ReCap

Monday, August 7, 2023 4:52 PM

i=0 , j=1 , k=2 , m ; → int

i=1 j=2

m = i++ + ++j + ++k ;

0 1

i = 0 j = 1 k = 2 m = 1

1 2

i=3 ;

i = i++ ; → i=4 , i=3

i = 3

a = 1 b = 0

b = a++ + a++ ; → compiler dependant

a=2 a=3

b = 1 + 2 = 3

b = 3

a = 3

b = a++ + ++a ; compiler dependant

a=3 a=2

b = 2 + 2

b = 4

b = 2 + 2

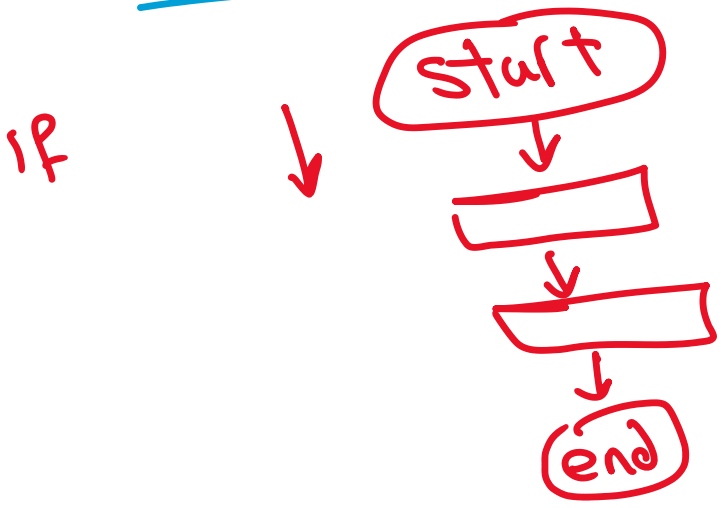
a : 3 b = 4

b = a++++a; → error

□ ++ + □

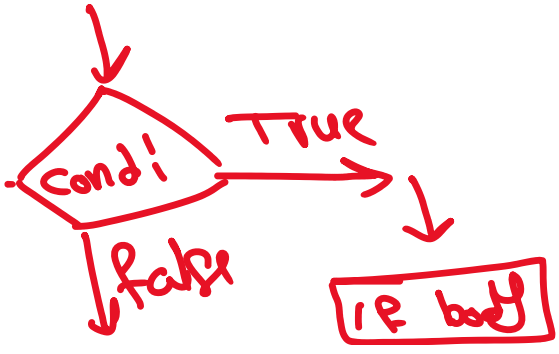
Conditional statements

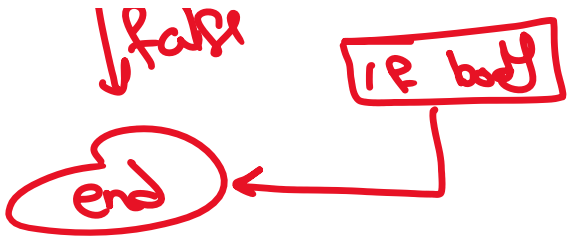
if switch



if

Flowchart:






```
if (condition)
{
   // if body
}
```

T or false
1 → to
0

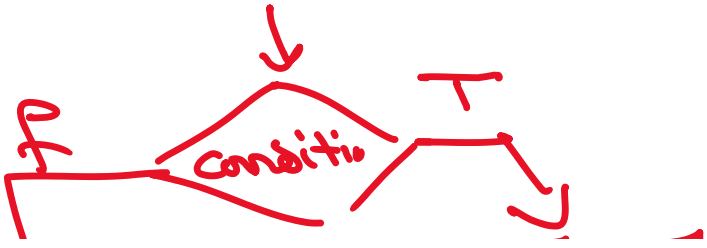
example:

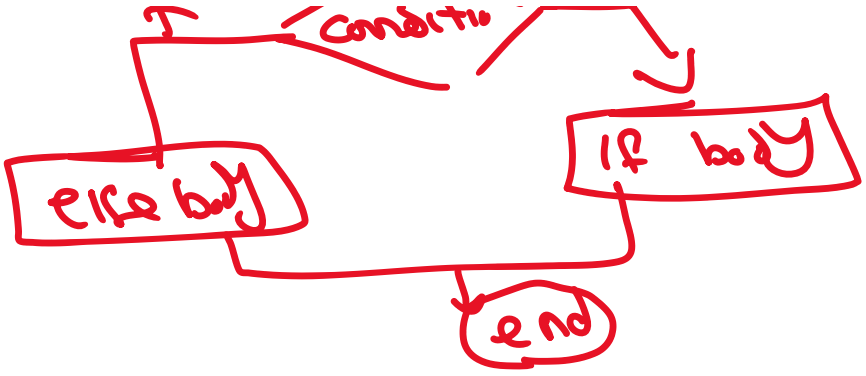
```
int num =10;
if (num > 0)
{
   printf("+ve");
}
```

+ve

if else

flowchart:





