



Java developer in 12 months

Mentor-supported training program from CodeGym

MODULE 2. JAVA CORE

Lesson #15

Inner and Nested classes



Lesson plan

- Inner classes
- Static inner classes
- Anonymous inner classes
- Examples of class types from JDK



Inner classes

If one class is declared inside another, then such a class is called an inner class.

In this case, objects of inner classes are nested in objects of outer classes and can access variables of outer classes.

Peculiarities of inner classes

The inner class has a reference to an object of the outer class, therefore:

1. You can not create an object of the inner class inside a static method of the outer class: there is nowhere to take a reference to the object of the outer class, which is implicitly passed to the constructor of the inner class.
2. An inner class can not contain static variables and/or methods.
3. If the inner class is declared public, then its objects can be created outside the outer class, but the object of the outer class must be present.
4. Because we have two nested objects, then two this references are available in the methods of the inner object.

Static inner classes

Inner static classes are also called nested classes.

We can add the static keyword before the declaration of the inner class, and then the inner class becomes a nested class.

An inner static (nested) class is more like a static method in this regard. The word static before the class declaration indicates that this class does not store references to objects of the outer class within which it is declared. Nested static classes do not have hidden references to objects of the outer class in which they are declared.

Peculiarities of Nested classes

1. When creating objects of a nested class outside the outer parent class, you must also specify the name of the outer class through a dot (e.g. Outer.Inner).
2. The nested class and its objects have access to the private static variables and methods of the outer parent class.

Anonymous inner classes

We can combine four things in one place:

1. Declaration of the child class.
2. Method override.
3. Variable declaration.
4. Creating an object of the child class.

But in fact, we are combining two operations together - declaring a derived class and creating its object:

```
Thread thread = new Thread() {  
    public void run() {  
        // method code  
    }  
};
```

Examples of class types from JDK

1. Example of an inner class

The `AbstractList` class has an inner `Itr` class. This is an implementation of the `Iterator` interface, which allows you to get the elements of collections one by one.

2. Example of a static inner class

The `Integer` class contains a static inner `IntegerCache` class.

3. Example of an anonymous inner class

An example of an anonymous class is the `InputStream` class and its static `nullInputStream` method.

Homework

Module 2

Level 15

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Questions and Answers

