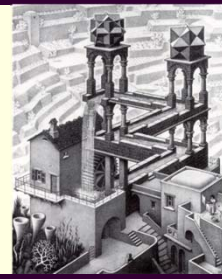


# CS 259

## 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);
```

- 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

x=	0	2	3	4	6	7	8	10	11
----	---	---	---	---	---	---	---	----	----

line	1	5	8	8	5	8	5	5	
------	---	---	---	---	---	---	---	---	--

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## 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)           char c = (char)i;
8)           System.out.println(i +
9)             ":c=["+c+" ]");
10)        }
11)     }
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)

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