```
class A{
	int x;
	void add(){
		System.out.println(" X  : "+x);
	}
}
class B extends A{
	int y;
	void sum(){
		System.out.println(" X  : "+x+" Y  : "+y);
	}
}

class Demo4{
	public static void main(String aa[]){

		B s1 = new B();

		s1.x=100;
		s1.add();

		s1.y=200;
		s1.sum();


		System.out.println("----------------------");

		A s2 = new B();

		s2.x=300;
		s2.add();


		//s2.sum();


		System.out.println("----------------------");

		B s3 = (B)s2;

		s3.add();

		s3.y=400;
		s3.sum();



	}
}


######################################################################

class A{
	int x;
	void add(){
		System.out.println(" X  : "+x);
```

```
	}
}

class B extends A{
	int y;
	void sum(){
		System.out.println(" X  : "+x+" Y  : "+y);
	}
}
class Demo5{
	public static void main(String aa[]){

		B s1 = new B();

		s1.x=100;
		s1.add();

		s1.y=200;
		s1.sum();

		System.out.println("----------------------");


		A s2 = s1;

		s2.add();
		//s2.sum();


		System.out.println("----------------------");

		B s3 = (B)s2;

		s3.add();
		s3.sum();
	}
}



##########################################################################

// Inheritance

class Test1{
	int x;
	void show1(){
		System.out.println(" X  : "+x);
	}
}

class Test2{
	int y;
	void show2(){
		System.out.println(" Y  : "+y);
	}
}
```

```
class Test3{
      int z;
      void show3(){
            System.out.println(" Z  : "+z);
      }
}

class Demo6{
      public static void main(String aa[]){
            Test1 ob1=new Test1();
            ob1.x=100;
            ob1.show1();

                System.out.println("------------------------------");

            Test2 ob2=new Test2();
            ob2.y=200;
            ob2.show2();

                System.out.println("------------------------------");

            Test3 ob3=new Test3();
            ob3.z=300;
            ob3.show3();

            Object r1=new Test1();
            Object r2=ob1;

            Object r3=new Test2();
            Object r4=ob2;

            Object r5=new Test3();
            Object r6=ob3;

                System.out.println("------------------------------");

            Test1 ob4=(Test1)r1;
            ob4.x=400;
            ob4.show1();

            Test1 ob5=(Test1)r2;
            ob5.show1();

                System.out.println("------------------------------");

                Test2 ob6=(Test2)r3;
            ob6.y=500;
            ob6.show2();

                Test2 ob7=(Test2)r4;
            ob7.show2();

                System.out.println("------------------------------");

                Test3 ob8=(Test3)r5;
                ob8.z=600;
            ob8.show3();
```

```
            Test3 ob9=(Test3)r6;
            ob9.show3();
                        System.out.println("-------------------------");


      }
}

#########################################################################

// Inheritance (Only upcasting)

class A{
      int x;
      void add(){
            System.out.println(" X  : "+x);
      }
}

class B extends A{
      int y;
        void sum(){

            System.out.println(" Y  : "+y);
      }
}

class Demo6{
      public static void main(String aa[]){
            B s1=new B();
            s1.x=100;
            s1.y=200;
            s1.add();
            s1.sum();

            System.out.println("----------------------");

            A s2=new B();
            s2.x=300;
            s2.add();

            System.out.println("----------------------");

            Object s3=new B();
      }
}


#########################################################################

// Class casting (Upcasting and Downcasting)

class A{
      int x;
      void add(){
            System.out.println(" X  : "+x);
      }
}
```

```
class B extends A{
	int y;
	void sum(){
		System.out.println(" Y  : "+y);
	}
}

class Demo7{
	public static void main(String aa[]){
		B s1=new B();
		s1.x=100;
		s1.y=200;
		s1.add();
		s1.sum();

		System.out.println("----------------------");

		A s2=s1;
		s2.add();


		System.out.println("----------------------");

		Object s3=s2;

		System.out.println("----------------------");

		A s4=(A)s3;
		s4.add();

		System.out.println("----------------------");

		B s5=(B)s4;
		s5.add();
		s5.sum();
	}
}
```

##