Loops

↳ for loop

when you have to do a task again and again

ex print all digits till 10; // 150

```
Syso(0);
Syso(1);
Syso(2);
  :
  :
Syso(10);
```

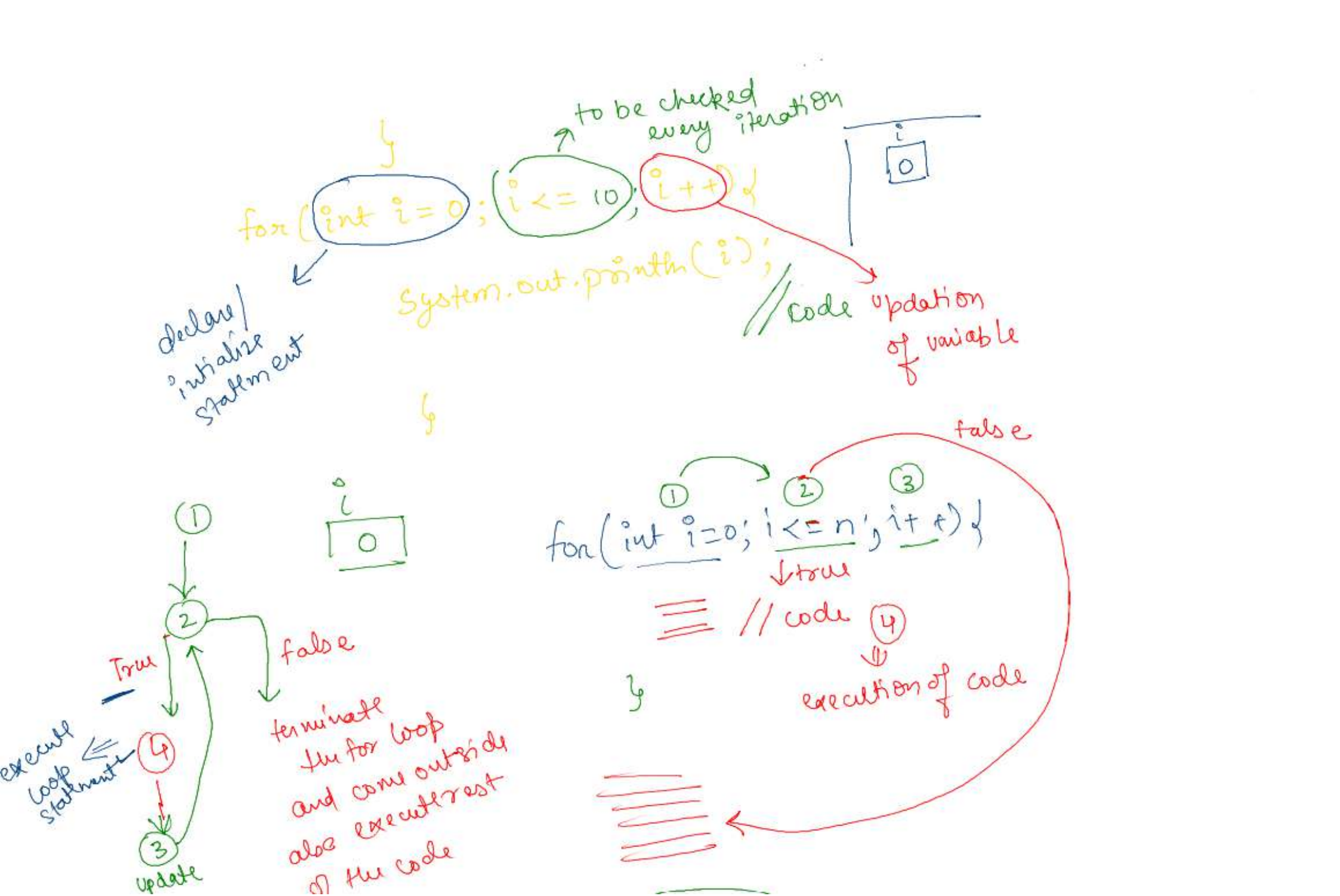
} 10 times

