OOPS is a methodology to develop software devalopment applications it consists prinicples like

Encapsulation,Abstraction,Inheritance,Poly.....

DataHiding
==========
Hiding of the data cannot not be accessed any other java class...
ot
the data cannot be accessed any other java class is called as DataHiding...

note: private is modifer can be used to hide the data...
Use : security
eg private int account_number=100;

Abstraction
=============
Hiding the internal implementation higligting set of services what we are offering to the user

eg: whatsApp,AtmScreen,sms.....
can be achieved using Abstract and Interface....
EncapSulation
============== Encapsulates the datamember and methods into singleUnit is called as Encapsulation.
or Binding of datamember and methods into single module is called as Encapsulation.
Encapsulation= DataHiding+DataAbstraction; use : Security..

Eg: Check in Class

Inheritance(IS-A-RelationShip)
==========
Inheriting parent class properties into child class is called as inheritance.
extends is a keyword to make relation between two classes.

```
class Parent
{
//properties
}
class Child extends Parent
{
//parent class properties. we can access here..
//child class properties
}
```

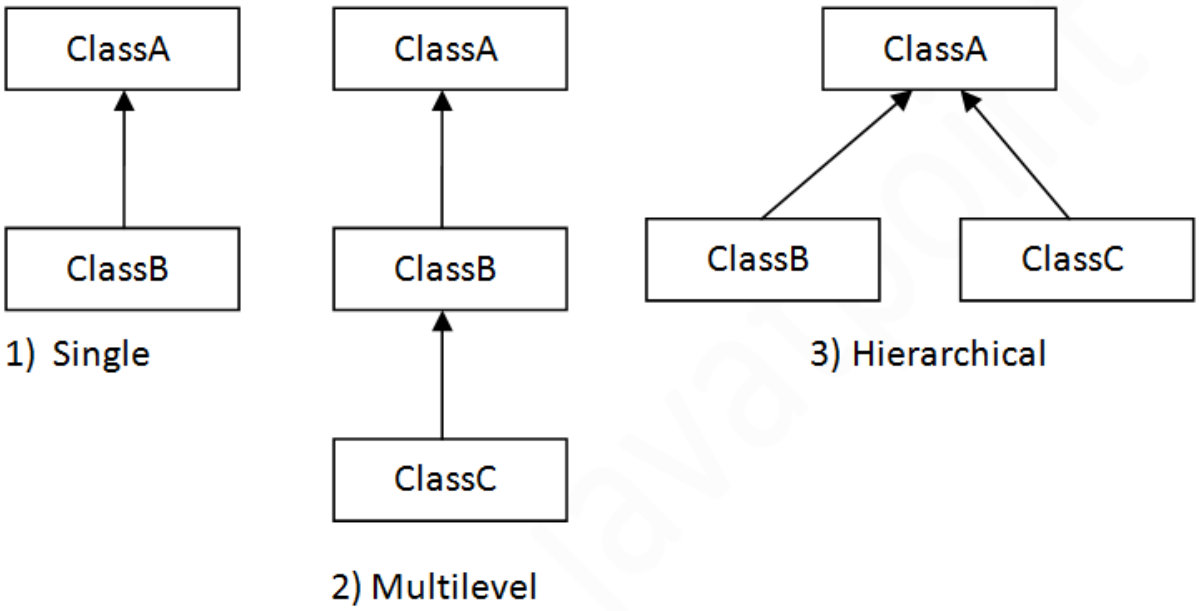
Note: Use of the Inheritance is reusability

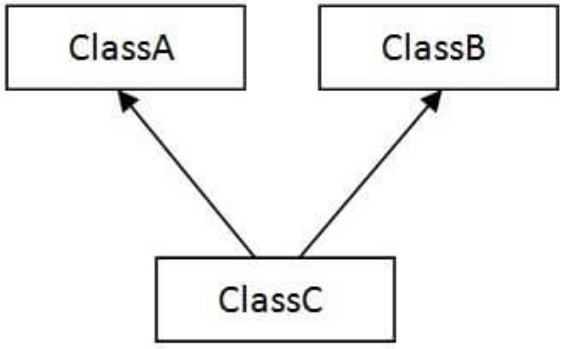
```
class Employee
{
 String firstName;
 String lastName;
//setxxx
//getxxx
}
class HourlyEmployeeClass extends Employee
{

}
```

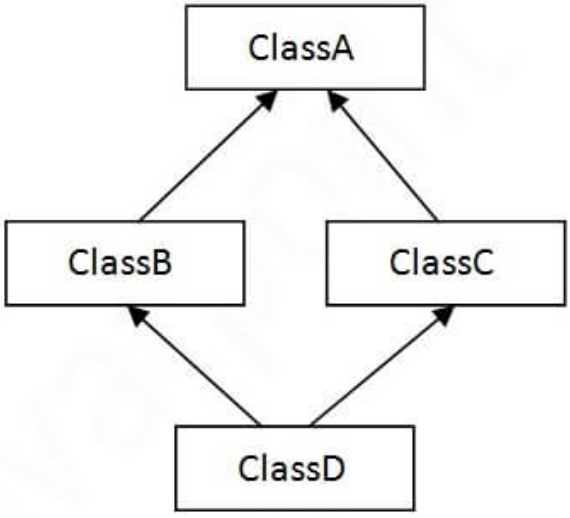
```
class SalaryEmployee extends Employee
{
-----------------------
}
```

```
Book        AnnuaEdition    SpecialEditionBook
======      ============    ==================
bid         discount        cds
bname
bprice
btype
```





