**EXPERIMENT NO : 3B**

**Python Programs To Implement Different Types of Inheritance.**

**NAME : AKASH RAMKRIT YADAV ID.NO: VU4F2122016**

**BATCH : A BRANCH : IT DIV : A**

**Aim : Python Programs to Implement different types of Inheritance.**

***THEORY:***

***OUTPUT:***

*Python 3.11.0a4 (main, FEB 27 2023, 12:57:32) [MSC v.1929 32 bit (Intel)] on win32*

*Type "help", "copyright", "credits" or "license()" for more information.*

*#AKASH YADAV ID.NO:VU4F2122016*   *EXP:3B DATE:27/2/2023*

***Types of Inheritance in Python***

*Types of Inheritance depend upon the number of child and parent classes involved.*

***There are five types of inheritance in Python***

***>> 1 Single Inheritance:***

***2 Multiple Inheritance:***

***3 Multilevel Inheritance :***

***4 Hierarchical Inheritance:***

***5 Hybrid Inheritance:***

***#1 Single Inheritance:***

*Single inheritance enables a derived class to inherit properties from a single parent class,*

*thus enabling code reusability and the addition of new features to existing code.*

*#Base class*

*class india:*

*def f1(self):*

*print("This function is in parent class.")*

*# Derived class*

*class mumbai(india):*

*def f2(self):*

*print("This function is in child class.")*

*# Driver's code*

*obj=mumbai()*

*obj.f1()*

*obj.f2()*

***>>>****This function is in parent class.*

*This function is in child class.*

***#2 Multiple Inheritance:***

*When a class can be derived from more than one base class this type of inheritance is called multiple inheritances.*

*In multiple inheritances, all the features of the base classes are inherited into the derived class.*

*# Base class1*

*class Father:*

*Fathername=""*

*def Father(self):*

*print(self.Fathername)*

*# Base class2*

*class Mother:*

*Mothername=""*

*def Mother(self):*

*print(self.Mothername)*

*# Derived class*

*class Child(Father,Mother):*

*def Parent(self):*

*print("FatherName : ",self.Fathername)*

*print("MotherName : ",self.Mothername)*

*# Driver's code*

*a1=Child()*

*a1.Fathername="AKASH YADAV"*

*a1.Mothername="AKANSHA YADAV"*

*a1.Parent()*

***>>>****FatherName : AKASH YADAV*

*MotherName : AKANSHA YADAV*

***#3 Multilevel Inheritance :***

*In multilevel inheritance, features of the base class and the derived class are further inherited into the new derived class.*

*This is similar to a relationship representing a child and a grandfather.*

*# Base class*

*class GrandMother:*

*def \_\_init\_\_(self,GrandMothername):*

*self.GrandMothername=GrandMothername*

*# Intermediate class*

*class Mother(GrandMother):*

*def \_\_init\_\_(self,Mothername,GrandMothername):*

*self.Mothername=Mothername*

*GrandMother.\_\_init\_\_(self,GrandMothername)*

*# Derived class*

*class Son(Mother):*

*def \_\_init\_\_(self,Sonname,Mothername,GrandMothername):*

*self.Sonname=Sonname*

*Mother.\_\_init\_\_(self,Mothername,GrandMothername)*

*def print\_name(self):*

*print('GrandMother name :', self.GrandMothername)*

*print("Mother name :", self.Mothername)*

*print("Son name :", self.Sonname)*

*# Driver code*

*akash = Son('Krishna', 'Devaki', 'Marisha')*

*print("LORD KRISHNA PARENTS : CODE BY AKASH YADAV")*

*akash.print\_name()*

***>>>****LORD KRISHNA PARENTS : CODE BY AKASH YADAV*

*GrandMother name : Marisha*

*Mother name : Devaki*

*Son name : Krishna*

***#4 Hierarchical Inheritance:***

*When more than one derived class are created from a single base this type of inheritance is called hierarchical inheritance.*

*In this program, we have a parent (base) class and two child (derived) classes.*

*class Parent:*

*def f1(self):*

*print("This function is in parent class.")*

*class Child1(Parent):*

*def f2(self):*

*print("This function is in Child 1")*

*class Child2(Parent):*

*def f3(self):*

*print("This function is in Child 2")*

*akash1=Child1()*

*akash2=Child2()*

*akash1.f1()*

*akash1.f2()*

*akash2.f1()*

*akash2.f3()*

***>>>****This function is in parent class.*

*This function is in Child 1*

*This function is in parent class.*

*This function is in Child 2*

***#5 Hybrid Inheritance:***

*Inheritance consisting of multiple types of inheritance is called hybrid inheritance*

*class PVPPCOE:*

*def f1(self):*

*print("This function is in class PVPPCOE ")*

*class IT(PVPPCOE):*

*def f2(self):*

*print("This function is in class IT ")*

*class CS(PVPPCOE):*

*def f3(self):*

*print("This function is in class CS ")*

*class ITSA(IT,PVPPCOE):*

*def f4(self):*

*print("This function is in class ITSA ")*

*# Driver's code*

*AKASH=ITSA()*

*AKASH.f1()*

*AKASH.f2()*

***>>>****This function is in class PVPPCOE*

*This function is in class IT*