1. What is the concept of an abstract superclass?

An abstract superclass is a class that is not meant to be instantiated on its own but serves as a blueprint for its subclasses. It often contains abstract methods that must be overridden by its subclasses. This concept enforces a common interface and behavior among related classes while allowing specific implementation details to be defined in the subclasses.

2. What happens when a class statement's top level contains a basic assignment statement?

When a class statement's top level contains a basic assignment statement, it defines a class attribute. This attribute is shared among all instances of the class and is accessible through both the class and its instances. Changes to this attribute affect all instances, and it can be overridden at the instance level.

3. Why does a class need to manually call a superclass's \_\_init\_\_ method?

A class needs to manually call a superclass's \_\_init\_\_ method when it wants to include the initialization behavior defined in the superclass. This is important to ensure that the superclass's attributes and setup logic are properly executed before any subclass-specific attributes or behavior are added. It allows for a complete and controlled initialization process.

4. How can you augment, instead of completely replacing, an inherited method?

To augment an inherited method without completely replacing it, you can use method overriding. In the subclass, define a method with the same name as the inherited method. Inside the overridden method, you can call the superclass's method using the super() function and then add or modify behavior as needed. This way, you retain the original functionality while extending it.

5. How is the local scope of a class different from that of a function?

The local scope of a class and a function differs in their purpose and accessibility. In a class, the local scope typically refers to the class's methods, attributes, and variables defined within methods. These are accessible throughout the class but not outside it. In a function, the local scope refers to variables defined within the function and is limited to that function's block. Class attributes are shared among instances, whereas function variables are specific to each function call.