***Abstraction in Java***

There are two ways to achieve abstraction in java

Abstract class (0 to 100%) and Interface (100%)

Abstract class needs to be extended and its method implemented.

Abstract class cannot be instantiated.

**abstract** **class** Bike{

**abstract** **void** run();

}

**class** Honda4 **extends** Bike{

**void** run()

}

**public** **static** **void** main(String args[]){

System.***out***.println("running safely..");

Bike obj = **new** Honda4();

obj.run();

}

}

**abstract** **class** Bank{

**abstract** **int** getRateOfInterest();

}

**class** SBI **extends** Bank{

**int** getRateOfInterest()

**(return** 7;)

}

**class** PNB **extends** Bank{

**int** getRateOfInterest()

**(return** 8;)

}

**class** TestBank{

**public** **static** **void** main(String args[]){

Bank b;

b=**new** SBI();

System.***out***.println("Rate of Interest is: "+b.getRateOfInterest()+" %");

b=**new** PNB();

System.***out***.println("Rate of Interest is: "+b.getRateOfInterest()+" %");

}}

**abstract** **class** Shape{

**abstract** **void** draw();

}

//In real scenario, implementation is provided by others i.e. unknown by end user

**class** Rectangle **extends** Shape{

**void** draw(){System.***out***.println("drawing rectangle");}

}

**class** Circle1 **extends** Shape{

**void** draw(){System.***out***.println("drawing circle");}

}

//In real scenario, method is called by programmer or user

**class** TestAbstraction1{

**public** **static** **void** main(String args[]){

Shape s=**new** Circle1(); //In real scenario, object is provided through method e.g. getShape() [factory] method

s.draw();

}

}

//example of abstract class that have method body

**abstract** **class** Bike{

Bike(){System.***out***.println("bike is created");}

**abstract** **void** run();

**void** changeGear(){System.***out***.println("gear changed");}

}

**class** Honda **extends** Bike{

**void** run(){System.***out***.println("running safely..");}

}

**class** TestAbstraction2{

**public** **static** **void** main(String args[]){

Bike obj = **new** Honda();

obj.run();

obj.changeGear();

}

}