

~~Topics~~

80 % Asistencia

Participación →

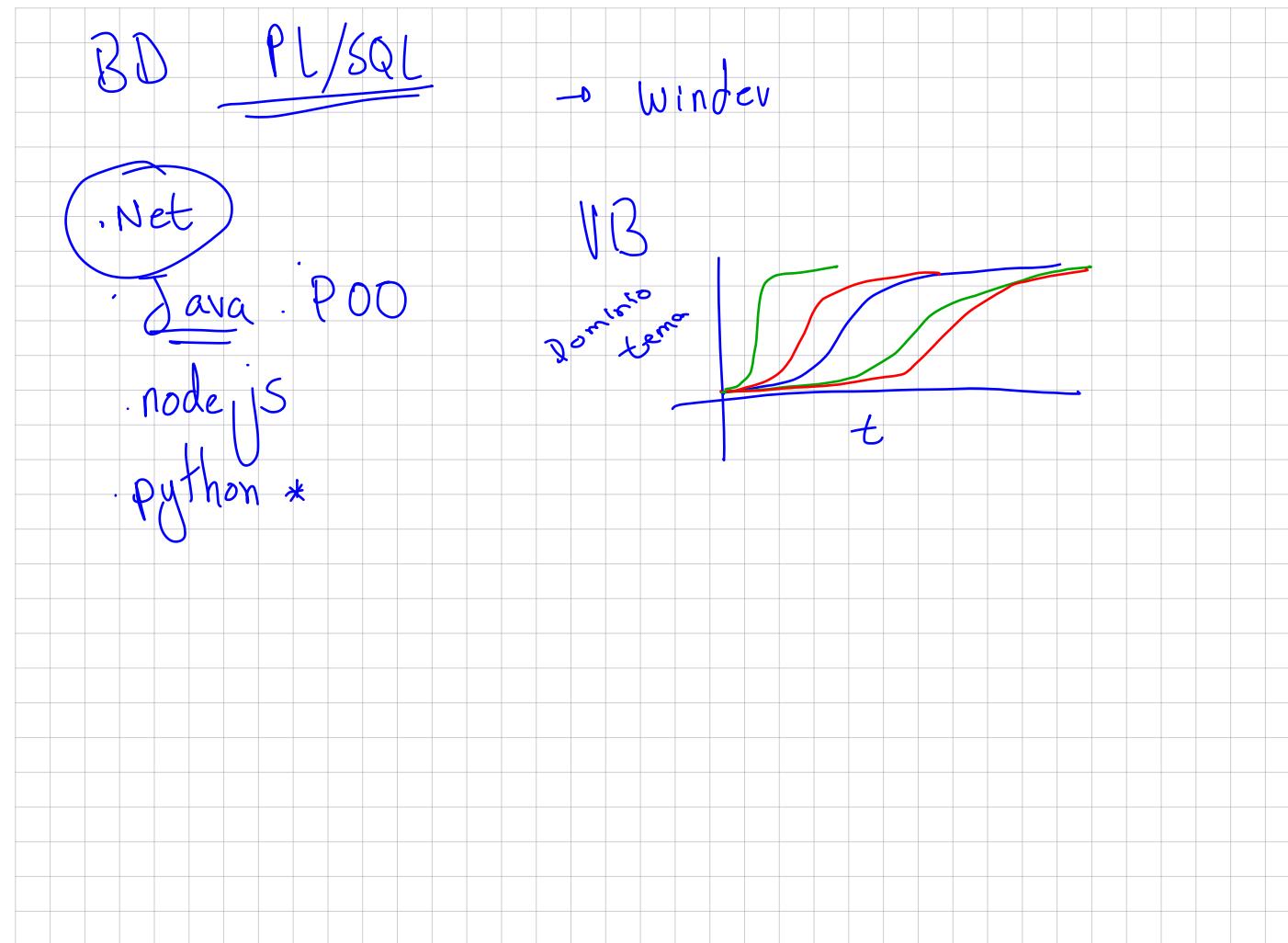
↓  
20"

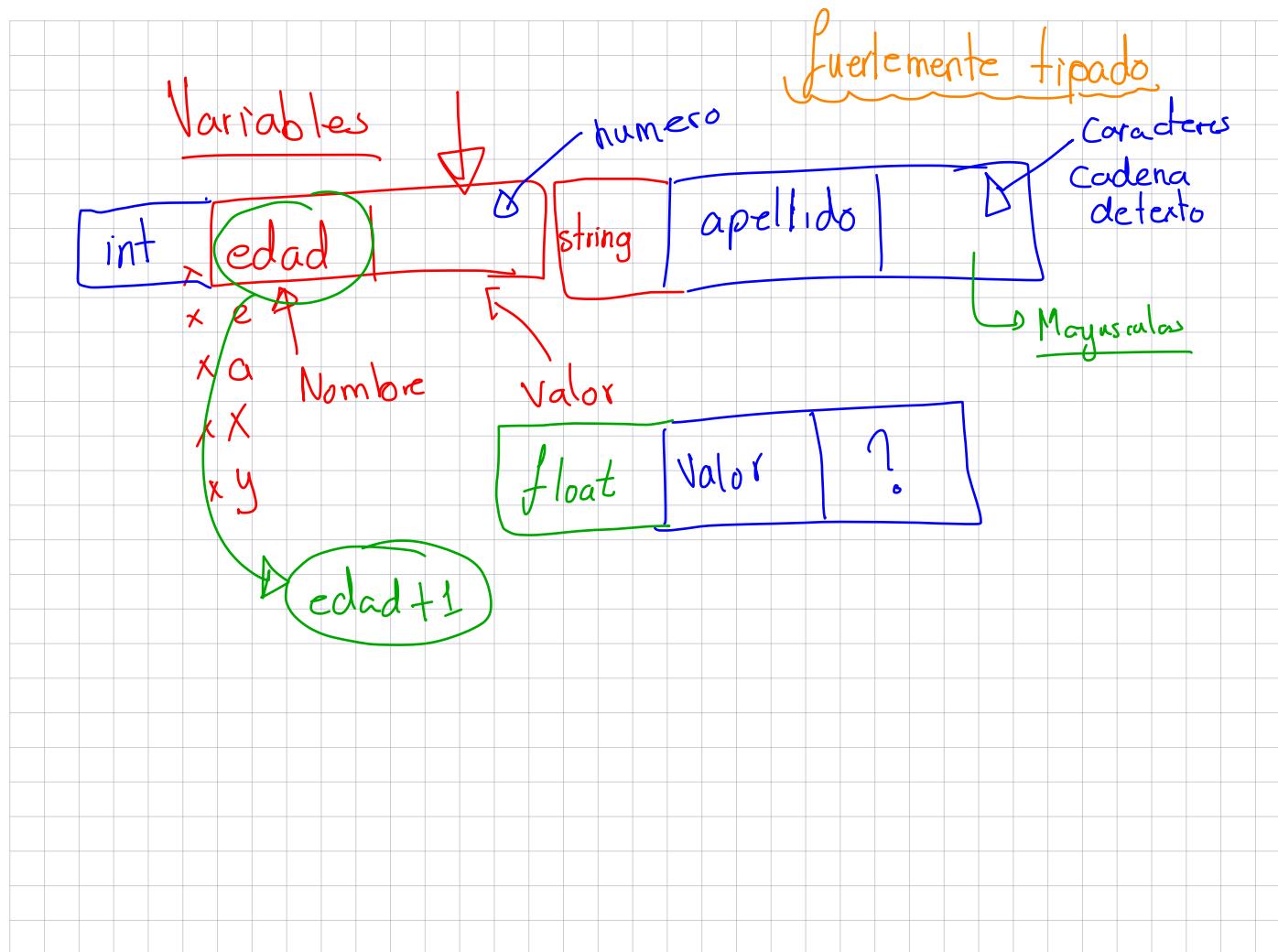
Horarios → 6:30 ~, ≈ 7:50 8:10 ~ 9:30  
→ ⑤

L - S

L → V

|||





## Variables

1º

tipo\_nombre

2º

nombre

3º

4º

⋮

⋮

1º → int edad  
string apellido  
float valor

2º  
3º edad  
apellido

asignar un valor

1º → tipo\_nombre = [valor que queremos asignar]

2º → nombre = [valor que queremos]

1º  
int edad = 28  
string apellido = "Castro"  
float valor = 30,5  
edad = 29  
apellido = "CASTRO"  
valor = 22,74

## Variables

$$\text{edad} = 14$$

## Incrementar

sumar! Cuanto?

$$\text{edad} = \text{edad} + 10$$



$$\text{edad} = \text{edad} + 10$$

$$= 14 + 10$$

$$= 24$$

asignacion!

edad

14

24

24 ✓

$$\begin{array}{r}
 \text{edad} \quad \text{factor} \\
 \hline
 \text{edad} = 25 \quad 25 \\
 \text{factor} = 2.5 \quad 2.5 \\
 \text{edad} = \text{edad} * \text{factor} \quad 62.5 \quad 2.5 \\
 \text{edad} = \text{edad} / 2 \quad 31.25 \quad 2.5 \\
 \text{edad} = 30 \quad 30
 \end{array}$$

$$\begin{array}{l}
 \rightarrow \text{edad} = 30 \\
 \rightarrow \text{factor} = 4.45 \\
 \rightarrow \text{edad} = \text{edad} * \text{factor} / 3 + 3 \\
 \rightarrow \text{edad} = \text{edad} * 2
 \end{array}$$

$$\begin{array}{r}
 \text{edad} \quad \text{factor} \\
 \hline
 30 \quad 4.45
 \end{array}$$

$$\begin{array}{r}
 \text{edad} = 30 * 4.45 / (3 + 3) \\
 47.5 \quad 7.42 \\
 22.5
 \end{array}$$

- ① Parentesis
- ② Exponentes
- ③ Multiplicacion
- ④ Division
- ⑤ Suma
- ⑥ Resta.



$$\text{edad} = 20$$

$$\text{(edad * factor)}/\left(\left(3 + \text{edad}\right) \times 4\right)^4$$

$$3 + \text{edad} \times 4 \Rightarrow 83$$

$$(3 + \text{edad}) \times 4 \Rightarrow 92$$

$$3 + (\text{edad} \times 4) = 83$$

$$\begin{array}{l}
 a = 5 \quad \swarrow \\
 a = a \times 5 \quad \swarrow \\
 b = a \quad \swarrow \\
 a = b \times a \quad \swarrow \\
 b = a \quad \swarrow \\
 a = a/(b \times 2) \quad \swarrow
 \end{array}$$

$$\begin{array}{r}
 a \quad b \\
 \hline
 5 \quad 25 \\
 25 \quad 625 \\
 625 \\
 0.5
 \end{array}$$

$$\begin{aligned}
 X &= 0 \\
 Y &= 1 \\
 a &= x + y \\
 X &= y \\
 Y &= a \\
 a &= x + y \\
 X &= y \\
 Y &= a \\
 a &= x + y \\
 X &= y \\
 Y &= a \\
 a &= x + y
 \end{aligned}$$

X	Y	a
0	1	1
1	2	2
2	3	3
3	5	5

$$\begin{array}{ccccccccc}
 1 & 1 & 2 & 3 & 5 & & & & \\
 x & y & x+y & x+y & x+y & x+y & x+y & x+y & x+y
 \end{array}$$

$$\begin{array}{ccccccccc}
 0 & 1 & 1 & 2 & 3 & 5 & 8 & 13 & 21 & 34 & 55 & 89 \\
 + & & & & & & & & & & & \\
 0 & 1 & 1 & 2 & 3 & 5 & 8 & 13 & 21 & 34 & 55 & 89
 \end{array}$$

0  
1

1  
2  
3  
5

Series  
Fibonacci

$$\begin{array}{l} a = 0 \\ a = 1 \end{array}$$

$$x = 0$$

$$y = 1$$

$$a = x + y$$

$$x = y$$

$$y = a$$

$$a = x + y$$

$$x = y$$

$$y = a$$

$$a = x + y$$

$$x = y$$

$$y = a$$

$$a = x + y$$

$$\begin{array}{l} 0 \\ 1 \\ 1 \\ 2 \\ 3 \\ 5 \end{array}$$

$a$	$x$	$y$
0	0	1
1	1	1
1	1	2
2	2	3
3	3	5

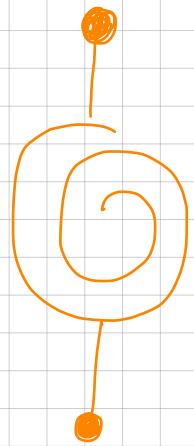
$$a = x + y$$

$$a = 2 + 3$$

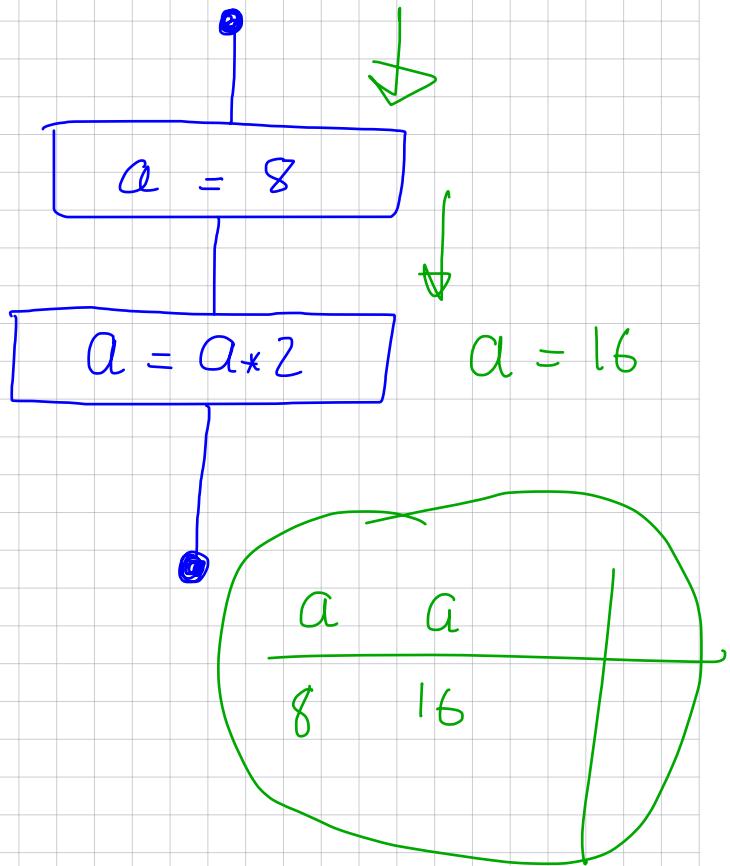
$$a = 5$$

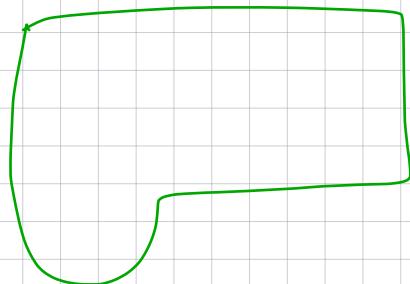
$$0 \ 1 \ 1 \ 2 \ 3 \ 5 \ 8$$

Diagrama de Flujo



Algoritmo



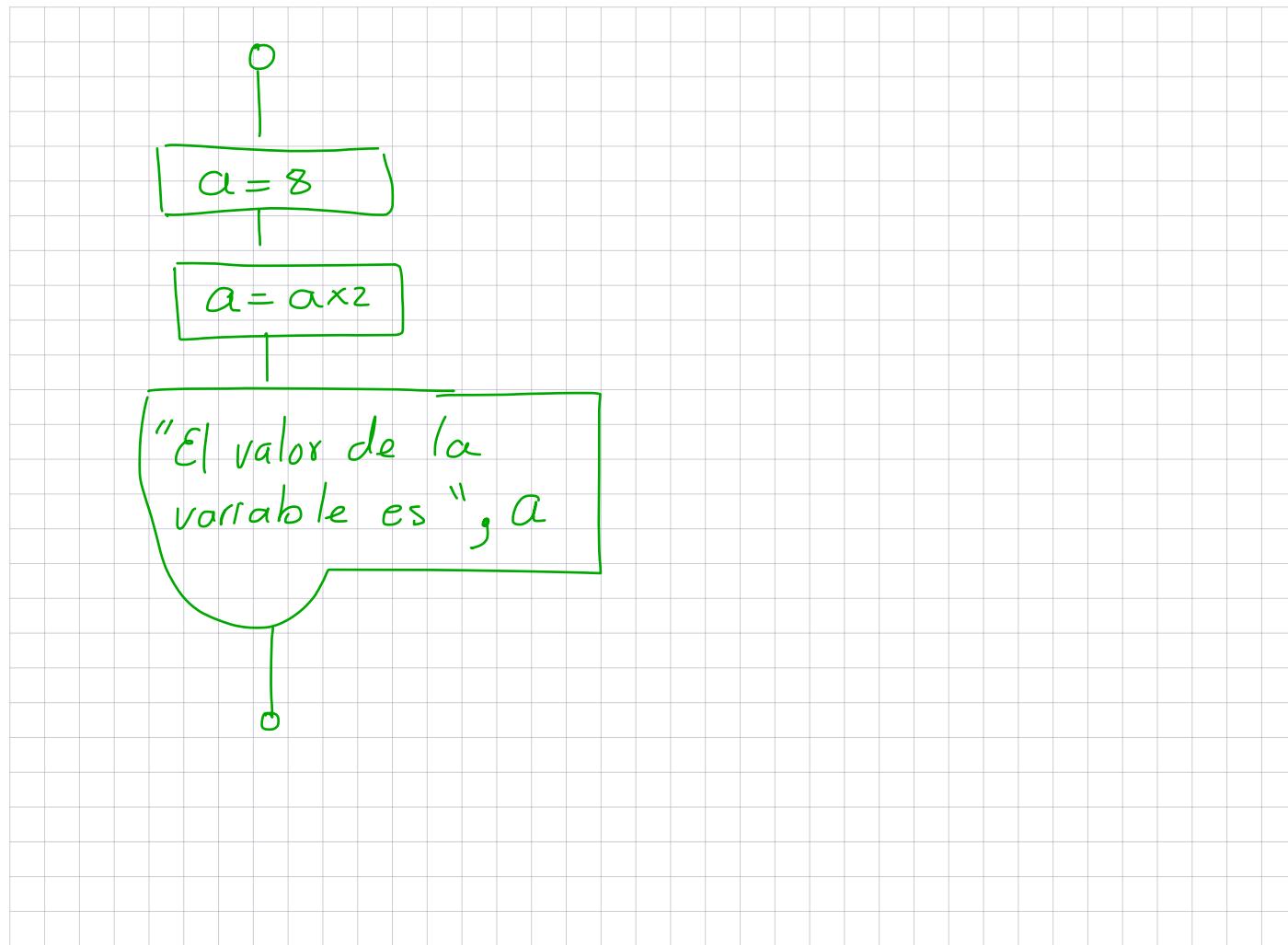


Imprimir

① los mensajes van <sup>s</sup>  
entre comillas " "   
, ,

② los separadores se  
encargan de concatenar  
tanto mensajes  
como variables  
+ ,

③ las variables van tal  
cual como se asignaron



Pedir el valor de una variable

edad

① Diseñe un algoritmo que halle el doble de un numero

$$\begin{array}{c} 4 \\ \times 2 \\ \hline 8 \end{array}$$

$$\begin{array}{c} 4 \\ \times 2 \\ \hline 8 \end{array}$$

$$f(x) = x \cdot 2$$

$$\rightarrow x = 4$$

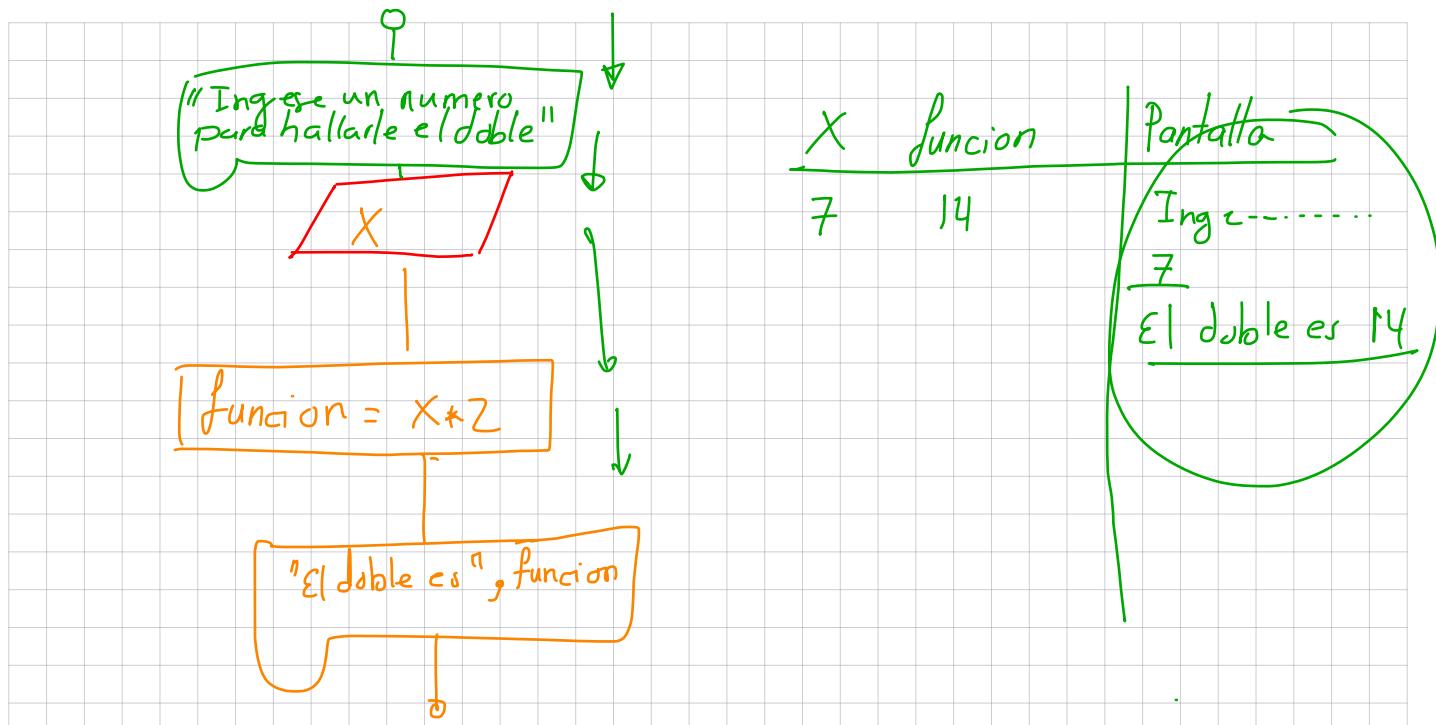
$$\rightarrow \text{funcion} = x \cdot 2$$

