JAVA for loop

* The for loop executes a group of
  Java statements as long as the
  boolean condition evaluates to
  be TRUE.

* The for loop combines the
  three phases
  1. initialization statement
  2. boolean exp
  3. Increment or decrement
     statements

About step 1: This is executed
before the loop starts. primary
use is to set value for the
Variable.

About step 2: boolean expression
is evaluated before each time the
block statement is executed.
block statements are executed
ONLY if the BE is True

step 3. i++ or --i

```
int  count        count = 1;

for ( count        ; count < 11 ; count ++)
    block
Private  Systen - - - - - - . (count);
                              10
    └─3

1

;

10
```

basic syntax

for (init ; condition; ~~statement~~ update)

< Block Statement >
print or
do something

int i

for (~~int~~ i = 0; i < 5; i++) // Every
                                    i is
                                    seen on
                                    1 line
{
    System. . . . ("i is : " + i);
}
}

___

multi assignments
for (int i = 0, j = 5; i < 5 j i++)

multi updates as well
for(int i = 0, j = 5; i++, j--)
         _ a   ↑

int j, x, y, z;
  ↗ _____

Each iteration of outer loop executes one iteration of inner loop, right? why is the output twelve astericks instead of seven?

Source code:

```
public class Minnyme
{

    public static void main (String [] args)
    {

        for (int j = 1; j <= 3; j++)
        {

            for (int k = 1; k<= 4; k++)
            {
                System.out.println('*');
            }

        }

}
}
```

Output:

```
*
*
*
*
*
*
*
*
*
*
*
*
```

NESTED for loops

Time is Just a (#)

Java is Just about ($$)

Problem # 1

nested for

T/F   T

```
for (int i = 1; i <= 3; i++) {
    for (int j = 1; j <= 2; j++) {
        System.out.println ("six.");
    }
}
```

output will be:

① six = 1-1
   six = 1-2
   six = 2-1
② six = 2 2
   six   3-1
③ six   3 2

Nested FOR loop means a for loop within a FOR loop. It does not how many loops are there in a FOR loop. A instance of this,if u consider this loop

```
for (int i=1;i<10;i++)     // loop 1
  {                                            // start of outer loop
     for(int j=1;j<=i;j++)  //loop 2
     {                                        // start of inner loop
      System.out.println(j);
     }                                        // end of inner loop
  }                                           // end of outer loop
```

Now, lets see how this code executes, remember that inner loop completes first then control shifts to the outer loop so now we analyze step by step

1. In loop 1 Control , assign i=1 then checks condition of i<10 after that control shifts to loop 2

2 Now In loop 2 , j is assign =1, then control checks for condition j<=1 i.e 1<=1 so now as condition is true,it now moves inward now it finds statement to print the value of j **so it prints 1** now control moves to update statement of loop 2 where increment of j occurs and value of j becomes 2.

3 Now control shifts to condition(of loop 2) j<=i,but now j=2 so condition is false so control moves out of the inner loop and control is transferred to the outer loop's update part(i++)

4 As i becomes 2, there is a check of condition (i<10), after than again same as step 2 j=1, prints   1
                          2

when i=3 it prints 1
                         2
                         3

likewise it executes till i=10....

Write nested loops in Java

Like if statements, loops can be **nested**. If a loop is nested, the inner loop will execute all of its iterations for each time the outer loop executes once.

```java
for(int i = 0; i < 10; i++)
{
    for(int j = 0; j < 10; j++)
    {
        loop statements;
    }
}
```

The loop statements in this example will execute **100** times.