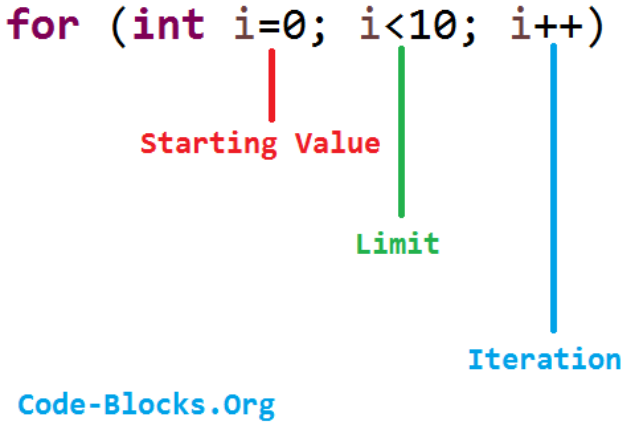
For loops

For loop, like all loops in programming, are used to **repeat lines of code**. For loops are often useful when you want to repeat something a **known number of times**.

For loops contain 3 things:

1. A **starting** value.
2. A limit value. **End** value
3. **Iteration** value (how you want to count)

You will see that **these loops are great for dealing with Arrays**…and Arrays are common and essential ways of storing and retrieving information.



Please note: in the code to the left that **`i++`** is the same as **`i=i+1`** (or increase **`i`** by 1 every time through the loop)

Look through the following loops carefully

Example#1

```
#include <stdio.h>
int main()
{
   int i;
   for (i=1; i<=3; i++)
   {
       printf("%d\n", i);
   }
   return 0;
}
```

Output:

```
1
2
3
```

Example#2

Nested For Loop in C

Nesting of loop is also possible. Lets take an example to understand this:

```
#include <stdio.h>
int main()
{
   for (int i=0; i<2; i++)
   {
         for (int j=0; j<4; j++)
         {
            printf("%d, %d\n",i ,j);
         }
   }
   return 0;
}
```

Output:

```
0, 0
0, 1
0, 2
0, 3
1, 0
1, 1
1, 2
1, 3
```

In the above example we have a for loop inside another for loop, this is called nesting of loops. One of the example where we use nested for loop is **Two dimensional array.**

Examples#3

Table 3 Nested Loop Examples, continued

Nested Loops	Output	Explanation

`for (i = 1; i <= 4; i++)`
`{`
`  for (j = 1; j <= i; j++) { Print "*" }`
`  System.out.println();`
`}`
	`*`
	`**`
	`***`
	`****`
		Prints 4 rows of lengths 1, 2, 3, and 4.

`for (i = 1; i <= 3; i++)`
`{`
`  for (j = 1; j <= 5; j++)`
`  {`
`  if (j % 2 == 0) { Print "*" }`
`  else { Print "-" }`
`  }`
`  System.out.println();`
`}`
	`-*-*-`
	`-*-*-`
	`-*-*-`
		Prints asterisks in even columns, dashes in odd columns.

`for (i = 1; i <= 3; i++)`
`{`
`  for (j = 1; j <= 5; j++)`
`  {`
`  if ((i + j) % 2 == 0) { Print "*" }`
`  else { Print " " }`
`  }`
`  System.out.println();`
`}`
	`* * *`
	`  * *`
	`* * *`
		Prints a checkerboard pattern.