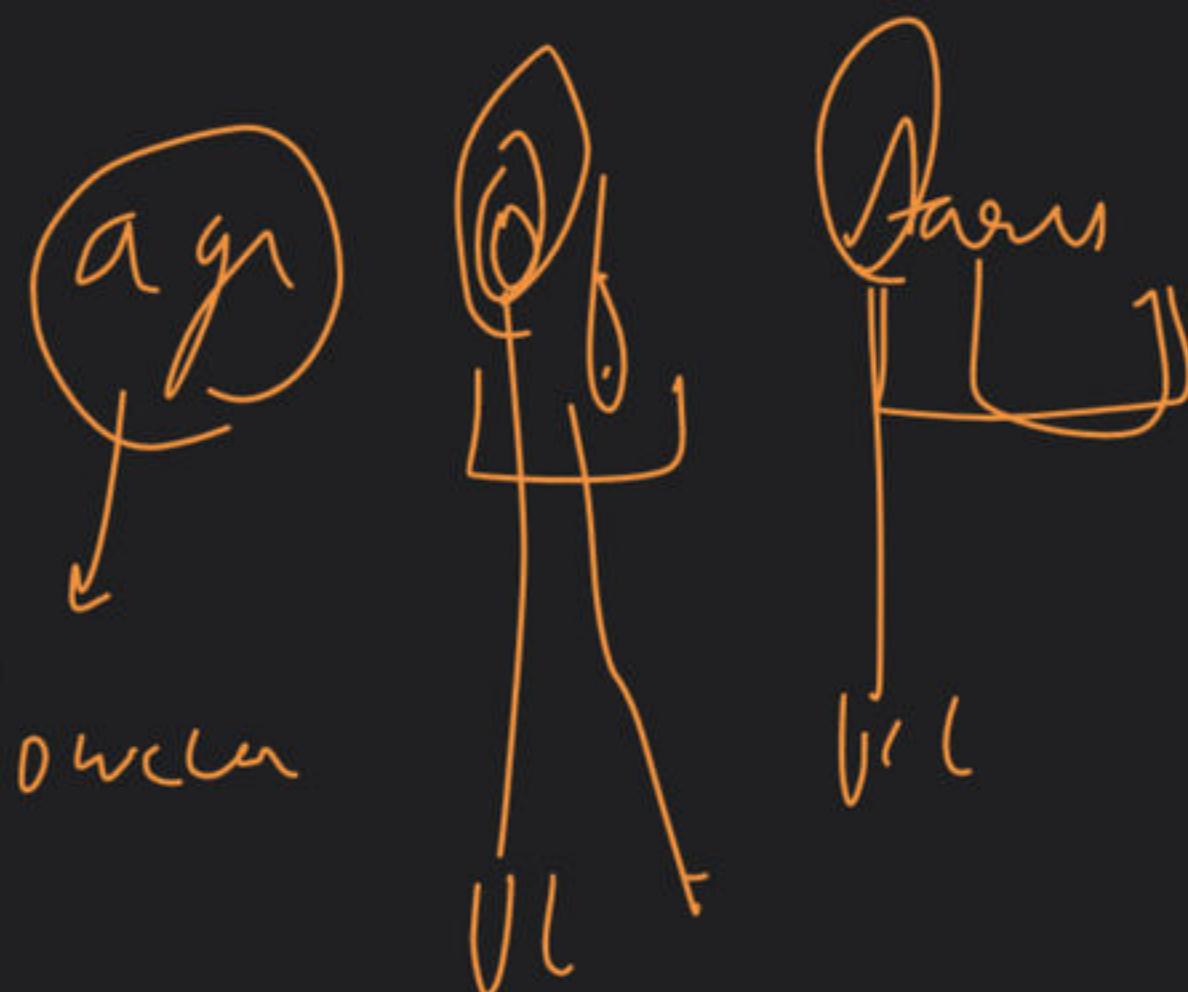
int age of car

int love=5 ;

int Love=5 ;