Syntax:

```
if (condition)
{
  // if body (True)
}
else
{
  //else body (False)
}
```

example:

```
int num = -6;
if(num > 0)
{
  printf("+ve");
}
else
{
  printf("-ve");
}
```

-ve ✓

```
else
{ printf("-ve");
}
```

```
if (x==0)
{ printf("zero");
}
x=10;
else
{ printf("not zero");
}
```

compiler error

```
x= -10;
if (x>=0)
{
if(x==0)
printf("zero");
else printf("+ve");
}
else printf("-ve");
```

Nested if

if body

if body

else body

if { }
else
one line

else

-ve

$x = 0$

If else if

```
x = 0
if (x >= 0)
    printf("+ve");
else if (x == 0)
    printf("zero");
else printf("-ve");
```

+ve

else if (optional) → No limit

else

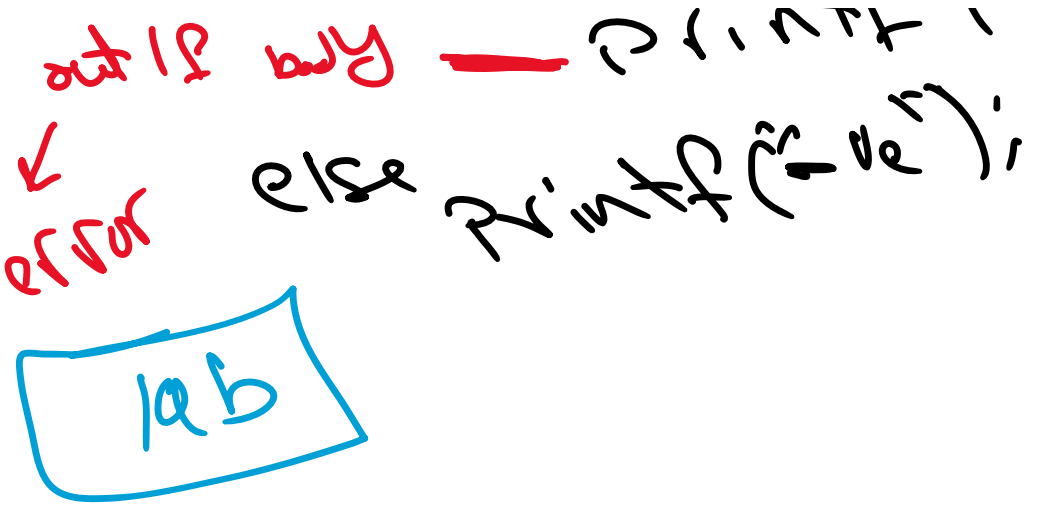
No code between if else

Nested if

one line of code {}

```
if (x == 0)
    printf("zero");
else printf("+ve");
```

out if body



lab

Q&A:

```
int x=10;
if(x==10)
{ printf("A");
}
if(x==30)
{ printf("B");
}
```

```
int x=10;
if (x==10)
 printf("Ahmed");
else printf("Youssef");
```

```
else  printf("youssef");
      printf("samir");
```

out of else

Ahmed samir

x = 0

```
if (x == 10)
{
    printf("yes");
}
else
{
    printf("no");
}
```

yes → 10

no → 0

x = 10

```
if (x == 10)
    printf("Ahmed");
    printf("samir");
else printf("youssef");
```

if body

error

else body

out of if

if(printf("0"))

↳ 1 → True

a=5 b=10

if(a++ || b++)

0 ← 6 < 6 || 11 < 11

0 11 0

if(a++ || b==++b)

if(++x == ++y) x=++y

error

float a = 0.7;

0.7 > a

↳ True

double

1 → True

0.7f → float

Switch

Switch(exp)

Integer value
char int

{

case 1 → Const integer value (caps)

case 2 :

case 3 :

default:

}

else :

Switch Jump → case []

Switch(x) x=3

{

case 1 :

case 2 :

case 3 :

default :

x = 3

if (x==1)

else if (x==2)

else if (x==3)

default : ——

① case const unique a → 97

case 2 :
case 1+1 : X

case 'a' : X
case 97 :

