

Object Oriented Programming

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The stay button (LeetCode) indicates that (2015) Object Oriented (OO) is very important for software development. Its concept and application have even surpassed programming and software development, and extended to many aspects. When computer programming technology develop to the certain extent, it will develop a new method to recognize and abstract the world, the new method is object-oriented programming.

Java language is object oriented, object-oriented languages differ from procedural languages such as C. Process oriented is to analyze the steps needed to solve the problem, and then use functions to implement these steps step by step, one by one when using the call can be. Object orientation is the decomposition of the transaction that constitutes the problem into various objects. The object is established not to complete a step, but to describe the behavior of something in the whole step of solving the problem. Object-oriented programming has three basic features, the features are encapsulation, inheritance and polymorphism. Encapsulation is an object-oriented programming concept that combines data and operational data functions to prevent external interference and misuse. (Wikipedia, 2009) Data encapsulation leads to an important OOP concept: data hiding. Polymorphism is a technique that allows you to set a parent object to one or more of its children. The parent object can behave differently depending on the characteristics of the child object that is currently assigned to it. (Charlie Calverts, 1999) Inheritance makes existing code reusable and extensible. The subclass can inherit from the superclass, subclass can use the methods and functions in the superclass.

Object-oriented programming is a programming method that maps the real world to a computer model by means of objects. (Xuefeng Liao, 2011) There are two concepts in object-oriented programming, one is class, another is instance. The class is an object template that defines how an instance is created, so the class itself is a data type. However, the instance is an instance of an object. The instance is an instance created by class. You can create multiple instances. Each instance has the same type, but the attributes may be different. For example, we can consider animal as a class, and we can create many instances through the animal class, such as dog, cat, fish and so on. A class can contain multiple fields, which are used to describe the characteristics of a class. Data is encapsulated by classifying a set of data onto an object.

When there is only one abstract method in the interface, it is a functional interface. You can use annotations to force the constraint interface to have only one abstract method. Functional interface also can contain default methods, this interface will still be recognized as a functional interface. In the functional interface, there can be static method, but the static method must be public. In the functional interface, the program can use the Lambda

expression. The Lambda expressions optimize the program to a certain extent. Lambda only works with functional interfaces, so in methods where the parameters are functional interfaces, we can try to use Lambda expressions, not only simple to write, but also optimize performance. In terms of code maintainability, the biggest advantage of functional programming is that the reference transparency, that is, the result of the function operation depends only on the input parameters, and does not depend on the external state. Therefore, we often say that functional programming has no side effects. There is no huge side effect. There is no state inside the function, that is, the input is determined, the output is determined, and it is easy to test and maintain.

Therefore, the object-oriented programming and functional interface are very important and both of them are extremely useful in our study of computer science.

Reference

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