$$\begin{array}{c} 0 \\ | \\ X = 4 \end{array}$$

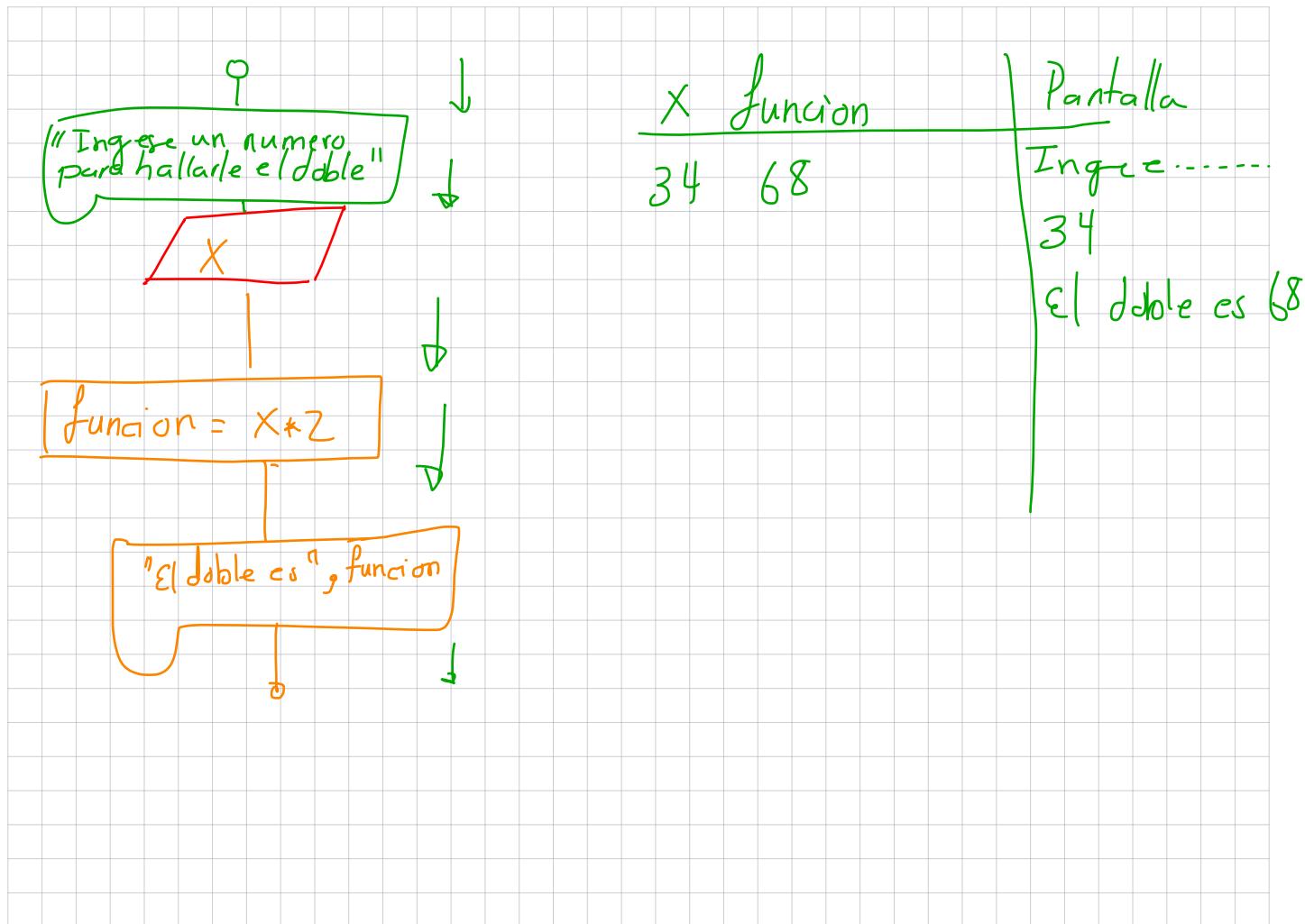
$$\boxed{\text{funcion} = x \cdot 2}$$

$$\boxed{\text{"El doble es", funcion}}$$

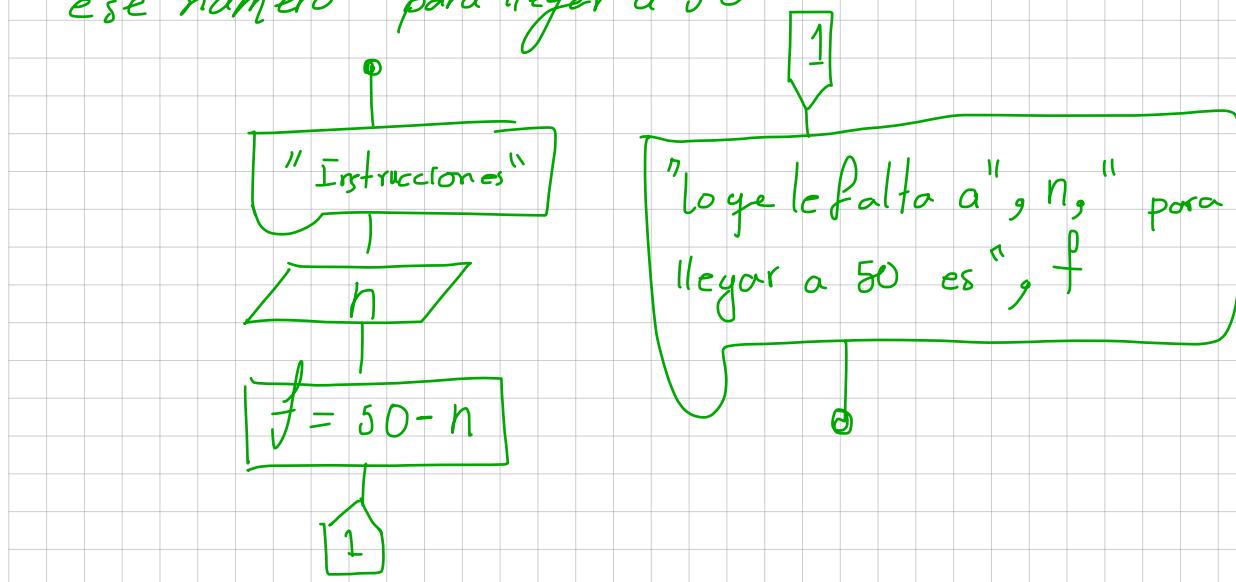
$$\boxed{> \text{El doble es } 8}$$



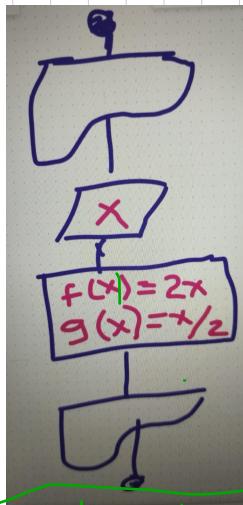
"El doble dev", X, "les", funktion



- \* Diseñe un algoritmo que me diga cuánto me falta para llegar a 50.
- \* Diseñe un algoritmo que dado un número ingresado por el usuario determine e imprima lo que hace falta a ese número para llegar a 50



\* Diseñe un algoritmo que dado un numero por el usuario muestre el doble del numero y la mitad del numero

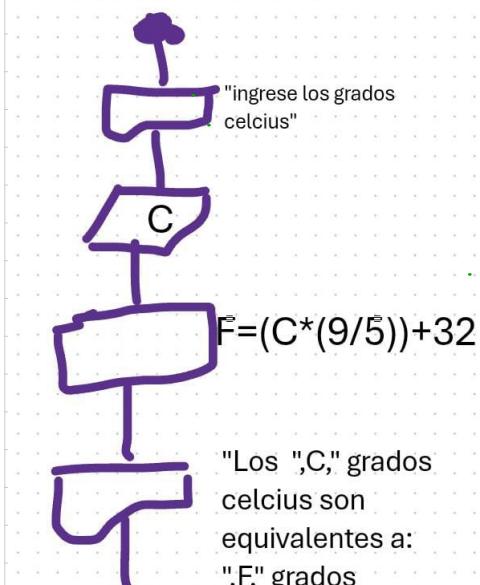


$$f(x) \Rightarrow f_x \Rightarrow \text{doble} = 2x$$

$$g(x) \Rightarrow g_x \Rightarrow \text{mitad} = x/2$$

"el doble del "g(x)" es "doble",  
" y la mitad seria "mitad"."

- Diseñar una calculadora que dado los grados celcius por el usuario, calcule su equivalente en grados Fahrenheit



Temperatura

0 = 32

Grado Celsius Grado Fahrenheit

Fórmula:  $(0^{\circ}\text{C} \times 9/5) + 32 = 32^{\circ}\text{F}$

Más información Comentarios

grados Celcius

grados - celcius

Camelcase

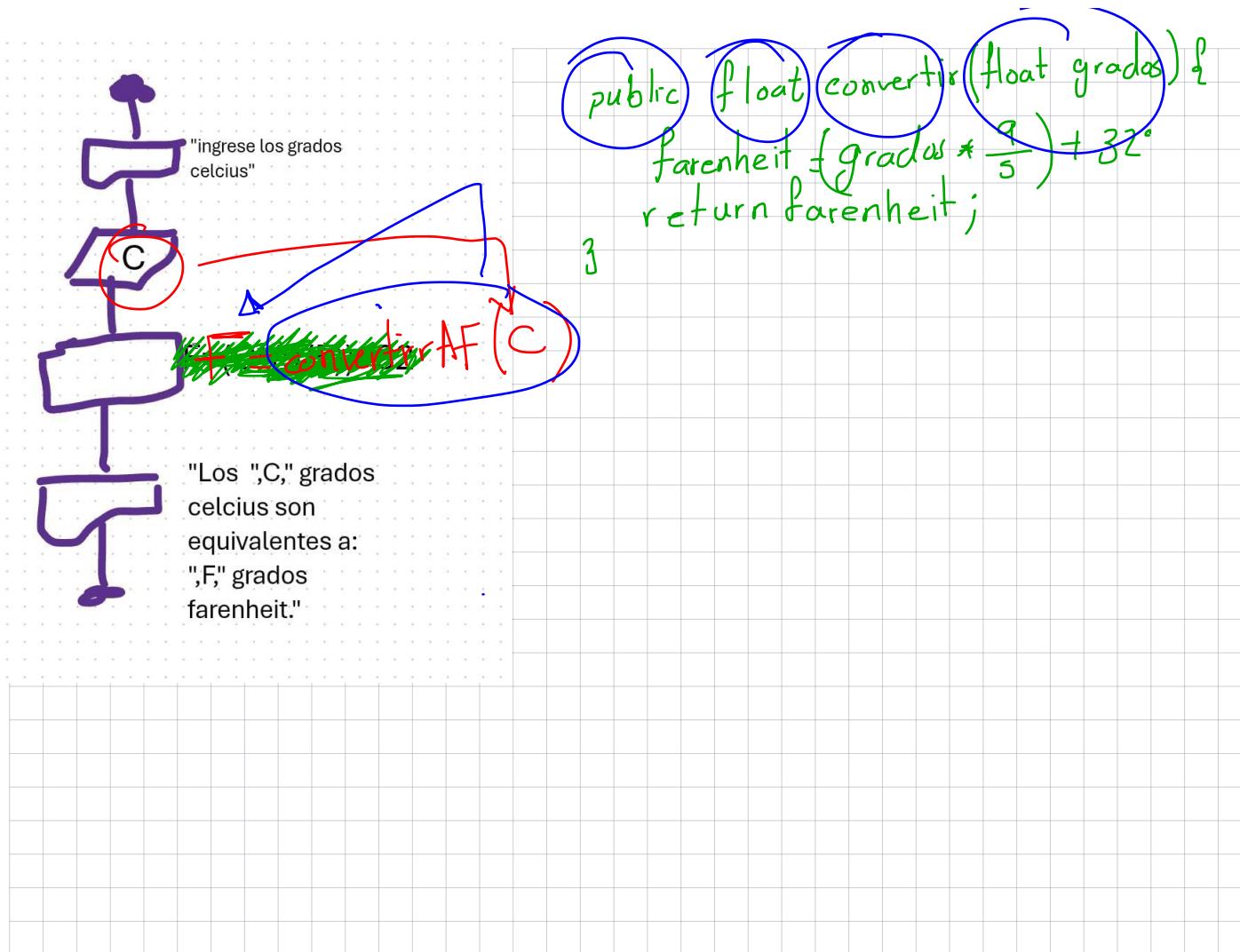
Grados Celcius

class

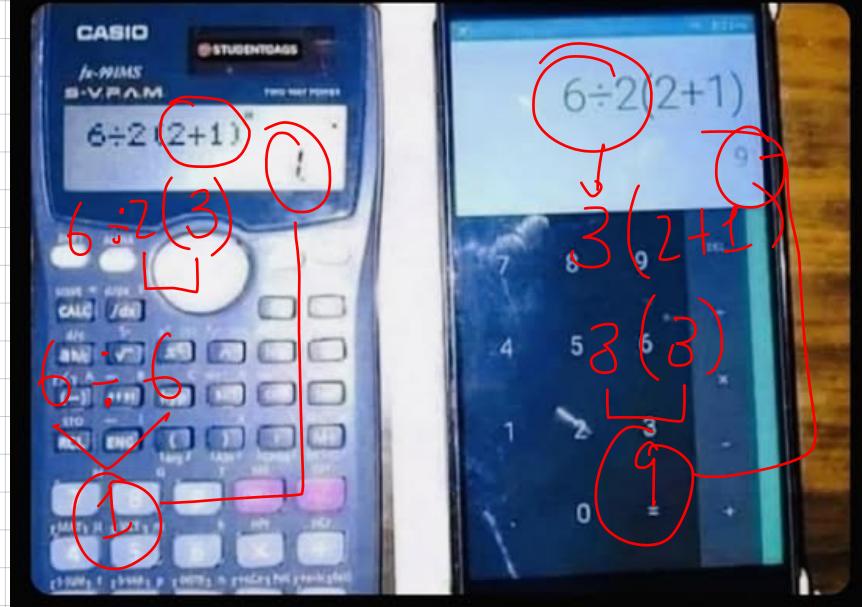
## Properties

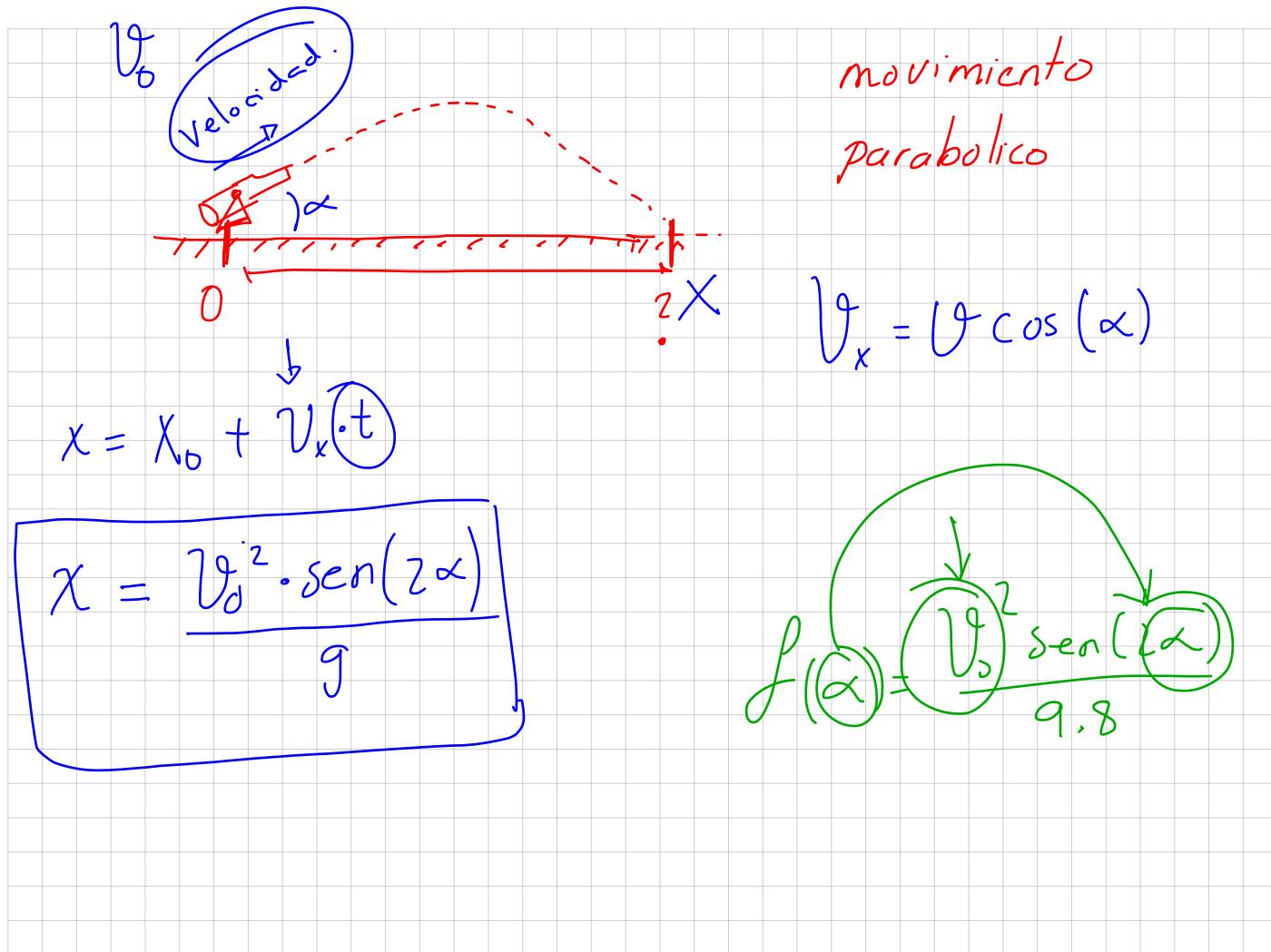
# functions

## Methods

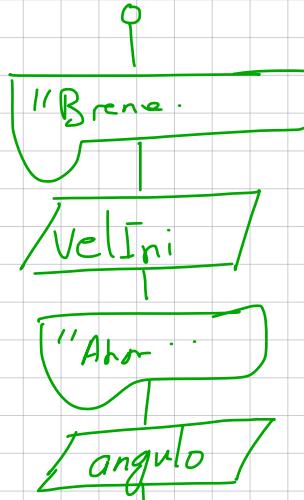


Mis problemas de confianza  
empezaron desde aquí.





$$x = \frac{v_0^2 \cdot \sin(2\alpha)}{g}$$



$$\text{distancia} = \frac{v_0^2 \cdot \sin(2\alpha)}{9.8}$$

"la distancia a la cual queda el proyectil es"  $\Rightarrow$  distancia

- Diseñar un algoritmo que dado un valor por el usuario en "pies" nos diga la equivalencia en kilómetros.

$$1 \text{ pie} = 30.48 \text{ cm}$$

$$\frac{1 \text{ pie}}{1 \text{ pie}} \cdot \frac{30.48 \text{ cm}}{1 \text{ pie}} \cdot \frac{1 \text{ m}}{100 \text{ cm}} \cdot \frac{1 \text{ km}}{1000 \text{ m}} = 1 \text{ km}$$

$$\frac{30,48}{100000}$$

$$2. \frac{30,48}{100000}$$

1"Brene..."  
↓  
pies

$$Km = \text{pies} \cdot \frac{30,48}{100000}$$

"La equivalencia en  
Kilometros es " km

$$\frac{\text{pies}}{1500} \quad \frac{Km}{0,4572}$$

Pies	Km	Pantalla
1500	0,4572	Bren - - - -
.		> 1500
.		La equivalencia en Kmts es 0,4572

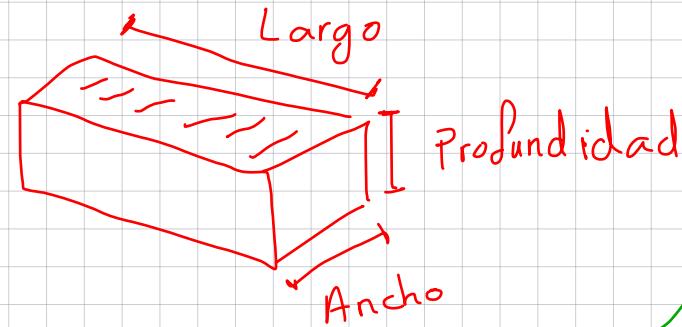
$$Km = 1500 \cdot \frac{30,48}{100000}$$

git

github

o  
f

Calcular la cantidad Litros



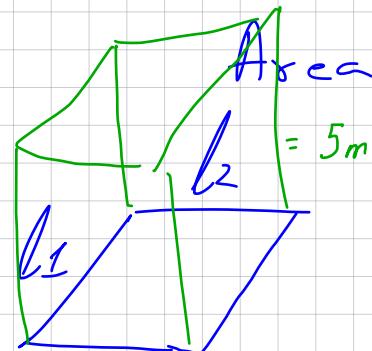
¿Como?

¿medidas  $\rightarrow$  Litros?

