

L2-Basics of Programming

Special class

L2 - Basics of Programming

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

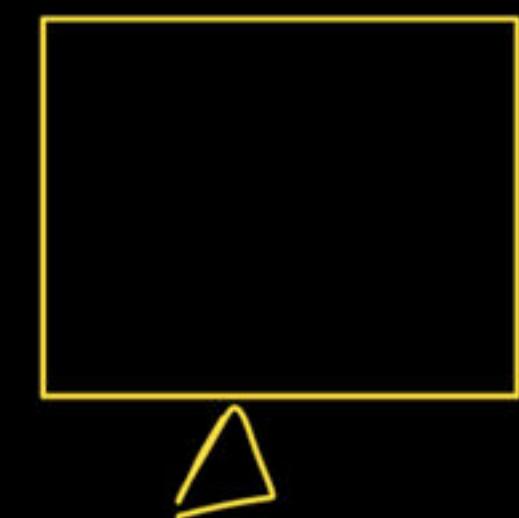
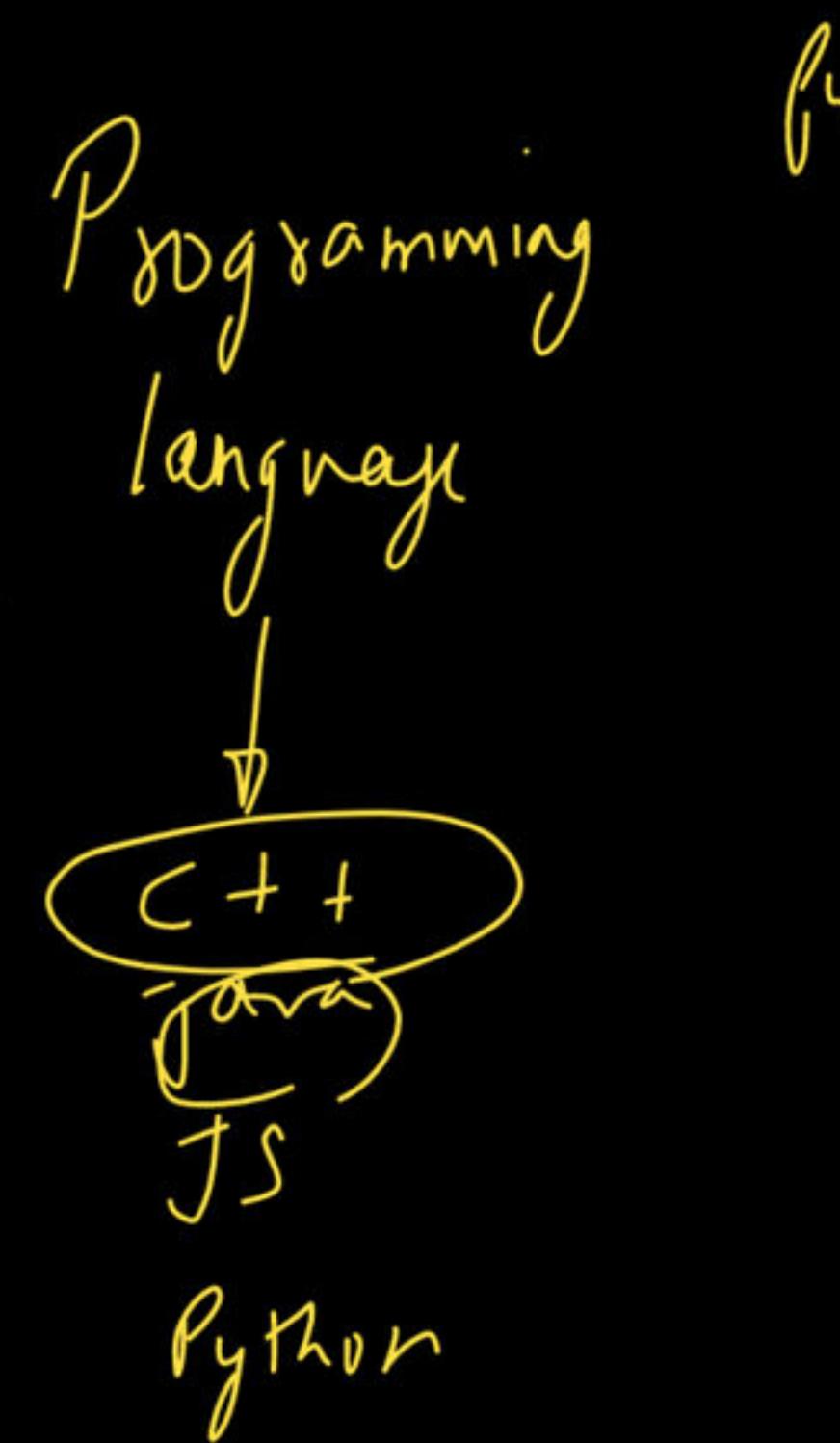
—> by **Codehelp**

Programming Language ?

What ?

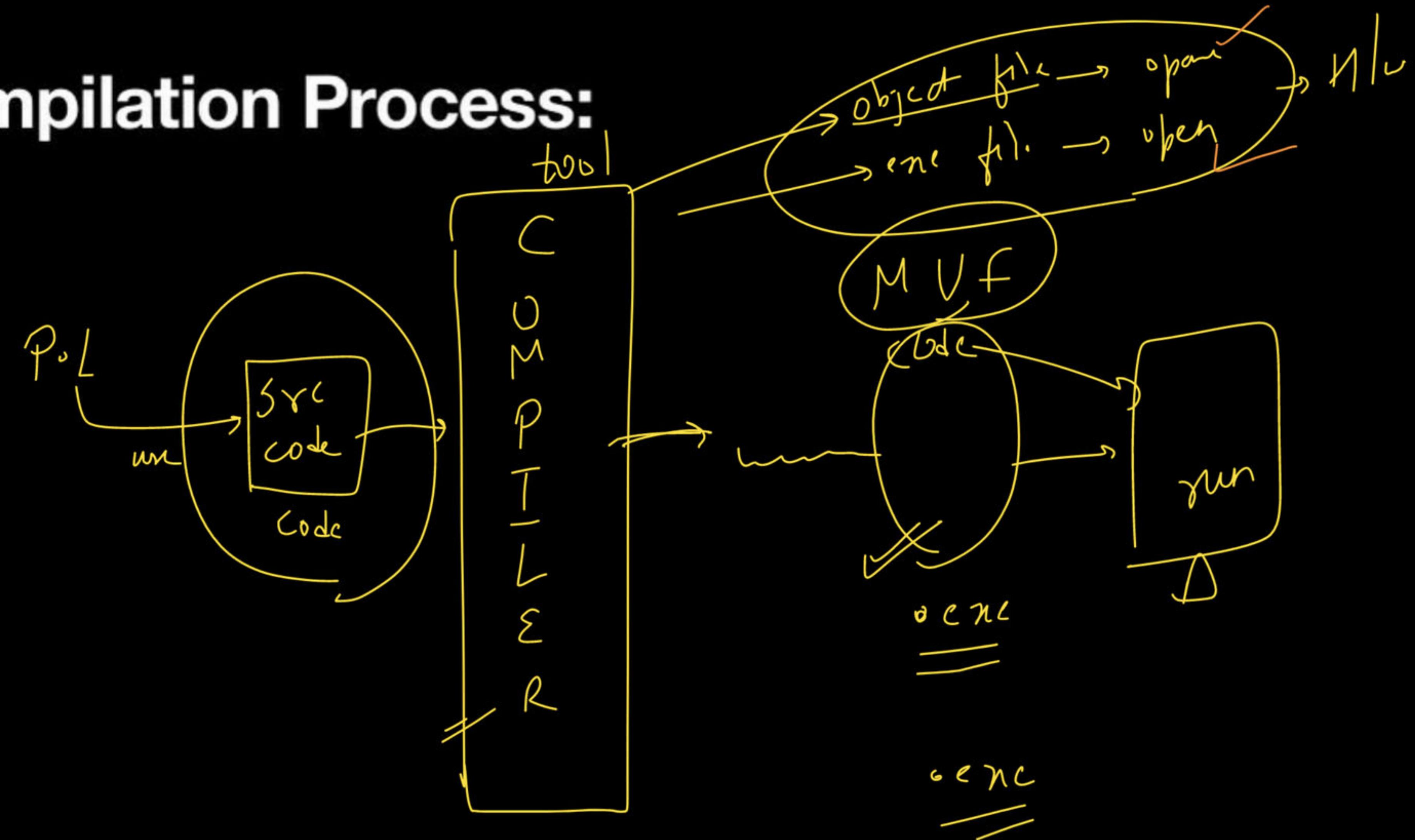
Why ?

standard

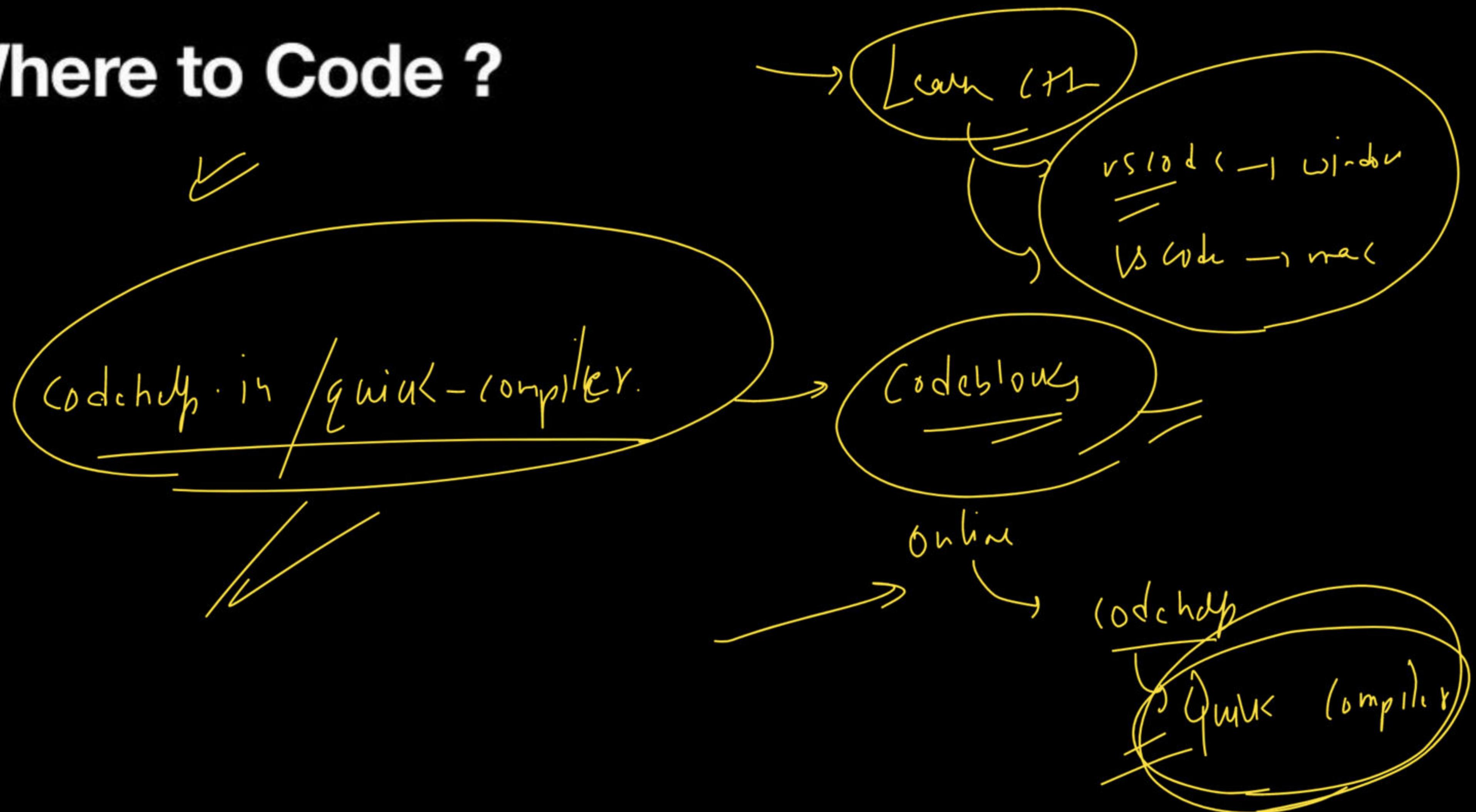


task

Compilation Process:



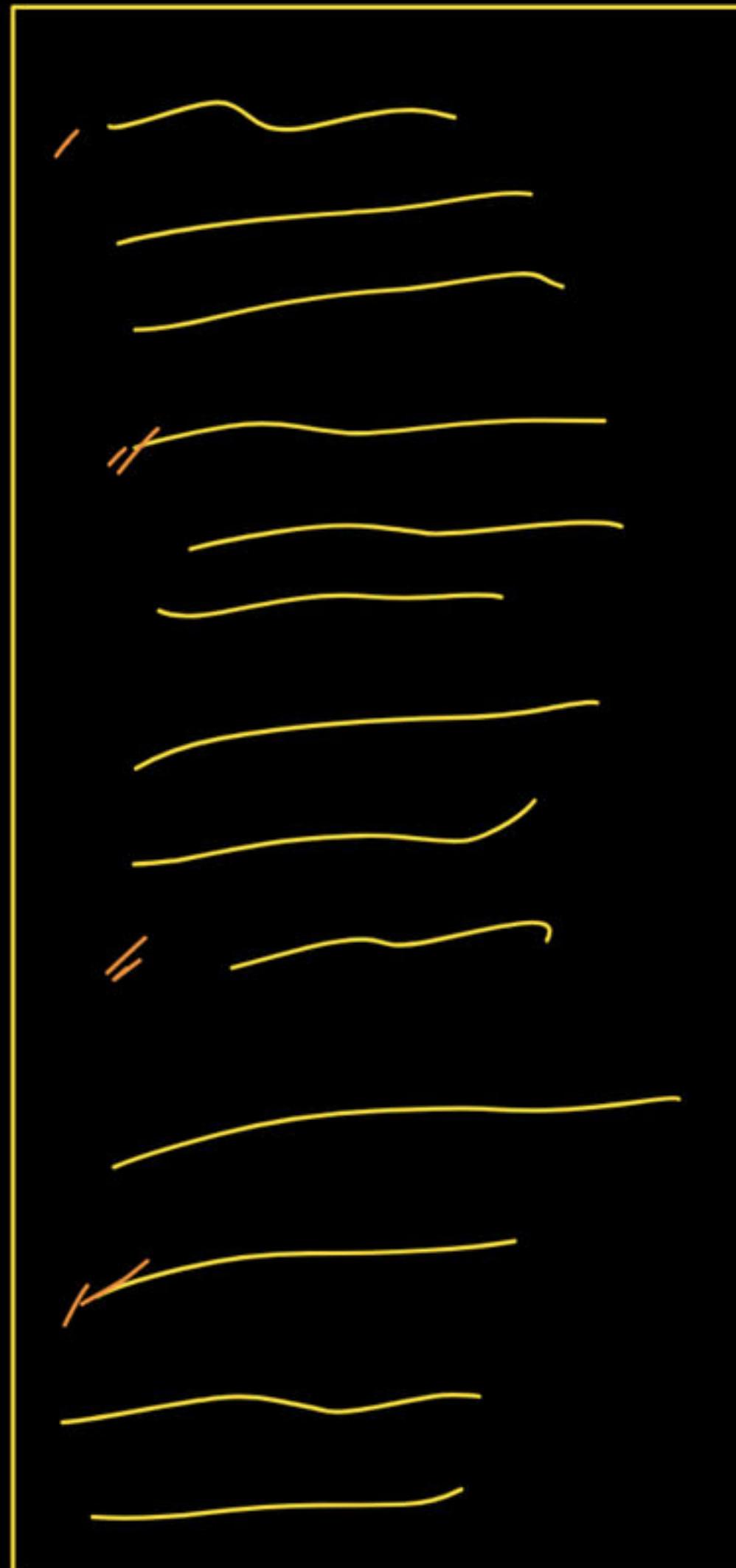
Where to Code ?

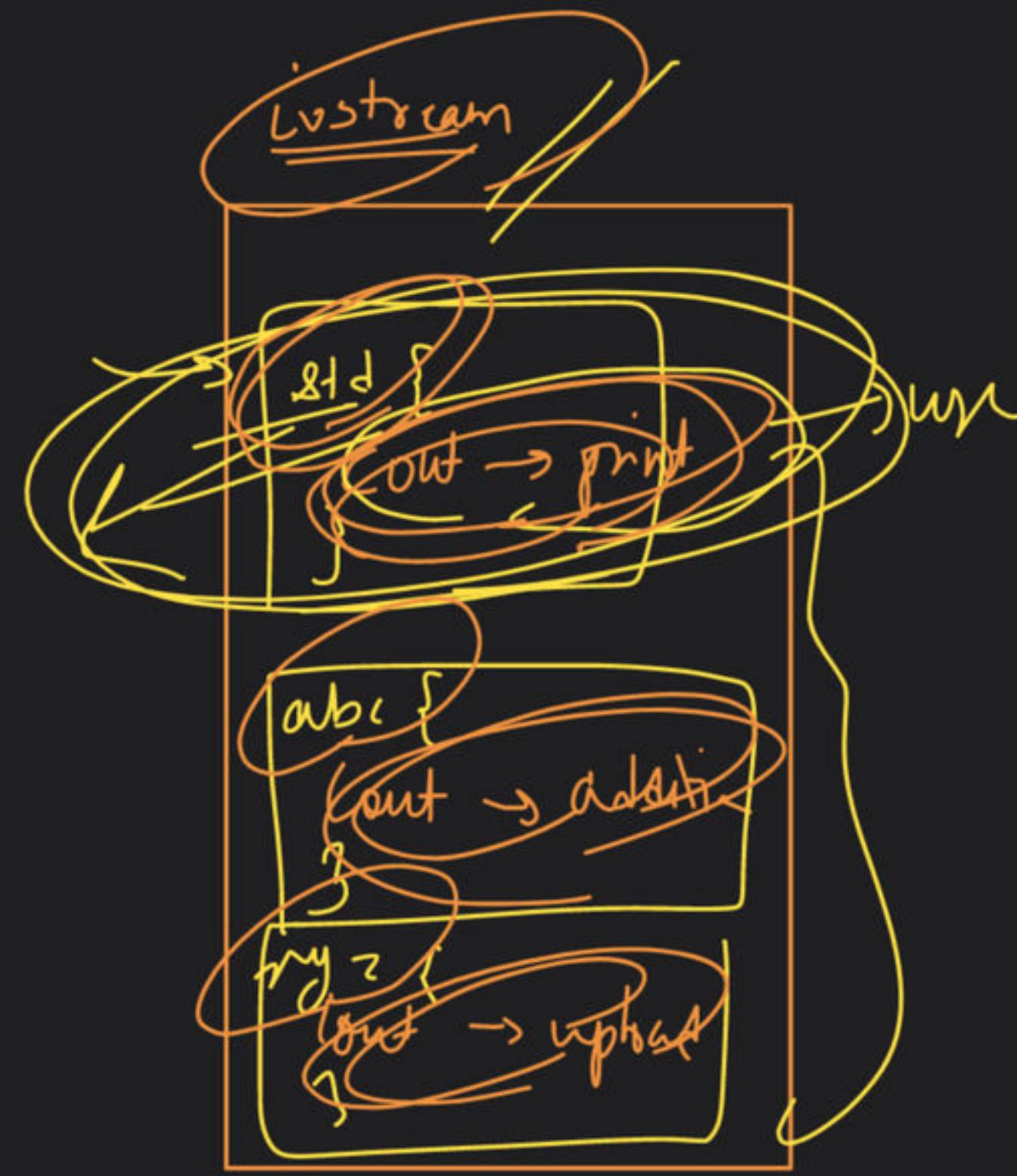


Your 1st Code:

C++
 \u2192 Starting point
int main

Starting point





```
#include <iostream>
using namespace std;

int main ()
{
    cout << "Love";
    abc();
}
```

Starting point

return type

function name

int main()

{

 //

 //

 //

 //

 return 0;

}

integer →

- - - - -3, -2, -1, 0, 1, 2
, 3

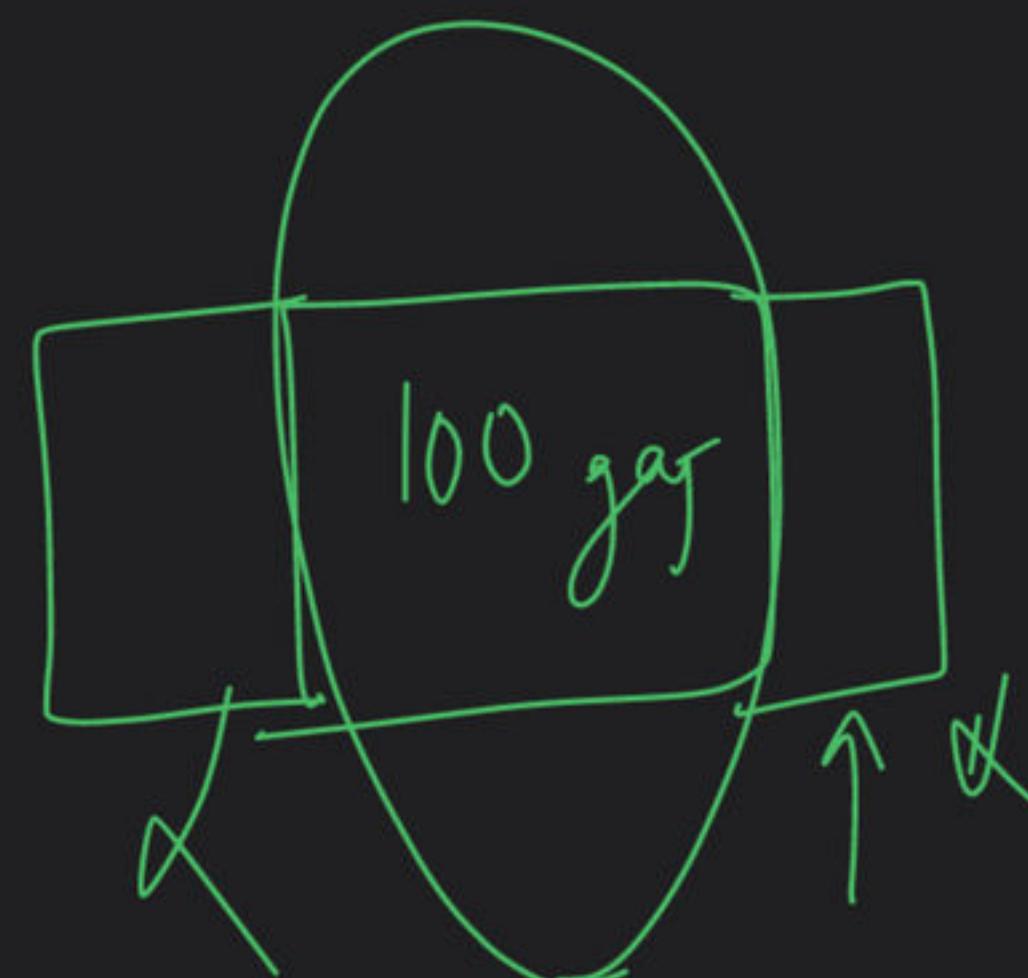
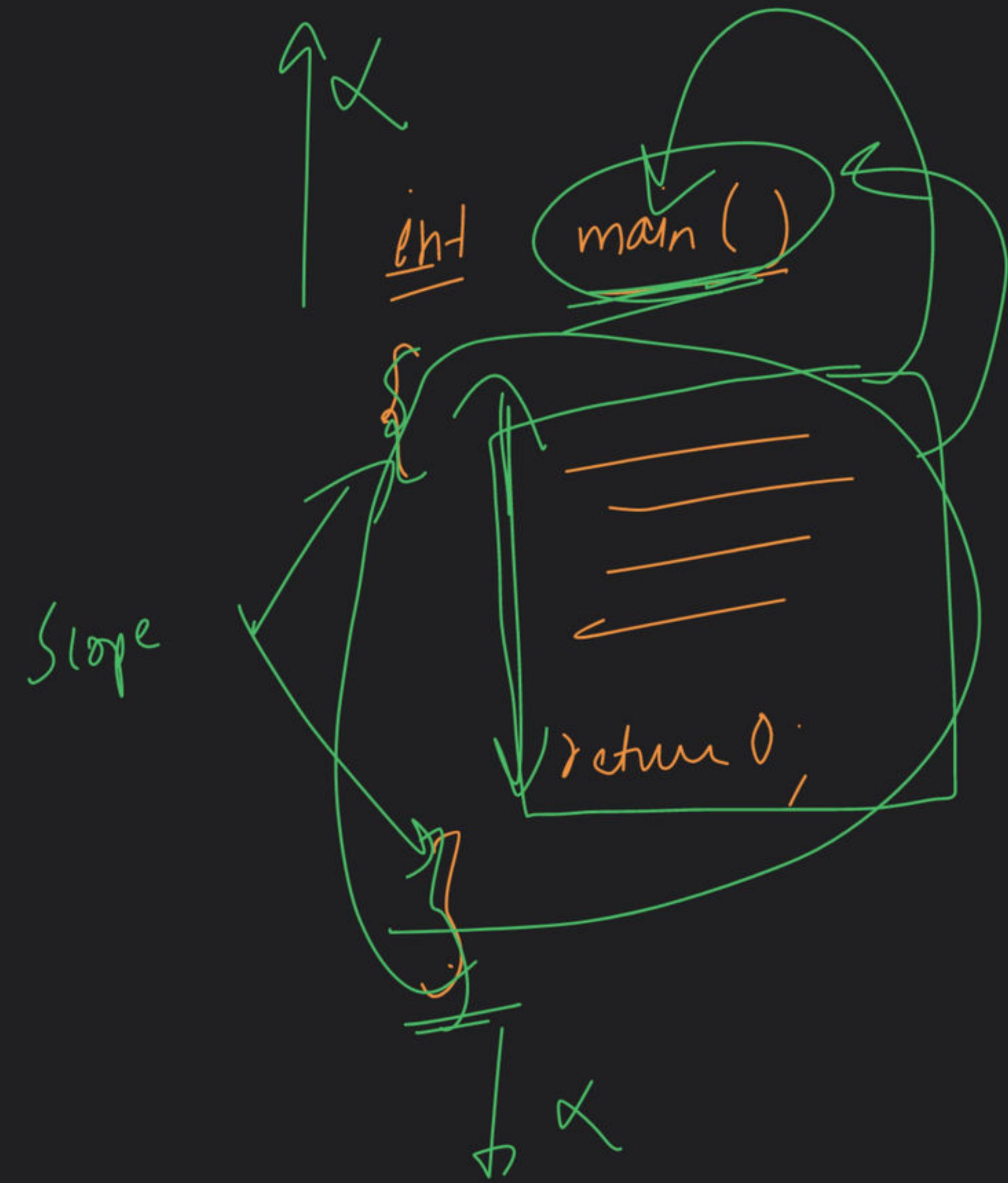
function