② case const variable X

③ integer value

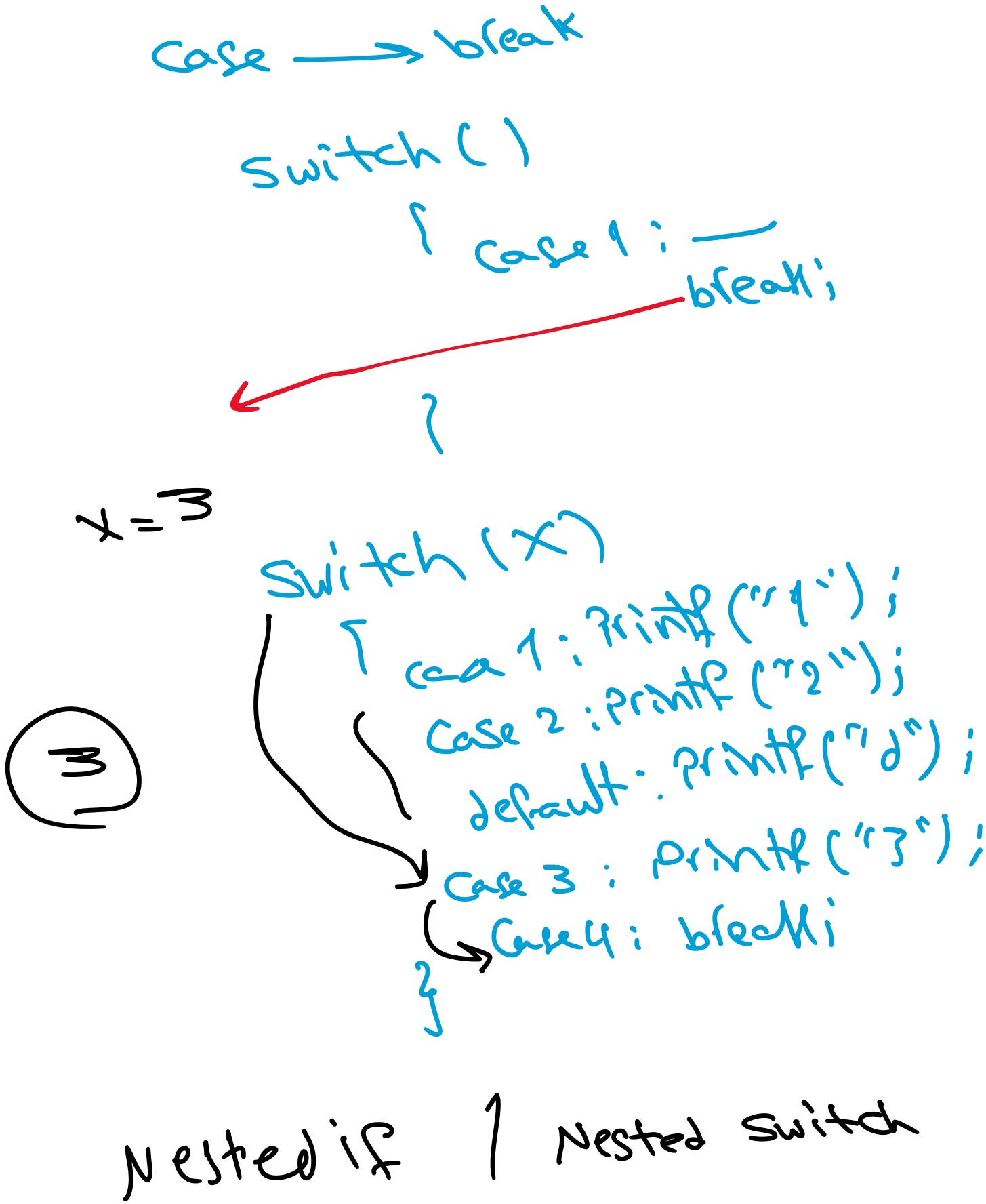
④ default → 1 default

⑤ ↳ optional

⑥ anywhere

```
switch(x)
{ default : ——
    case 1 : ——
}
```

break


case → break
switch ( )
{ case 1 : —
break;
}
x = 3
switch (x)
{ case 1 : printf ("1");
case 2 : printf ("2");
default : printf ("d");
case 3 : printf ("3");
case 4 : break;
}
3
Nested if / Nested switch

switch (x)

{

case 1:

printf("1");

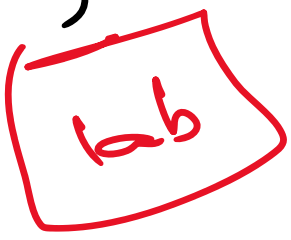
printf("2");

printf("10");

break;

case 2:

}



if - switch

ternary operator (? :)

uni

bi

Syntax:

Condition ? True exp : False exp;

num=4

x = Num % 2 ? "odd" : "even";

x = "even"

num = 5

x = "odd"

(R(num%2)

{ "odd";

?

else

{ "even"

?

Num%2 ? "odd" : "even";

int i=2, j=5, k=10, a;

a = i>1 ? j<1 || k<1 ? 100 : 200 : 300;

