Assignment 1 Solutions

Q1. What is the purpose of Python's OOP?

Ans: Object-oriented programming is a programming paradigm that provides a means of structuring programs so that properties and behaviors are bundled into individual objects

- Object-Oriented Programming makes the program easy to understand as well as efficient.
- Since the class is sharable, the code can be reused.
- Data is safe and secure with data abstraction.
- Polymorphism allows the same interface for different objects, so programmers can write efficient code
- inherit feature allows programmer to inhetit the methods from existing programs.

Q2. Where does an inheritance search look for an attribute?

Ans: The inheritance search happens in bottom up fashion. its starts form object.attr and search all the way up to the parent class to find the find the first occurrence of attribute by looking in object, then in all classes above it, from bottom to top and left to right

Q3. How do you distinguish between a class object and an instance object?

Ans: The differences between a class object and an instance object are:

1. Class is a template for creating objects whereas object is an instance of class
2. Seperate memory is allocated for each object whenever an object is created. but for a class this doesnot happens.
3. A Class is created once. Many objects are created using a class.
4. As Classes have no allocated memory. they can't be manipulated. but objects can be manipulated.

Q4. What makes the first argument in a class's method function special?

Ans: Python Classes usually have three types of methods which are:

- Instance Methods (object level methods)
- Class Methods (class level methods)
- Static Methods (general utility methods)
- `self` is the first argument for instance methods. which refers to the object itself
- `cls` is the first argument for class methods which refers to the class itself

Q5. What is the purpose of the init method?

Ans: `__init__` is a reseved method in python classes. It serves the role of a **constructor** in object oriented terminology. This method is called when an object is created from a class and it allows the class to initialize the attributes of the class

Q6. What is the process for creating a class instance?

Ans: To create a class instance, we need to call the class by its name and pass the arguments to the class, which its `init` method accepts.

Example: `my_name = my_class("kale","abhishek")` Here `my_name` is an instance of class `my_class` with attributes "kale" and "abhishek".

Q7. What is the process for creating a class?\

Ans: `class` keyword is used to created a class in python. The syntax to create a class in python is `class <classname>:`

Example: `class Shape:` → this creates a class called Shape

Q8. How would you define the superclasses of a class?

Ans: The class from which a class inherits is called the parent or superclass. A class which inherits from a superclass is called a subclass, also called heir class or child class. Superclasses are sometimes called ancestors as well.