

Polymorphism

The word polymorphism means having many forms. In programming, polymorphism means the same function name but different structures being used for different types.

Polymorphism with class methods:

The following example shows the best way to explain polymorphism in class method.

Example:

```
class India():
    def capital(self):
        print("New Delhi is the capital of India.")

    def language(self):
        print("Hindi is the most widely spoken language of India.")

    def type(self):
        print("India is a developing country.")

class USA():
    def capital(self):
        print("Washington, D.C. is the capital of USA.")

    def language(self):
        print("English is the primary language of USA.")

    def type(self):
        print("USA is a developed country.")

obj_ind = India()
obj_usa = USA()
for country in (obj_ind, obj_usa):
    country.capital()
    country.language()
    country.type()
```

Output:

```
New Delhi is the capital of India.  
Hindi is the most widely spoken language of India.  
India is a developing country.  
Washington, D.C. is the capital of USA.  
English is the primary language of USA.  
USA is a developed country.
```

In the above example, both classes India and USA have the same method name but print different messages. This is the best example of polymorphism with the class method.

Polymorphism with Inheritance:

In inheritance, polymorphism means child class and parent class have the same name method. In inheritance, the child class inherits the method from the parent class. If there is a method that is inherited from the parent class and they are not working as child class then we re-implement the method in the child class. This type of re-implementing a method in the child class is known as Method Overriding.

Example:

```
class Bird:  
    def intro(self):  
        print("There are many types of birds.")  
  
    def flight(self):  
        print("Most of the birds can fly but some cannot.")  
  
class sparrow(Bird):  
    def flight(self):  
        print("Sparrows can fly.")  
  
class ostrich(Bird):  
    def flight(self):  
        print("Ostriches cannot fly.")  
  
obj_bird = Bird()
```

```
obj_spr = sparrow()  
obj_ost = ostrich()
```

```
obj_bird.intro()  
obj_bird.flight()
```

```
obj_spr.intro()  
obj_spr.flight()
```

```
obj_ost.intro()  
obj_ost.flight()
```

Output:

```
There are many types of birds.  
Most of the birds can fly but some cannot.  
There are many types of birds.  
Sparrows can fly.  
There are many types of birds.  
Ostriches cannot fly.
```