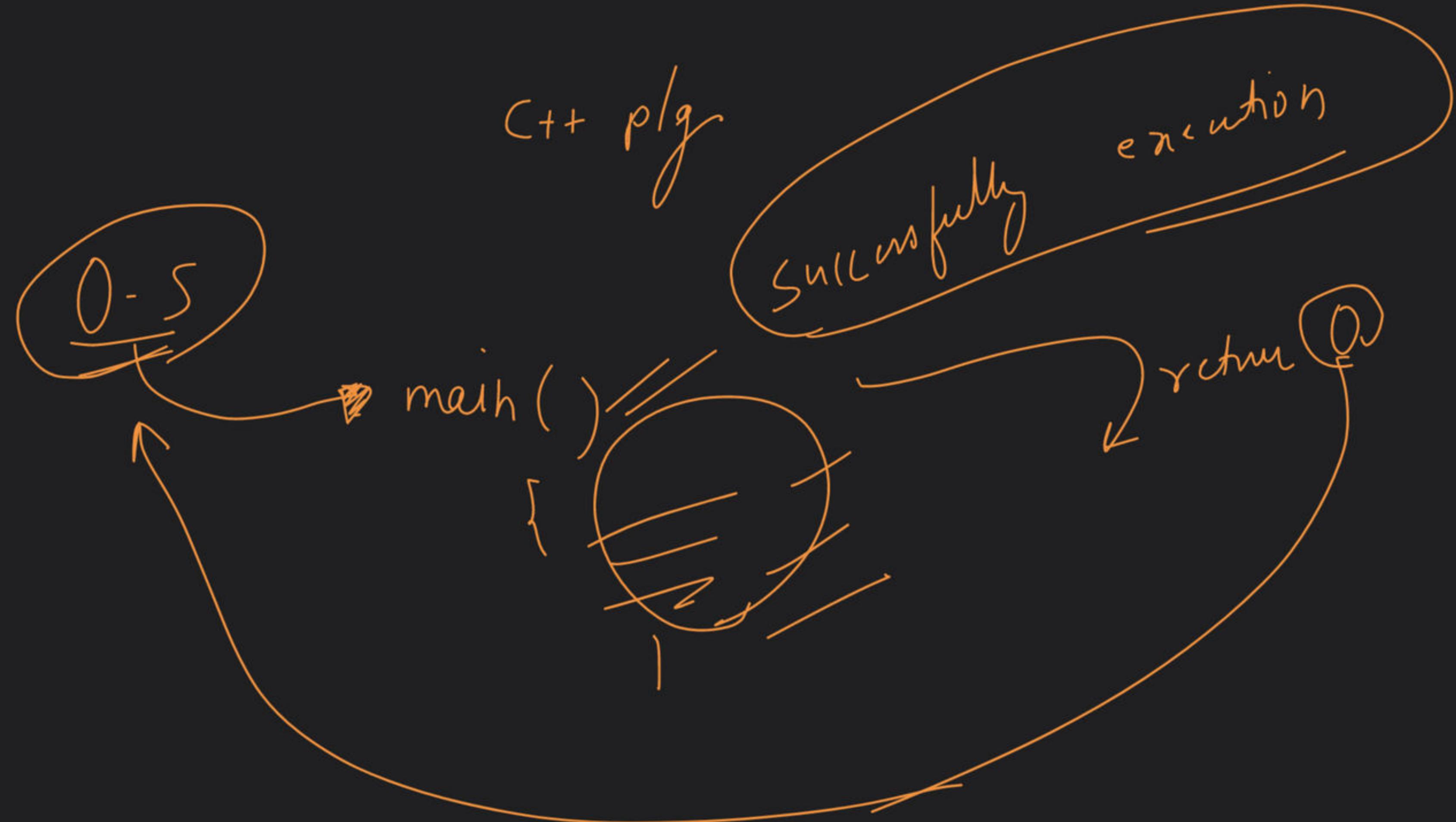
may " "
may "not" be

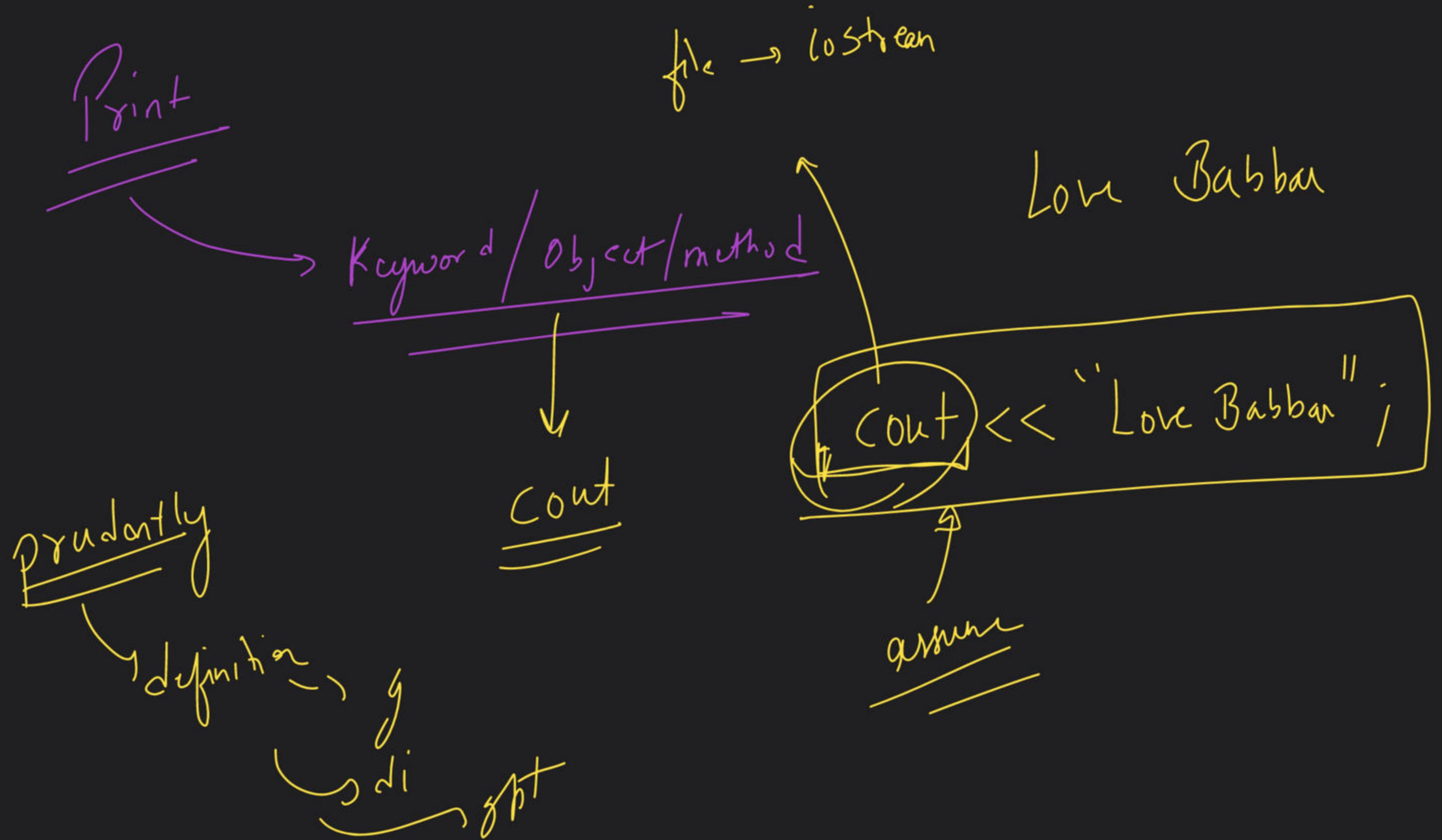
function → output

possibly

Call







#include <iostream>

using namespace std;

namespace

Syntax
rule

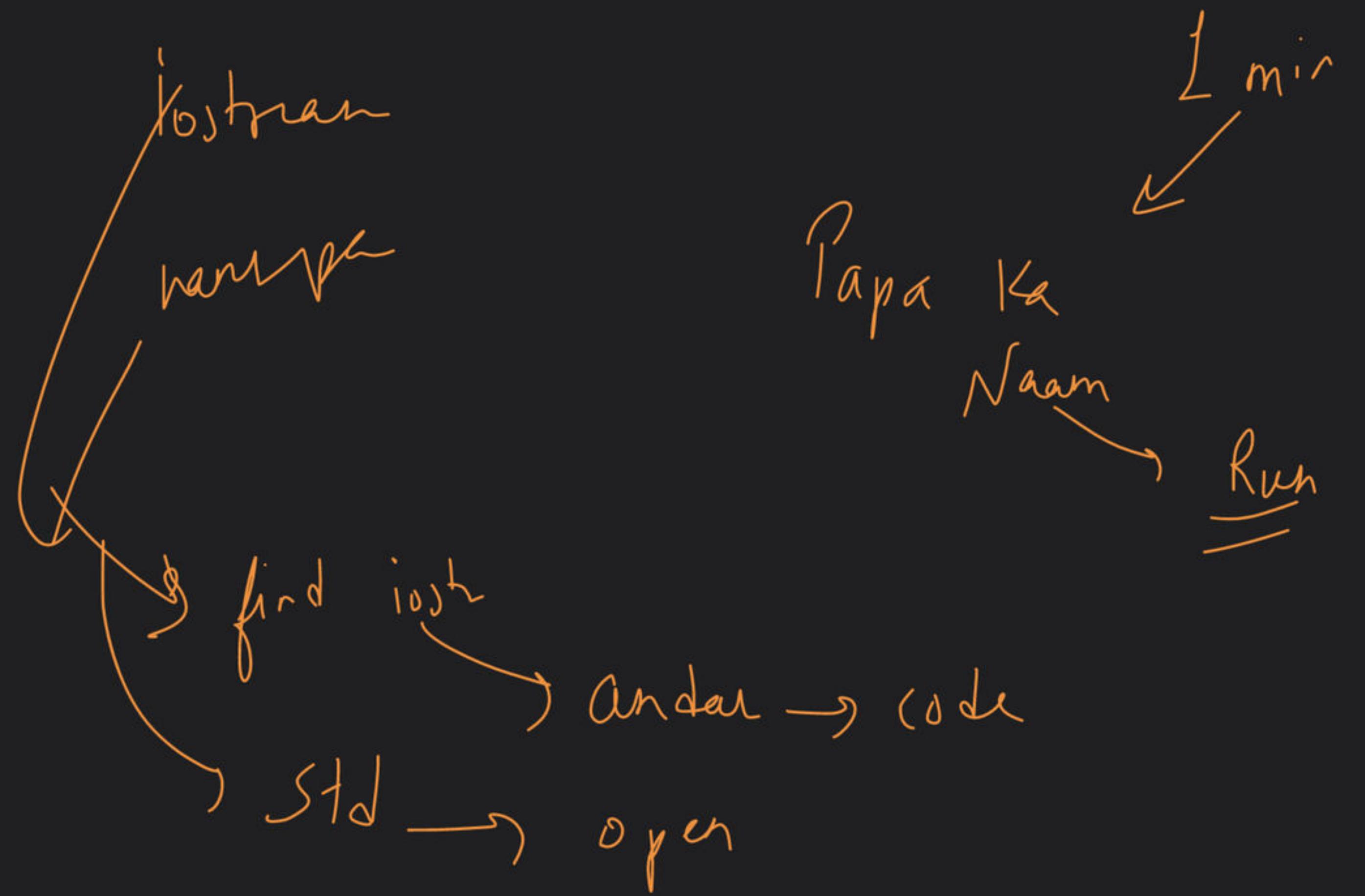
int main ()

