

Inheritance

```
1 Inheritance is a fundamental concept in programming and is
2 a feature of object-oriented programming languages like Java,
3 C++,Python and other.It allows you to create a new class that is a
4 modified and specialized version of an exiting class.
5 Inheritance enables the creation of a hierarchy of classes where
6 one class(the child and Subclass) can inherit the properties
7 and behaviors(attributes and methods) of another class.
```

```
1 Types of Inheritance --- 1.Single Level  2.Multilevel
2 3.Hierarchical Inheritance  4.Multiple Inheritance
```

Single Level Inheritance

```
In [1]: 1 class A:
2         def m1(self):
3             print("This is Parent class M1 Method is Calling...")
4
5         class B(A):
6             def m2(self):
7                 print("This is child class M2 method is calling...")
```

```
In [2]: 1 #Child class obj and child class Ref
2
3         b1 = B()
4
5         b1.m1()
6         b1.m2()
```

```
This is Parent class M1 Method is Calling...
This is child class M2 method is calling...
```

```
In [3]: 1 #Parent class obj and Parent class Ref
        2
        3 p1 = A()
        4 p1.m1()
```

This is Parent class M1 Method is Calling...

Multilevel Inheritance

```
In [4]: 1 class A: #Grand Parent
        2     def m1(self):
        3         print("This is Grand Parent Method M1 is calling...")
        4
        5 class B(A):
        6     def m2(self):
        7         print("This is Parent Method M2 is calling...")
        8
        9 class C(B):
       10     def m3(self):
       11         print("This is Child Method M3 is calling...")
```

```
In [5]: 1 #Child class obj and child class ref
        2
        3 c1 = C()
        4
        5 c1.m1()
        6 c1.m2()
        7 c1.m3()
        8
```

This is Grand Parent Method M1 is calling...
This is Parent Method M2 is calling...
This is Child Method M3 is calling...

```
In [6]: 1 #Parent Class obj and parent class ref
        2
        3 b1 = B()
        4 b1.m1()
        5 b1.m2()
```

This is Grand Parent Method M1 is calling...
This is Parent Method M2 is calling...

Hierarchical Inheritance

```
In [7]: 1 class A:
        2
        3     def m1(self):
        4         print("Parent class M1 Method is calling")
        5
        6 class B(A):
        7     def m2(self):
        8         print("Child_1 M2 Method is calling")
        9
        10 class C(A):
        11     def m3(self):
        12         print("Child_2 M3 Method is calling")
```

```
In [8]: 1 b1 = B()
        2 b1.m1()
        3 b1.m2()
```

Parent class M1 Method is calling
Child_1 M2 Method is calling

```
In [9]: 1 c1 = C()
        2 c1.m1()
        3 c1.m3()
```

Parent class M1 Method is calling
Child_2 M3 Method is calling

Multiple Inheritance

```
In [10]: 1 class A:
2         def m1(self):
3             print("Parent1 Class M1 method is calling")
4
5         class B():
6             def m2(self):
7                 print("Parent2 calss M2 Method is calling")
8
9         class C(A,B):
10            def m3(self):
11                print("Child class M3 Method is calling")
```

```
In [11]: 1 c1 = C()
2         c1.m1()
3         c1.m2()
4         c1.m3()
```

Parent1 Class M1 method is calling
Parent2 calss M2 Method is calling
Child class M3 Method is calling

```
In [ ]: 1
```