a = 200

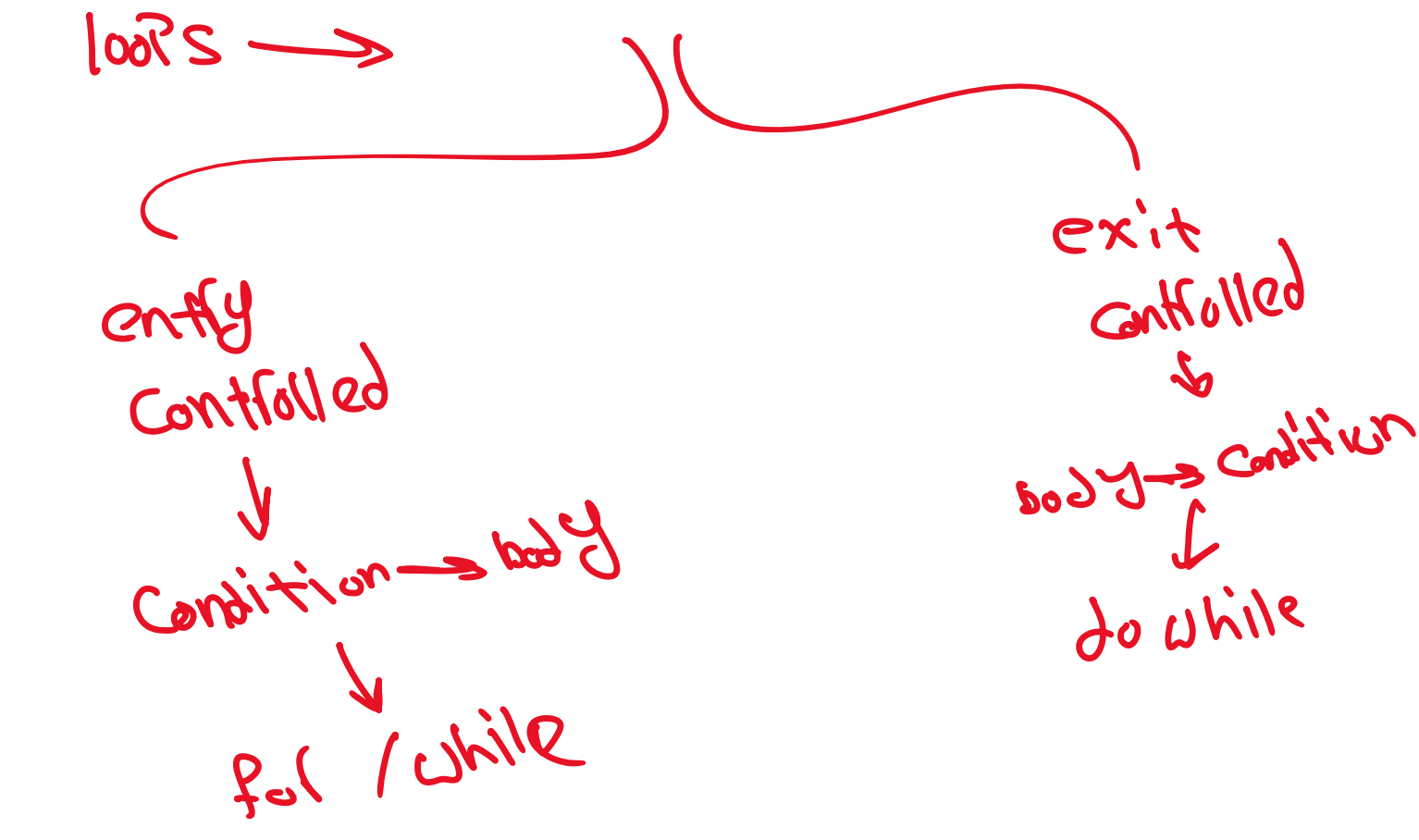
→ garbage

→ garbage

int k, num = 30;

k = num > 5 ? num <= 10 ? 100 : 200 : 300

num = 30



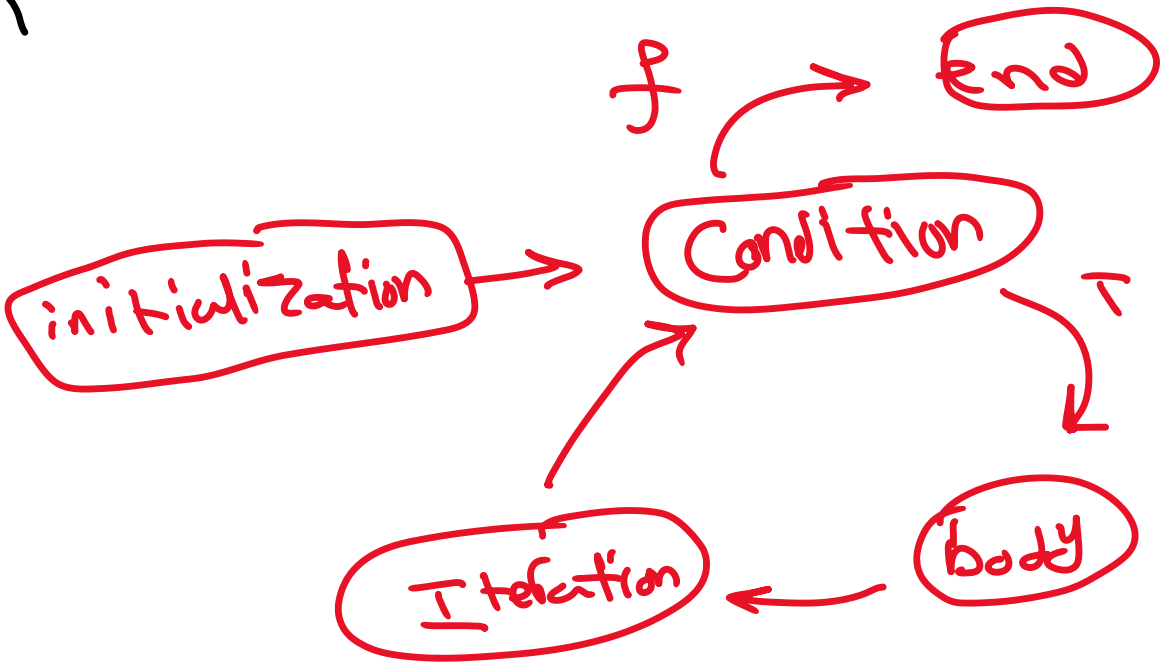
for loop:

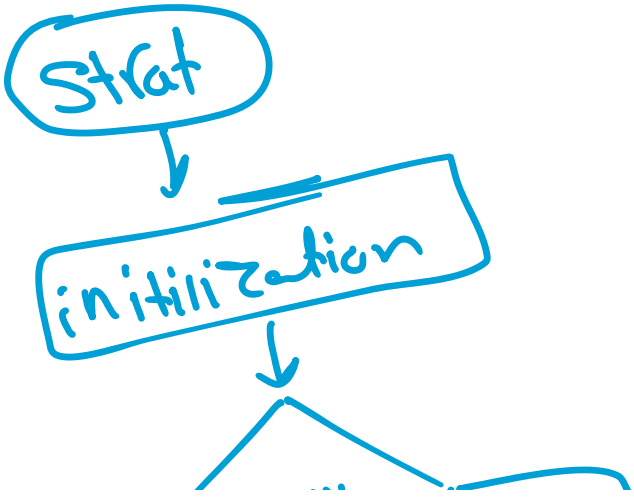
syntax:

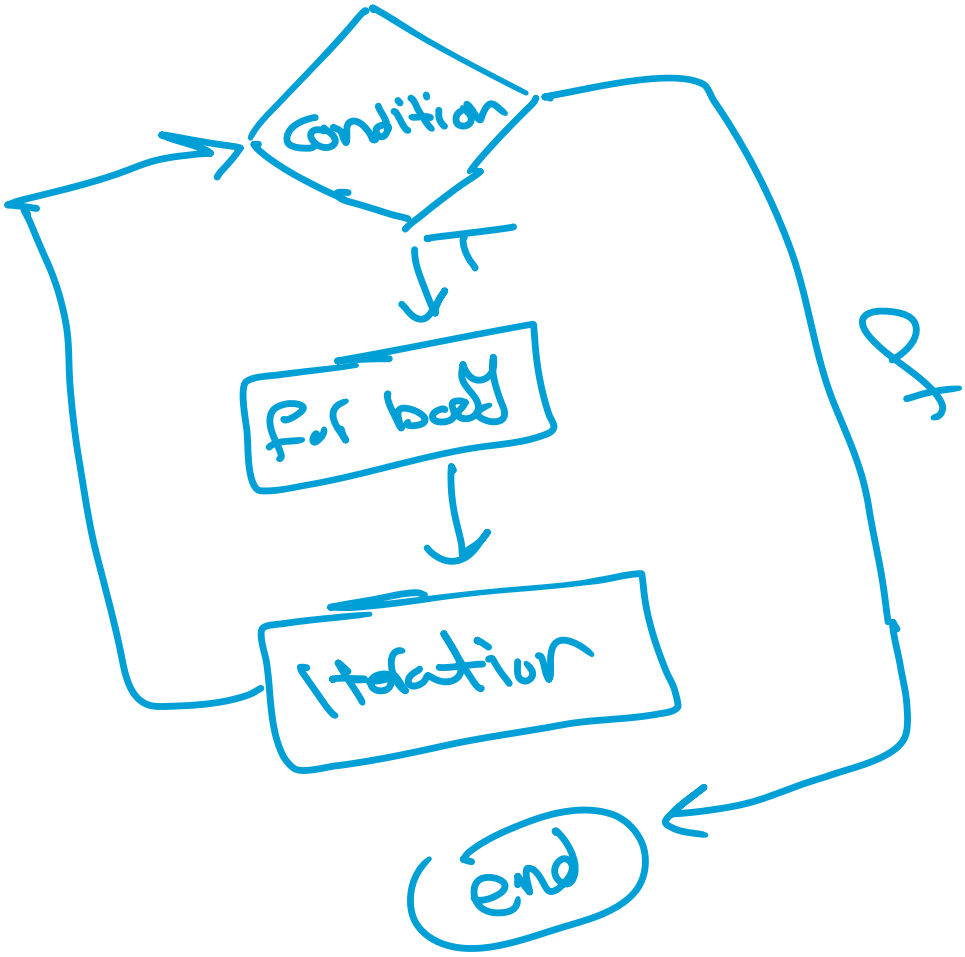
only one time (first)

1 → 2 → 3 → 4

```
for (initilization ; Condition ; iteration)
  {
    // for body
  }
```







example:

```
int i=0;
for( i=1; i<=5; i++)
{  printf("%d",i);
}
```

① ② ④ ③

12345

num = ~~16~~ 10

```
for( ; num>0 ? 1:0 ; );
```

for (; num > 0 ; i--)