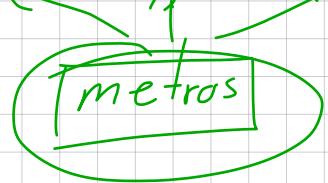
$$X \cdot X = X^2$$

$$5m \cdot 5m = 25m^2 \times 5m = 125m^3$$

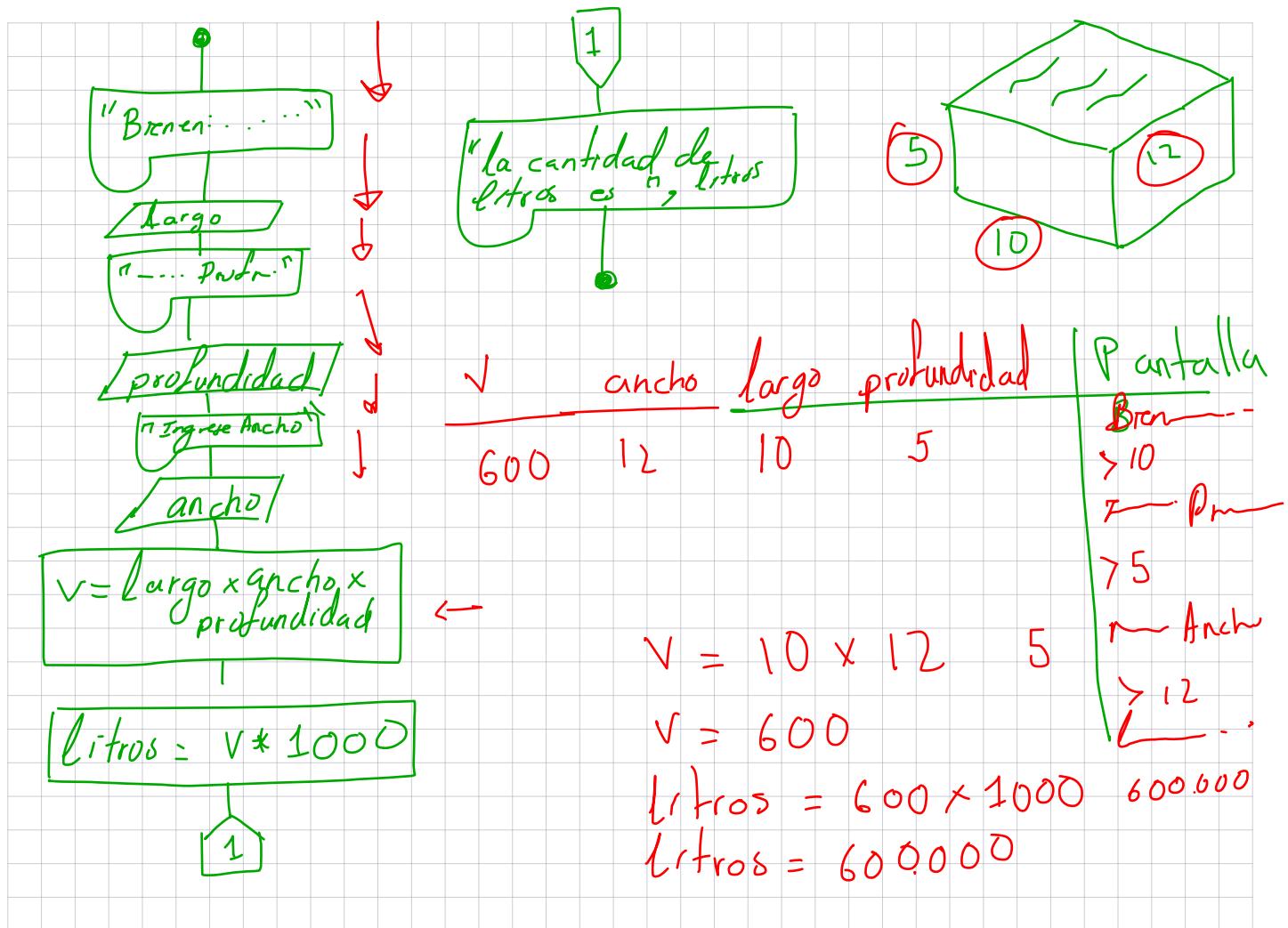
$$l_1 \times l_2 = 5 \times 5 = 25$$

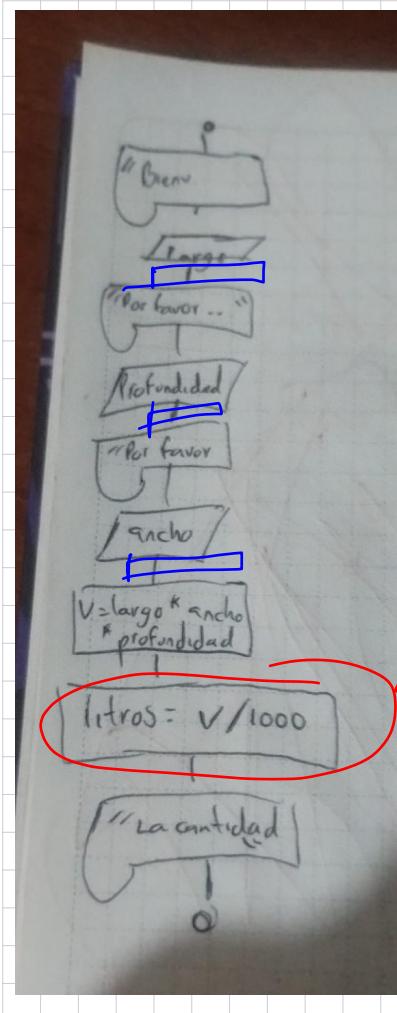


$$V = \text{largo} \times \text{ancho} \times \text{profundidad}$$



$$\text{litros} = \frac{V \times 1000}{-} \Rightarrow \text{litros}$$





V	<u>Largo</u>	<u>Profundidad</u>	Ancho	Pantalla
600 <sup>11</sup>	1000	500	1200	$B_r$ $> 1000$ $A_r$ - $> 500$ $T$ - Ancho $> 1200$ $L$ - - - $600.000$

$$V = 1000 \times 500 \times 1200$$

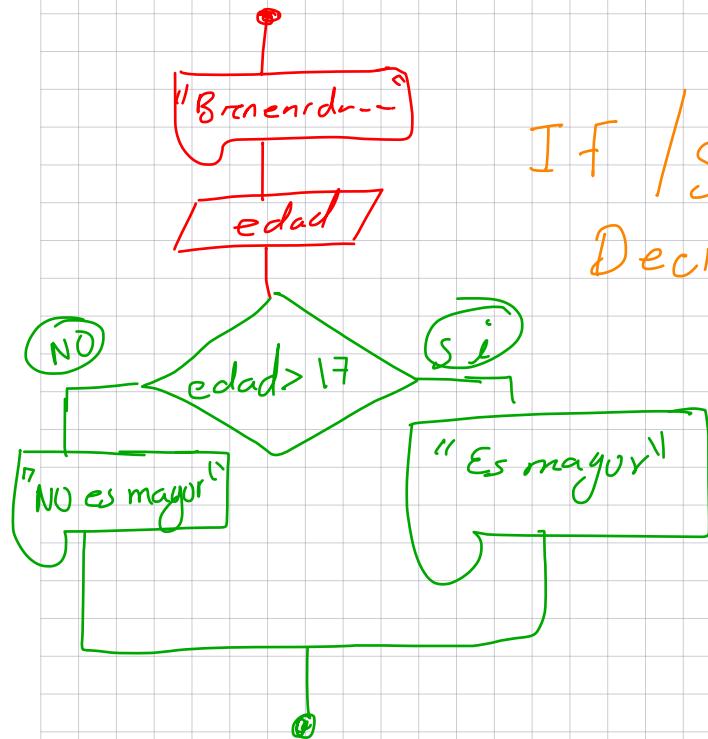
$$V = 600.000.000$$

$$\text{litros} = \frac{600.000.000}{1000}$$

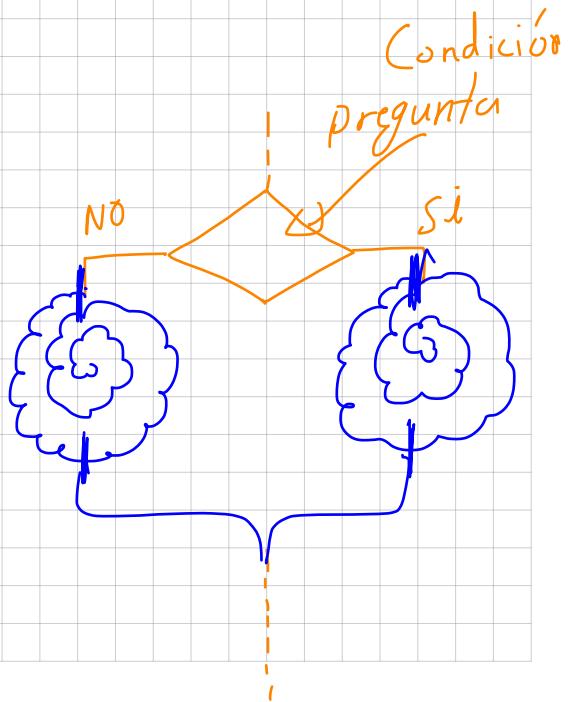
$$\text{litros} = 600.000$$



- Determinar si alguien es mayor de edad



IF / Sí / no  
Decisión



$a < b$

$a > b$

$a \leq b$

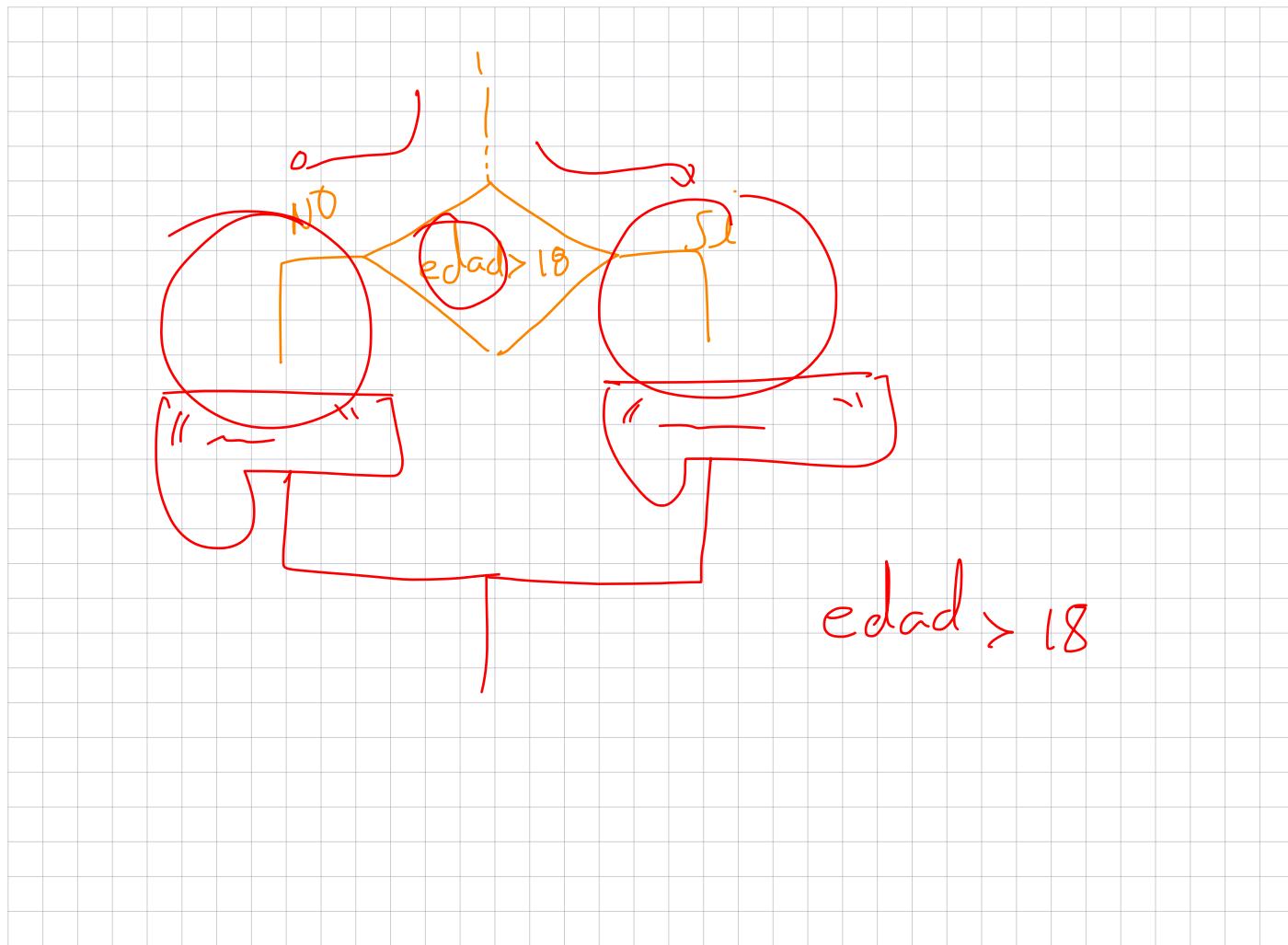
$a \geq b$

$a \neq b$   $a < > b$

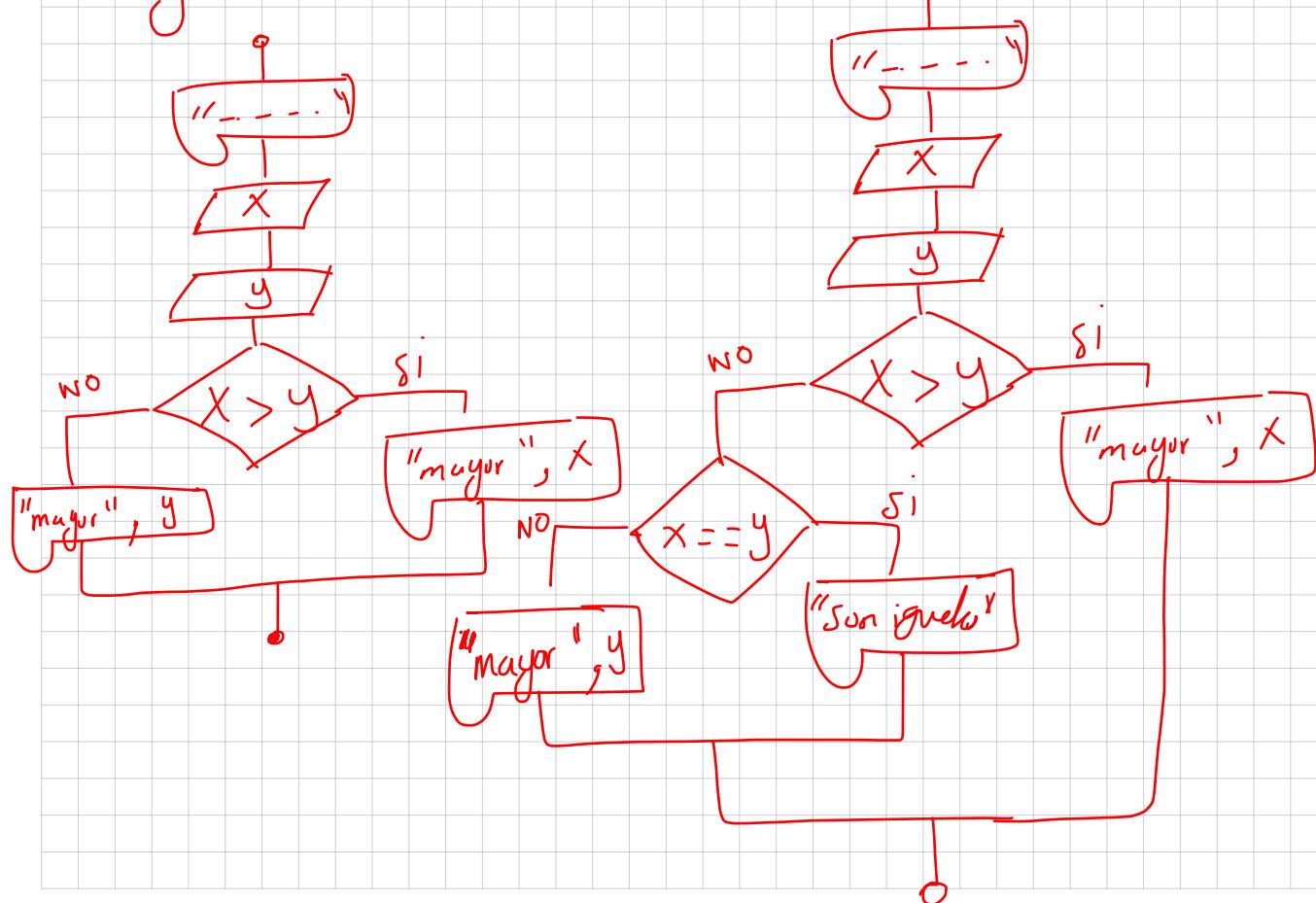
$a = b$

si

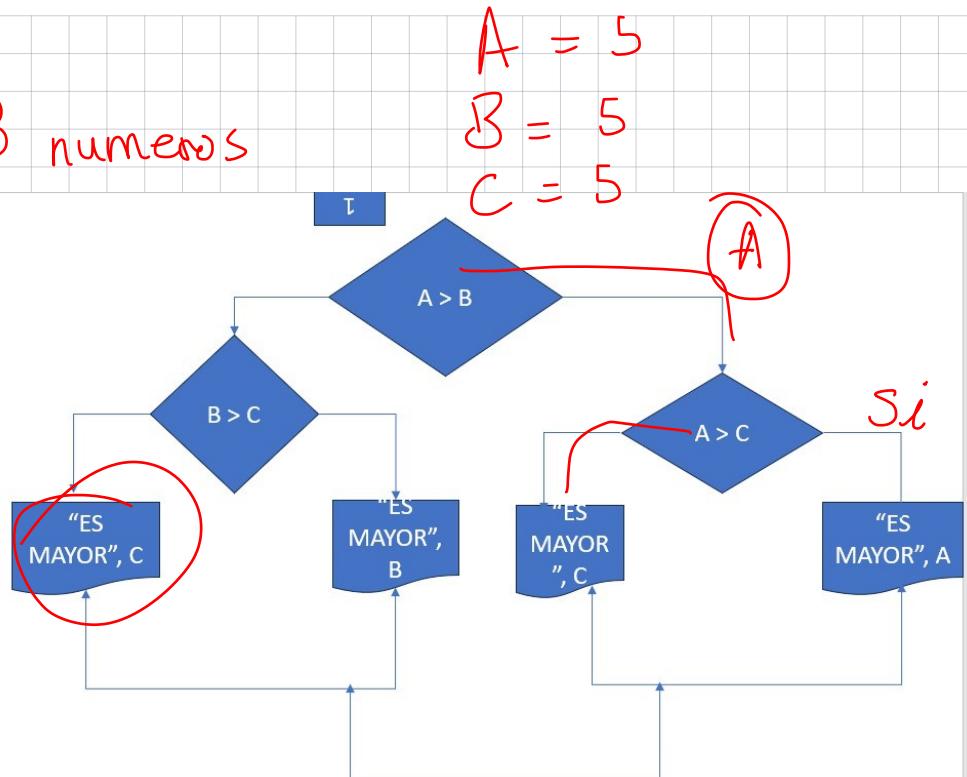
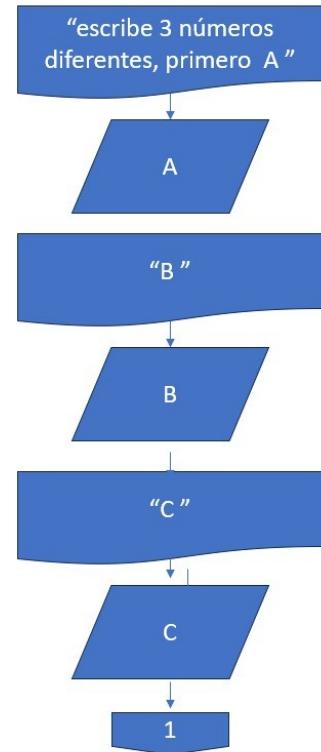
no