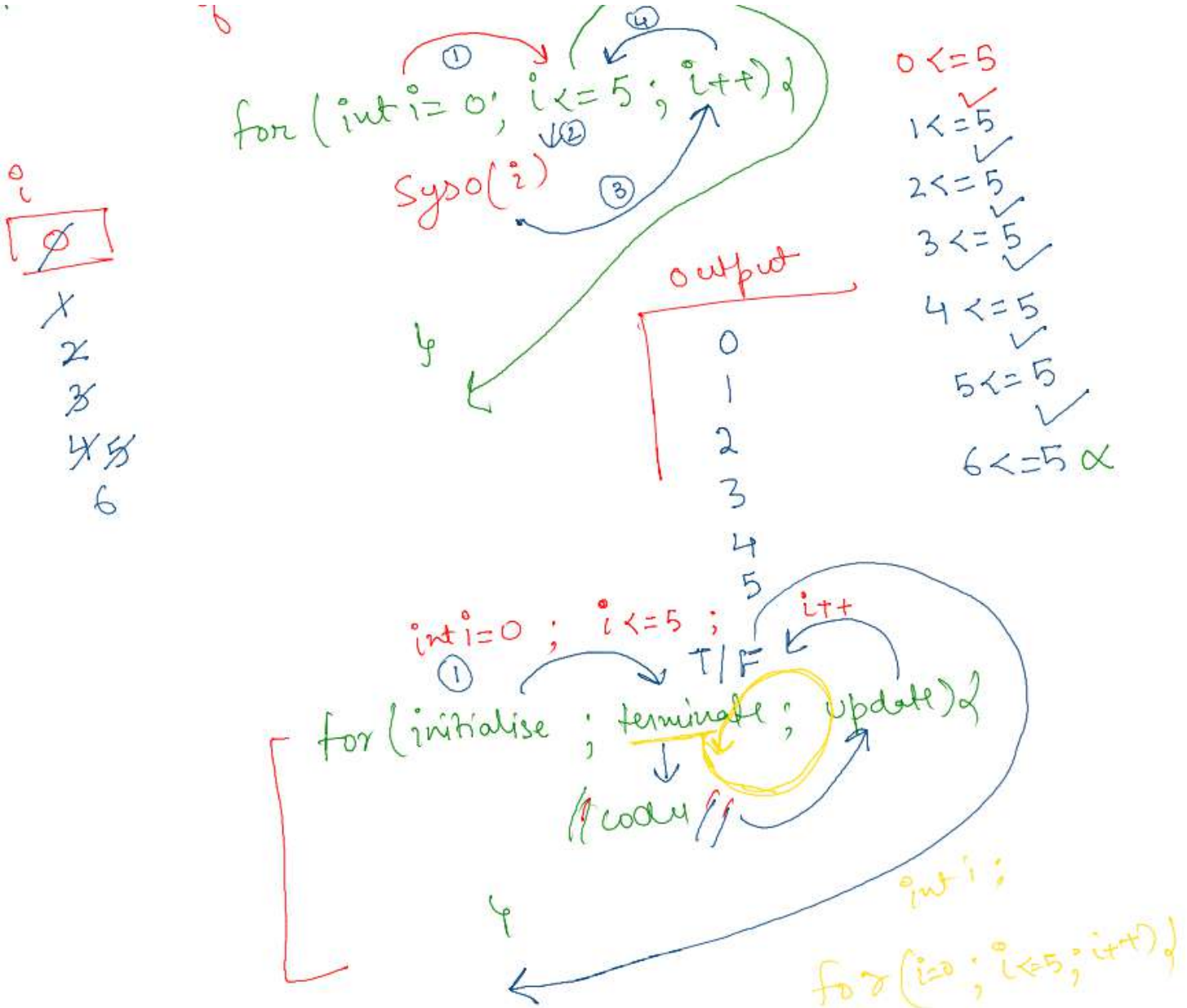
(initialization statement)

termination condition

(increment/ decrement)

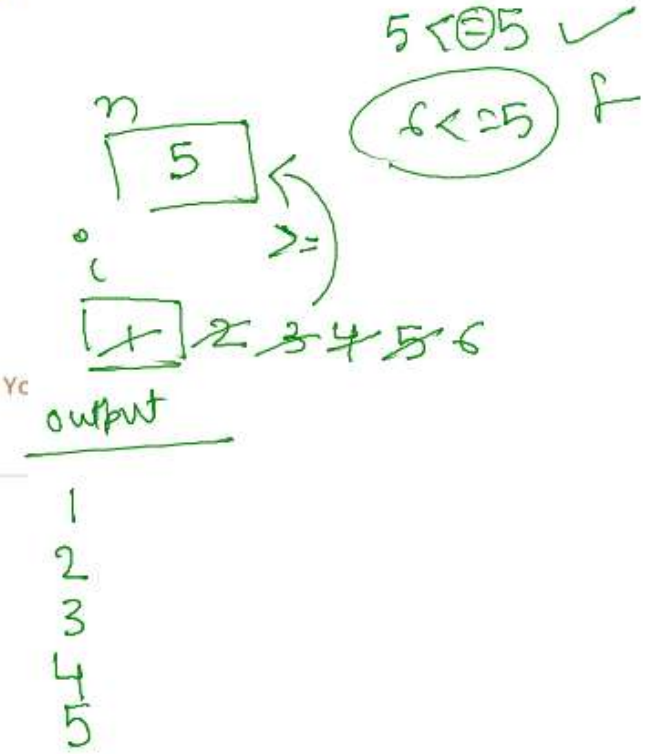
```
for( ______ ; ______ ; ______ ){

    // code to be repeat
```