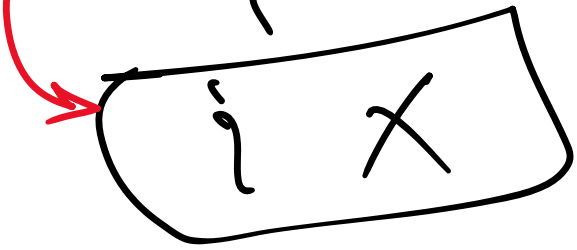
for (; 1 ;)

for (;0;)

int i = 0

for (int i = 0 ; ;) → C90 C99 C11

{ i++ ; }



C89 ANSI

int i = 0 ;

for (; num > 0 ; i++)

example :

i = 0

i=0

for (printf("1st\n"); i<2 && printf("2nd\n"); i++ && printf("3rd\n"))

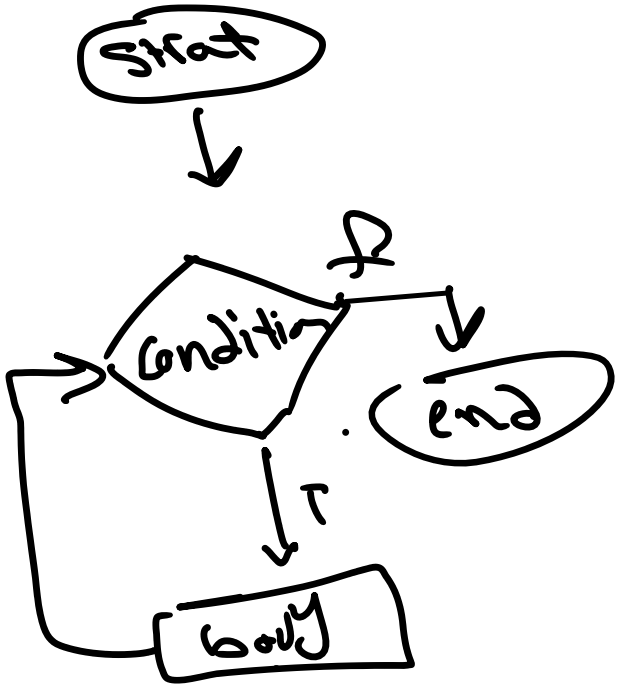
{ printf("*\n"); }

1st
2nd *
3rd
2nd *
3rd

for → n time

syntax:

```
while(condition)
{
  // body
}
```



example: int count = 1;

example: int Count = 1;

```
while (Count <= 5)
{ printf("%d", Count);
  Count++;
}
```

12345

While → n time Unknown

Do While: exit Controlled

body → condition

```
do{
  // do while body
}while (condition);
```

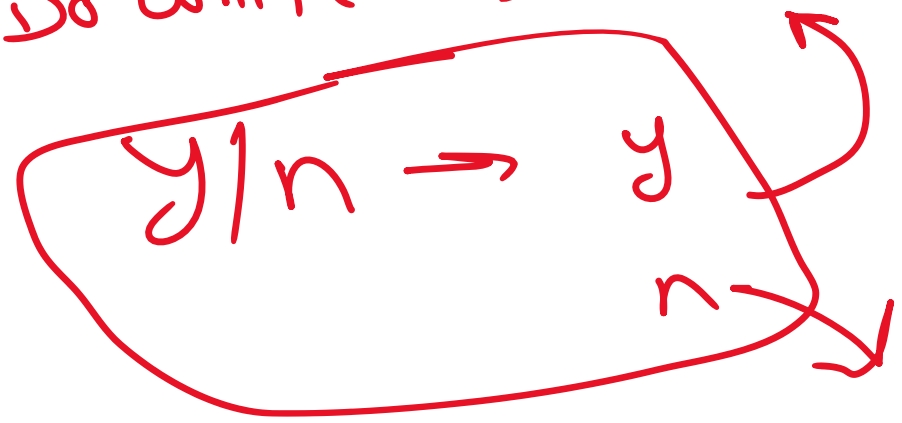
example:

```
int Count = 1;
```

12345

```
do {
    printf("%d", count);
    count++;
} while (count<=5);
```

Do while → at least one time



Q&A

```
c=5 ; n=10
do {
    n /= c;
```

□/0 → Runtime error

```
} while(c--);
printf("%d", n);
```

Break - Continue

↳ switch

loops

break = exit

↳ Jump instruction

```
for (i=1; i<=10; i++)
{
    if(i==6)
        break;
    printf("%d", i);
}
```