• mayor de 2 numeros

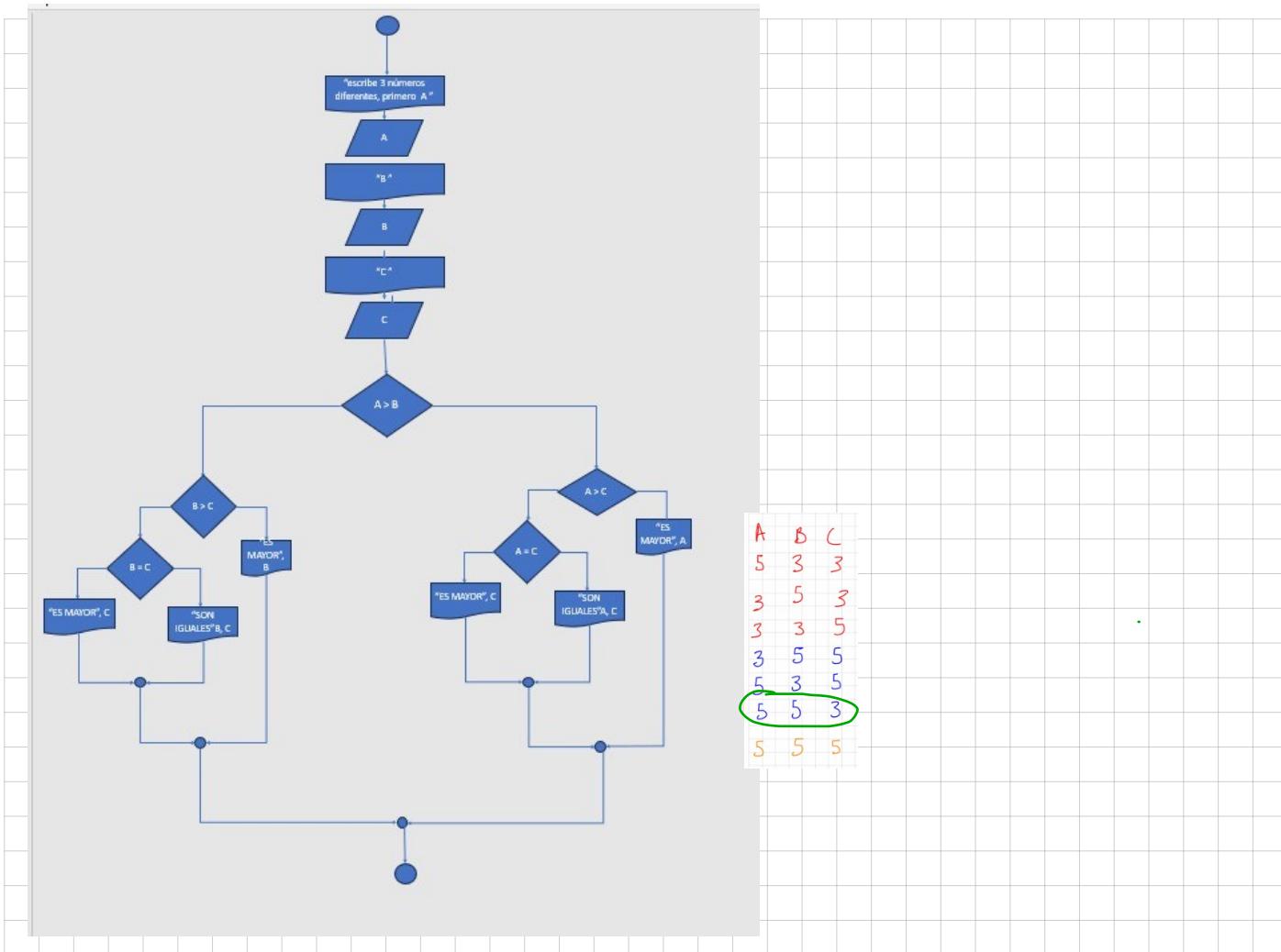


Mayor de 3 numeros

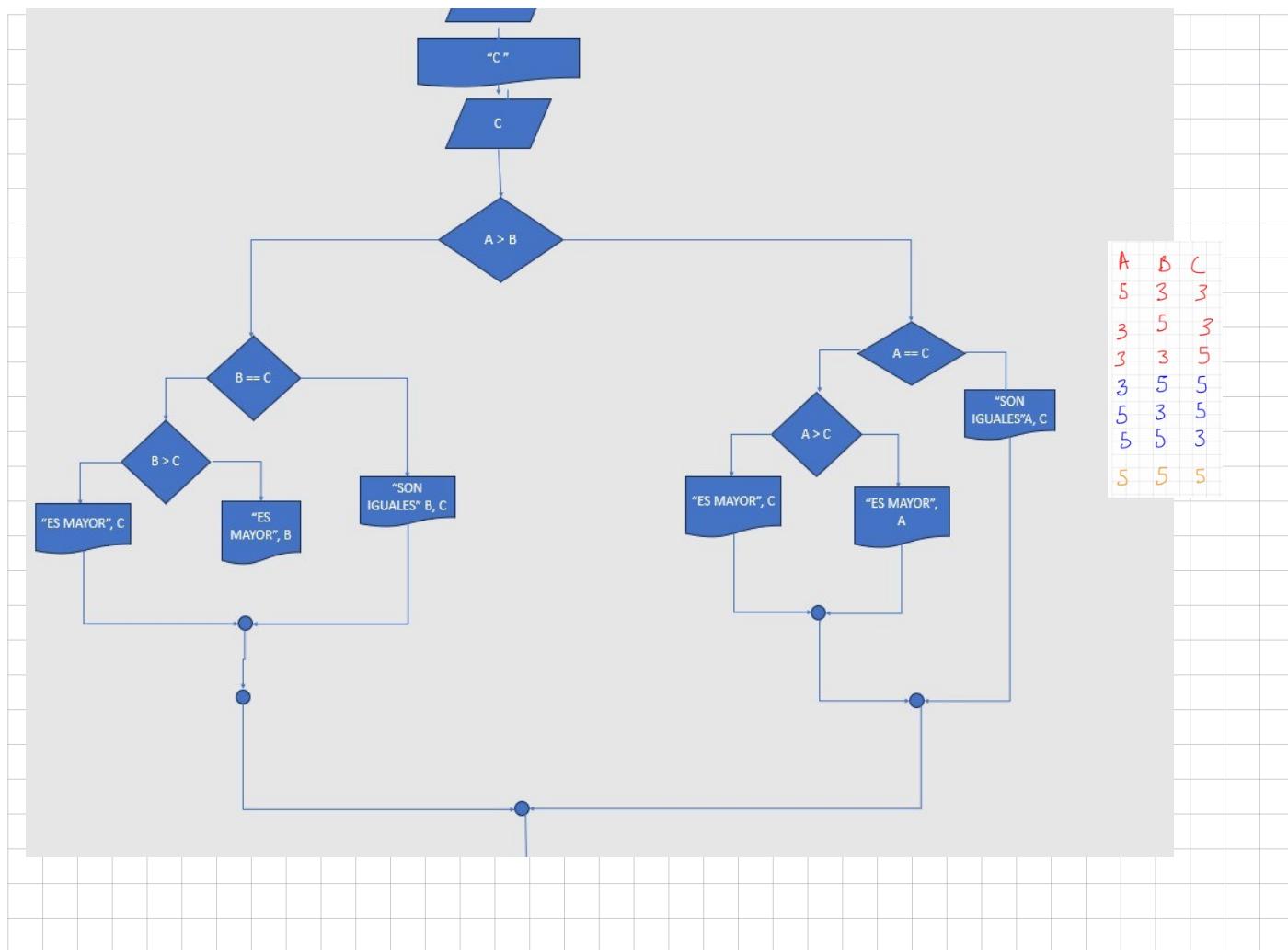


Es mayor 5

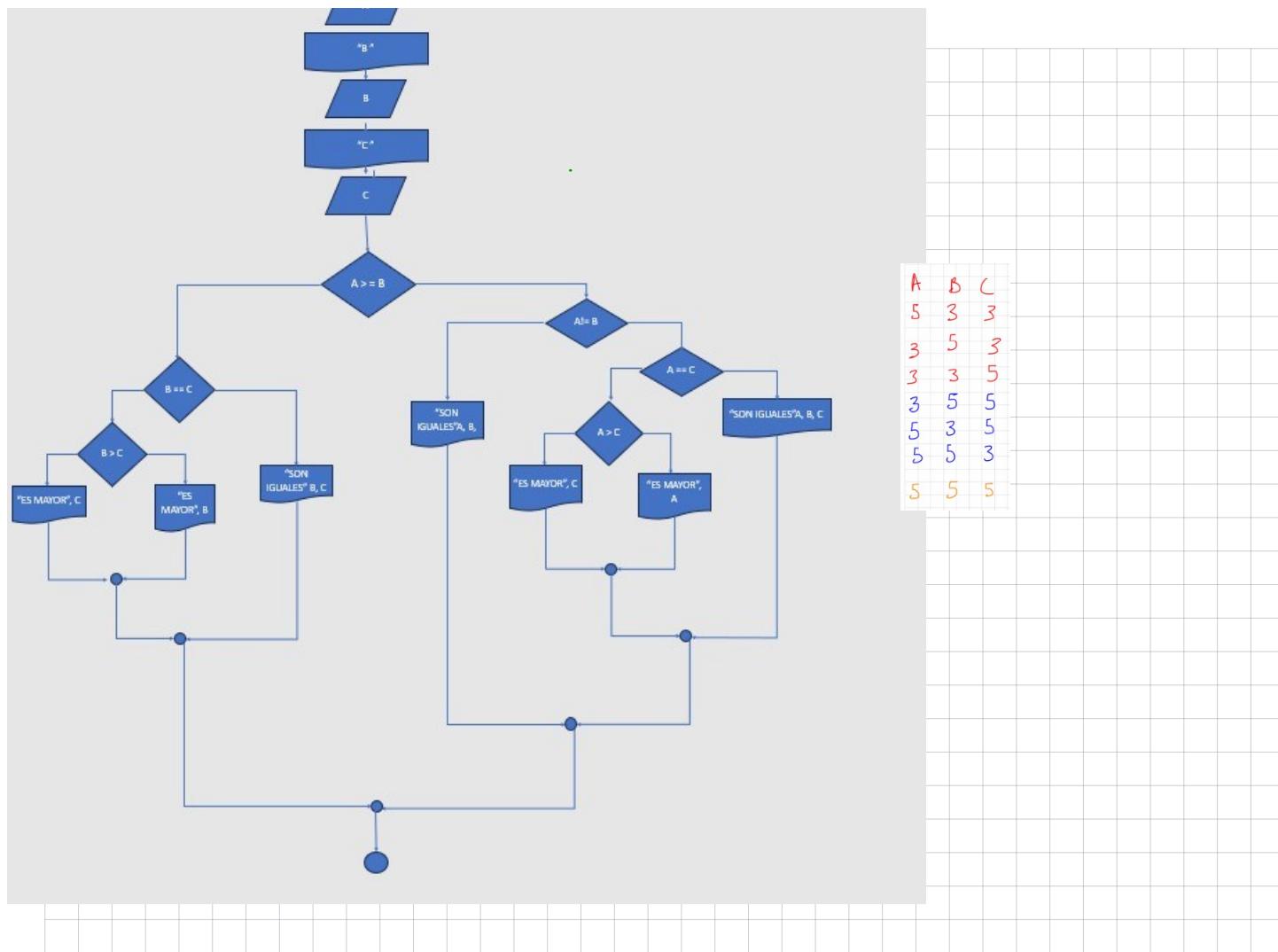
A	B	C	
5	3	3	
3	5	3	
3	3	5	
3	5	5	?
5	3	5	
5	5	3	
5	5	5	→ todos iguales

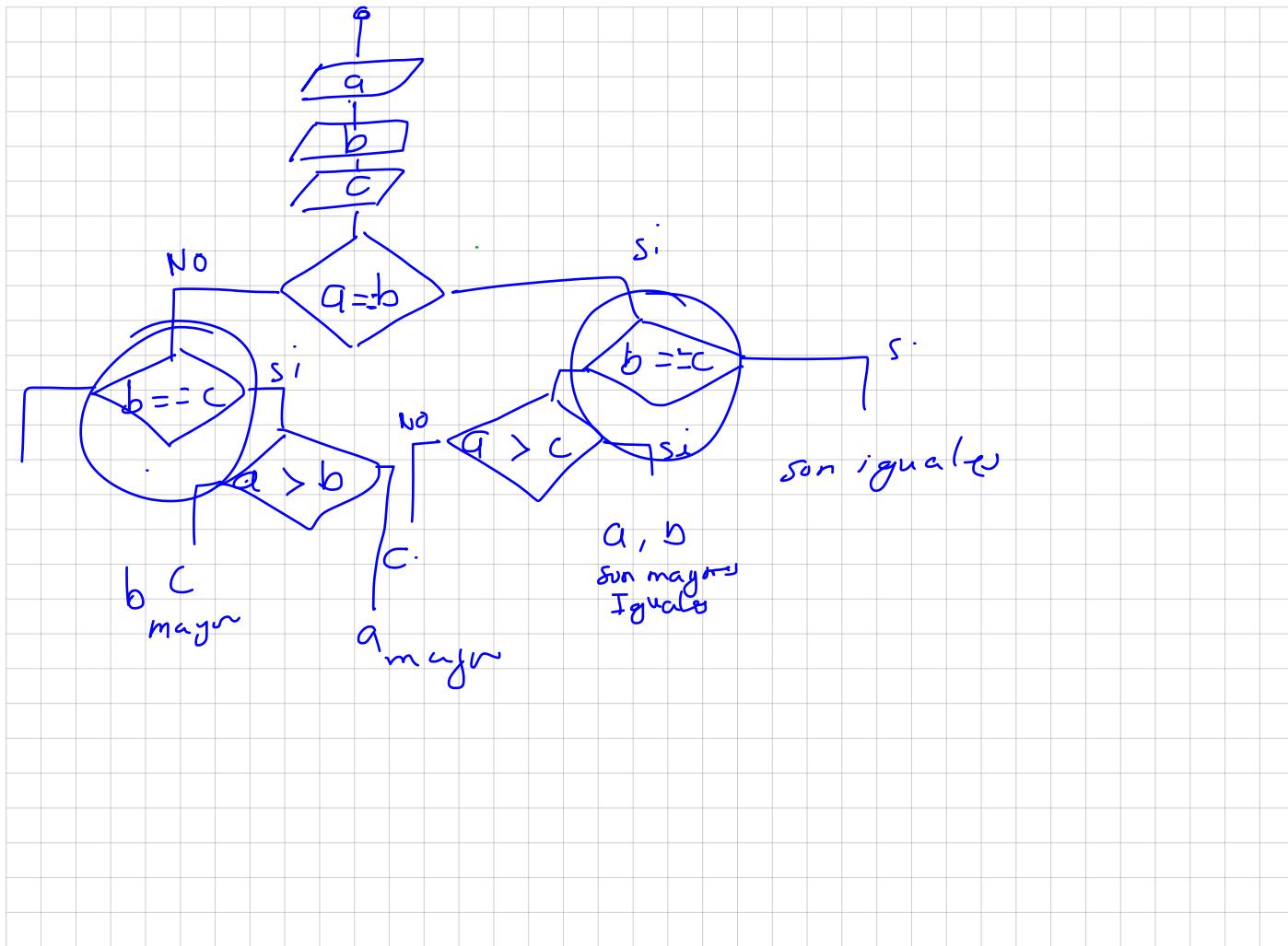


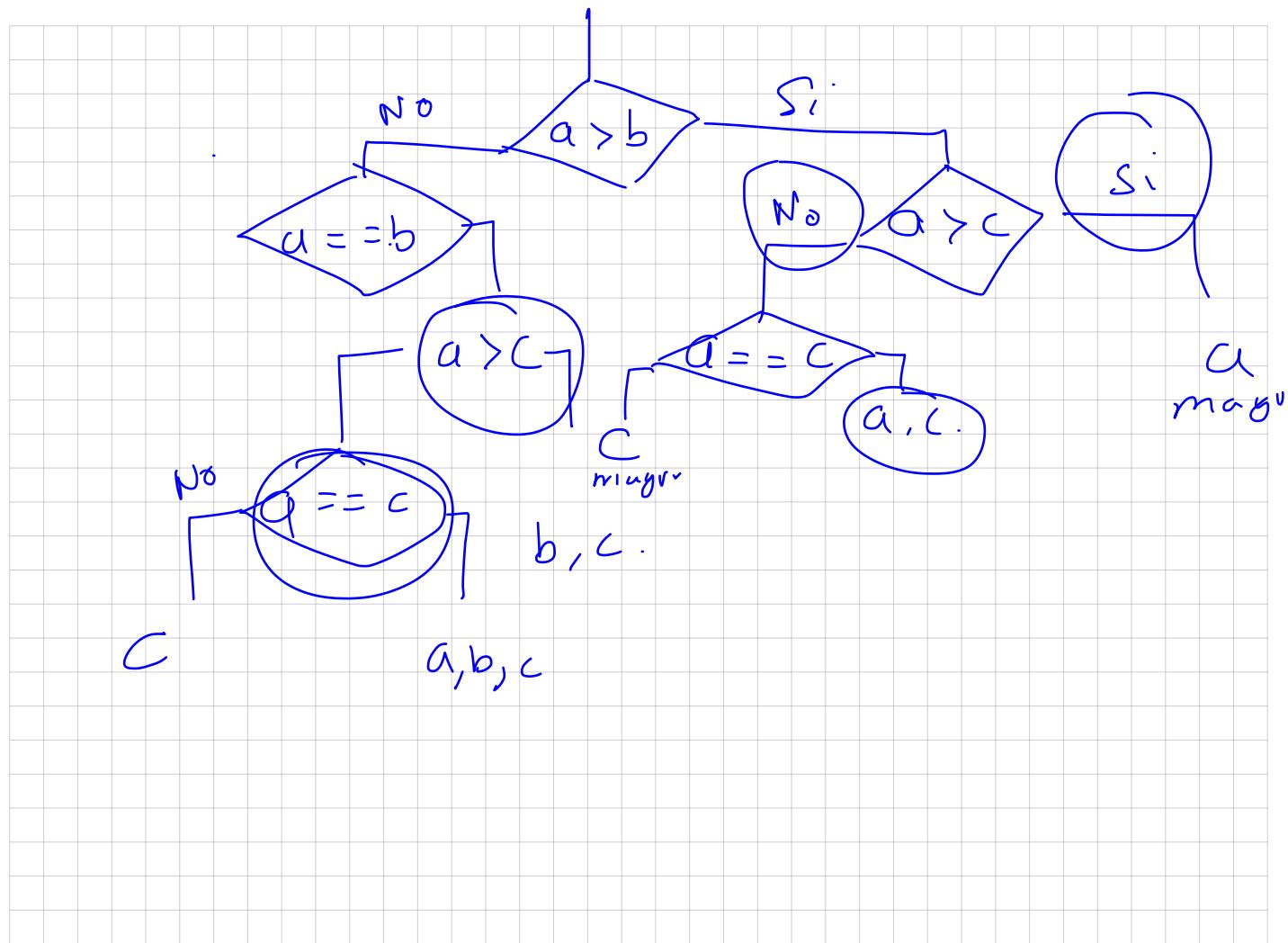
A	B	C
5	3	3
3	5	3
3	3	5
3	5	5
5	3	5
5	5	3
5	5	5