age Of Aariz



lowe\_babbars

lowBabbar

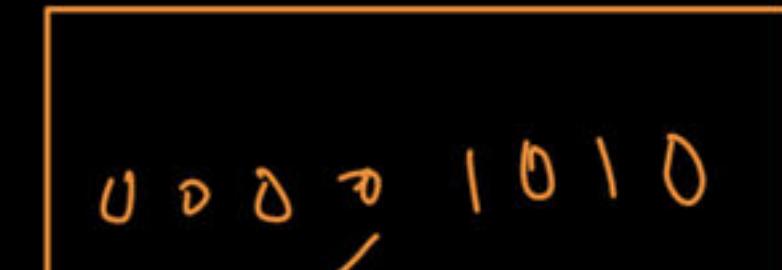
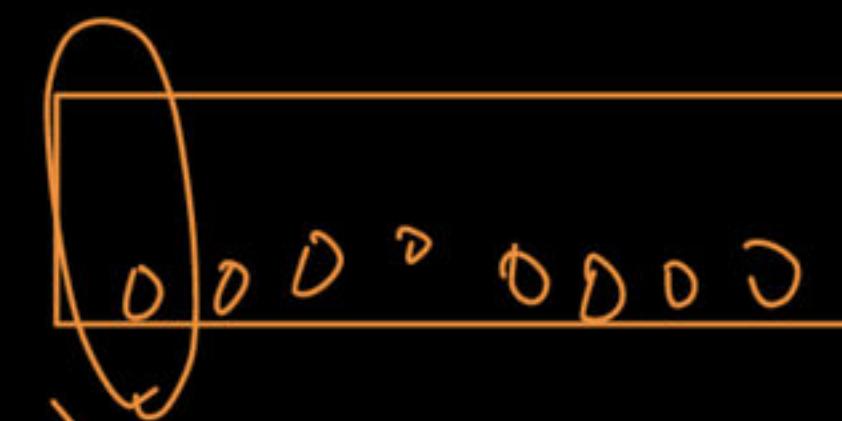
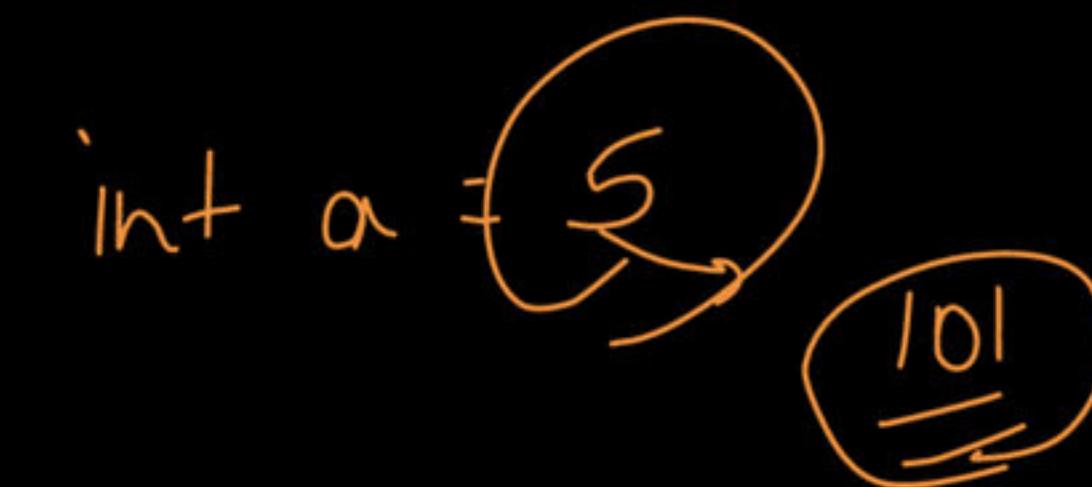
harsh Kapoor

aditya Kumar

lowe\_babbars

# Assignment:

Difference in storage of +ve and -ve integers ?



