

CS 152

Computer Programming Fundamentals

Java's **For** Loop

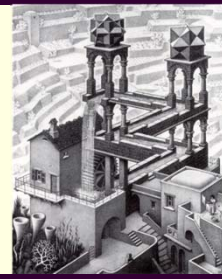
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Quiz: **while** Loop: What is the Output?

```
1) int x = 0;  
2) while (x < 10)  
3) {  
4)     if ((x % 2) == 0)  
5)     { x = x + 2;  
6)         System.out.print(x + ", ");  
7)     }  
8)     x++; // x = x+1;  
9) }  
10) System.out.println(x);
```

x=	0	2	3	4	6	7	8	10	11
line	1	5	8	8	5	8	5		

- a) 2, 6, 10, 11
- b) 3, 4, 7, 8
- c) 3, 4, 7, 8, 11
- d) 2, 3, 4, 6, 7, 8, 10
- e) 2, 3, 4, 6, 7, 8, 10, 11

The **for** Loop

```
1. public class HelloWorld
2. { public static void main(String[] args)
3. {
4.     // Create i and initialize it to 0
5.     // Execute block if true
6.     // Each time block is executed do this at end.
7.     for (int i=0; i<5; i=i+1)
8.     {
9.         System.out.print(i + ", ");
10.    }
11.    System.out.println("\nDone");
12. }
13. }
```

Output: 0, 1, 2, 3, 4,
Done

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for and **while** Loops

```
int i = 2;
while ( i < 5 )
{
    System.out.println("i="+i);
    i++;
}
```

```
for (int i=2; i<5; i++ )
{
    System.out.println("i="+i);
}
```

i=2
i=3
i=4

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Quiz: **for** Loop – What is the Output?

```
1) public static void main(String[] args)
2) { int a = 2;
3)   for (int i=5; i<8; i++)
4)   { System.out.print("(" + i+ ", " +a+ ") ");
5)   }
6)   System.out.println("");
7) }
```

- a) (5,2) (6,2) (7,2) (8,2)
- b) (5,5) (6,6) (7,7) (8,8)
- c) (5,0) (6,0) (7,0) (8,0)
- d) (5,2) (6,2) (7,2)
- e) (5,6) (6,7) (7,8)

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ASCII CODES?

Experiment
Explore

```
1) public class Explore
2) {
3)   public static void main(String[]
4)   { //Printable ASCII: codes 32-126
5)     for (int i=0; i<127; i++)
6)     {
7)
8)       char c = (char)i;
9)
10)      System.out.println(i +
11)      ":c=["+c+"]");
12)    }
13)  }
14) }
```

type cast

ASCII codes can be Googled,
but it's more fun to explore!

```
↑
57: c=[9]
58: c=[:]
59: c=[;]
60: c=[<]
61: c=[=]
62: c=[>]
63: c=[?]
64: c=[@]
65: c=[A]
66: c=[B]
67: c=[C]
68: c=[D]
69: c=[E]
70: c=[F]
↓
```

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Alphabet Wrapping

```
1) for (char c='A'; c<='Z'; c++)
2) {
3)     int letterNum = c - 'A';
4)     int shift = (letterNum + 10) % 26;
5)
6)     char cipherC = (char)('A' + shift);
7)
8)     System.out.println(c + " ==(" +
9)         shift + ")==> " + cipherC);
10) }
11) }
```

```
A == (10) ==> K
B == (11) ==> L
C == (12) ==> M
D == (13) ==> N
E == (14) ==> O
F == (15) ==> P
```

```
G == (16) ==> Q
H == (17) ==> R
I == (18) ==> S
J == (19) ==> T
K == (20) ==> U
L == (21) ==> V
```

```
M == (22) ==> W
N == (23) ==> X
O == (24) ==> Y
P == (25) ==> Z
Q == (0) ==> A
R == (1) ==> B
S == (2) ==> C
T == (3) ==> D
U == (4) ==> E
V == (5) ==> F
W == (6) ==> G
X == (7) ==> H
Y == (8) ==> I
Z == (9) ==> J
```

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Nested Loops: What is the Output

```
1) for (int i=1; i<=3; i++)
2) {
3)     System.out.println(
4)         "Top: i=" + i);
5)
6)     for (int k=1; k<=5; k++)
7)     {
8)         System.out.println(
9)             "    k=" + k);
10)    }
11) }
```

Top: i=1

k=1
k=2
k=3
k=4
k=5

Top: i=2

k=1
k=2
k=3
k=4
k=5

Top: i=3

k=1
k=2
k=3
k=4
k=5

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Quiz: **for** Loop

Which **for** loop on line (1) will result in the output: **2 5 8 11**

1)

2) { System.out.print(i + " ");

3) }

4) System.out.println("");

a) **for** (**int** i=2; i<5; i<8; i++)

b) **for** (**int** i=2; i<5; i<8; i=11)

c) **for** (**int** i=2; i<5; i=i+8)

d) **for** (**int** i=2; i<8; i=i+11)

e) **for** (**int** i=2; i<14; i=i+3)