12345

Continue = Skip

Skip current iter
for next iter

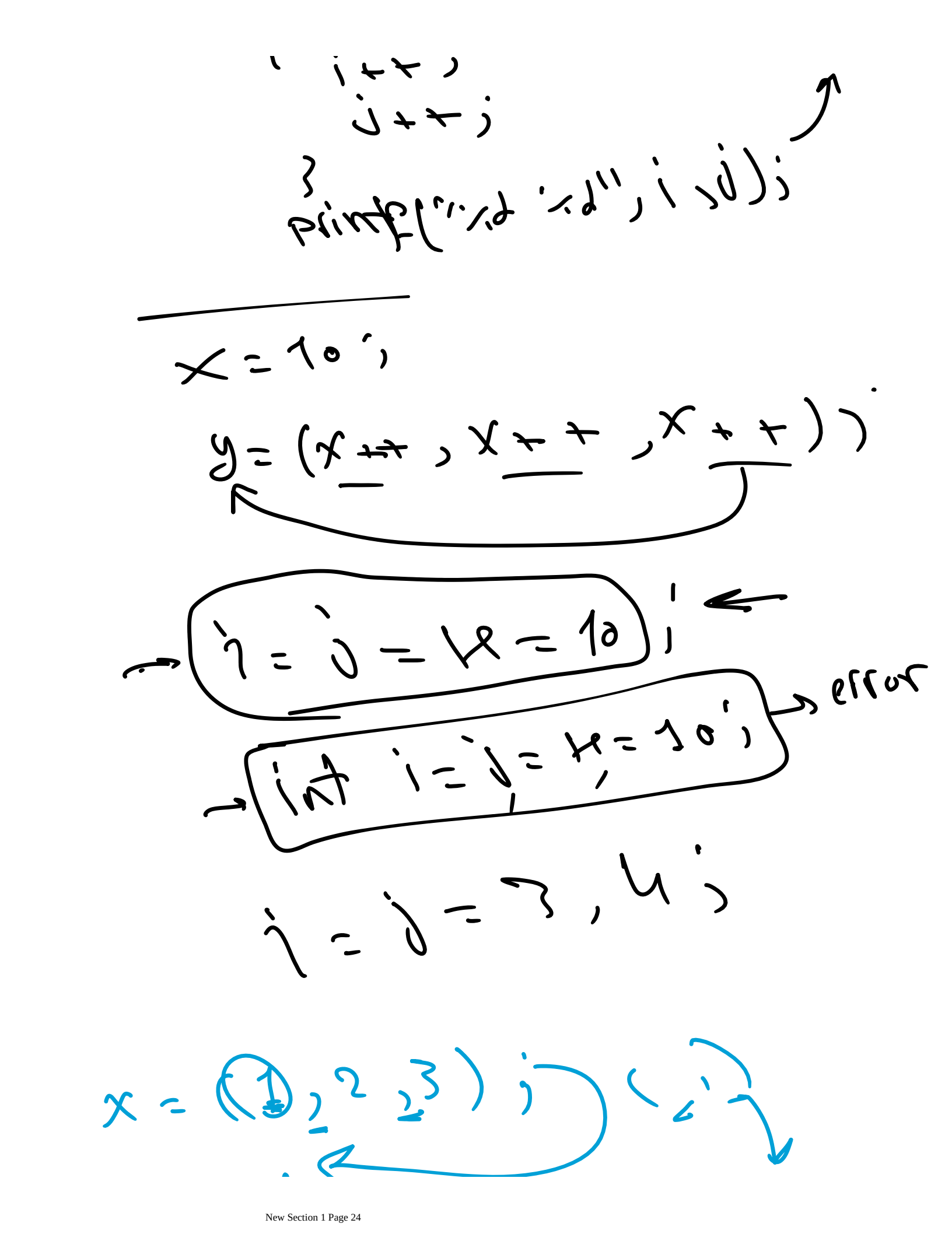
```
for(i=1,i<=10;i++)
  {   if(i%2==0)
          continue;
      printf("%d",i);
  }
```