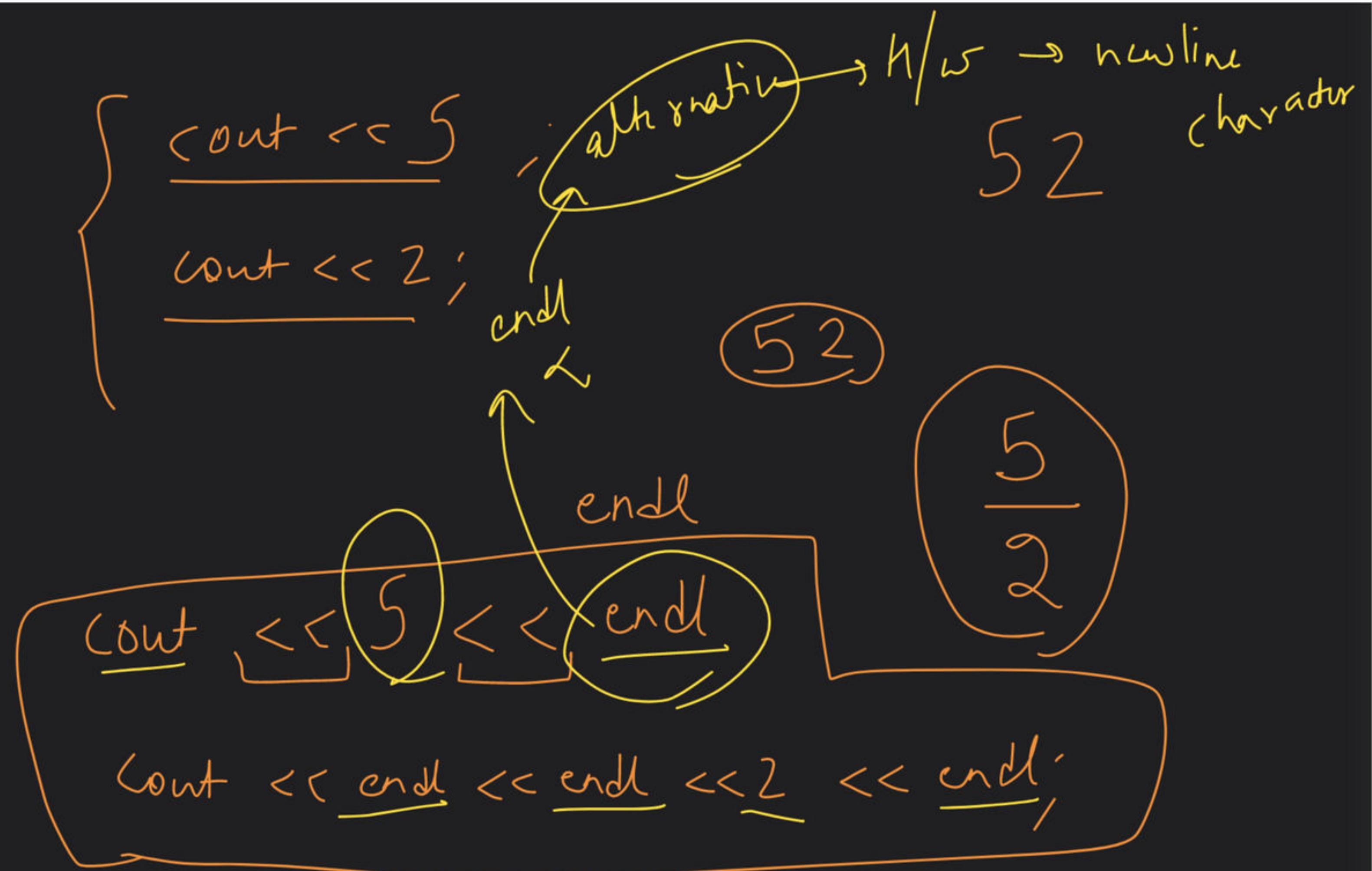
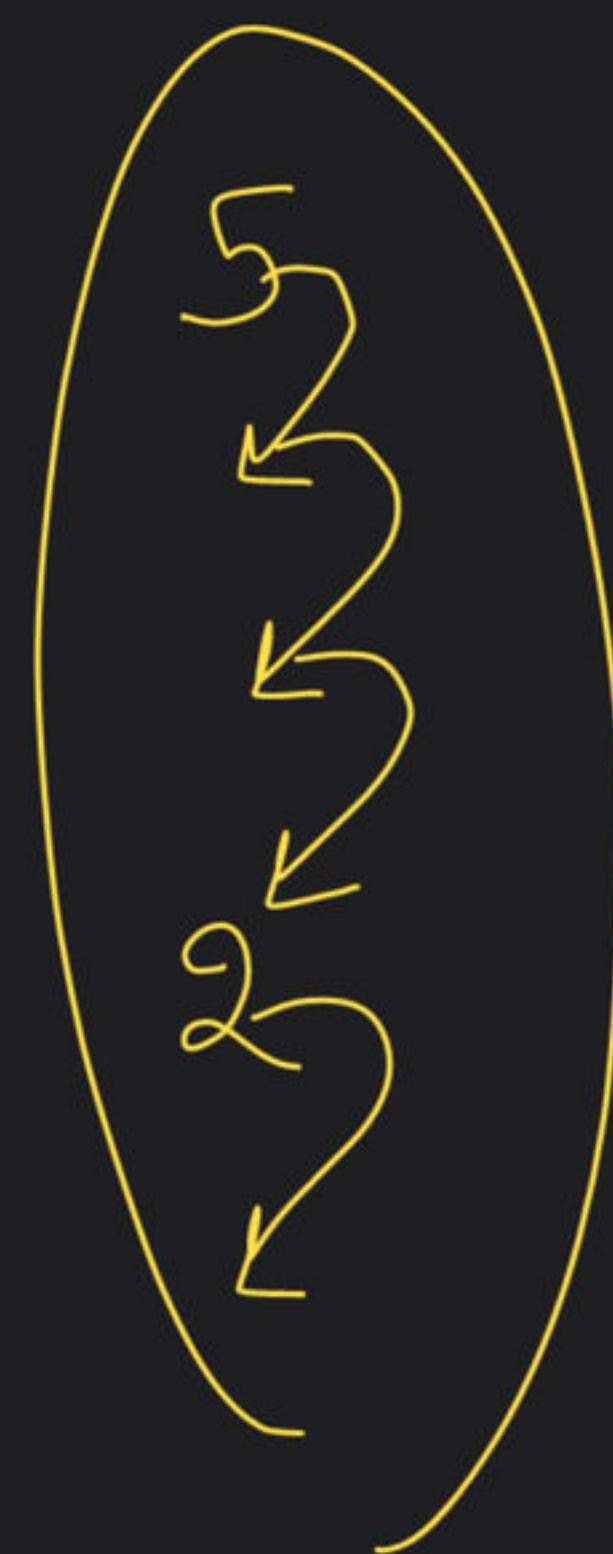
{
 cout << "Love" ;
}

cout

cout >>

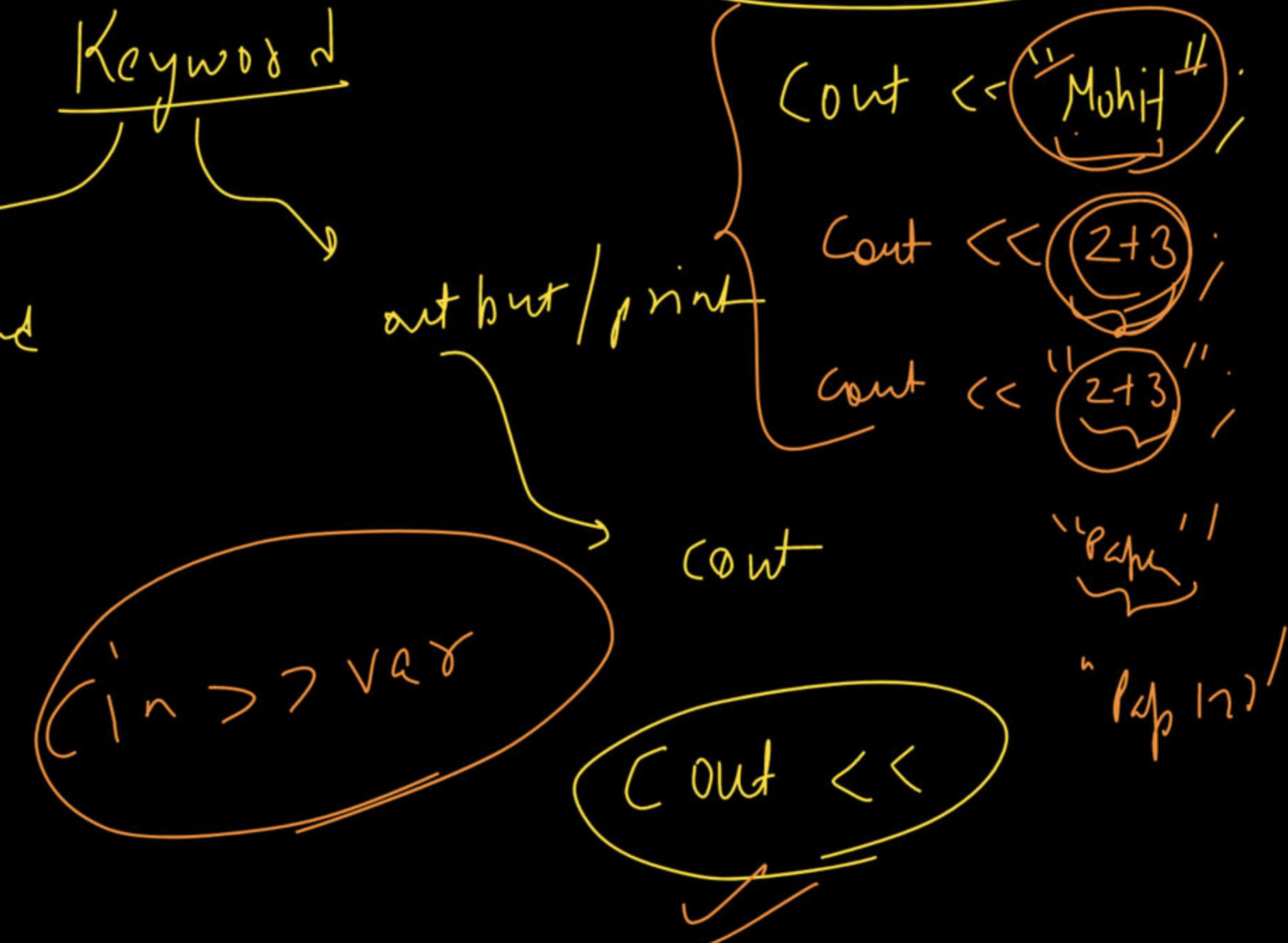
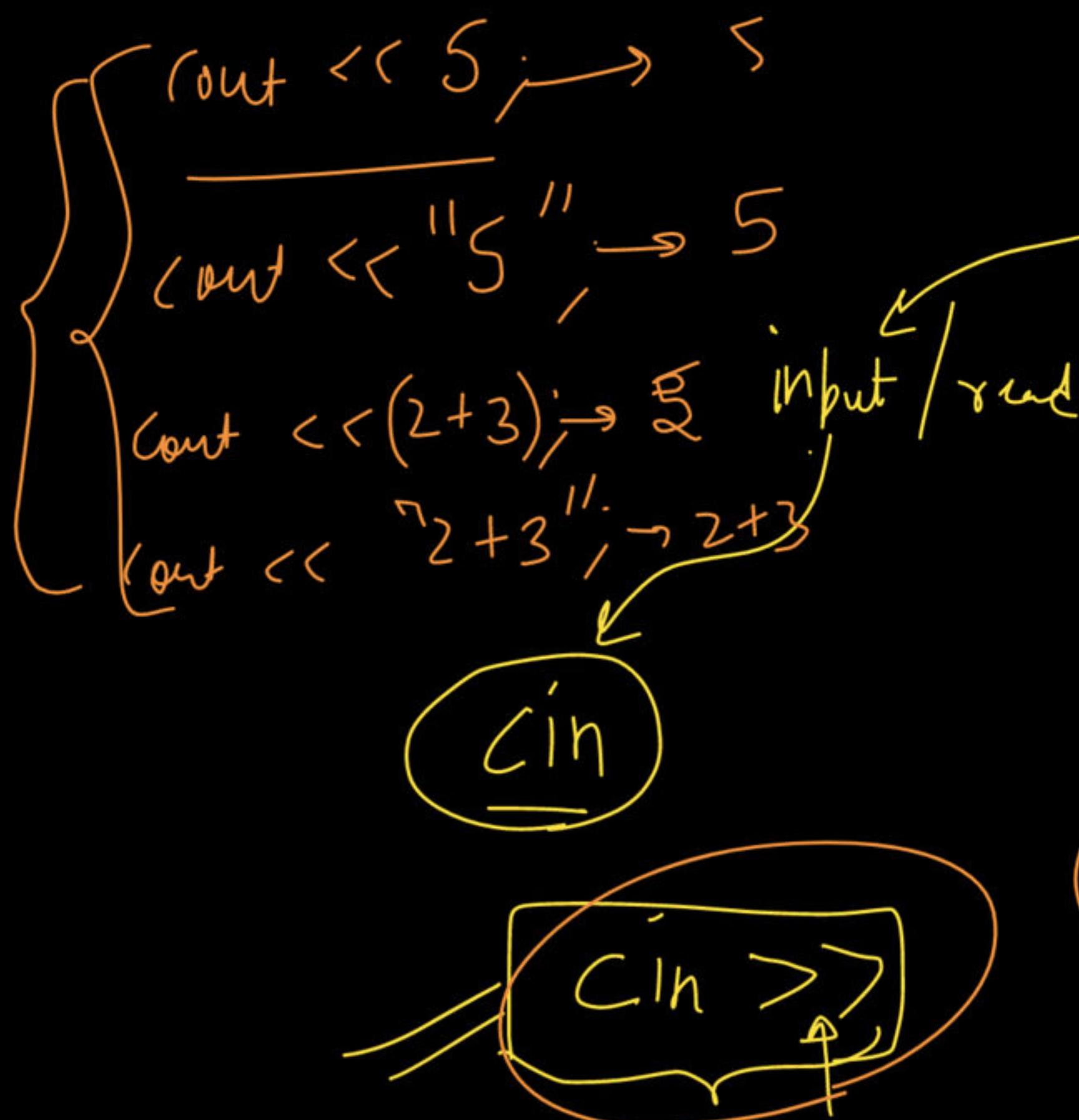
cout