A	B	C
5	3	3
3	5	3
3	3	5
3	5	5
5	3	5
5	5	3
5	5	5







A	B	C
5	3	3
3	5	3
3	3	5
3	5	5
5	3	5
5	5	3
5	5	5

$a >= b$

$a = b$

$a = c$

Son iguales

A . B . C  
O O O

A      B  
x      y

A B C

$x$   $y$   $z$

1 < 2

X Y Z

✓

↑ ↘ ↗

*x* *y*

\_\_\_\_\_

A B

✓ ✓

12 9

$m = A$

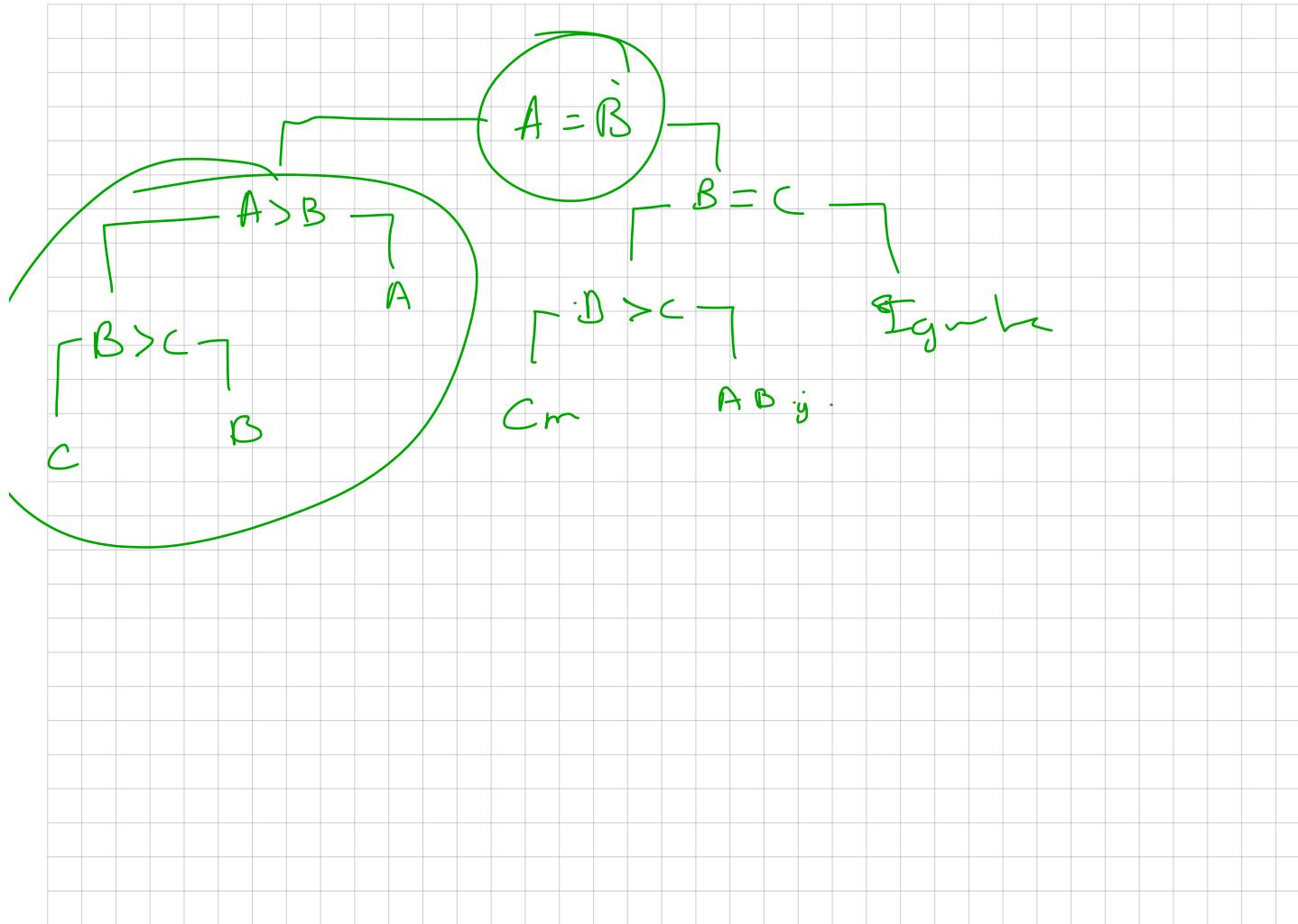
$$m = 9$$

$$a = 12$$

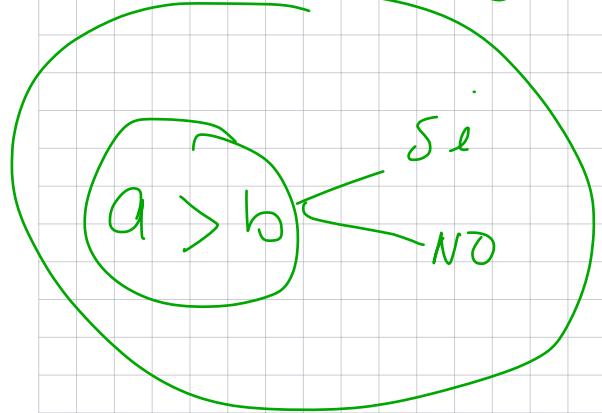
$$B = m$$

$$B = 9$$

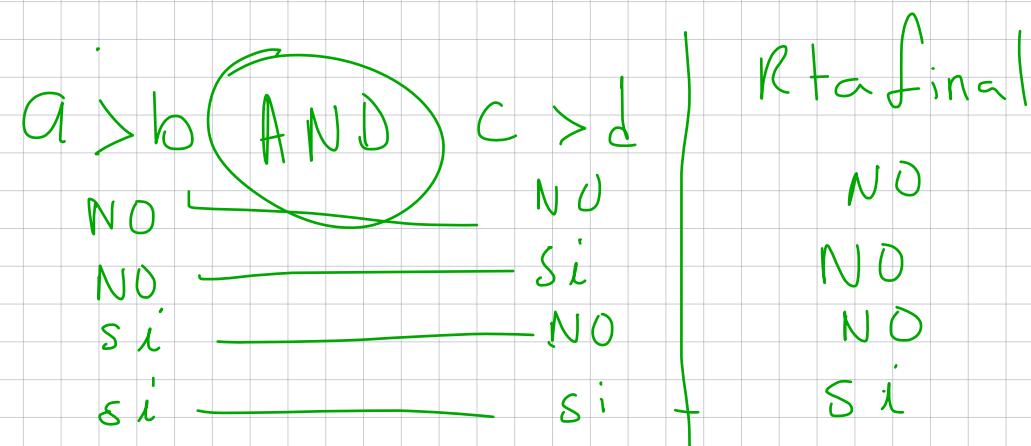
$$B = 9$$



Varias condiciones



| AND      &&  
OR      ||



$a > b$   $\text{O} h$   $c > d$  | R final

NO

NO

NO

Si

NO

Si

NO

Si

Si

Si

Si

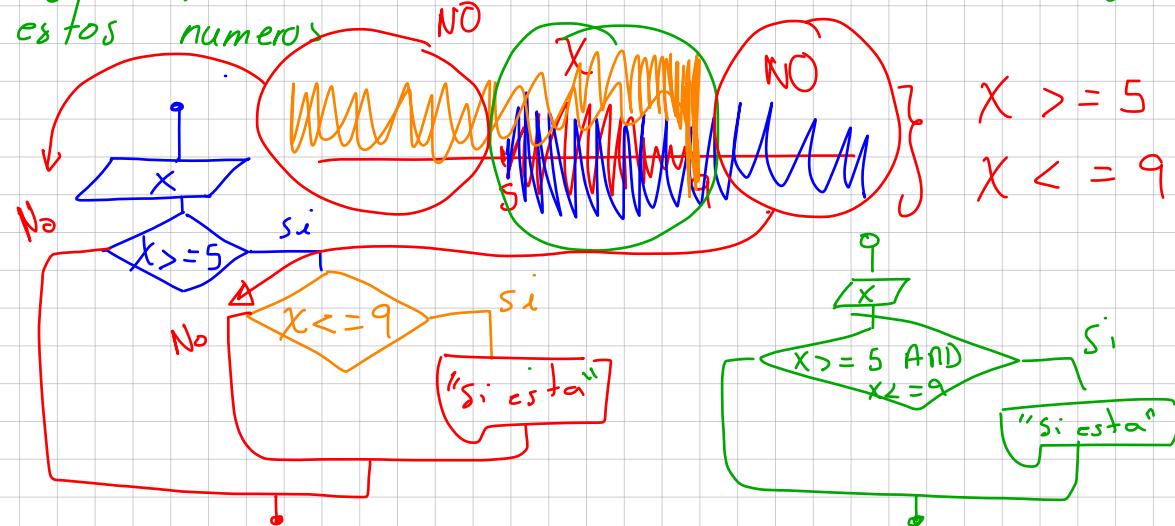
Si

$(a > 0 \text{ AND } b > 0) \text{ AND } (a > b \text{ OR } c > d)$

Logica Booleana

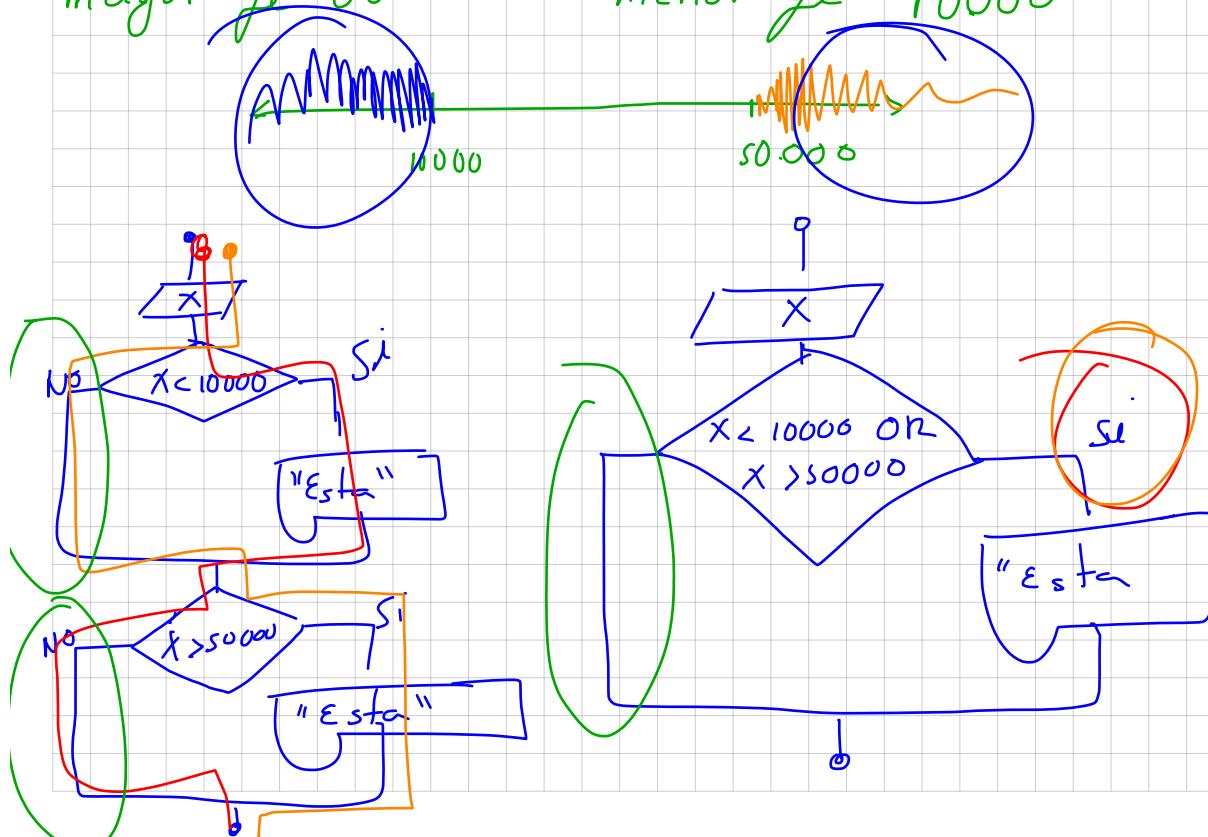
AND Y &

Diseñar un algoritmo que diga si un numero  
ingresado por el usuario esta entre 5 y 9; incluyendo  
estos numeros



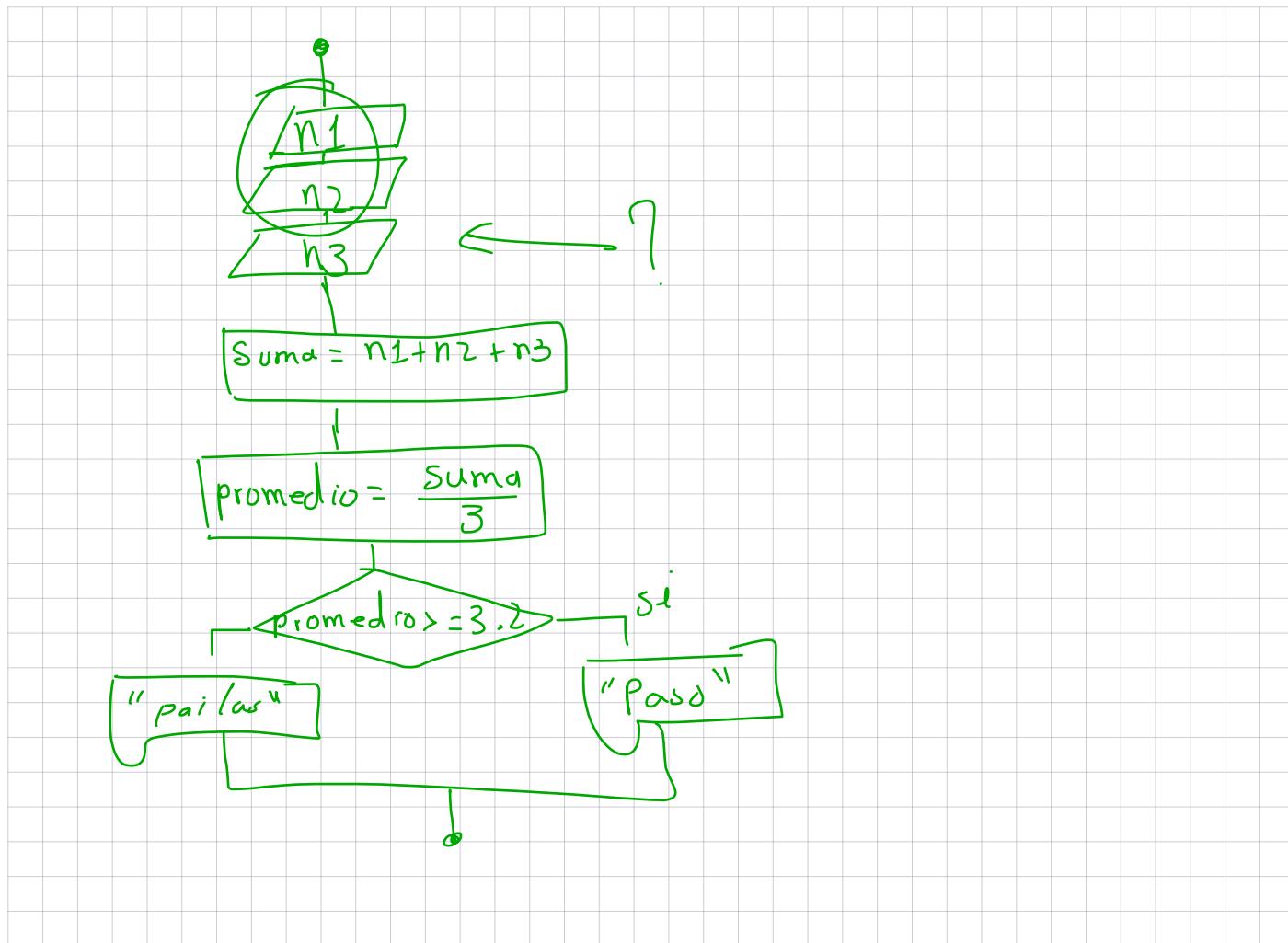
OR O 1 |

Diseñar un algoritmo que diga si un numero es  
mayor que 50.000 o menor que 10000



- Diseñar un algoritmo que basado en 3 notas ingresadas por el usuario, calcule su promedio y si este es mayor o igual a 3.7 imprima un mensaje que diga que el estudiante paso la materia de lo contrario imprimir un mensaje que diga que no paso

$$\frac{\sum_{x=1}^{x=n} x_n}{n} = \frac{n_1 + n_2 + n_3}{3} = \text{Promedio}$$



Continuando con el anterior si ya tenemos las 2 primeras notas; ge algoritmo me diga cuanto necesito para pasar. Teniendo en cuenta ge la nota para

pasar es

$$\text{promedio} = \frac{3,2}{n_1 + n_2 + n_3}$$

$$3,2 = \frac{n_1 + n_2 + x}{3}$$

$$(3,2 \times 3) - n_1 - n_2 = x$$

$$x = (3,2 \times 3) - n_1 - n_2$$

$$X = (3.2 \cdot 3) - n_1 - n_2$$

X	$n_1$	$n_2$
4.1	3.5	2.0

$$X = (3,2 \cdot 3) - 3,5 - 2,0$$

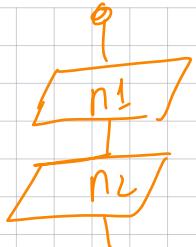
$$X = (4,1)$$

5,0

$$\text{promedio} = \frac{3,5 + 2,0 + 4,1}{3} \Rightarrow 3,2$$

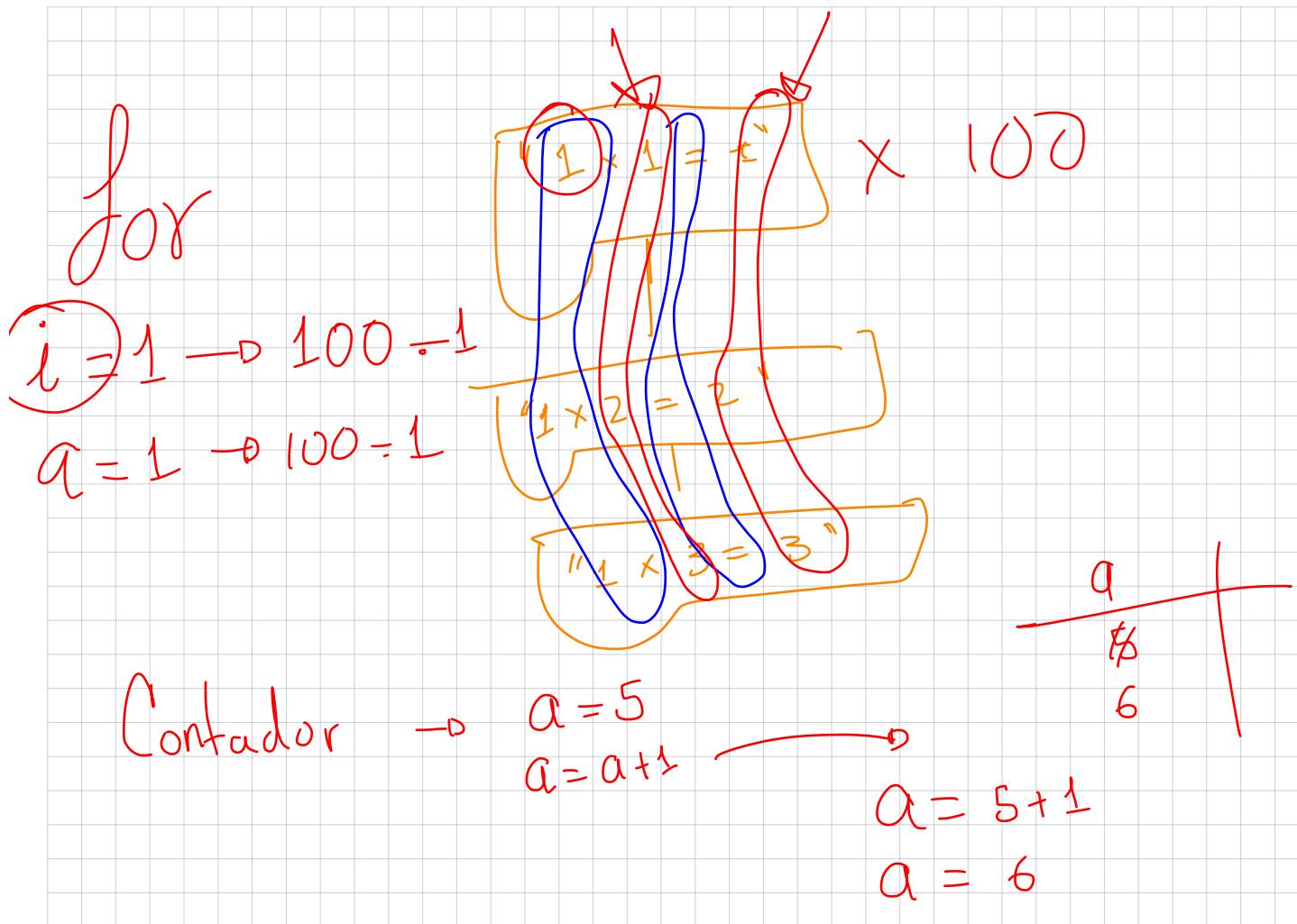
Para pasar necesitas sacar 4,1 ó mas nota

ticnes que sacar una nota mayor ó igual 4,1



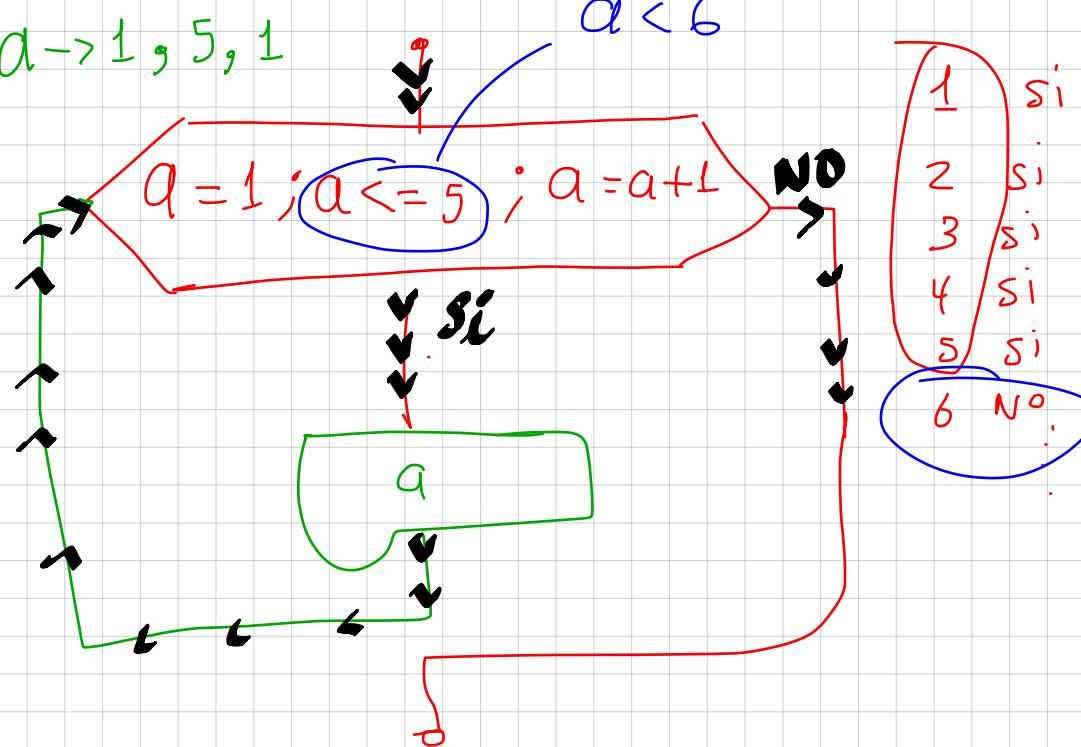
$$\text{pasar} = (3, 2 \cdot 3) - n1 - n2$$

"para pasar debes  
sacar una nota  
mayor o igual a", pasar



1 - 10 vueltas

$a \rightarrow 1, 5, 1$



# Tabla del 5 hasta la multiplicación por 10

$$5 \times 1 = 5$$

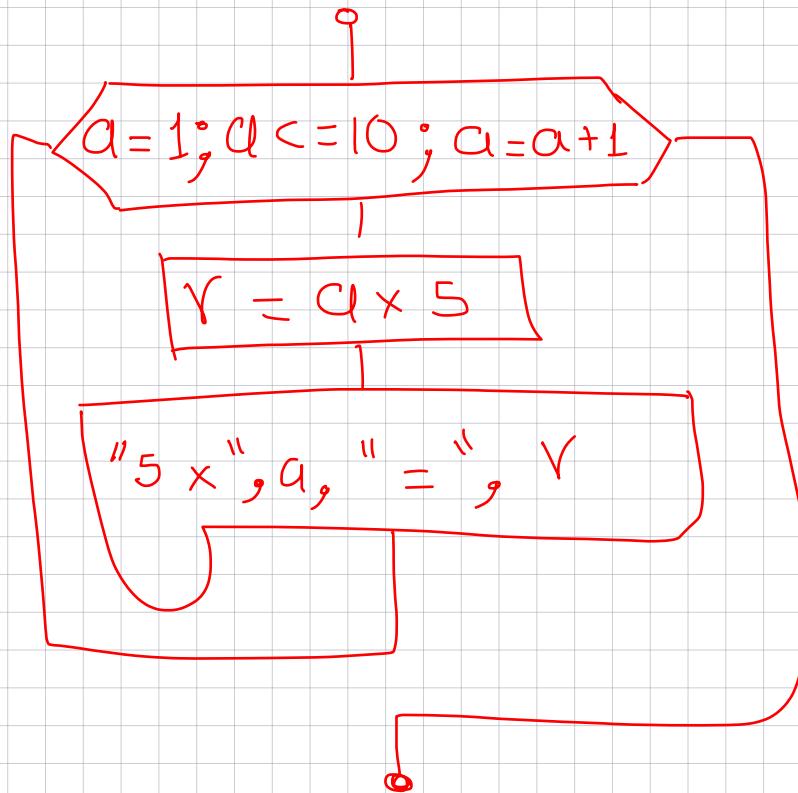
$$5 \times 2 = 10$$

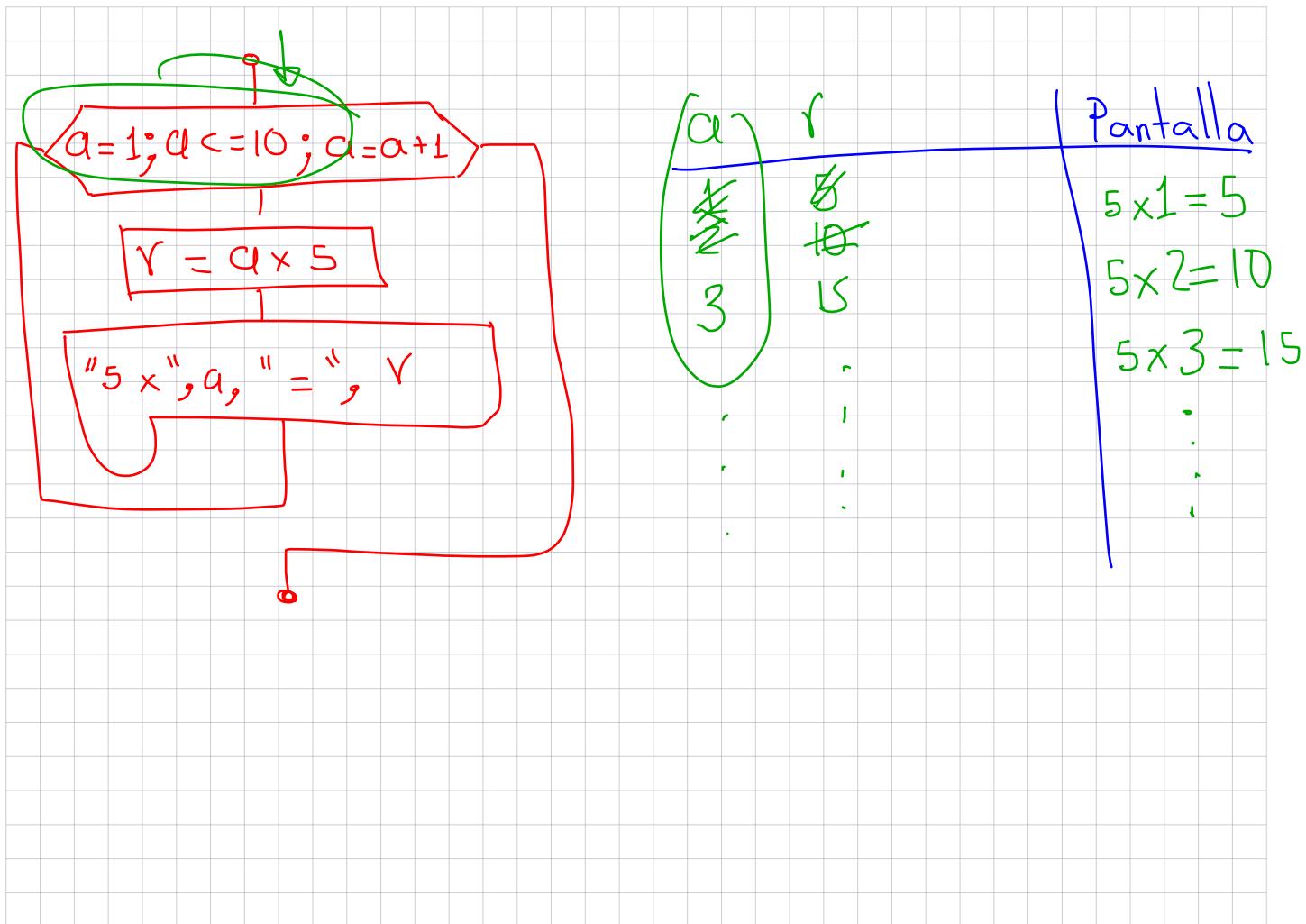
$$5 \times 3 = 15$$

:

