

Introduction to "While" Loops and Variable Incrementation/Decrementation

Trace the following loops with columns for each variable and circling the last value. Show the output in the column at right, and trace each variable in the columns provided. Note that these code segments do not necessarily use good style!

```
1. int num = 0;

while (num < 3) {
    System.out.println(num);
    num++;
}
```

num	< 3	outputs
0	✓	0 1 2
1	✓	
2	✓	
3	stop	

```
2. int num = 10;
   int dum = 0;

while (num > 8 & dum < 3)
{
    System.out.println(num);
    num--;
    dum++;
}
```

num	> 8	and	dum	< 3	outputs
10	✓		0	✓	10 9 8
9	✓		1	✓	
8	✓		2	✓	
7	✓		3	No	

Stops!

```
3. int num = 1;

while (num <= 5)
{
    System.out.print(num + "-");
    num++;
}
```

num	<= 5	outputs
1	✓	1-
2	✓	1-2-
3	✓	1-2-3-
4	✓	1-2-3-4
5	✓	1-2-3-4-5-
6	stop!	

```
4. int sum=0;

while (sum < 10) { sum += 2;
    sum++;
}
System.out.println(sum);
```

sum	< 10	prints 12
0	✓	prints 12
2		
3	✓	
5		
6	✓	
8		
9	✓	
11	stop	
12		

```

5. int num = 5;

   while (num < 10)
   {
       System.out.println(num);
       num += 2;
   }

```

<u>num</u> < 10		<u>println</u>
5	✓	5
7	✓	7
9	✓	9
11	stop	

```

6. int num = 5;
   int dum = 5;

   while (num > 1 && dum < 8)
   {
       System.out.print(num + "-");
       num--;
       dum++;
   }

```

<u>num</u> > 1	✓	<u>dum</u> < 8	prints
5	✓	5	5-
4	✓	6	5-4-
3	✓	7	5-4-3-
2	✓	8	no! stops!

```

7. int num = 0, dum = 8;

   while(num < 3)
   {
       dum = 8;

       while (dum > 2)
       {
           System.out.print(1 + dum);
           dum -= 2;
       }

       num++;
   }

```

<u>num</u> < 3	✓	<u>dum</u> > 2	prints
0	✓	8 } resets	9
		8	97
		6	975
		4	
		2	stop
1	✓	resets 8	9759
		6	97597
		4	975975
		2	stop
2	✓	8	
		6	
		4	
		2	
3	stops!		

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