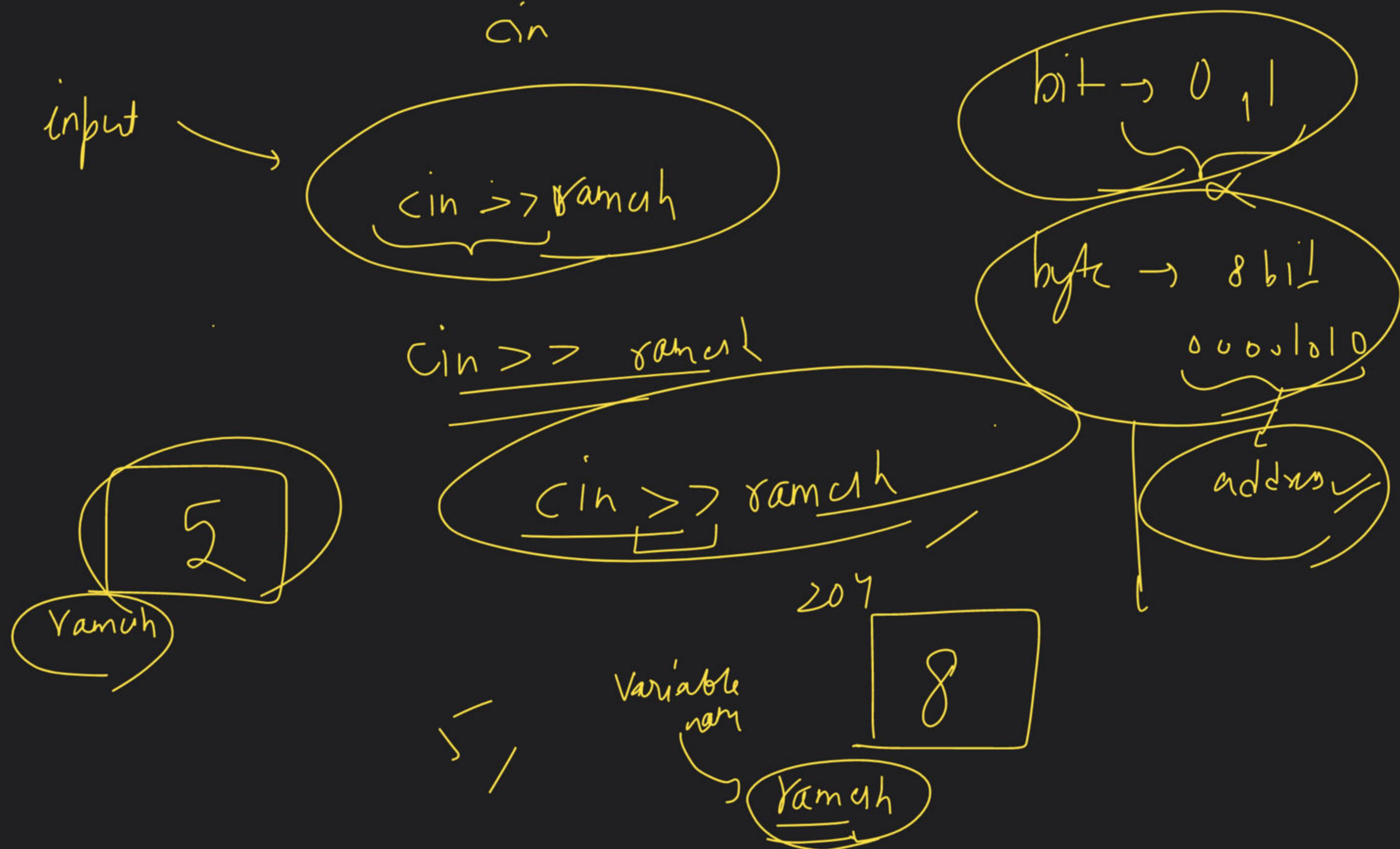




Input / Output in C++ :

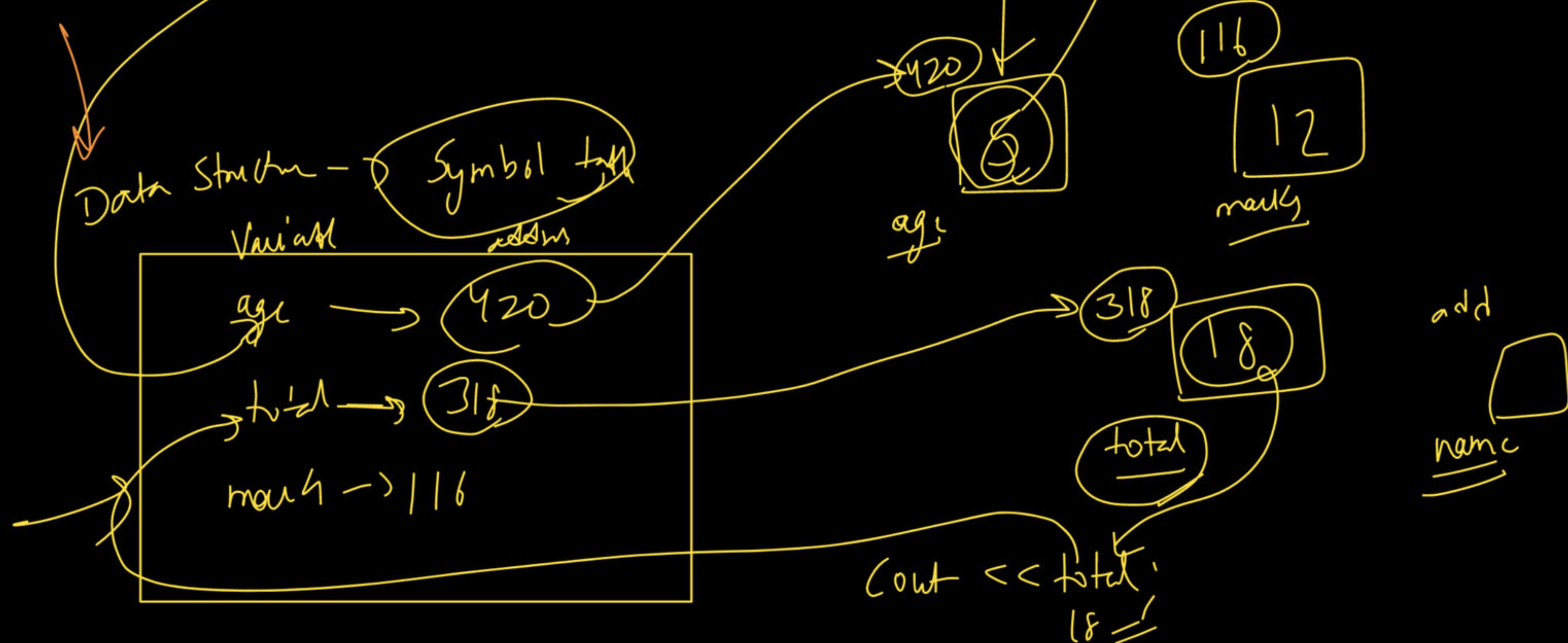
a → character
ab → string





Variables:

Variables are containers for storing data values.



garbage Value

Variable

declaration

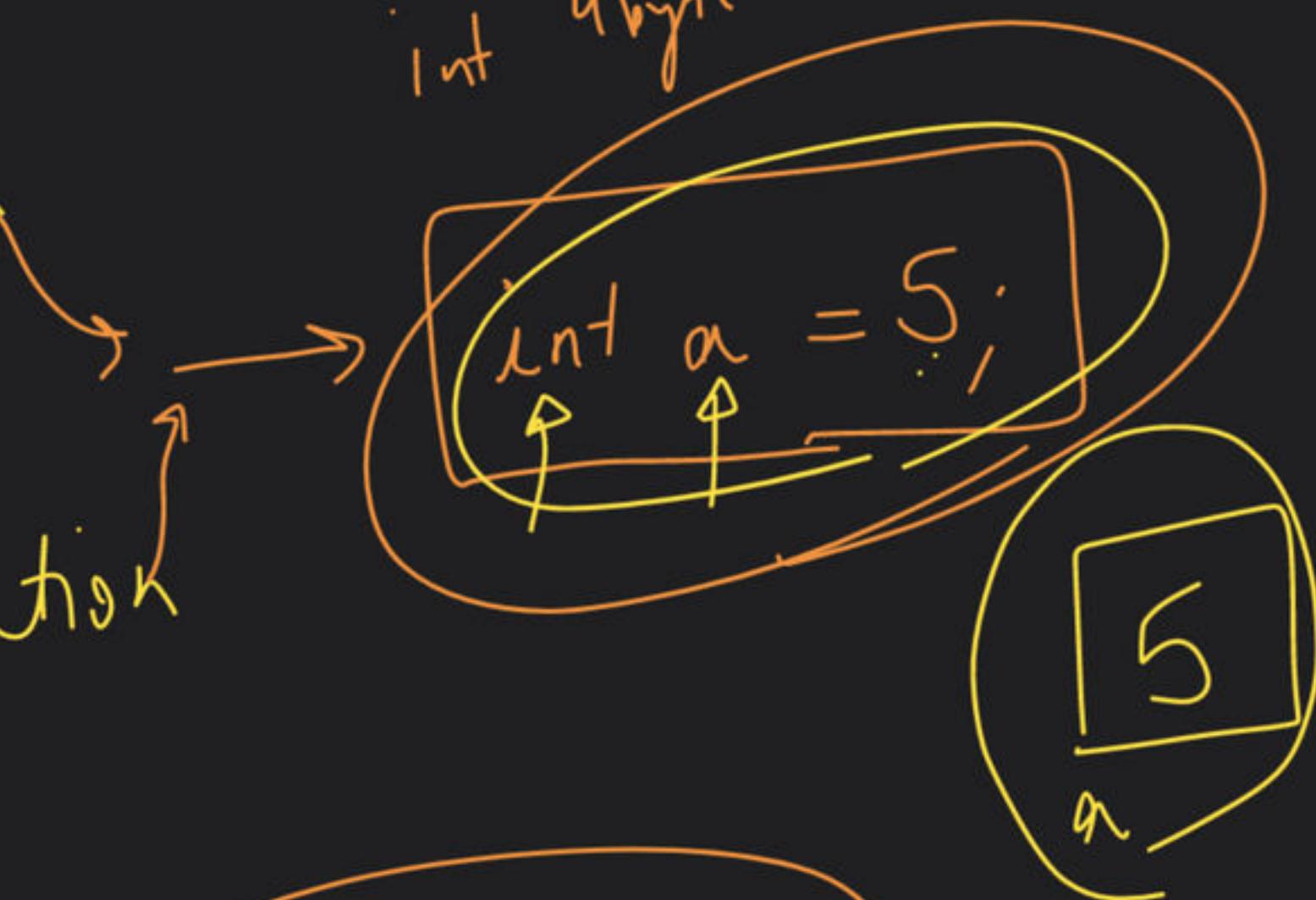
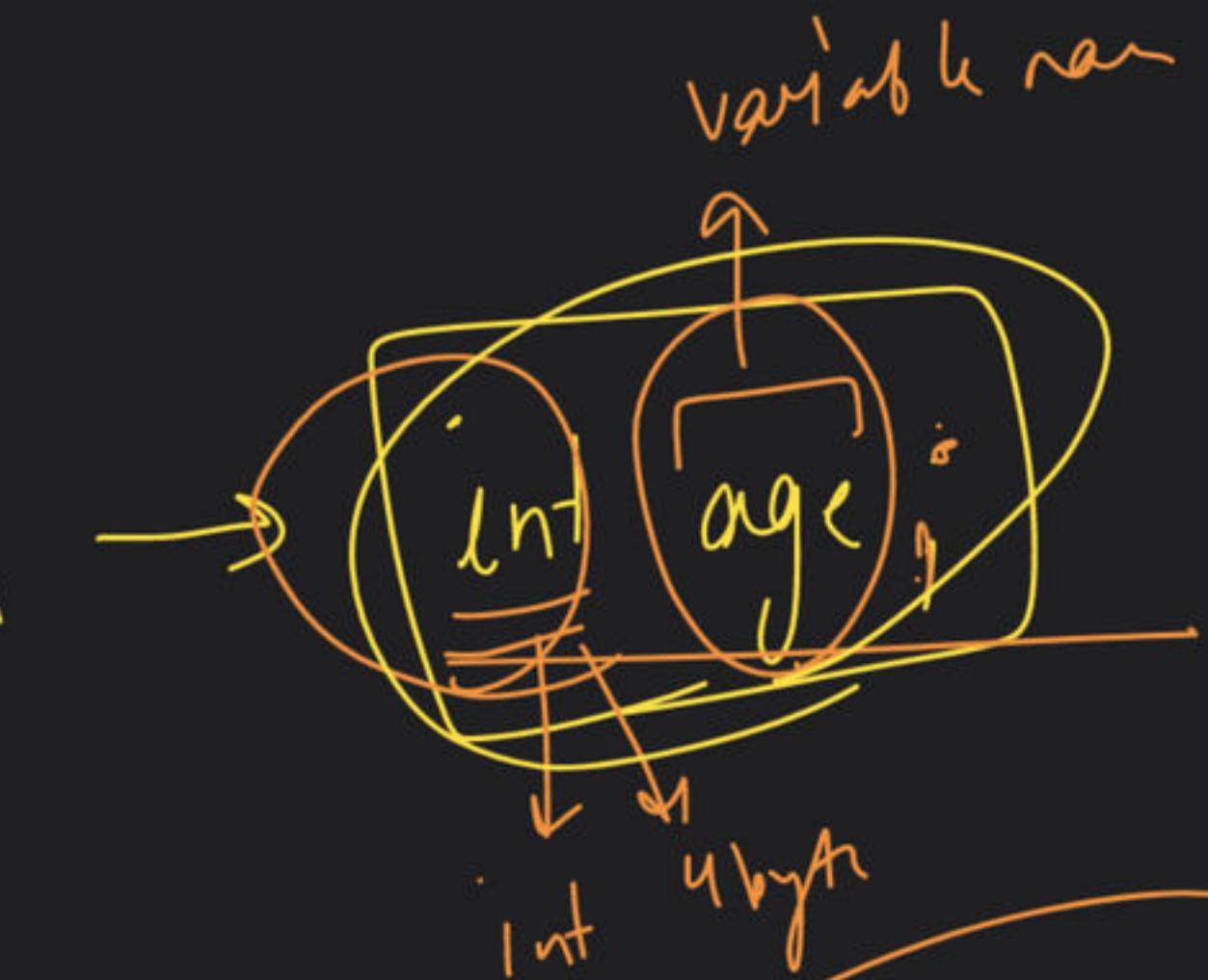
age

