

What is Inheritance?

In this lesson, you will be introduced to Inheritance, a powerful concept in Object-Oriented Programming.

WE'LL COVER THE FOLLOWING ^

- Definition
- The *IS A* Relationship
- The Python Object class

Now that you are familiar with the concepts of *objects* and *classes*, let's discuss **inheritance** which is another key concept in *Object-Oriented Programming*.

Definition

Inheritance provides a way to create a new class from an existing class. The new class is a specialized version of the existing class such that it inherits all the *non-private* fields (*variables*) and *methods* of the existing class. The existing class is used as a starting point or as a *base* to create the new class.

The *IS A* Relationship

After reading the above definition, the next question that comes to your mind is *when do we use inheritance?* Well, the answer is that wherever we come across an ***IS A*** relationship between objects, we can use inheritance.

Square



IS A

Python



IS A

Car



IS A

Shape	Programming Language	Vehicle
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In the above illustration, we can see the objects have a **IS A** relationship between them. We can write it as:

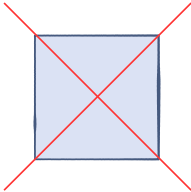
- Square **IS A** shape
- Python **IS A** programming language
- Car **IS A** vehicle

So, from the above descriptions regarding *inheritance*, we can conclude that we can build new classes by extending *existing classes*.

Existing Class	Derived Class
Shape	Square
Programming Language	Python
Vehicle	Car

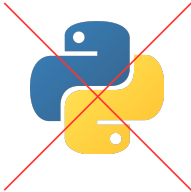
Let’s find out where an **IS A** relationship doesn’t exist.

Square




IS A
Corners

Python



IS A
Syntax

Car



IS A
Steering

The above illustration shows that we cannot use inheritance whenever an **IS A** relationship doesn’t exist between the classes.

The Python Object class

The primary purpose of object-oriented programming is to enable a programmer to model the *real-world objects* using a programming language.

In Python, whenever we create a `class`, it is, by default, a subclass of built-in Python `object class`. This makes it an excellent example of inheritance in Python. This class has very few properties and methods but does provide a strong basis for Object-Oriented Programming in Python.

Are things getting interesting? So, let's move to the next lesson in which we will discuss the syntax and terminologies related to inheritance.