Q. What is inheritance and describe the types of inheritances.

A:- **Inheritance:-**

The method to create a hierarchy between classes by inheriting from other ~~classes~~. classes.

There are 5 types of Inheritance.

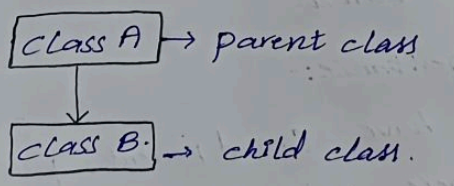
They are:-

1. Single Inheritance
2. Multilevel Inheritance
3. Multiple Inheritance
4. Hierachial Inheritance.
5. Hybrid Inheritance.

In this Multiple Inheritance doesnot supports in Java to overcome we use Interface.

**1. Single Inheritance:-**

In this we have one parent class and childcla Both are interlinked and child class is accessed by th parent class.



Program:-

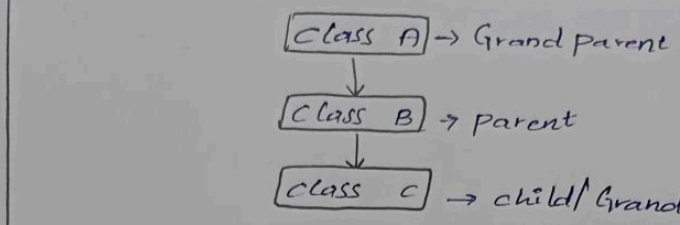
```
Class A{
    Public Void dis_a(){
    System.out.println("Base class is Derived");
}
}

Class B Extends A{
    Public void dis_b(){
    System.out.println("child class is created");
}
}

Class Main{
  Public Static void main(String args[]){
        b obj= new b();
      obj.dis_a();
      obj.dis_b();
  }
}
```

Output:-

Base class is Derived
child class is created.

2. Multilevel Inheritance:-

In this we have Grand parent, parent and child class where child class becomes Grand child for the Grandparent class




program:-

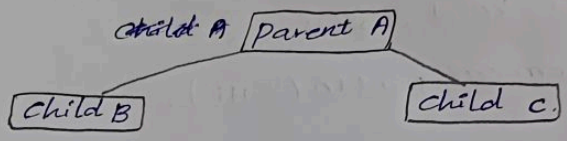
```
class A {
    public void dis1(){
        System.out.println (" Hi");
    }
}
Class B Extends A {
    public void dis2(){
        System.out.println (" Hello");
    }
}
class C Extends B {
    public void dis3(){
        System.out.println (" world");
    }
}
class Main{
    public static void main (String args[]){
        C o = new C();
        o.dis1();
        o.dis2();
        o.dis3();
    }
}
```

output:-

Hi
Hello
World.

3. Hierachial Inheritance:-

In this Inheritance single parent class have many child classes as follows




program:-

```
class A {
public void dis1(){
System.out.print("parent class derived");
}
}

class B Extends A{
public void dis2(){
System.out.print("child1 is derived");
}
}
class C Extends A{
public void dis3(){
System.out.print("child2 is derived");
}
}
```

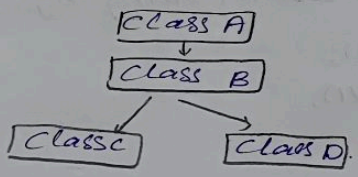
```
Class Main{
  public static void main(String args[]){
      b o1 = new b();
      c o2 = new c();
        o1.dis1();
        o1.dis2();
        o2.dis3();
  }
}
```

Output:-

Parent class derived.
child1 is derived.
child2 is derived.

4 Hybrid Inheritance :-

In this Inheritance is done when combination of 2 Inheritances as follows



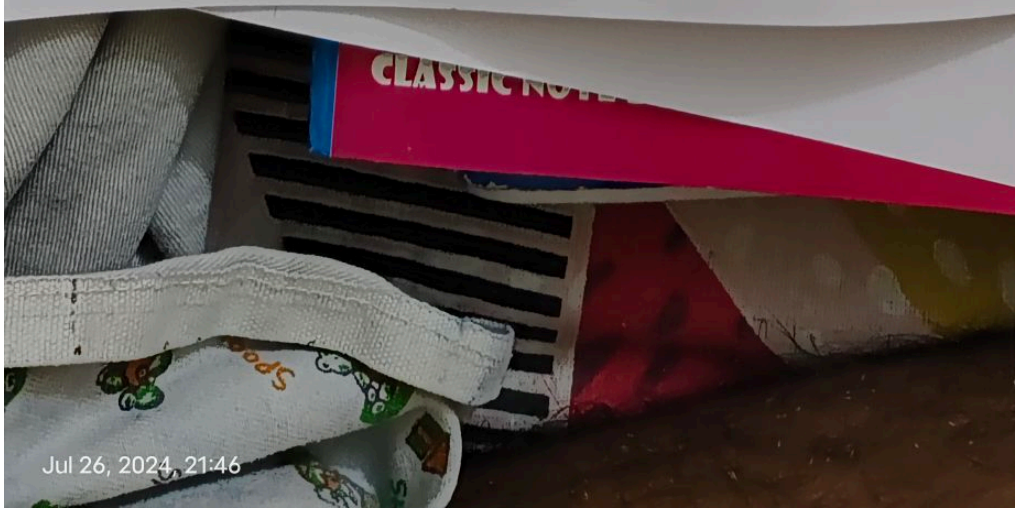

program:-

```
class a{
   public Void dis1(){
   System.out.println("Hi");
  }
}
class b extends a{
```

```
    Public void dis2(){
    System.out.println("Hello");
  }
}

Class c Extends b{
    Public void dis3(){
    System.out.println("Hi!");
  }
}

Class d Extends b{
    Public Void dis4(){
    System.out.println("King");
  }
}

Class Main{
public static void main(String args[]){
      c objc = new c();
      d objd = new d();
      objc.dis1();
      objc.dis2();
      objc.dis3();
      objd.dis1();
      objd.dis2();
      objd.dis4();
  }
}
```

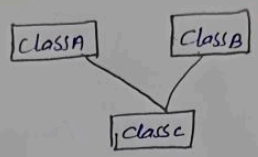
Output:-

Hi
Hello
Hi!
Hi
Hello
King.



5. **Multiple Inheritance :-**

In this Inheritance 2 parent class combines and forms an single child class where in Java it is not possible for overcoming we use Interface.




```
class A{
int a;
A(){
   a=5;
 }
Void dis1(){
   System.out.println(a);
 }
}

interface B{
    int b=10;
  Void dis2(){
    System.out.println(b);
   }
}

class C Extends A implements B{
    int c=15;
  Void dis3(){
  System.out.println();
 }
}
Public class main{
     public static void main (String args[]){
       cobj = new C();
       obj.dis1();    obj.dis3();}
       obj.dis2();
```

**Output :-**

5
10
15

3.
```
Class Main{
public static void main(String args[]){
try{
int a=50/0;
System.out.print("There is no Error");
}
Catch(Exception e){
System.out.println(e.getMessage());
}
finally
{
System.out.println("This is finally Block");
}
}
}
```

Outpiut:-

/ by zero
This is the finally Block.