:

$$5 \times 10 = 50$$

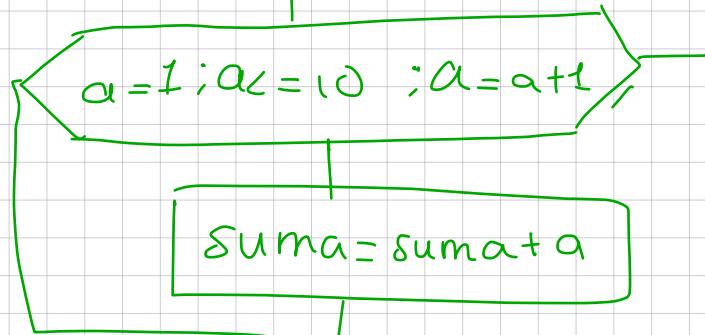




→ Diseñar un algoritmo que sume los primeros  
100 números

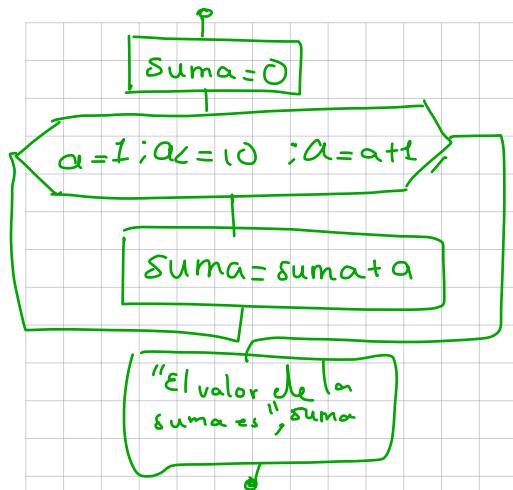
$$\begin{array}{cccccccccc} & & & & & & & & & \\ \text{+} & \text{+} & \text{+} & \text{-} & \text{-} & \text{-} & \text{-} & \text{-} & \text{-} & \text{=} \\ \hline a = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 \end{array}$$

$$\boxed{\text{Suma} = 0}$$



$\boxed{\text{Suma} = \text{sum} + a}$

"El valor de la  
suma es", sum



Suma	a	Pantalla
0	1	
1	2	
3	3	
6	4	
10	5	
15	6	
21	7	
28	8	
36	9	
45	10	
55	11	El valor de la suma es 55

$$\text{suma} = 45 + 10$$

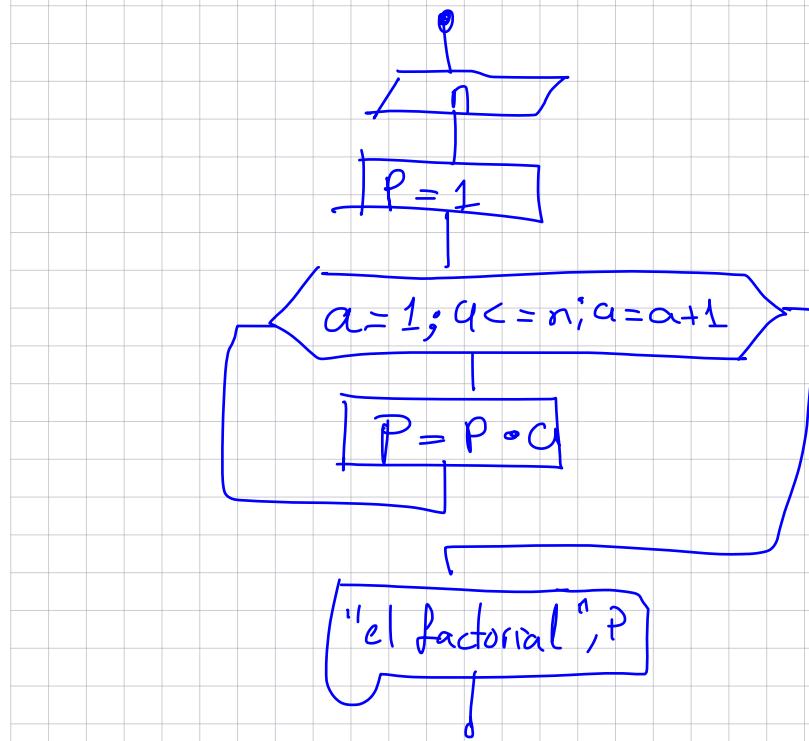
$$\text{suma} = 55$$

$$8 + 2 + 1 = 11$$


$$1+2+3+4+5+6+7+\dots+100$$

Diagram illustrating a stack-based algorithm for calculating the sum of the first  $n$  natural numbers. The stack frame contains the expression  $10 * (10+1) / 2$ . A brace on the right indicates the stack grows downwards. Below the stack, a note says "La suma es", followed by an arrow pointing to the stack frame.

\* Algoritmo que multiplique los . primeros n numeros naturales, empezando con el numero 1



factorial.

Handwritten notes on a grid background:

- Top left (orange box):
  - $11 \times 2$
  - $22 \times 3$
  - $66 \times 4$
  - $264 \times 5$
  - $1320 \div 2$
  - $660 \div 3$
  - $220 \div 4$
  - $55 \div 5$
  - $11$
- Top right (orange text):
 

divide y  
vencerás
- Bottom left (green oval):
 

$\langle a = 5; a >= 2; a = a - 1 \rangle$
- Bottom right (green text):
 

$11 \times 5$   
 $55 \times 4$   
:  
2  
5  
4  
3  
2

Modulo

par/2 = exacta

$$\begin{array}{r} 1012 \\ \times 105 \\ \hline 0 \end{array}$$

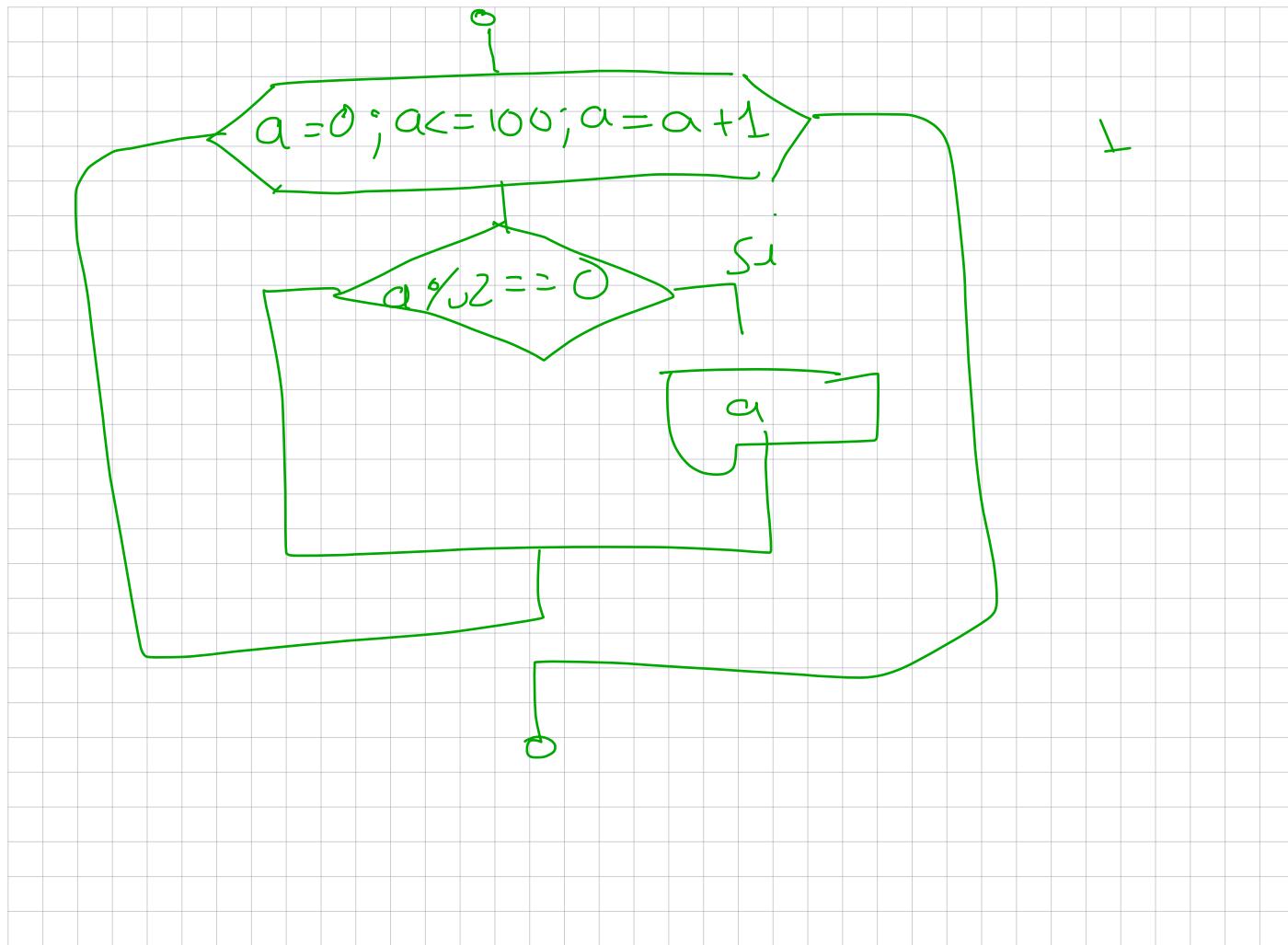
Residuo

$$a \% 2 = 0$$

$$\begin{array}{r} 912 \\ \times 84 \\ \hline 14 \end{array}$$

$$90 \times 10 \% 2$$

$$\begin{array}{r} y = 9 \% 2 \\ \downarrow \\ 1 \end{array}$$



0 1 2 3 4 5 6 7 8 9 10 ←

6 4

$10^4 \ 10^3 \ 10^2 \ 10^1 \ 10^0$

6 4

10 ←

6 4

$8^4 \ 8^3 \ 8^2 \ 8^1 \ 8^0$

6 4

8 ←

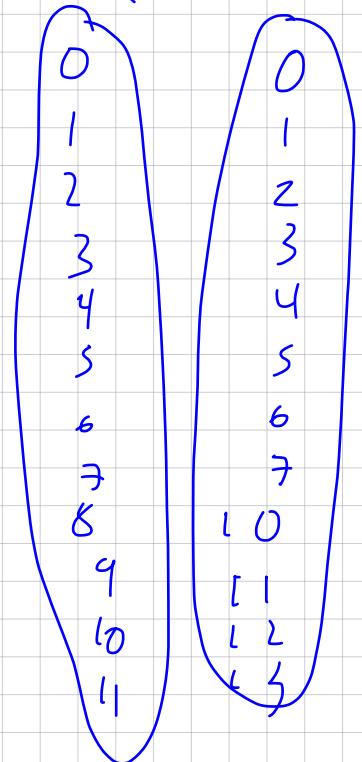
10 ←

1 0 0

1 2 3 4 5 6 7 8 9 10

Simulacion de contar en base 8

for ( $a=0$ ;  $a \leq 100$ ;  $a=a+1$ )  $\leftarrow 8^{9-8}=0$



28 | 8

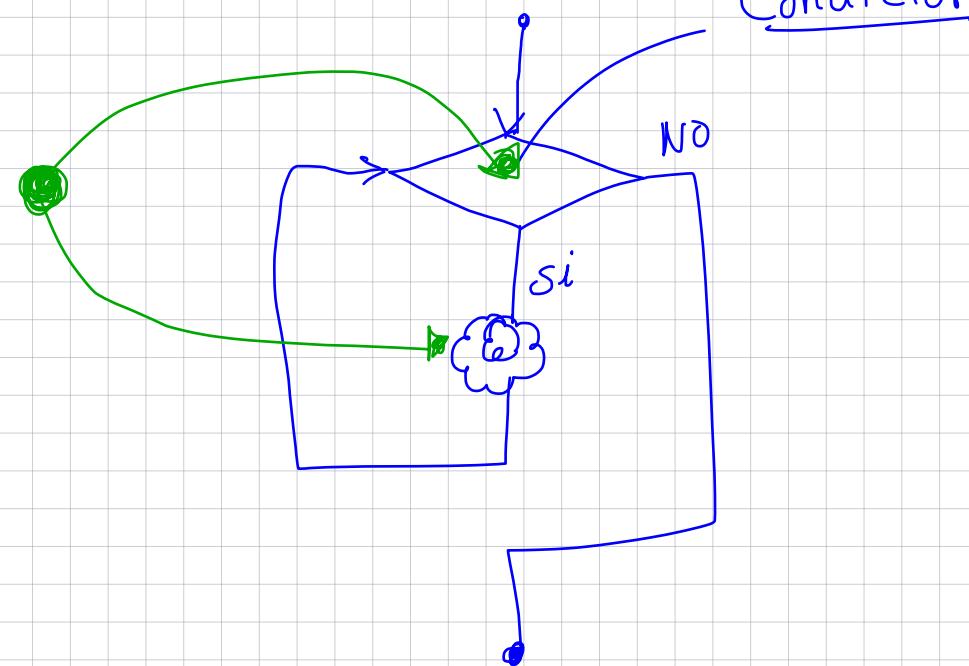
17  
20  
21  
22  
:  
27  
20 . 17 % 8  $\Rightarrow 1$   
16 % 8  $\Rightarrow 0$

→ algoritmo que diga si un año es bisiesto

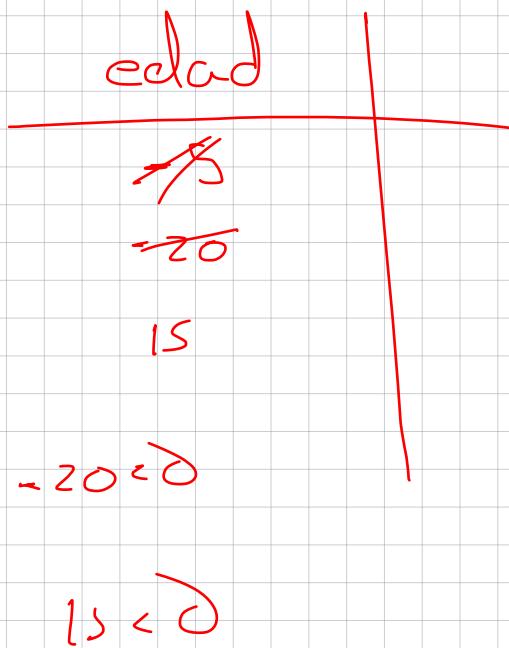
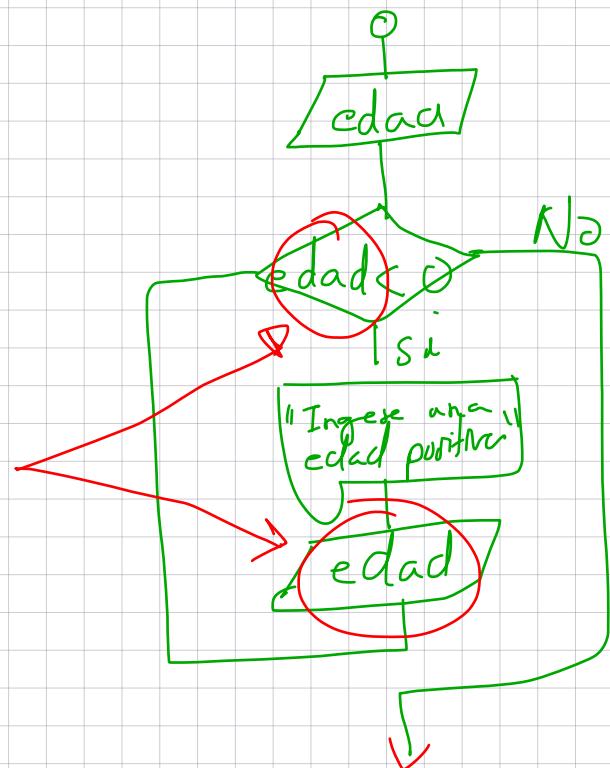
\*  
\*

Ciclo mientras  
While

Condicion



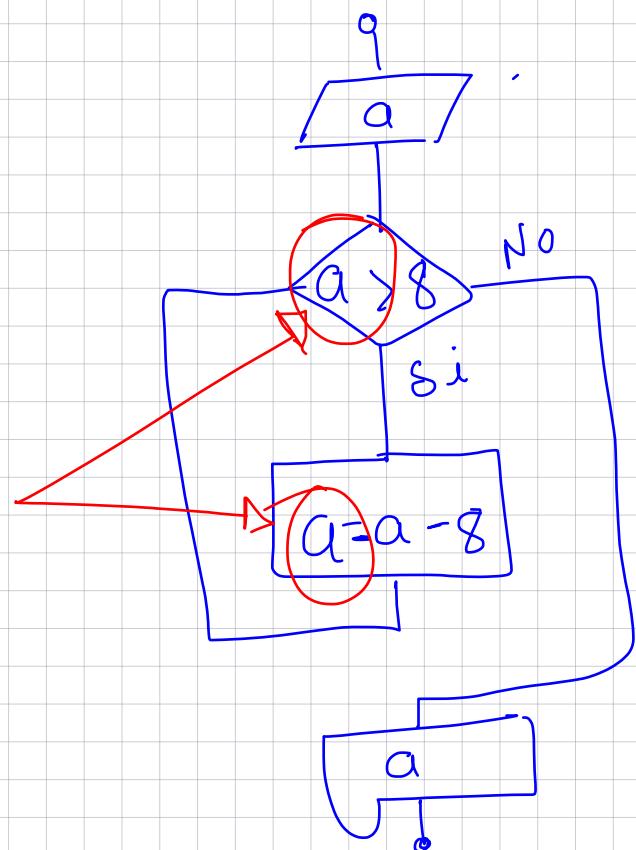
## Validacion (edad)



modulo 8

$a \% 8$

$$\begin{array}{r} 1418 \\ 8 \overline{)1418} \\ \underline{8} \\ 6 \end{array}$$



