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Assignment # 04

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Q.1 Describe the concept of polymorphism in python.

- Method overloading
- Method overriding
- Operator overloading

Ans **Polymorphism:**

In python, polymorphism is a fundamental concept that allows objects of different types to be treated as if they are the same type, simplifying code and promoting flexibility. It's based on the idea that objects can take on many forms, and the same method name can behave differently based on the object it's called on.

Method Overloading:

In languages like java or C++, method overloading refers to defining multiple

methods in the same class with the same name but different parameters. Python doesn't support method overloading in the same way because it doesn't allow multiple methods with the same name differing only by parameters. However, you can achieve a similar effect by using default parameter values or variable-length arguments.

Method overriding:

Method overriding occurs when a subclass provides a specific implementation of a method that is already defined in its superclass. This allows the subclass to provide a specialized version of the method while still maintaining the same method signature as the superclass. Python supports method overriding through inheritance. When a subclass defines a method with the same name as a method in its superclass, the subclass's method overrides the superclass's method.

Operator Overloading:

Operator overloading allows operators such as '+', '-', '*', etc, to behave differently based on the operands they are applied to. In python, this is achieved by defining special methods with double underscores (e.g., __add__, __sub__, __mul__) corresponding to each operator. When an operator is used

an objects of a class that defines these special methods, python invokes these methods to perform the appropriate operation. This enables custom behavior for operators based on the operand's types.