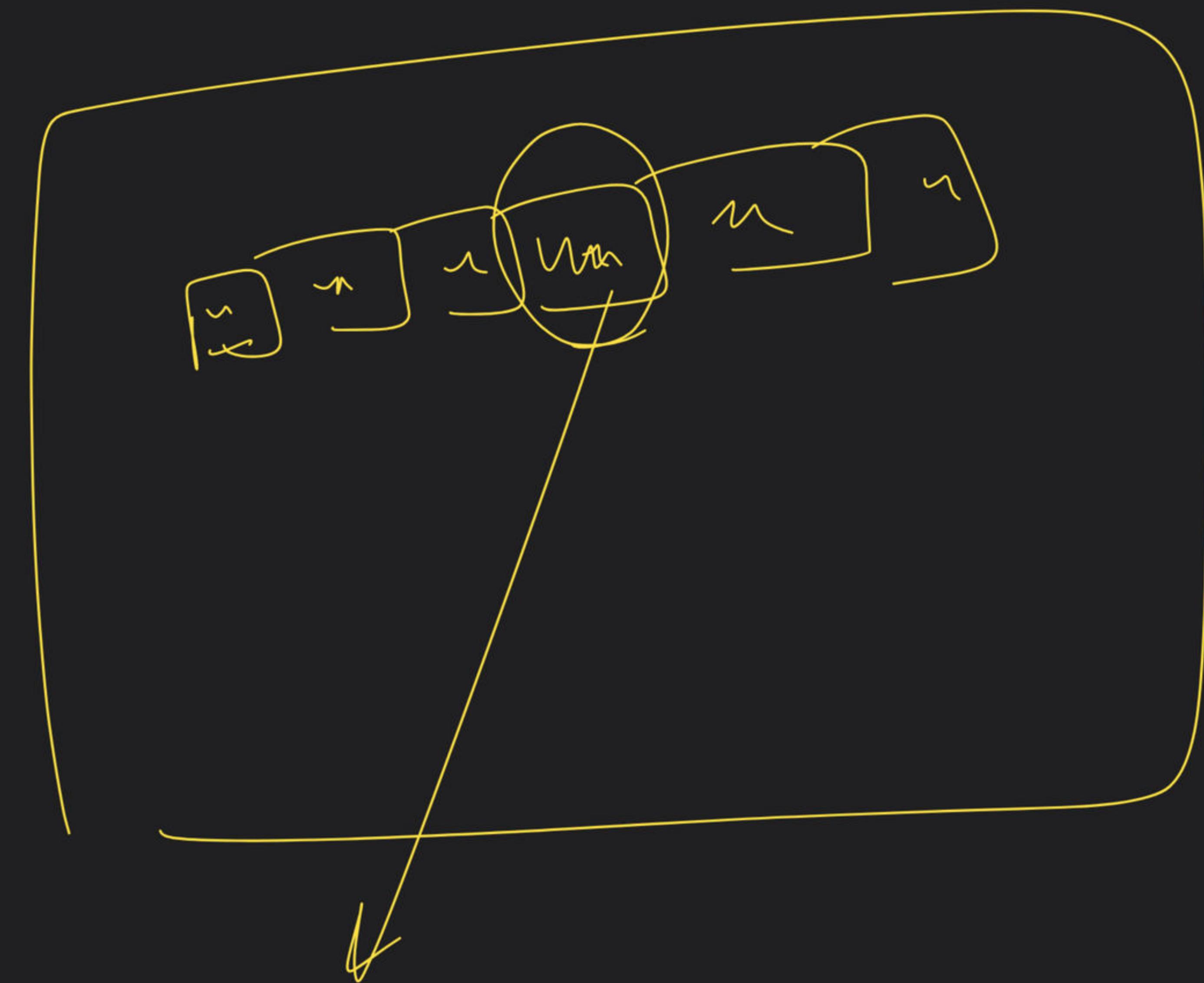
float marks;

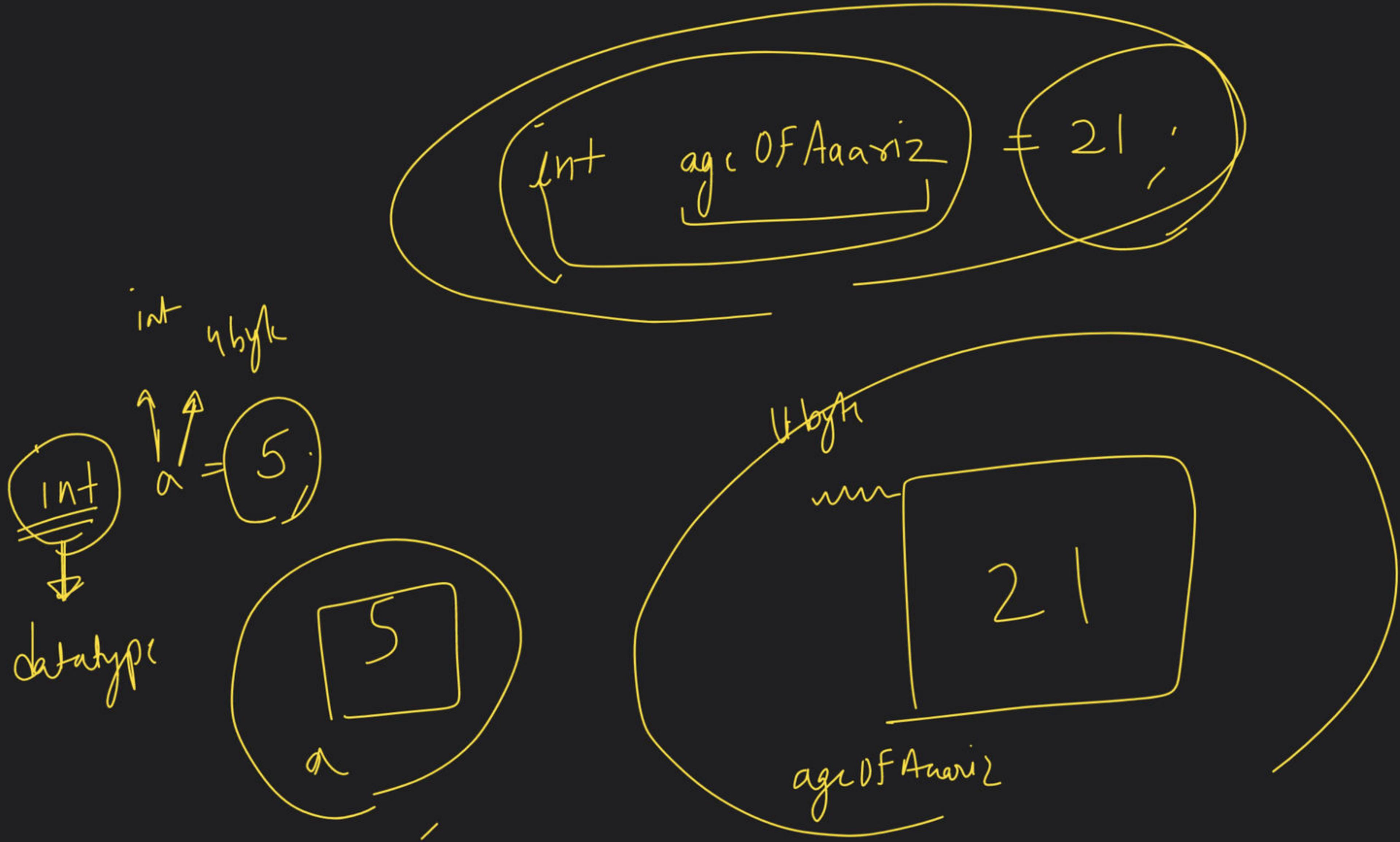
char grade;

bool flag;

definition
initialisation







datatyp

int, char, bool, long, long long

char →  true / false

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

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

$$0 \rightarrow 2^{8-1} \rightarrow 0 \rightarrow 2^{5(1)} \\ 0 \rightarrow 2^{15}$$

