for loops

problem :-   You are given marks of 10 students in
the class, you have to print their marks.

Scanner sc = new Scanner (System.in);
// we are creating object of scanner.
↓
class

```
int marks1 = sc.nextInt();
int marks2 =        ''
 ⋮

   marks10 =        ''

System.out.println (marks1);
   ''     ''   ·      (marks2)
    ⋮
_  _  _  _  (marks10);
```

for loop is a technique in programming which helps
us to run/execute a piece of code again & again &
again & again _ _ _

loop syntax
↓
Defines how long
does a loop run,
how does the loop
proceeds

(loop syntax) {

```
SOUT ("Hello world");
```

}

we can only use loops if there is a pattern in
your code

Problem : You have to print numbers from 1 to 10
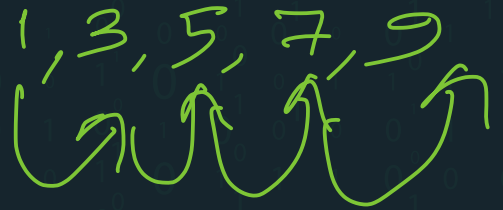
```
scanner - - ——
int x = 1;
int y = 2;
int z = 3;
int p = 4;
     ;
     10;

SOUT(x)
SOUT(y)
SOUT(z)
    ;
```

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

1, 3, 5, 7, 9

Syntax - for loop

```
for ( Initialization ; condition check ; operation ) {
    // code
}
```

```
int i = 1;

for ( i = 1 ; i <= 10 ; i = i + 1 ) {
    system.out.println(i);
}
```

Iteration
↓
the number of time loop
is running

Ist iteration :-   Initializⁿ
                          condition check
                          code   execution inside for loop. (if condⁿ
                                                          check is true)

IInd iteration onwards :- operation
                          condition check
                          code execution (if condⁿ check
                                          is true)

```
for (int i=1 ; i<=10; i++ ) {
    SOUT (i);
}
```

This code will print Hello 10 times.

Ist :   Hello   i=1   1

IInd;   Hello   i=2   2

IIIrd;   Hello   i=3   3

IXth ;   Hello   i=9

Xth ;   Hello   i=10

$i = i+1$

$↓$

$i += 1$

$i++$

Post Inc

++i ⊃ PreInc

A number is multiple of x if the number divides x completely , i.e., after divison the remainder is 0.