L's compliant

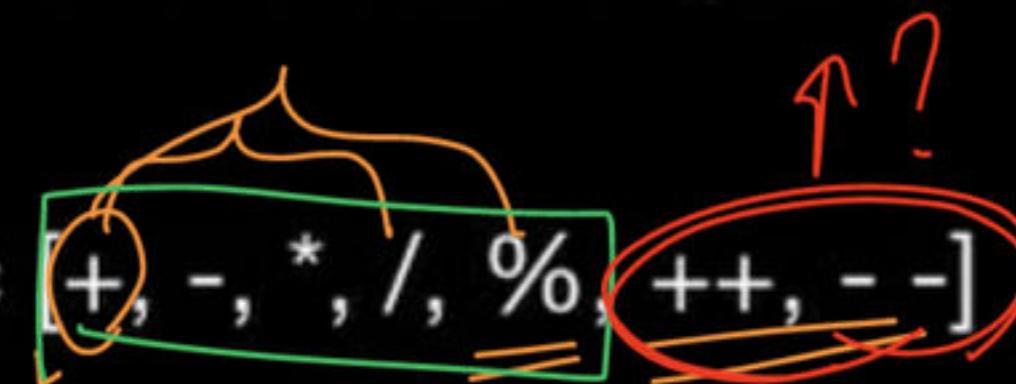
Z's compliant

# Signed vs Unsigned Integers:

# Operators:

Operators are used to perform operations on variables and values.

- Arithmetic [ +, -, \*, /, %, ++, -- ]



- Relational [ ==, !=, >, <, >=, <= ]

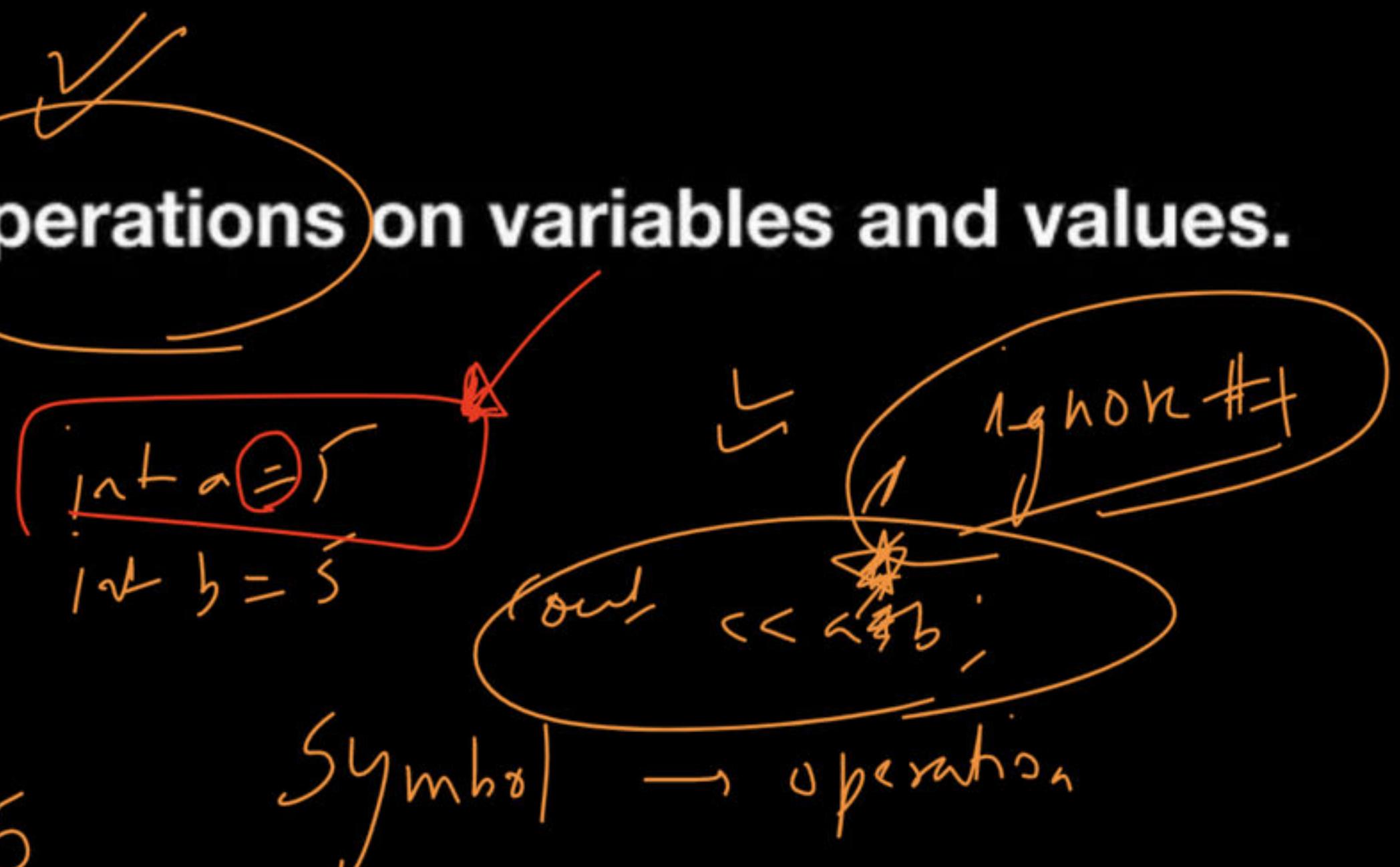
- Assignment [ = ]