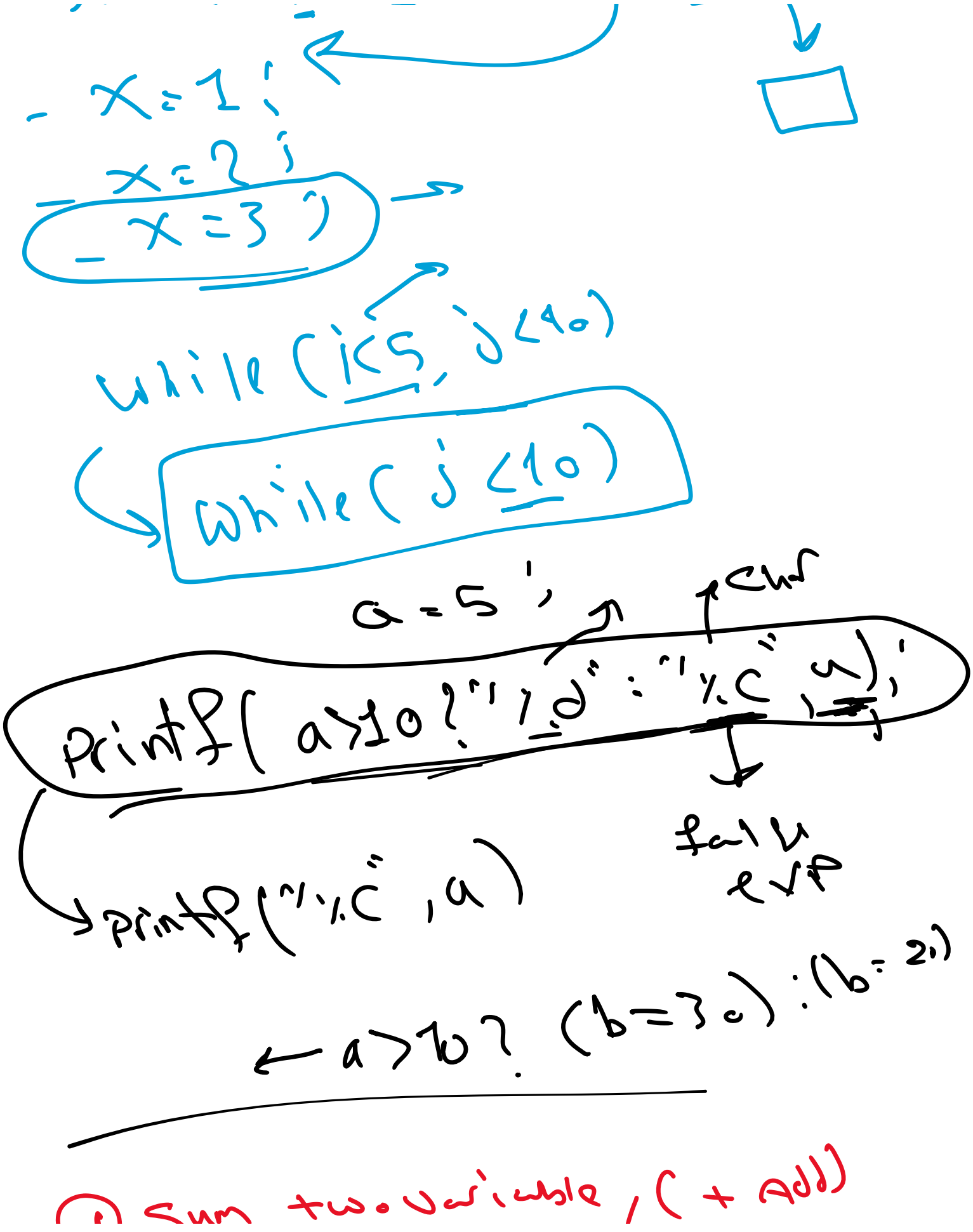
1 3 5 7 9

```
i=0, j=0
while(i<5,j<10)
  {   i++;
```

i<5, j<10

comma op


error


x=1;
x=2;
x=3;
while(i<5, j<10)
while(j<10)
a=5;
printf(a>10?"%d":"%c",a);
printf("%c",a)
a>b? (b=30):(b=20)
Sum two variable, (+ Add)

(1) Sum two variable / (+ Add without

(2) swap two variable with using

3

^
+ -
* /

(3) Code integer
i +ve char int

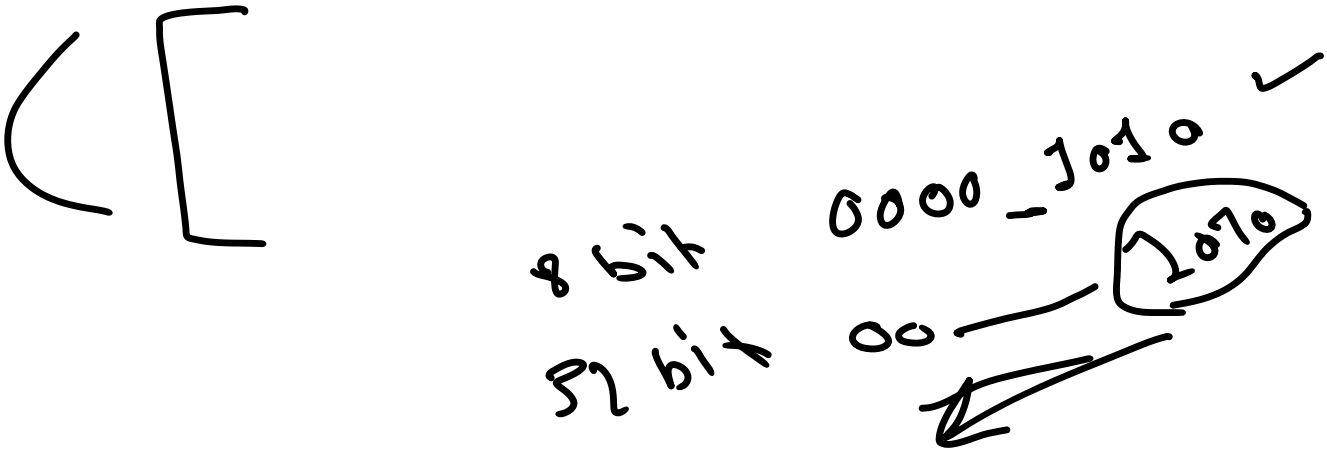
↳ binary

char 8 bit

int 32 bit

Char var = 10 ; 8 bit
↳ int var = 10 ; ↳ 32 bit

int
Char var = 10 ;


8 bit
32 bit
0000_1010
1010
00