COP 3330 10/5/26

* 1) NO IN PERSON CLASS ON 10/7/26
INSTEAD, TONIGHT (10/5), I WILL RECORD A ZOOM VIDEO IN PLACE OF WED LECTURE!

2) O.H. this Hours - Reduced
ONLY ON TUESDAY!
AFTERNOON

3) Homework 5 Posted

4) Inheritance!

HAS-A relationship Bentory HAS-A Ticket

IS-A relationship HUMAN IS-A MAMMAL
CAT IS-A MAMMAL
LIZARD IS-A REPTILE
etc.

SUB CLASS ↑ THAT INHERITS BASE CLASS ↑

BASE CLASS

Define
Instance var
methods

SUB CLASS

Keyword extends
Use BASE CLASS CODE FOR FREE
↳ code reuse

If you want you can REDEFINE any behaviors from the BASE class, OR NOT
If you don't, you inherit base class code
if you do, you OVERRIDE the base class code!
ADD NEW METHODS
ADD NEW INSTANCE VARS!

CHANGE #1: In base class make instance variables protected
This allows only direct + indirect subclasses to access them.

In Java, ALL classes inherit from the Object class.

CHANG IN SUBCLASS: public class B extends A {
ONLY LIST NEW INSTANCE VARIABLES

IN ALL CONSTRUCTORS, JAVA REQUIRES ~~YOU~~ ~~ID~~ A CALL THE BASE CLASS CONSTRUCTOR VIA THE KEYWORD SUPER.

super(a,b,c) → this is a call to the base class constructor w/ the given parameter
↑ must do first

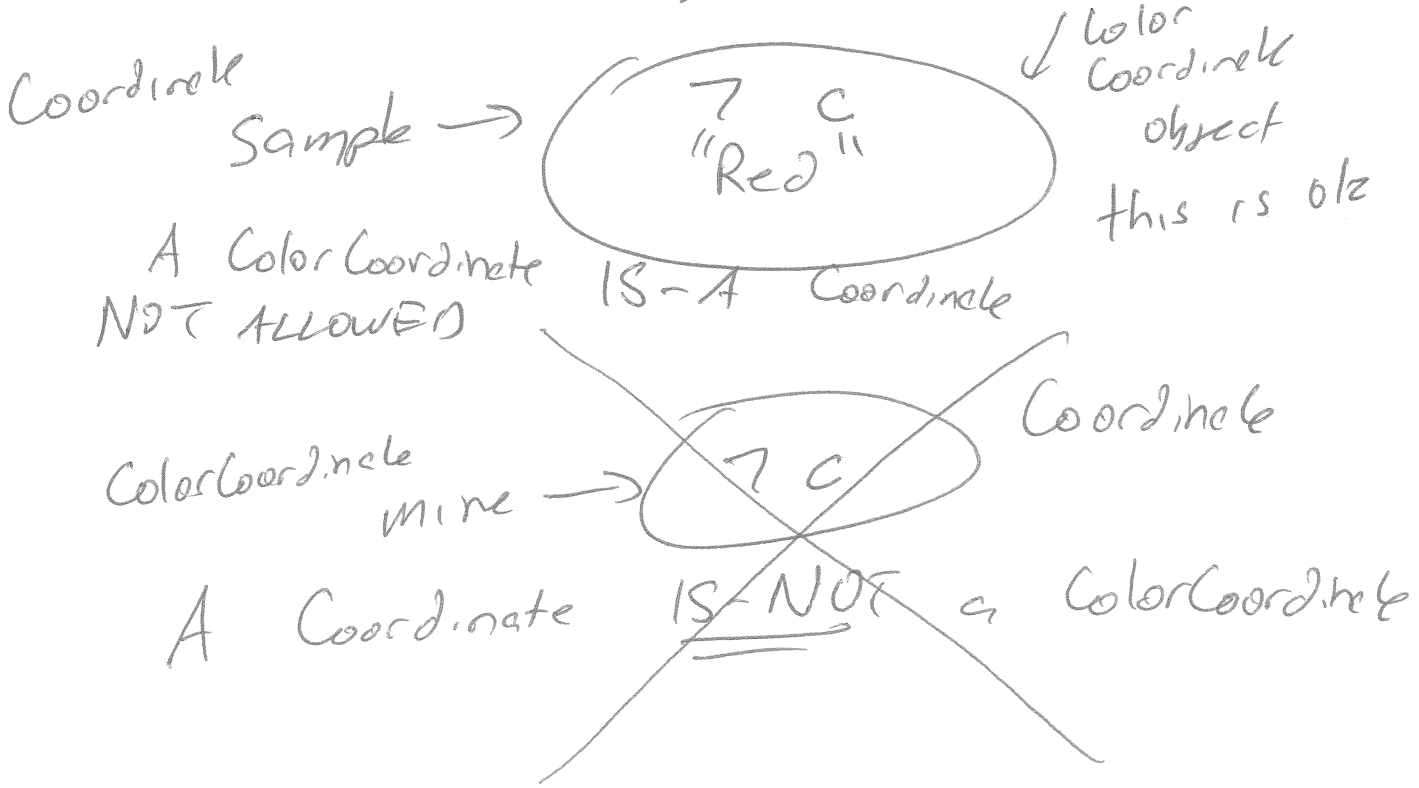
If you "forget" to call the base class constructor in your constructor, Java automatically calls the default super class constructor!

TO CALL ANY BASE CLASS METHOD AT ANY TIME, DO super.methodname(...)

To see if an object is a particular "type" (class) do

if (item instanceof classname)

keyword



~~Refer~~ Reference type need not be the same as Object type but the Object type must inherit from Reference type

Polymorphism is when a decision about which method is run is made at run-time

a.methodname() → at run-time Java will find the method in the "highest" class of the object that a is actually pointing to!

Parameters are matched at COMPILE TIME but objects methods are called on are matched at run-time & exhibit polymorphism.

2 MORE ITEMS

1) Why on earth would we want polymorphism???

2) 3 minute intro fraction example

```
Animal[] all = new Animal[100];
{
all[5] = new Chimpanzee(...)

for (Animal fido : all)
    fido.feed();
```

LOOK UP ?

INVESTIGATE FRACTION/

MIXED FRACTION

EXAMPLE