for(int i=0; i<=10; i++){
declare/ initialize statement
to be checked every iteration
code updation of variable
System.out.println(i);
i
0
}
1
2
3
4
True
false
execute loop statement
update
terminate the for loop and come outside also execute rest of the code
for(int i=0; i<=n; i++){
true
// code
execution of code
false


for (int i= 0; i<=5 ; i++){
Syso(i)
}
i
0
1
2
3
4
5
6
0<=5 ✓
1<=5 ✓
2<=5 ✓
3<=5 ✓
4<=5 ✓
5<=5 ✓
6<=5 ✗
output
0
1
2
3
4
5
int i=0 ; i<=5 ;
T/F
i++
for (initialise ; terminate ; update){
//code//
}
int i ;
for (i=0 ; i<=5 ; i++){
}

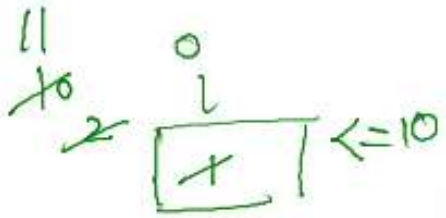
```
for(int i=1;i<=n;i++){
    //code
}
```

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();

    for(int i=1;i<=n;i++){
        System.out.println(i);
    }
    /* Enter your code here. Read input from STDIN. Print output to STDOUT. Yo
}
```



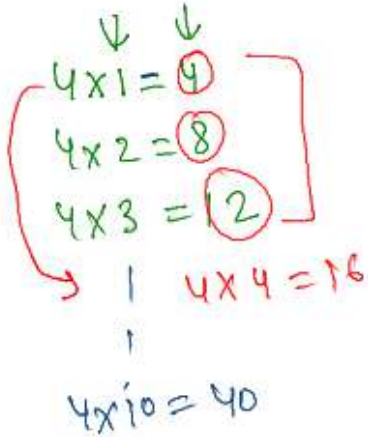

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int x = scn.nextInt();
    int n = scn.nextInt();

    for(int i = x;i<=n;i++){
        System.out.println(i);
    }
    /* Enter your code here. Read input from STDIN. Print output to STDO
}
```

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int x = scn.nextInt();
    int n = scn.nextInt();

    for(int i = x;i<=n;i++){
        System.out.println(i);
    }
    /* Enter your code here. Read input from STDIN. Print output to STDO
}
```




```
public static void main(String[] args) {

    for(int i =1;i<=10;i++){
        System.out.println("4x"+i+"="+i*4);
    }
    /* Enter your code here. Read input from STDIN. Print output to STDOUT. Yo
}
```

4x1=4
4x2=8
⋮
4x10=40



i = 1 to 10

Syso("4x"+i+"="+4*i)

4x1=4
4x2=8
4x3=12
4x10=40

i%7==0 ⟹ exactly divisible

0 → n

if(i%7==0){
Syso(i);
}

0, 7, 14, 21, 28

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int val = scn.nextInt();

    for(int i=0;i<=val;i++){
        if(i%7==0){
            System.out.print(i+" ");
        }
    }
    /* Enter your code here. Read input from STDIN. Print output to STDOUT.

}
```

i till 28

0 7 14 21 28

(i%7==0) T F

i%7==0

```
0 7 14 21 28 35 42 49 56 63 70 77 84 91 98
```

val = 28

```
1  import java.io.*;
2  import java.util.*;
3
4  public class Solution {
5
6      public static void main(String[] args) {
7          Scanner scn = new Scanner(System.in);
8          int val = scn.nextInt();
9
10         for(int i=0;i<=val;i = i+7){
11                 System.out.print(i+" ");
12         }
13         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class
14     }
15 }
```

(5)

i : 0 7 14 21 28 35

0 7 14 21 28

Reasoning

23 30

i

16 9 2

output

2
9
16
23

(2) (9) (16) 23 - - - - - -

+7 +7 +7 +7

val = 24

F (30 <= 24)

for(i=2; i<=val; i+=7) {

Sysо (i)

}

4

16

1 to n
⇓ opposite
n to 1

n
5 ✓

i >= 1
0 >= 1 ✗

for(int i=n; i>=1; i--){
Syso(i)
}

5
4
3
2
1

break :→ came outside block

continue → skip

n=6
1 2 3 4 6

for(i=0; i<n; i++){
if(i==5){
continue;
}
Syso(i);
}

for(i=0; i<=n; i++){

continue
} unused →

switch(ch){
case 'o': int val=5
for(i=0; i<=val; i++){
if( ){
continue;
}
}
}