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

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

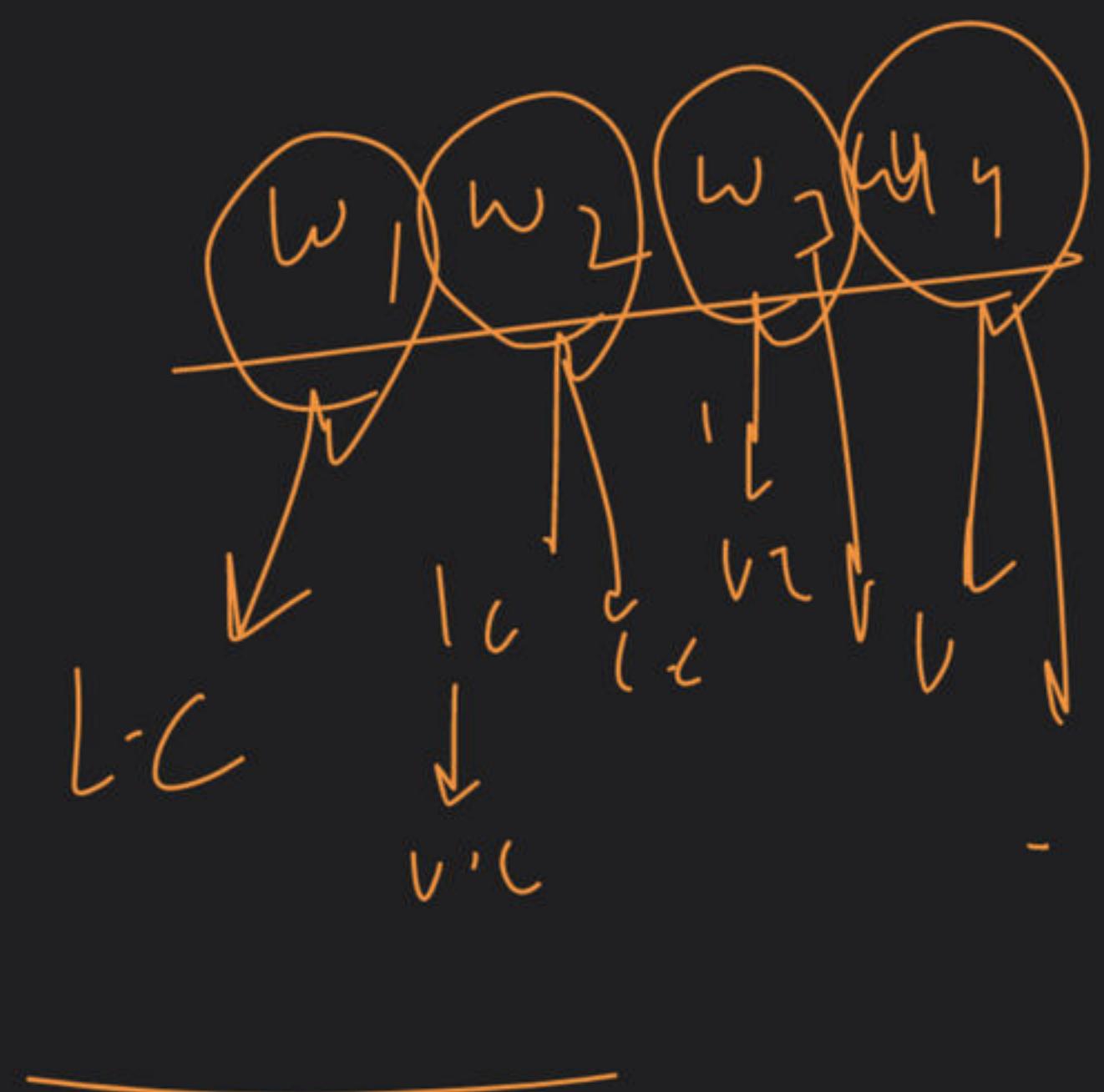
age of + b

age - of - ion

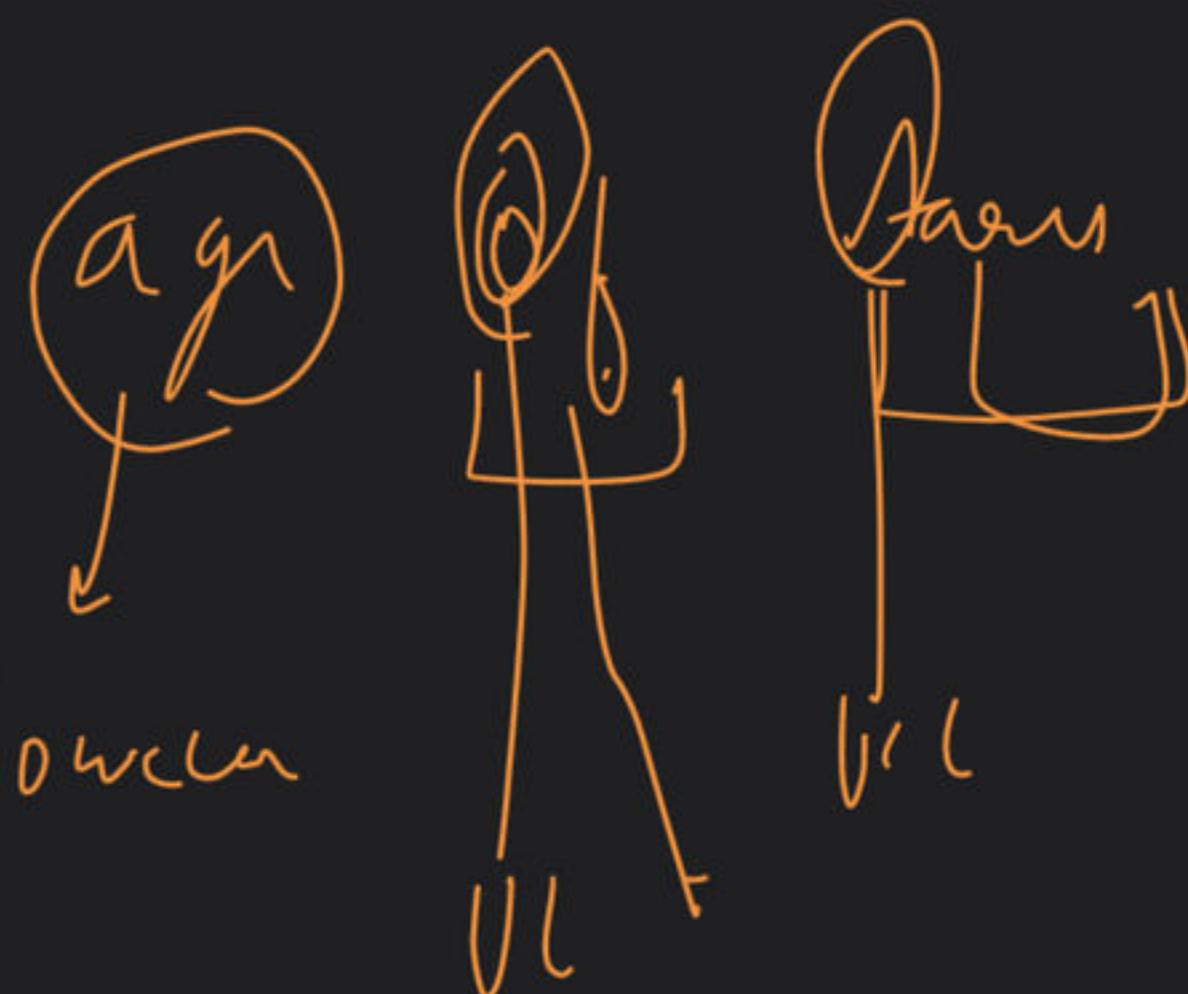
int age of car

int love=5 ;

int Love=5 ;



age Of Aariz



lowe_babbars

lowBabbar

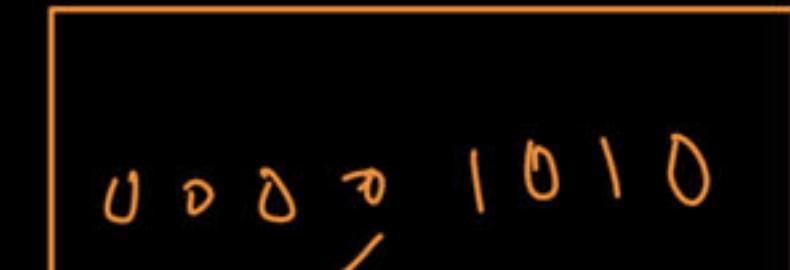
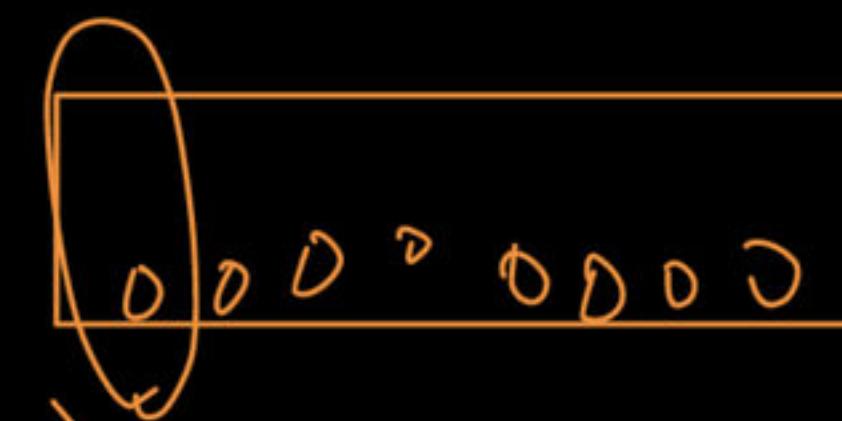
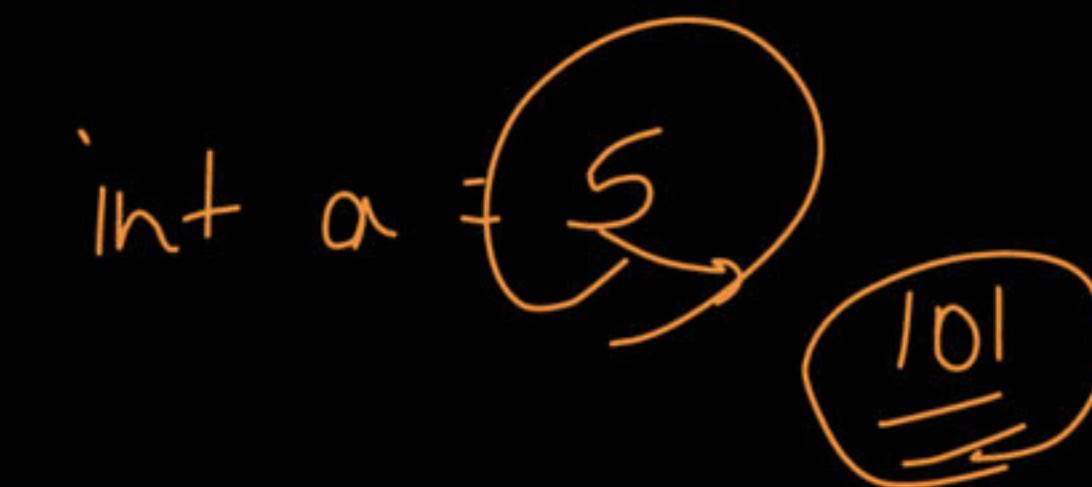
harsh Kapoor

aditya Kumar

lowe_babbars

Assignment:

Difference in storage of +ve and -ve integers ?



L's compliant

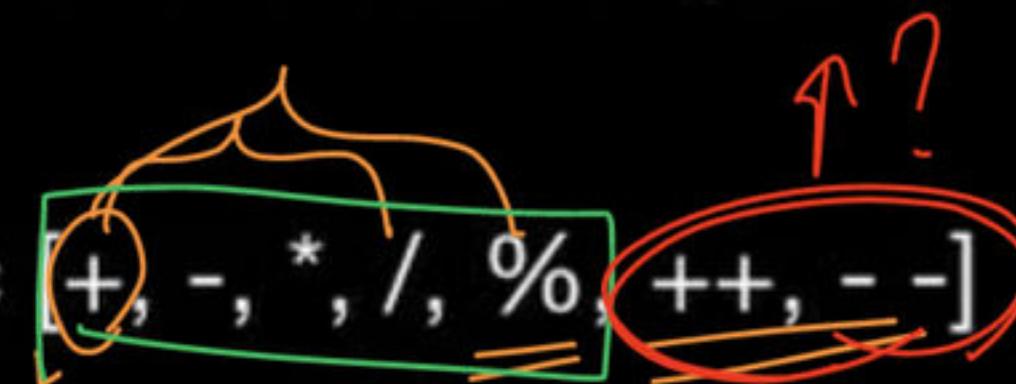
Z's compliant

Signed vs Unsigned Integers:

Operators:

Operators are used to perform operations on variables and values.

