Q1. What is the difference between \_\_getattr\_\_ and \_\_getattribute\_\_?

## **\_\_getattr\_\_**

*Called when an attribute lookup has not found the attribute in the usual places (i.e. it is not an instance attribute nor is it found in the class tree for self). name is the attribute name. This method should return the (computed) attribute value or raise an [AttributeError](https://docs.python.org/2.7/library/exceptions.html" \l "exceptions.AttributeError) exception*

## **\_\_getattribute\_\_**

*Called unconditionally to implement attribute accesses for instances of the class. If the class also defines*[*\_\_getattr\_\_()*](https://docs.python.org/2.7/reference/datamodel.html#object.__getattr__)*, the latter will not be called unless*[*\_\_getattribute\_\_()*](https://docs.python.org/2.7/reference/datamodel.html#object.__getattribute__)*either calls it explicitly or raises an [AttributeError](https://docs.python.org/2.7/library/exceptions.html" \l "exceptions.AttributeError). This method should return the (computed) attribute value or raise an [AttributeError](https://docs.python.org/2.7/library/exceptions.html" \l "exceptions.AttributeError) exception. In order to avoid infinite recursion in this method, its implementation should always call the base class method with the same name to access any attributes it needs, for example, object.\_\_getattribute\_\_(self, name).*

Q2. What is the difference between properties and descriptors?

Python descriptors are created to manage the attributes of different classes which use the object as reference. ... A descriptor is a mechanism behind properties, methods, static methods, class methods, and super() .

The property() method in Python provides an interface to instance attributes. It encapsulates instance attributes and provides a property. The property() method takes the get, set and delete methods as arguments and returns an object of the property class.

Q3. What are the key differences in functionality between \_\_getattr\_\_ and \_\_getattribute\_\_, as well as properties and descriptors?

The main difference between \_\_getattr\_\_ and \_\_getattribute\_\_ is that if the attribute was not found by the usual way then \_\_getattr\_\_ is used.

Whereas the \_\_getattribute\_\_ is used before looking at the actual attributes on the object. You will have to use it more consciously otherwise very easily you can end up in infinite recursions.