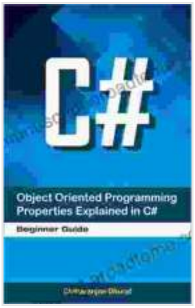
Object-Oriented Programming Properties Explained In Detail

Object-oriented programming (OOP) is a programming paradigm that uses "objects" to design applications and computer programs. "Objects" are data structures consisting of data fields and methods together with their interactions. This makes it easier to create complex programs that are easier to maintain and reuse. OOP is based on several concepts such as Encapsulation, Abstraction, Inheritance, and Polymorphism. Ultimately, OOP aims to imitate and simplify the real world by programming objects that contain both data and functions.

Encapsulation

Encapsulation is the bundling of data and methods that operate on that data within a single unit. This bundling helps keep data safe and secure and makes it easier to maintain code. Encapsulation also helps to reduce the complexity of code by hiding the implementation details of an object from other parts of the program.



Object Oriented Programming Properties Explained in C#: Beginner Guide by Chittaranjan Dhurat

★★★★☆ 4 out of 5

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For example, consider a bank account object. This object would have data fields such as the account number, balance, and account holder's name. It would also have methods such as deposit(),withdraw(),and getBalance(). The encapsulation of these data and methods within the bank account object helps to keep the account information secure and makes it easier to manage the account.

Abstraction

Abstraction is the act of creating a simplified representation of a complex system. This simplified representation hides the implementation details of the system and only exposes the essential information that is needed by the user. Abstraction helps to make code more understandable and easier to maintain.

For example, consider a car object. This object would have data fields such as the make, model, and year. It would also have methods such as drive(),brake(),and turn(). The abstraction of the car object hides the implementation details of how the car actually works. This makes it easier for the user to interact with the car object without having to worry about the underlying mechanics.

Inheritance

Inheritance is the ability for a new object (child) to inherit the properties and methods of an existing object (parent). This allows the child object to reuse the code of the parent object, which saves time and effort. Inheritance also helps to create a hierarchy of objects that can be used to represent complex relationships.

For example, consider a vehicle object. This object would have data fields such as the make, model, and year. It would also have methods such as drive(),brake(),and turn(). A car object could inherit from the vehicle object. This would allow the car object to reuse the code of the vehicle object, and it would also allow the car object to have its own unique data fields and methods.

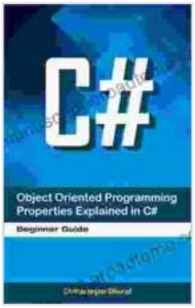
Polymorphism

Polymorphism is the ability for objects of different classes to respond to the same message in different ways. This allows for greater flexibility and code reuse. Polymorphism is achieved through method overriding, which allows a child class to define its own implementation of a method that is inherited from a parent class.

For example, consider a shape object. This object would have a method called draw(). A circle object could inherit from the shape object. The circle object could override the draw() method to draw a circle. A square object could also inherit from the shape object. The square object could override the draw() method to draw a square.

Object-oriented programming is a powerful programming paradigm that can be used to create complex and maintainable programs. The key concepts of OOP are encapsulation, abstraction, inheritance, and polymorphism. These concepts help to make OOP programs more secure, easier to understand, and more reusable.

If you are interested in learning more about OOP, there are many resources available online and in libraries. You can also find OOP courses at many colleges and universities.



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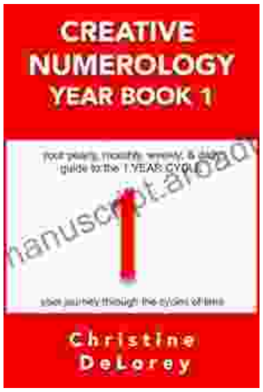
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your yearly, monthly, weekly, & daily guide to the 1 YEAR CYCLE
1
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Christine DeLorey

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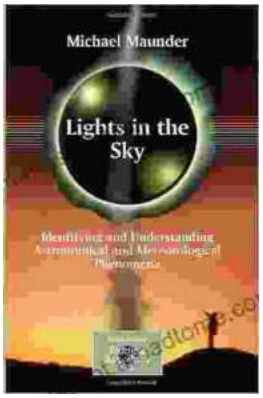
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