$$\begin{array}{r} a \\ \cancel{14} \\ \hline 6 \end{array}$$

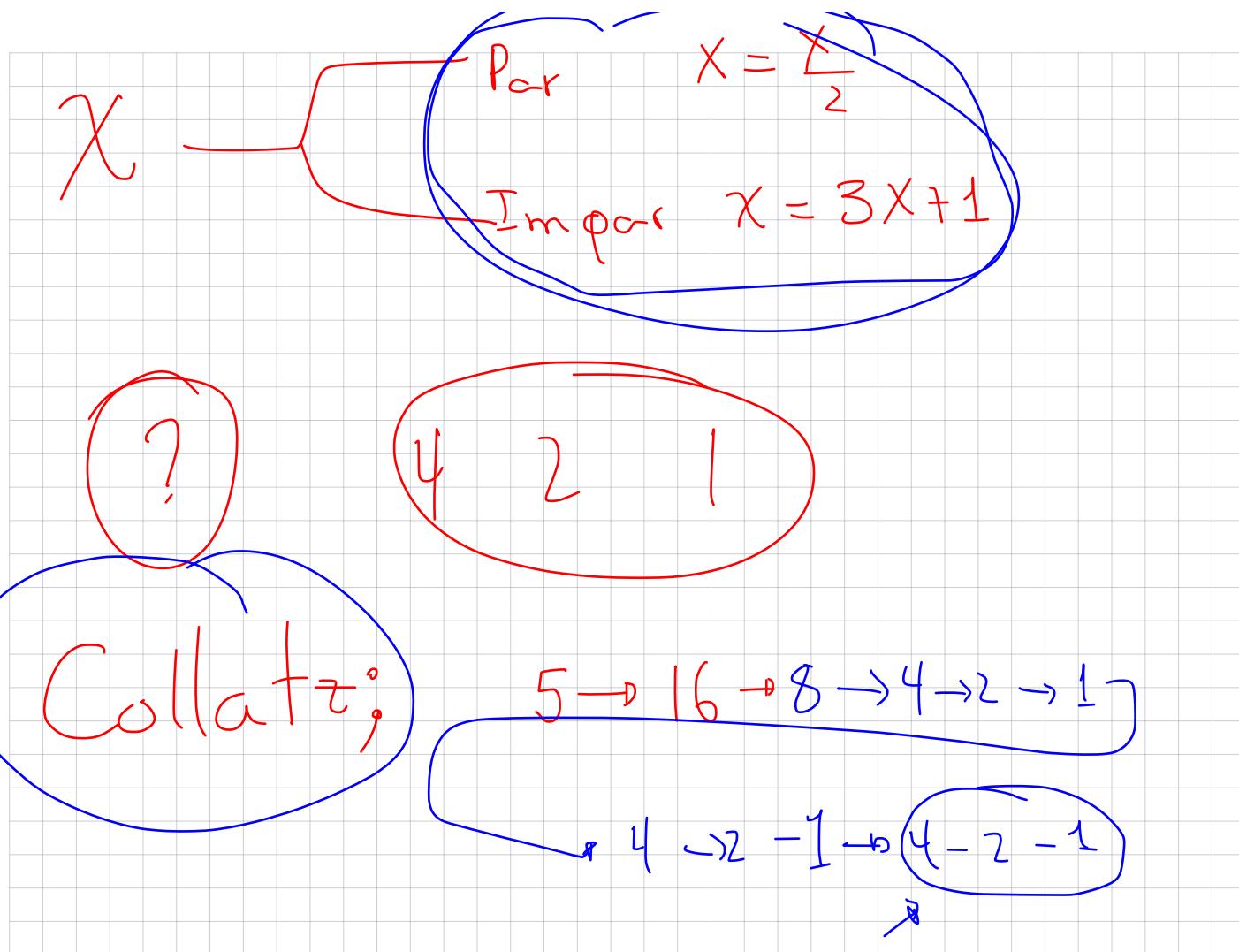
$$a = a - 8$$

$$a = 14 - 8$$

$$a = 6$$

$$6 > 8$$

No

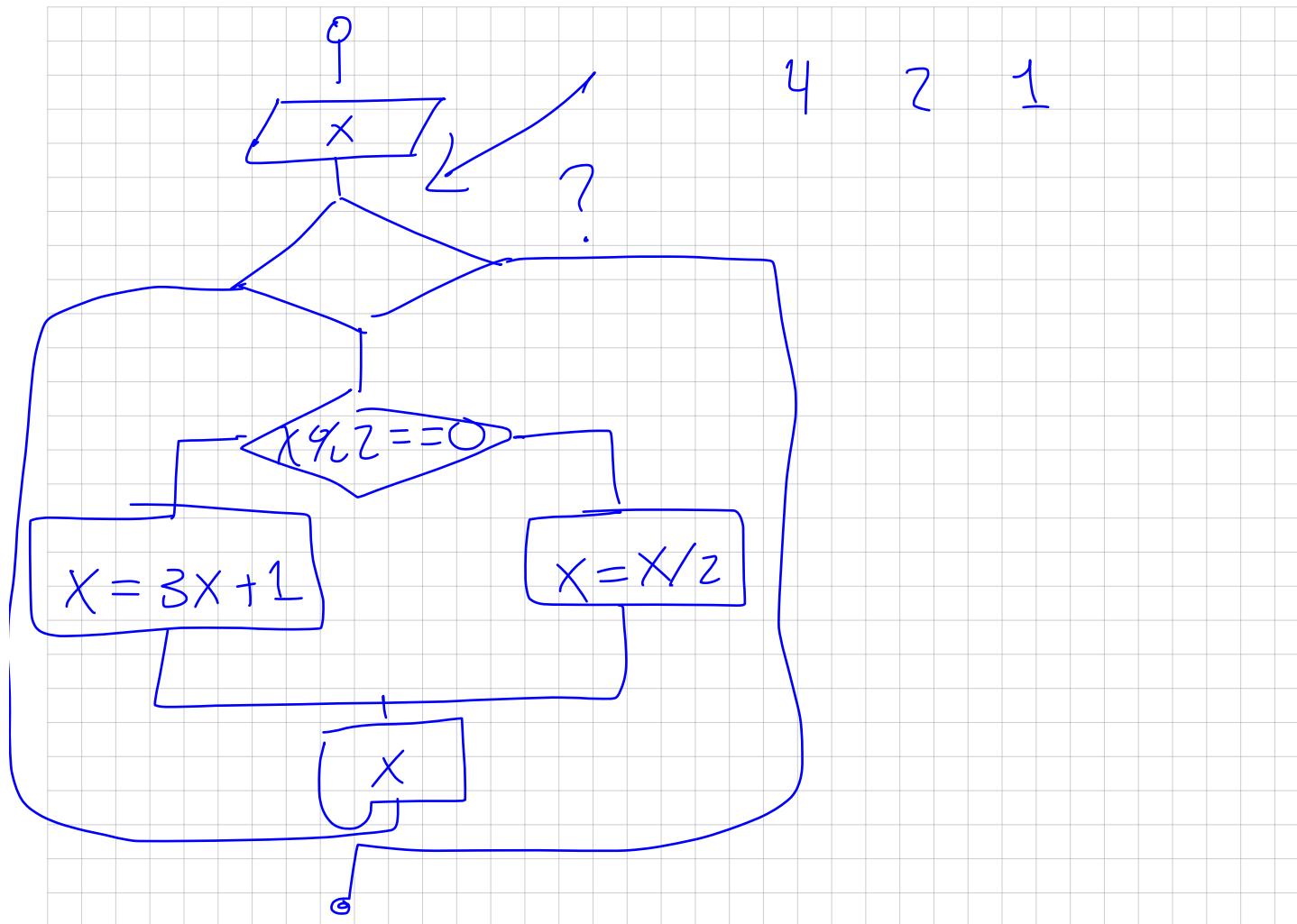


$$\frac{n(n+1)}{2}$$

$$3 = k$$

$$\frac{k(k+1)}{2} + (k+1)$$

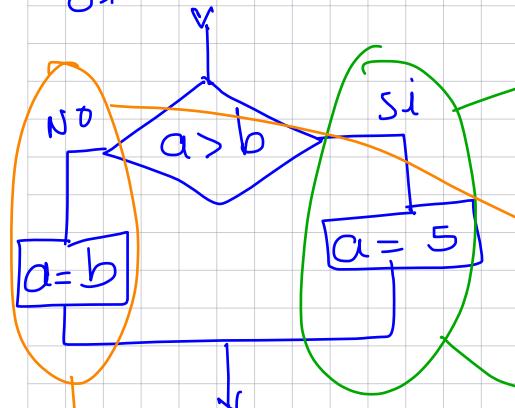
$$\frac{(k+1)((k+1)+1)}{2}$$



if

condiciones

Si



Java

`if(a > b) {`

`a = 5 ;`

`if-else {`

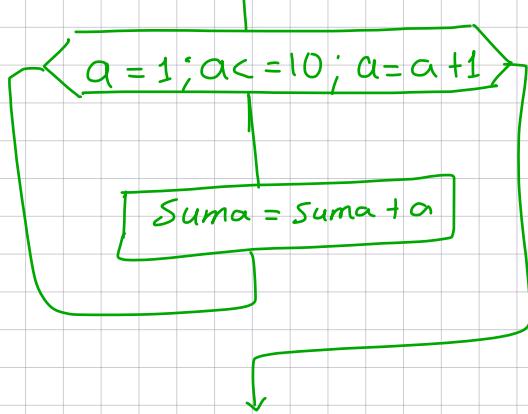
`a = b ;`

`}`

`END`

Para for

~

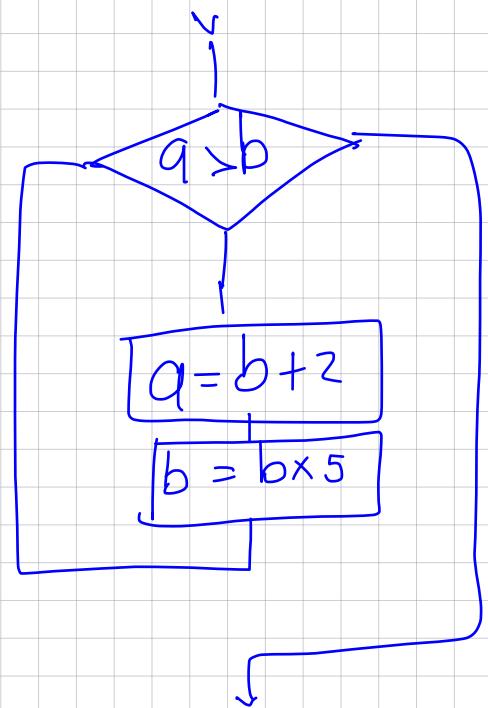


for (int a=1; a<=10; a=a+1) {

    Suma = Suma + a;

}

While, mientras

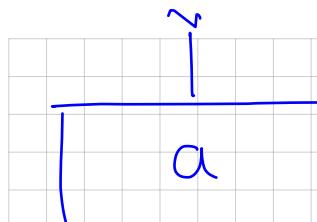


while (a > b) {

a = b + 2 ;

b = b \* 5 ;

}



System.out.println(a);



System.out.println("El valor es " + a);

# Variables

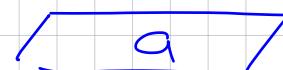
Java = fuertemente tipado

tipo a;

a = 5;

a = 7;

a = b + 4 \* 2



## tipos

byte	-128 a 127
short	-32768 a 32767
int	- $2^{31}$ a $(2^{31}-1)$
long	
float	
double	
boolean	true/false
string	

pedir. leer



Scanner t = new Scanner(System.in);

int a;  $\leftarrow$  Inicializar  
int b = 0;  $\leftarrow$

a = t.nextInt();

$a > b$

$a < b$

$a \geq b$

$a \leq b$

$a == b$

$a != b$

AND

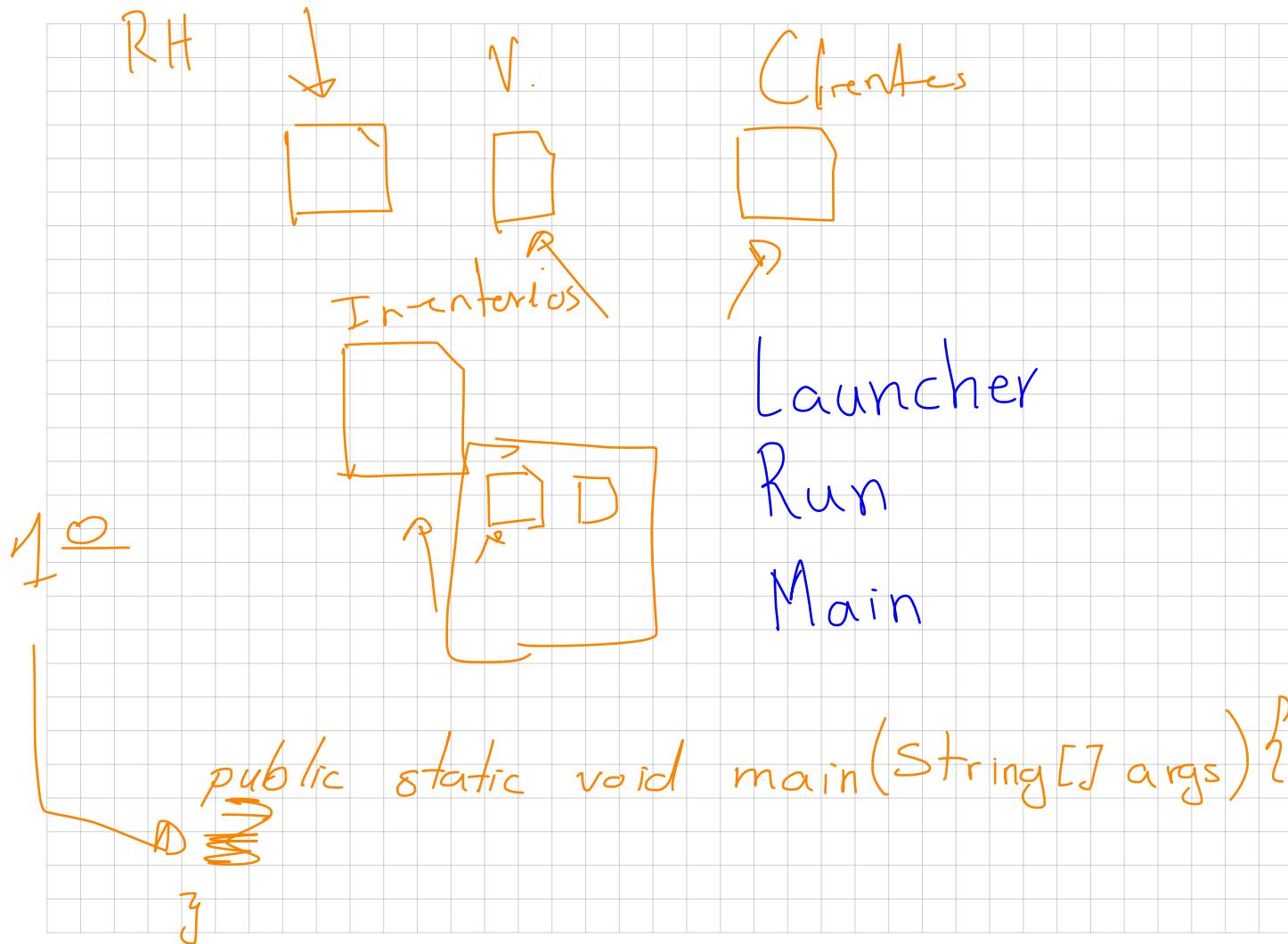
&&

$a > b \&& b > c$

$a > b \parallel b > c$

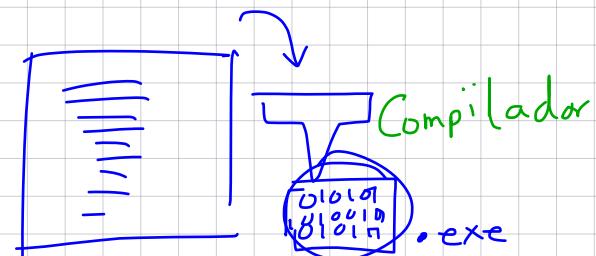
OR

||



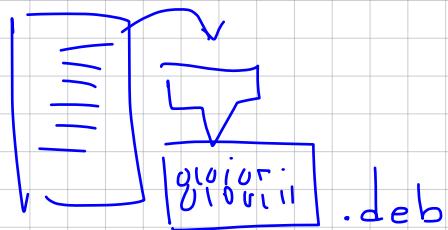
Windows

.exe



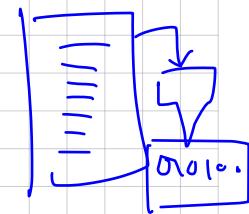
Linux

.deb



MacOs

.mac  
=



Windows

• .exe

Java Run Environment

JRE

Runtime

Linux

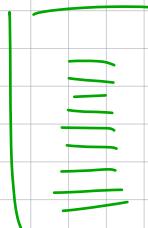
.deb

JRE

MacOs

• .mac

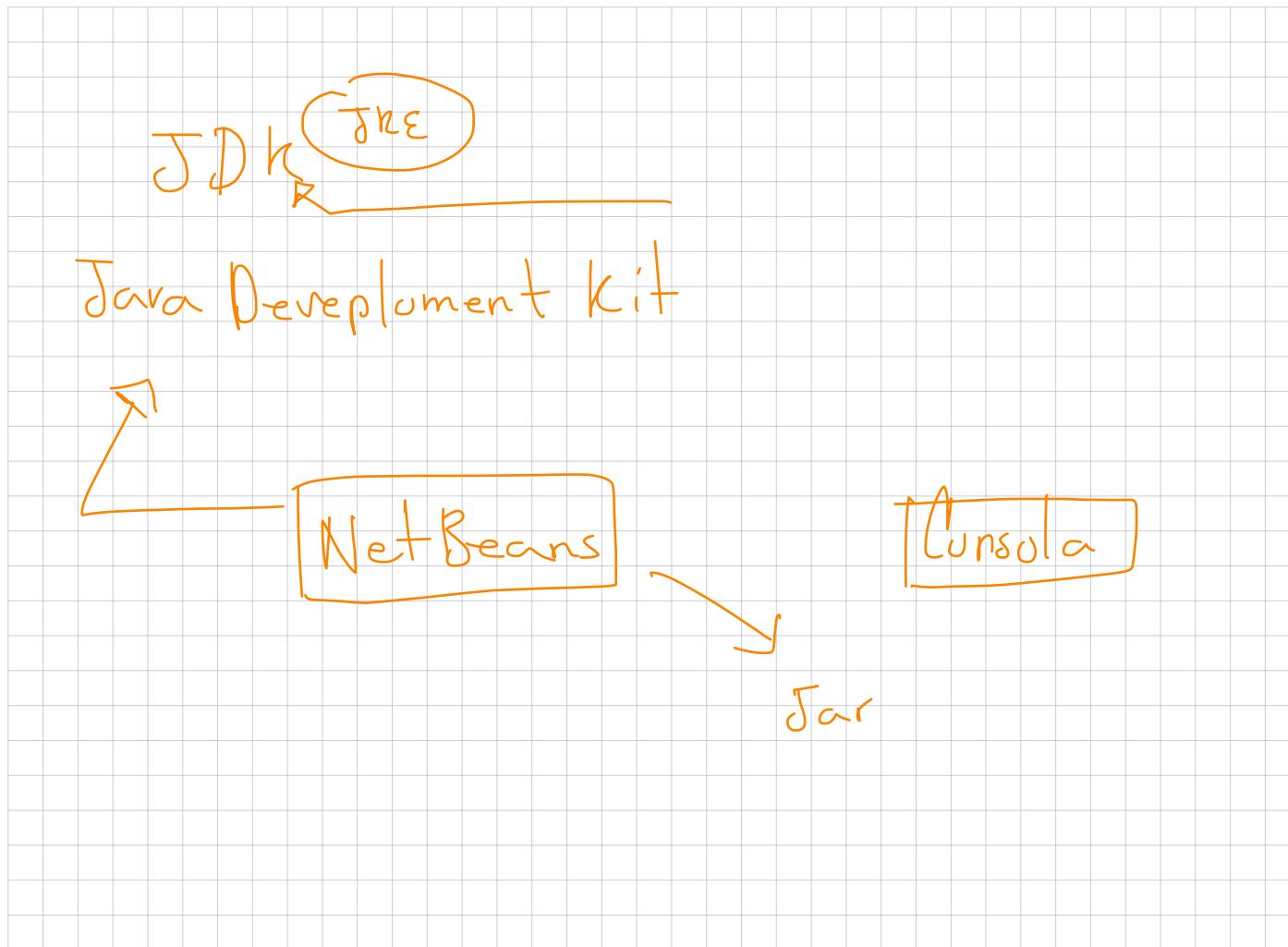
JRE



0101001  
0111

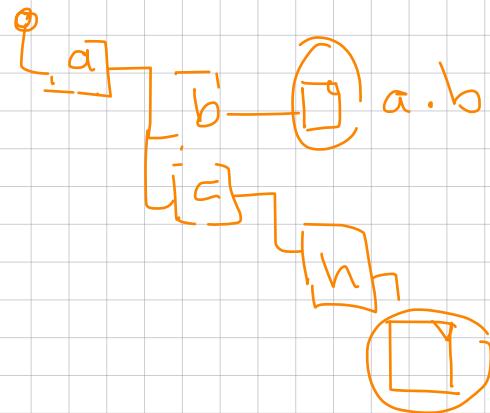
.jar

Escríbelo 1 vez  
ejecutalo donde  
quieras

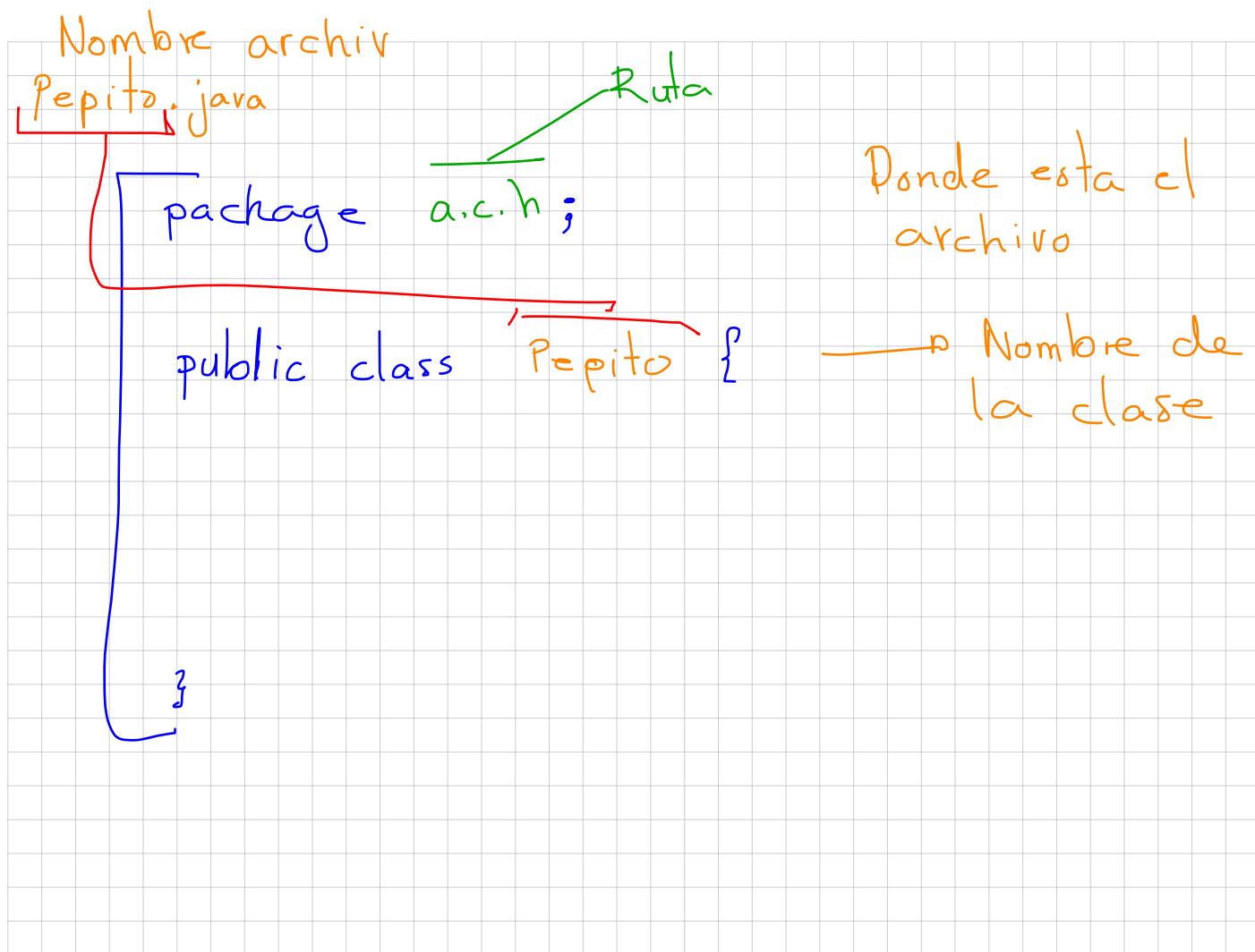


① Packages

RUTA



/ \ .