4) Multiple



5) Hybrid

Eg : Class Room

```
PolyMorphism
=================
It can perform a single Action in different ways

          Two types of polymorphism
====================================
1)CompileTime PolyMorphism/static poly/static binding/Early Binding

2)RuntimePolyMorphism/dynamicPoly/DynamicBinding/LateBinding


We can perform in PolyMorphism in java by method overloading and Method overriding

MethodOverloading
=================
Common methods and different types of parameters with in the class is called Method overloading
or
If a class has multiple methods hving same name but different in parameters is known as Method Overloading.
              Advantage of Method overloaindg
=============================================
   Method overloading increase the readability of the program
       Note: we can work Method overloading Nuber Of arguments and Type of arguments
If Number of arguments are match then it checks that type of argument
```

Eg: Example in Class Room

MethodOverriding
================ name
If subclass(childclass) has the same as declared in the parent class it is known ad MethodOverriding in java

or

Parent class method and subclass Method if its same name,same parameters,same return type these two classes hving relation we can call as methodoveriding.
Advantage: Method overriding is used provide the specific Implementation of a method.

super keyword
==========
super is a keyword ,it points super class properties from subclass. subclass Method and SuperClass Method if its same to differentiate from subclass we can use super keyword.
super keyword cannot be use with in the static Method.

Constructor hving two default statement this(), super()
==========
this()
=========
using this we can call constructor from Another constructor with in the class
we can use first statement always
super()
========== using this we can call parentclass Constructor from subclass constructor

Abstraction
==========
Is a process of hiding the implementation details and showing only functionality to the user.

ways to ahieve Abstraction
==========
1)Abstract Class
2)Interface

Abstract
==========
If A class contains Declaration of the Method and Definination of the Method(Implemenation of the Methods) pr abstract Methods and non-abstract Methods is called Abstract class.
or
A class which is declared as abstract keyword is known as abstract class,Abstract class can contain abstract methods and non-abstract Methods is called as abstract class..
note: Abstract class can contain abstract methods or non-abstract Methods also...
Abstract class Method should be implement in subclass if not implemented subclass declared as abstract class.

Abstract class cannot be instantied if u want to create object we can create Using Annomous block.
Abstract class hv constructors and static methods also.
Abstract Method
==========
A method which is declared as abstract and doesnot hv implemenation is knwon as abstract method.

Note: If a Class hving abstract method its mandatory to hv abstract keyword before the class.

Abstract class can hv abstract Methods or Non-abstract Methods or Both(abstract and non-abstractMethods,
It can hv constructor and we can define static Methods also.....

Assign Ment :

1 Create a class Student with StudentId, Name, MobileNo, Address, Course.
Write getters and setters for all the data members,
Write a method CalculateFee which returns the fee depending on course taken.
Write child classes FastTrackBatchStudent, CorporateBatchStudent, WeekendBatch Student, CorporateWeekendBatchStudent which overrides CalculateFee method and returns appropriate Fee.

2 Create a class Employee with eno,ename,dname.
Write getters and setters for all the data members,
Write a method CalculateSalary which returns the Salary depending on Dname taken.
Write child classes AccountsDepartMent,ItDepartMent,HrDepartment

Interface
==========
Inteface act as contract between consumer and provider,provider what type of services are providing ,those services will consume by consumer.
Faculty ---> Corejava,jdbc,servlet/jsp --->Student

Using interface keyword we can create unimplemenation structure.
by defualt interface varibles constants
by default interface methods abstract methods
implements keyword can provide implementation of the interface
interface methods should be implement subclass if not implemented subclass declared as abstract class

Interface object cannot be instantied ,using Annomous block we can create.

note: interface can extends more then one interface
note : class can implements more then one interface
note: class can extends only one class at a time.

eg:

```
Interface X
{
//by defualt vairlbes are constant
   int x=10;
//by default varible are abstract Methods
 void funX();
}
```

```
ineterface Y
{ void funY();
}
interface Z extends X,Y
{
void funZ();
}
```

```
class Test implements X,Y
{
// implemenation of the Mehtod
}
class Test implements Z
{
}
```

1)

```
 interface CalculateApp
{
void add();
void sub();
void mul()
}

class CalculateAppImpl implements
CalculateApp
{
//implementation of methods

}


class Client
{
p.s.v.m(s[]args);

}
```

2)

```
interface EmployeeDao
{
void addEmployee();
void viewEmployee();
}

class EmployeeDaoImpl implements
EmployeeDao
{
//implementation of methods

}

class EmployeeClient
{

p.s.v.m(s[]args)
{
// implementation of methods.

}
}
```

3)

```
interface CustmerDao
{
void addCustomers();
Customer[] viewAllCustomers();
Customer viewCustomer();
}
class CustomerDaoImpl implements

CustomerDao
{

//implementation Methods

}

 class CustomerClient
 {

p.s.v.m(s[]args)
{
//call methods ....
}
}
```

```
class Customer
{
cno
cname
cadd
cemail
}
```

Has-A-RelationShip
==========
one class object if we define another class is called Hah-A-RelationShip even we can call as a Aggregation or composition;

note: code Reusability.

```
Class Employee
{
int id;
String name;
Address address;
---
}

Class Address
{
String city;
Strign state;
---
}
```

Eg: Example In Class Room