- Logical [ &&, ||, ! ]

- Bitwise [ &, |, ~, ^, >>, << ]

int a = 5;

5 / 5



&  $\rightarrow$  Logical AND  
 condition  
 $TT \rightarrow T$

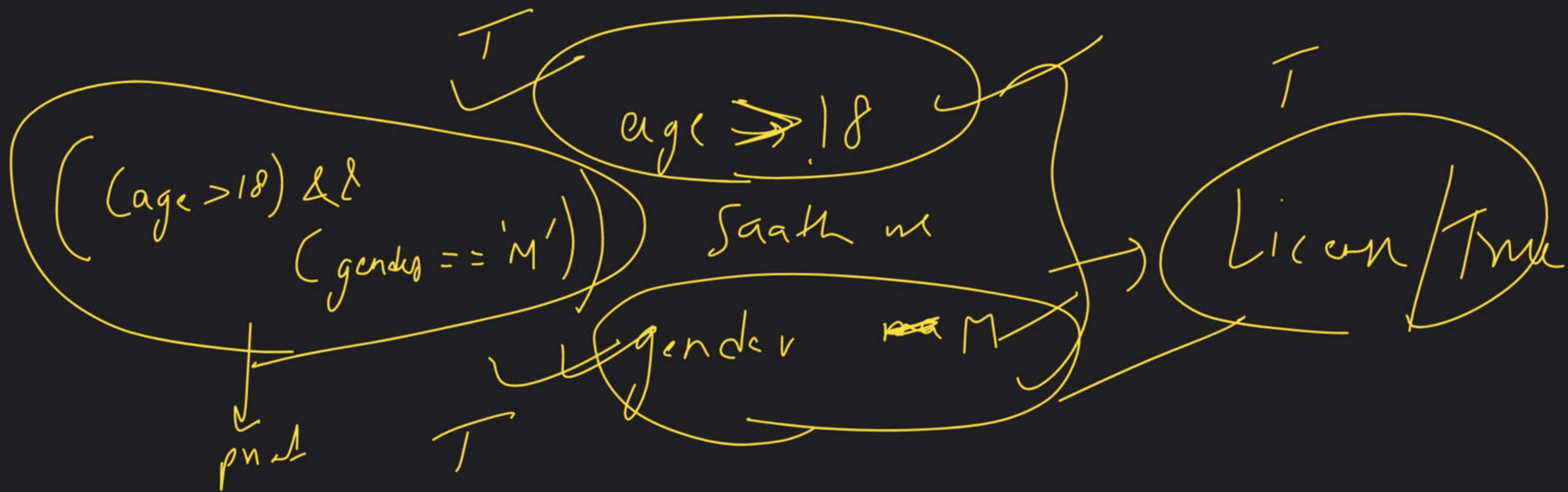
Condition		$a \wedge b$
$a$	$b$	0/0
T	T	T
T	F	F
F	T	F
F	F	F

//  $\rightarrow$  Logical OR  $\rightarrow$  at least 1 is true  $\rightarrow 0/0 \rightarrow T$