Pepito.java

package a.c.h;

public class Pepito {

public static void main (String [] args) {

}

}

Todo minúscula

Mayuscula inicial

Mayuscula parcial

lugo mayda oq se

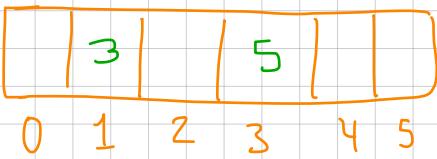
por co se

oq se

Vectores

$a[1]$

$a[6]$

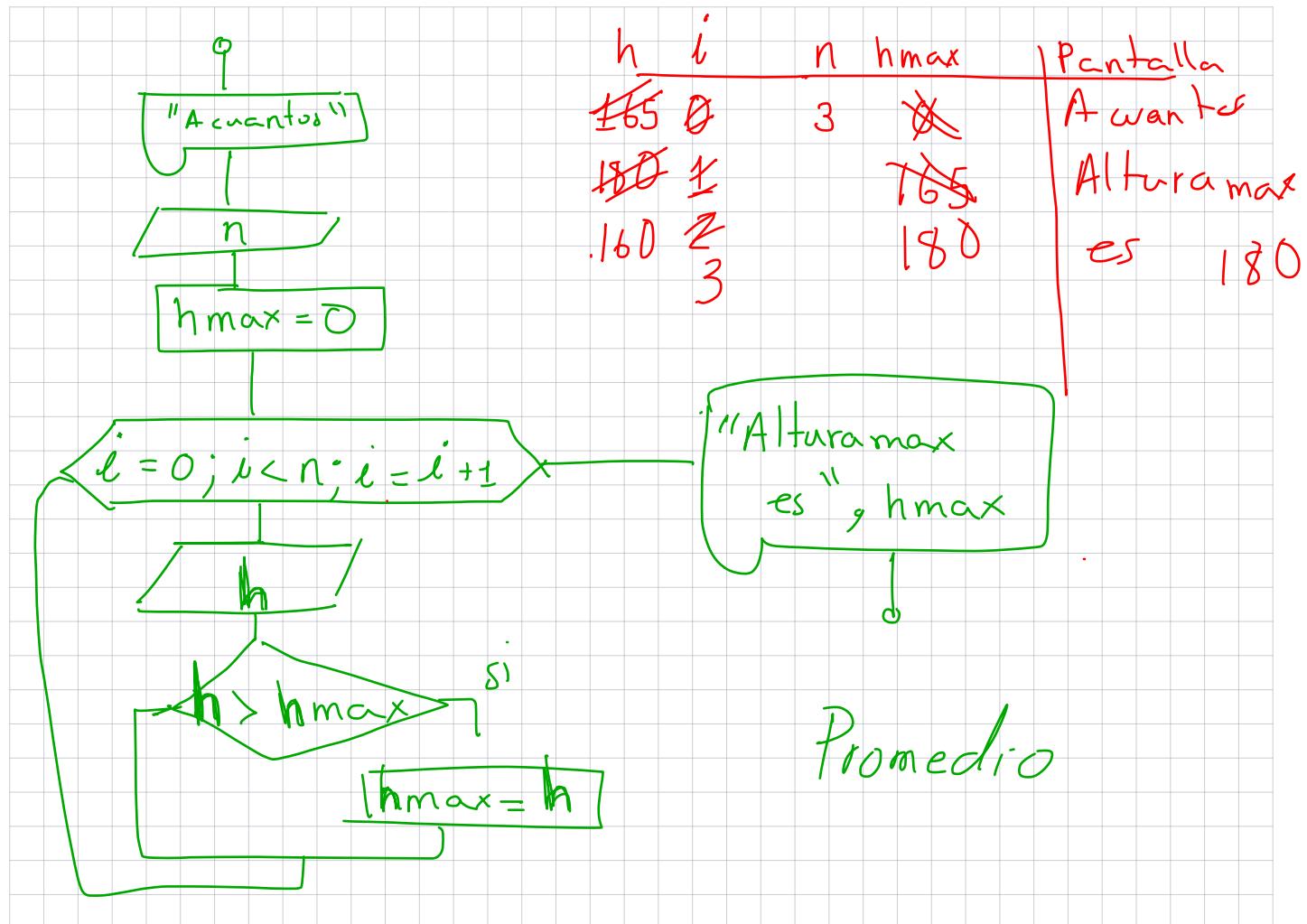


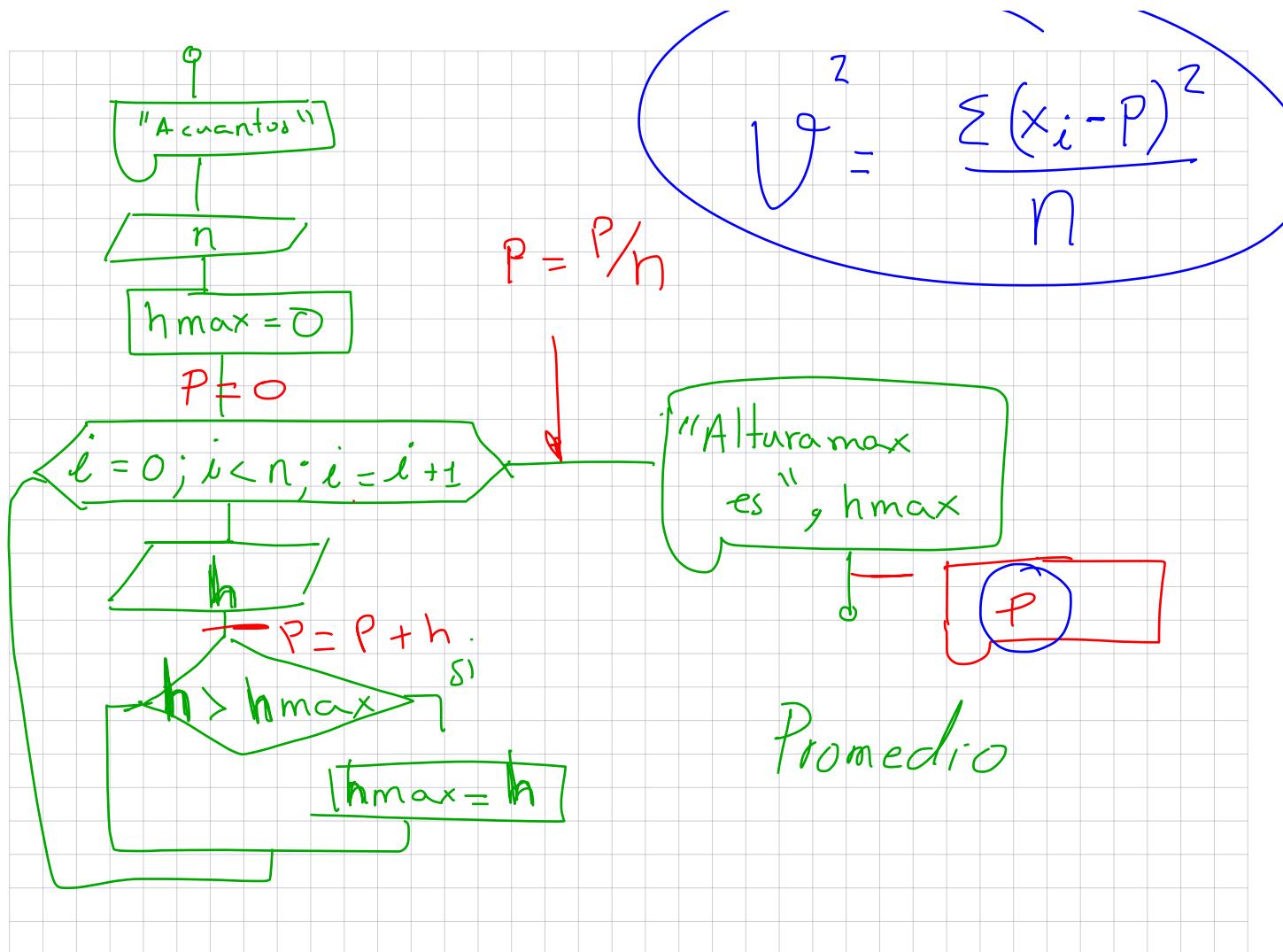
$$a[3] = 5$$

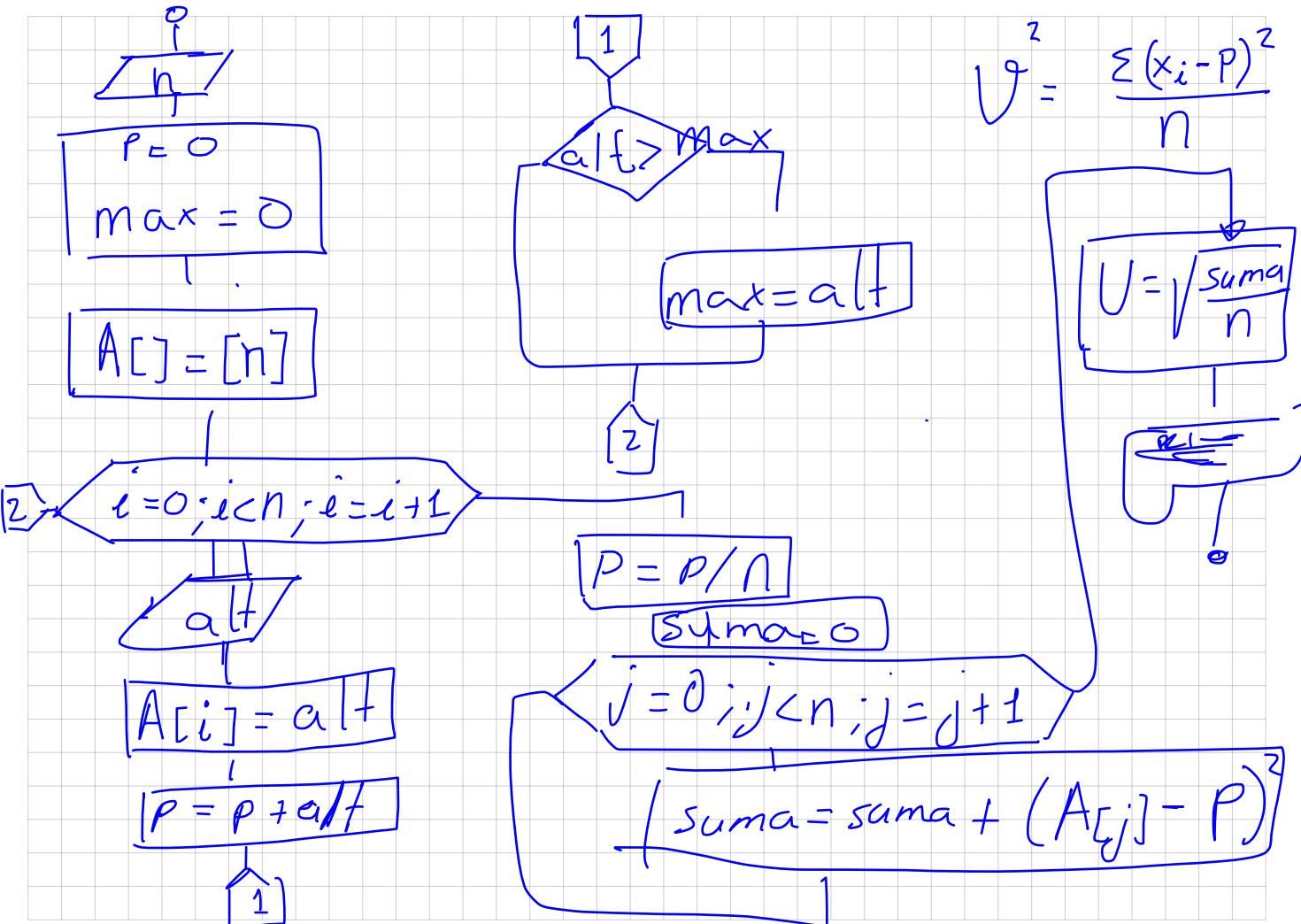
$a[3]$

$$a[1] = 3$$

$$r = a[1] + a[3] \equiv r = 3 + 5 \Rightarrow 8$$

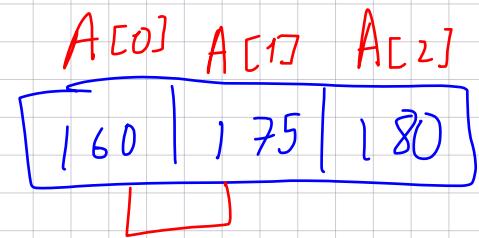






## 6 Ordenamiento

mayor a menor



175 160 180

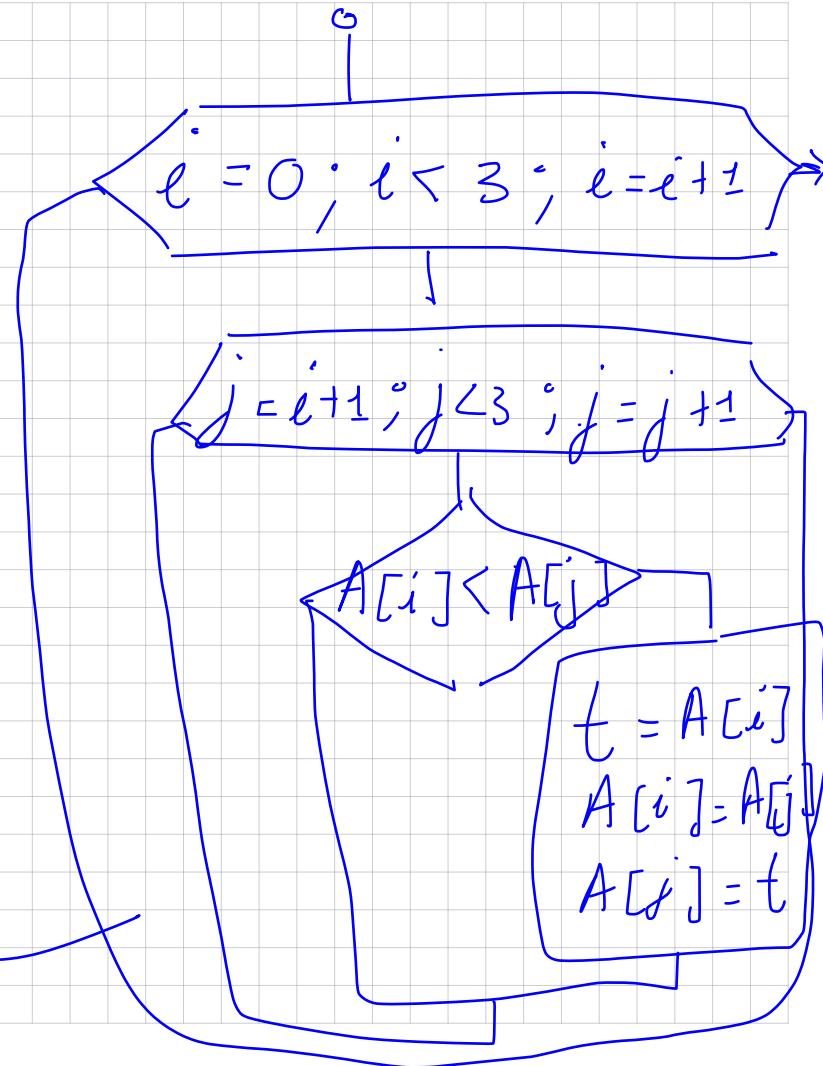
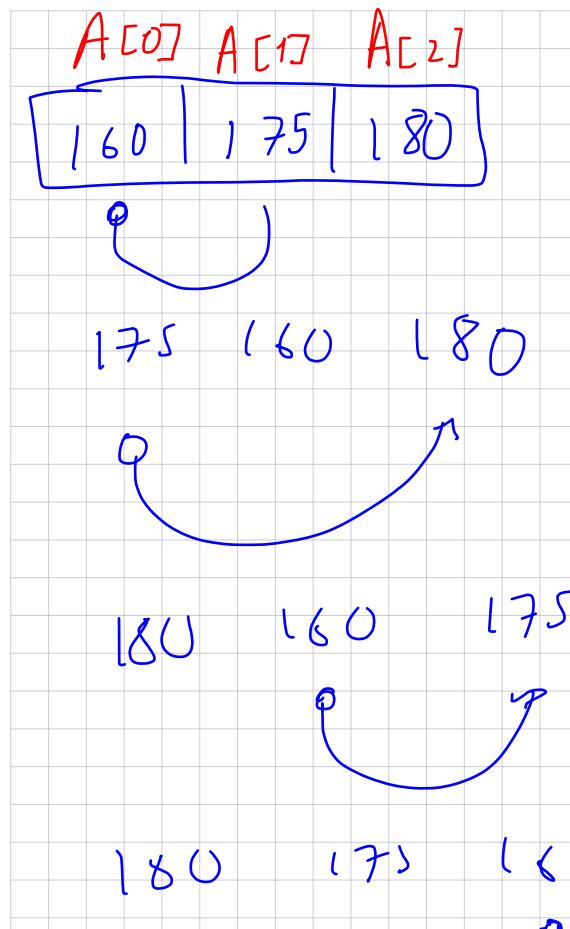
Ordenamiento

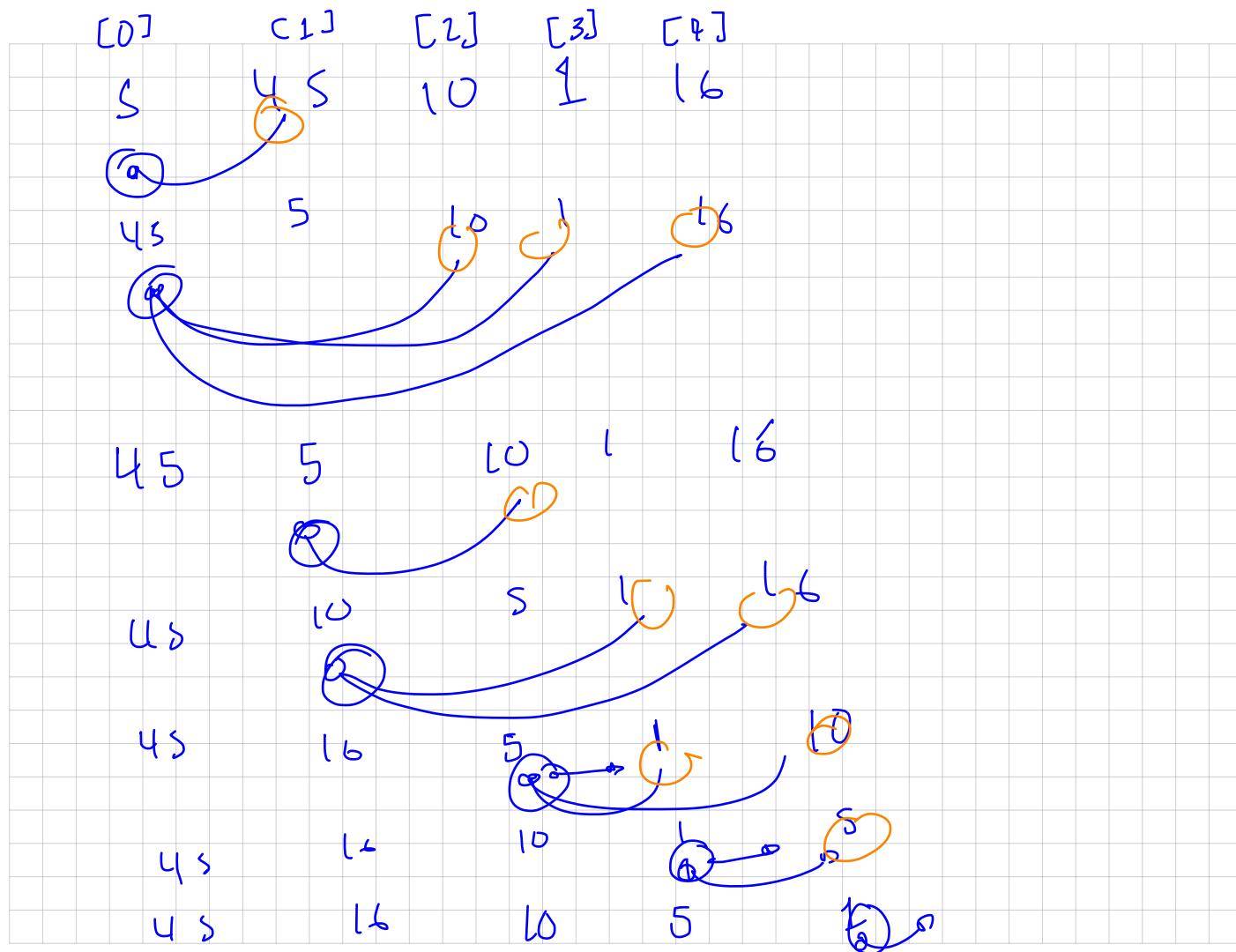
175 180 160

Burbuja

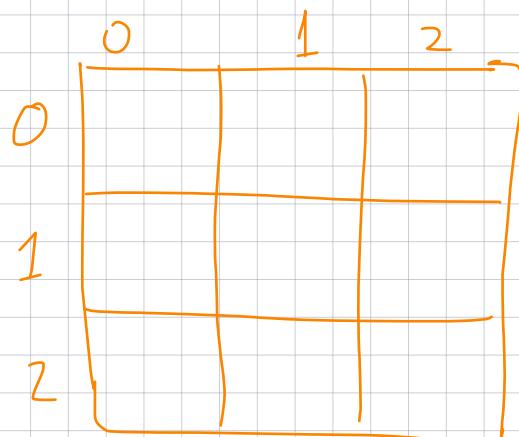
180 175 160

180 175 160





$$a[ ][ ] = a[3][3]$$



$$3x + y = 6$$

$$3x + y + z = 8$$

$$x + y = 3$$

$$x + y + z = 5$$

$$z + x = 4$$

$$\begin{bmatrix} 3 & 1 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} 6 \\ 3 \end{bmatrix}$$

$$\begin{matrix} 1 & \leftarrow 1 & 0 \\ 1 & 1 & 3 \end{matrix}$$

1 - 9

8	1	6
3	5	7
4	9	2

# funciones

[public]  
private  
protected

void

int  
float  
String  
:  
Bolsa  
Gatos  
Scanner  
:  
List<?>

iniciar con minuscula

(Macro)

[nombre] (   ,   ,   ,    ) {

[tipodato] [nombre]

int a;  
int b;  
int c;

    
    
return c;  
}