• Arithmetic [+, -, *, /, %, ++, --]



• Relational [==, !=, >, <, >=, <=]

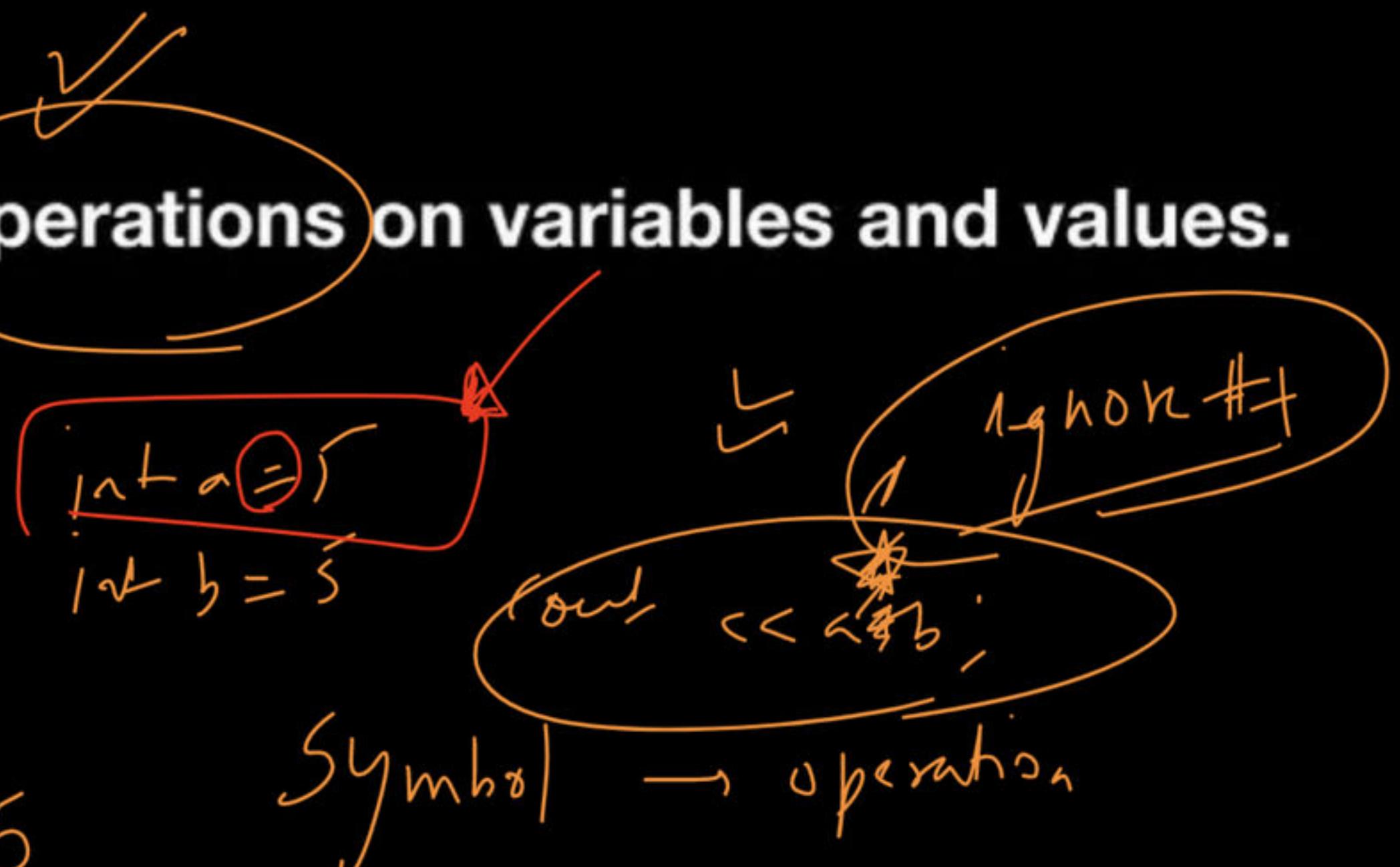
• Assignment [=]

• Logical [&&, ||, !]

• Bitwise [&, |, ~, ^, >>, <<]

int a = 5;

5 / 5



+

→ add

-

→ sub

*

→ mult

/

→ divid

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

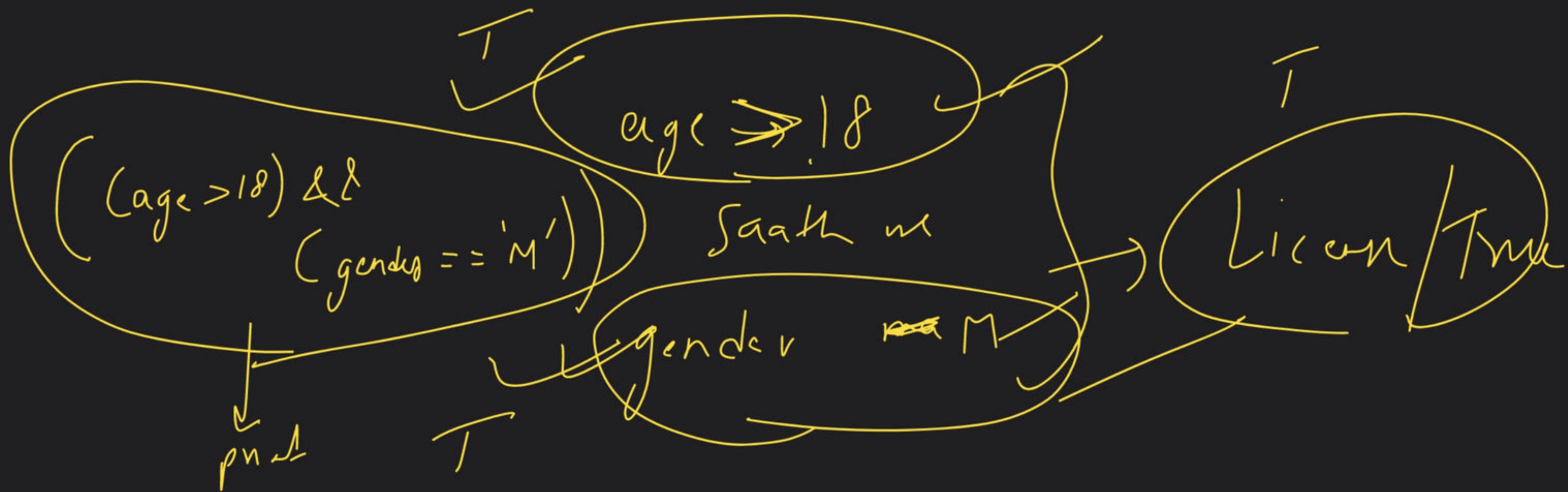
Condition		$a \wedge b$
a	b	0/0
T	T	T
T	F	F
F	T	F
F	F	F

// \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

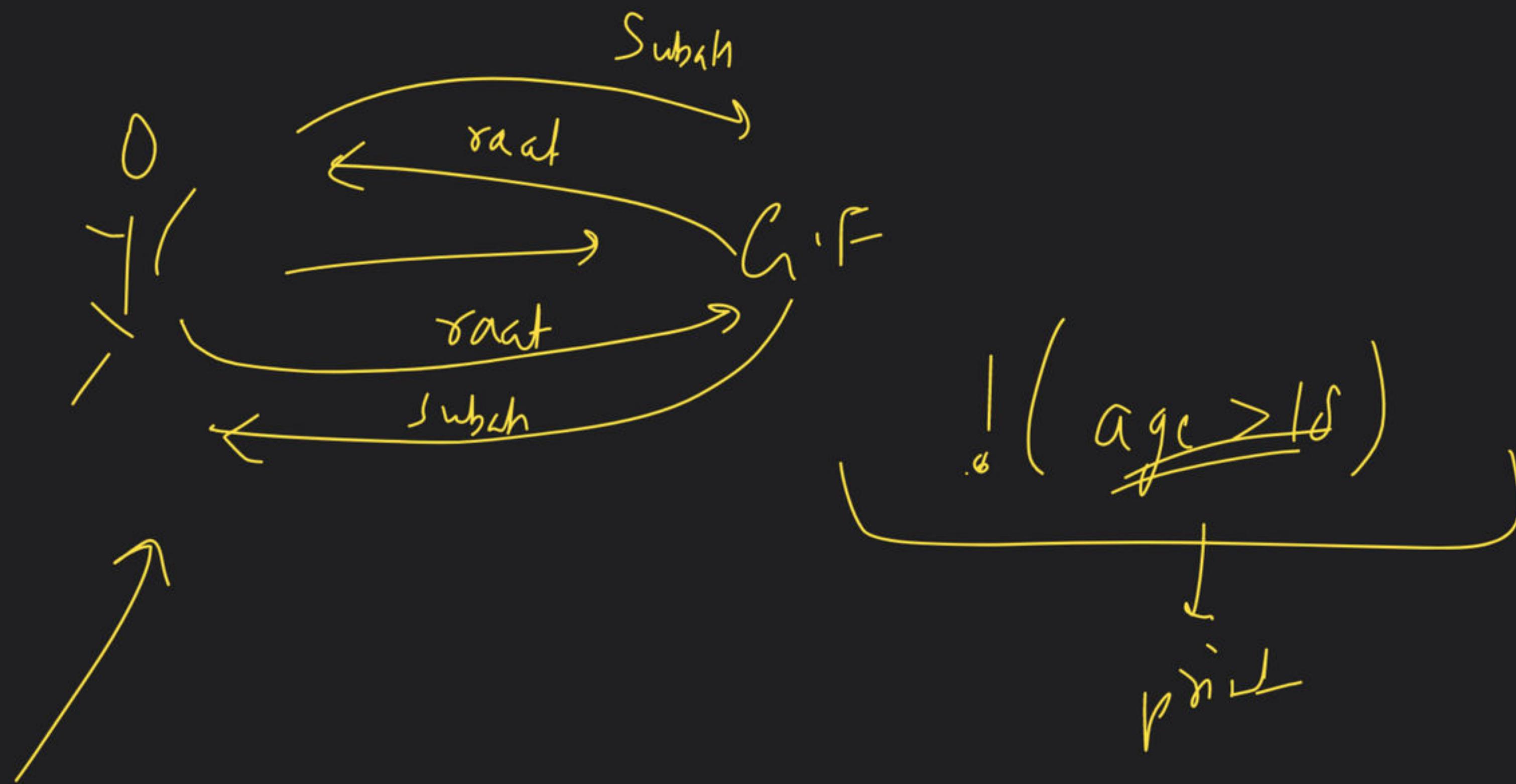
a	$!a$
T	F
F	T

Logical NOT
 Reversal
 flip



$\text{else} \rightarrow \text{False}$

 $\left[\begin{array}{l} (\text{age} > 18) \mid\mid (\text{gender} == 'M') \\ \end{array} \right]$

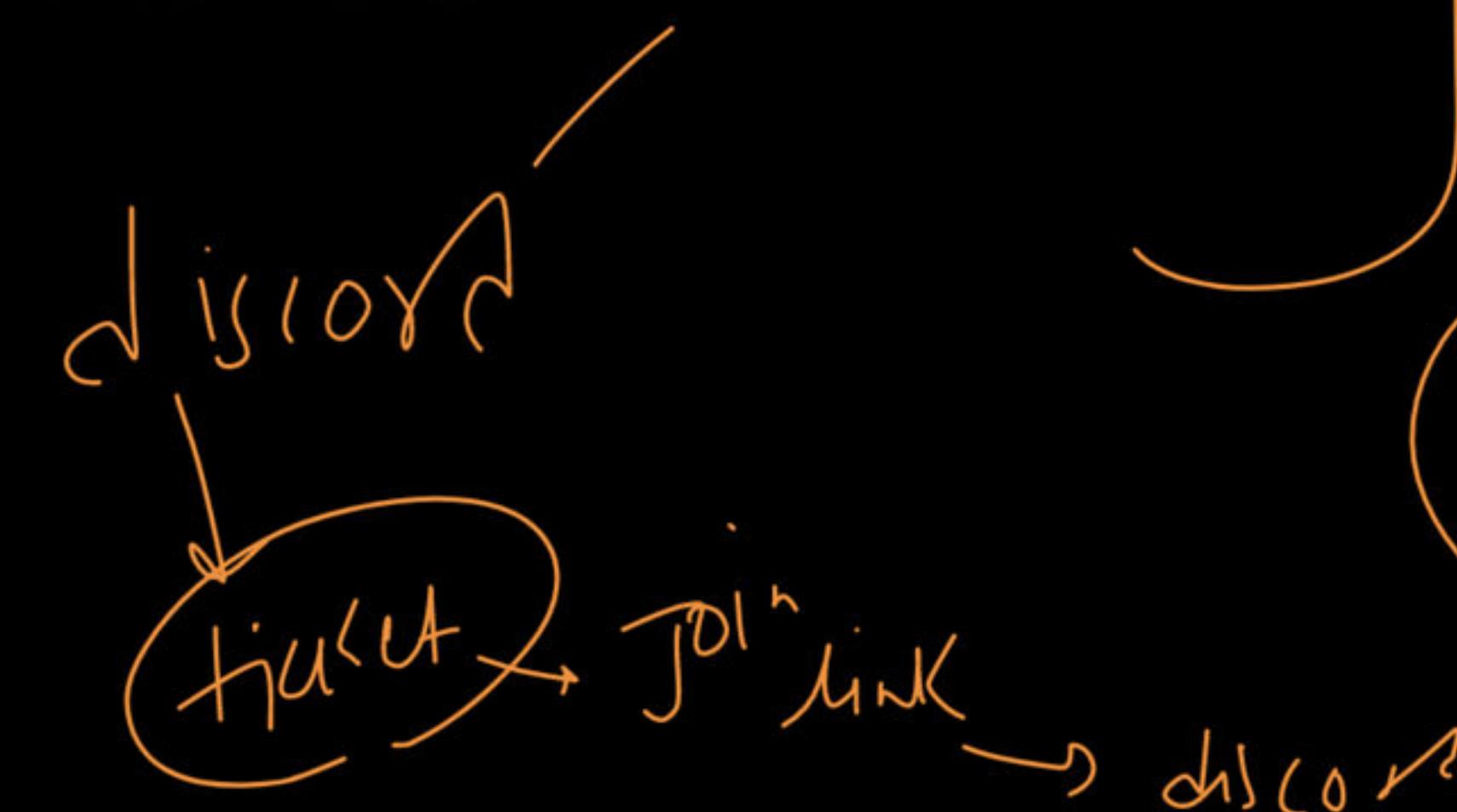


Assignment:

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

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

Nameit



Kal -> 9pm