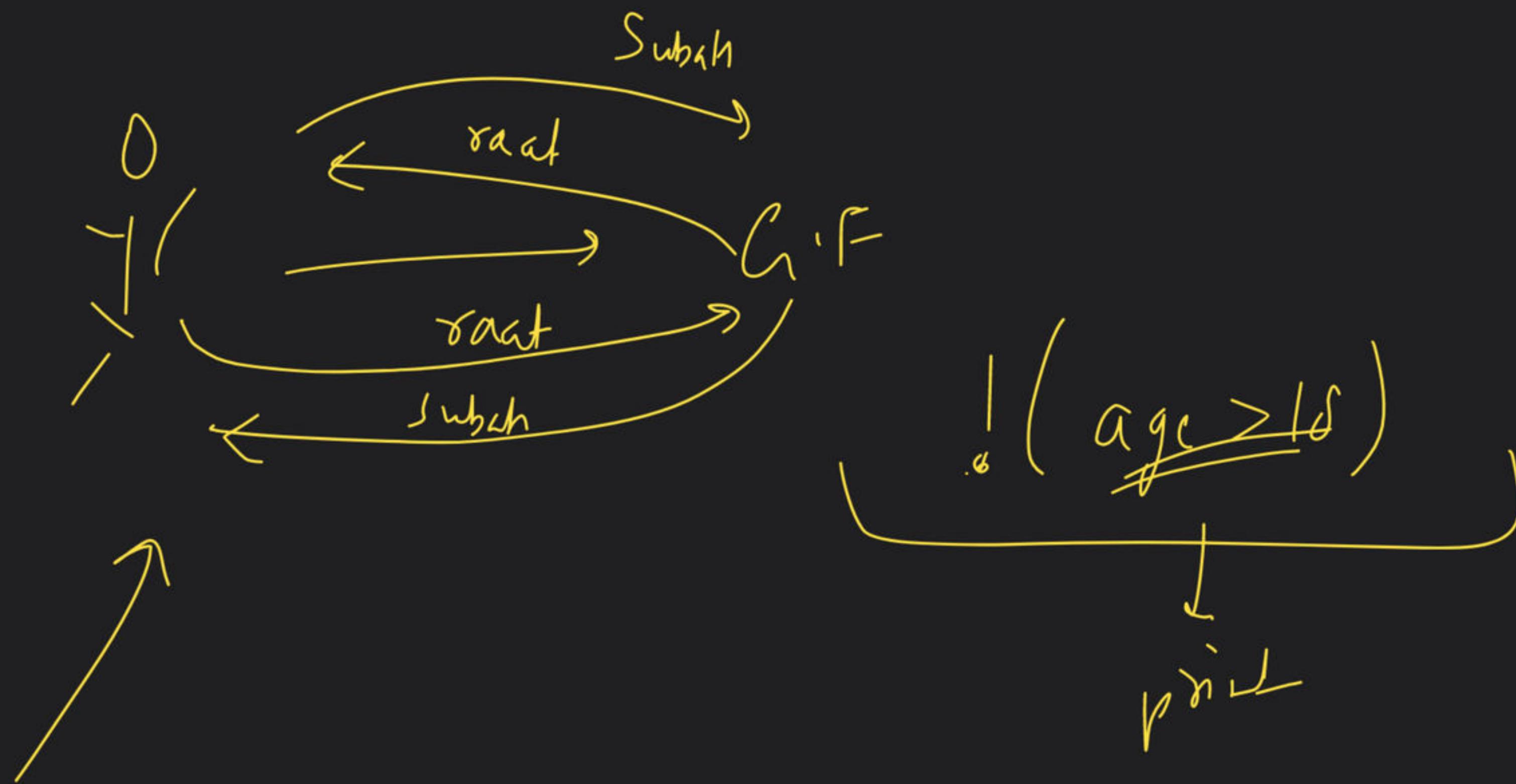
		$a \parallel b$
$a$	$b$	0/1
T	T	T
F	T	T
T	F	T
F	F	F

$a$	$!a$
T	F
F	T

Logical NOT  
 → Revers  
 → flip



else  
 $[ (a$   
 $((age > 18) || (gender == 'M'))$   
 $\neq$   
 $) ]$   
 $Fals$

