

Chapter 6 Objects and Classes

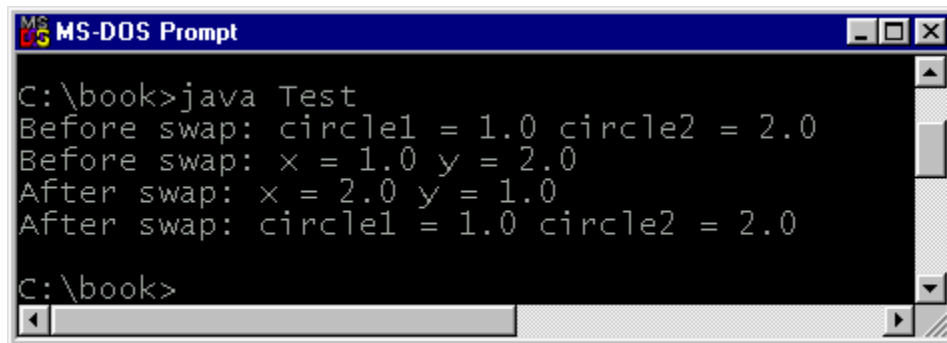
1. See the section "Declaring and Creating Objects."
2. Constructors are special kinds of methods that are called when creating an object using the new operator. Constructors do not have a return type—not even void.
3. Java uses “pass by value” to pass parameters to a method. When passing a variable of a primitive type to a method, the variable remains unchanged after the method finishes. However, when passing a variable of a reference type to a method, any changes to the object referenced by the variable inside the method are permanent changes to the object referenced by the variable outside of the method. Both the actual parameter and the formal parameter variables reference to the same object.

The output of the program is as follows:

count 101

times 0

4.



```
MS-DOS Prompt
C:\book>java Test
Before swap: circle1 = 1.0 circle2 = 2.0
Before swap: x = 1.0 y = 2.0
After swap: x = 2.0 y = 1.0
After swap: circle1 = 1.0 circle2 = 2.0
C:\book>
```

Remark: The reference value of circle1 is passed to x and the reference value of circle2 is passed to y. The contents of the objects are not swapped in the swap method. circle1 and circle2 are not swapped. To actually swap the contents of these objects, replace the following three lines

```
Circle temp = x;
```

```
x =y;
```

```
y =temp;
```

by

```
double t = x.radius;
```

```
x.radius = y.radius;
```

```
y.radius = t;
```

5. System.out.println(f.i);
 Answer: Correct
- System.out.println(f.s);
 Answer: Correct
- f.imethod();
 Answer: Correct
- f.smethod();
 Answer: Correct
- System.out.println(Foo.i);
 Answer: Incorrect
- System.out.println(Foo.s);
 Answer: Correct
- Foo.imethod();
 Answer: Incorrect
- Foo.smethod();
 Answer: Correct
6. i + j is 23 (because i (value of 2) is concatenated with string j + j is, then j (value of 3) is concatenated with string i + j is 2.)
 k is 2
 j is 0
7. There is such constructor ShowErrors(int) in the ShowErrors class.
8. x() is not a method in the ShowErrors class.
9. public, private, and static. See the section "Modifiers" for descriptions of each modifier.
10. The keyword this refers to the object itself.
11. b
12. b, because new C(5.0) does not match any constructors in class C.
13. d
14. e.
15. a is incorrect, since x can be accessed by an object of Foo inside the Foo class.

b is incorrect because x is non-static, it cannot be accessed in the main method without creating an object. d is incorrect, since it is permissible to create an instance of the class within the class. The best choice is c.

16. Yes. Though radius is private, myCircle.radius is used inside the Circle class. Thus, it is fine.
17. An array is an object. The default value for the elements of an array is 0 for numeric, false for boolean, '\u0000' for char, null for object element type.
18.
 - a. a[0] = 1 a[1] = 2
 - b. a[0] = 2 a[1] = 1
 - c. e1 = 2 e2 = 1
 - d. t1's i = 2 t1's j = 1
t2's i = 2 t2's j = 1