

Assignment 10 Solutions

Q1. What is the difference between `__getattr__` and `__getattribute__`?

Ans: `__getattribute__` is used to find an attribute of a class. It raises an **AttributeError** if it fails to find an attribute of a class. `__getattr__` is implemented latter if **AttributeError** is generated by `__getattribute__`, but for this `__getattribute__` and `__getattr__` both has to be defined in same class. If no attribute is found, `__getattr__` returns a default value. So key difference is that `__getattr__` is called for attributes that don't actually exist on a class.

Q2. What is the difference between properties and descriptors?

Ans: The differences between Properties and Descriptors is:

Properties: With Properties we can bind getter, setter and delete functions together with an attribute name, using the built-in property function or `@property` decorator. When we do this, each reference to an attribute looks like simple, direct access, but involves the appropriate function of the object.

Descriptor: With Descriptor we can bind getter, setter and delete functions into a separate class. we then assign an object of this class to the attribute name in our main class. When we do this, each reference to an attribute looks like simple, direct access but invokes an appropriate function of descriptor object.

Q3. What are the key differences in functionality between `getattr` and `getattribute`, as well as properties and descriptors?

Ans: The Key Differences between `__getattr__`, `__getattribute__`, Properties and Descriptors are:

`__getattr__`: Python will call this method whenever you request an attribute that hasn't already been defined

`__getattribute__`: This method will be invoked before looking at the actual attributes on the object. Means, if we have `__getattribute__` method in our class, python invokes this method for every attribute regardless whether it exists or not.

Properties: With Properties we can bind getter, setter and delete functions together with an attribute name, using the built-in property function or `@property` decorator. When we do this, each reference to an attribute looks like simple, direct access, but involves the appropriate function of the object.

Descriptor: With Descriptor we can bind getter, setter and delete functions into a separate class. we then assign an object of this class to the attribute name in our main class. When we do this, each reference to an attribute looks like simple, direct access but invokes an appropriate function of descriptor object.