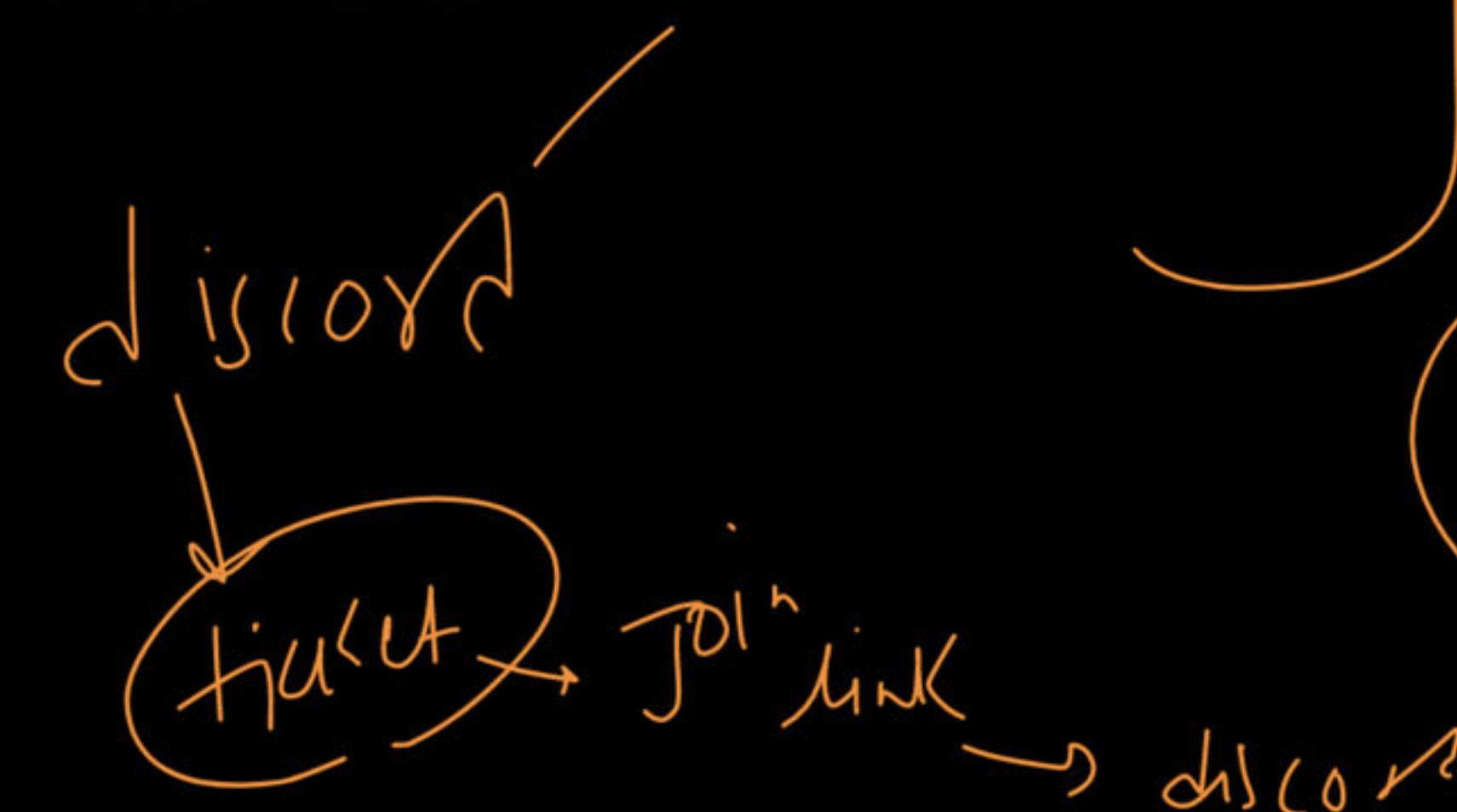


# Assignment:

Complete week-“Learn C++” recorded videos.

- 32 bit vs 64 bit Architecture
- Typecasting: Implicit and Explicit
- Binary and Decimal Number System

Nameit



Kal -> 9pm

