CS 302 Week 9

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Finish Car & Passenger Example

Will this compile?

```
public class Bell {
    private int num;

    public Bell() {
        this.num = 3;
    }

    public static void main( String [] args) {
        Bell b = new Bell();
        b.num = 5;
    }
}
```

What is count?

```java
public class Widget {
    char ch;
    static int count;

    Widget( char ch) {
        this.ch = ch;
        count++;
    }
    public static void main( String []args) {
        Widget widgetA = new Widget('A');
        Widget widgetB = new Widget('B');
        System.out.println( Widget.count);
    }
}
```

What does this do? How do we use it?

```java
class CarFactory {
    private static int numCarsMade = 0;
    public static int numCarsMade() { return numCarsMade; }

    public static Car [] makeCar( int numCars) {
        Car[] list = new Car[numCars];

        for ( int i = 0; i < list.length ; i++) {
            list[i] = new Car( 2015, "Honda", "CR-V", "Green", 0);
            numCarsMade++;
        }
        return list;
    }
}
```

More uses of Scanner

```
Scanner scan = new Scanner("These are some words.\n"
 +   "and more words.");

while( scan.hasNextLine() ){
     String line = scan.nextLine();
     System.out.println(line);
}
scan.close();
```

Demo P3

Scanner for Car and Persons

Person Minjoon Seoyeon Alejandro Chloe

Car 2012 Honda Accord Maroon 50000

Circle Class

Design a Circle Class
- Field: radius
- Constructor: radius is the argument
- Methods: getArea(), getCircumference(), toString()
- Recall: Area = π * radius * radius; Circumference = π × diameter

Draw a UML Class diagram

Create TestCircle Class
- Create circles with radius 3.5 and 34.1
- Print out area, circumference, and radius

Rectangle

1. Design a Rectangle class
   ○ <u>Fields</u>: width & height as double with default of 1.0 and private
   ○ <u>Constructors</u>: no-arg constructor & a constructor with specified width and height, public
   ○ <u>Methods</u>: getArea() and getPerimeter(), public
2. Draw a UML diagram for the class then implement the class.
3. Write a TestRectangle program that:

   ○ Creates 2 rectangles (4 by 10) and (3.5 by 25.4)
   ○ Display width, height, area and perimeter

Textbook Exercise 9.1

Bike

Design a bike class.

Instance Fields: numWheels, Color, unique id

Class Field: numBikesCreated, used to assign unique id's to each bike.

Constructor: numWheels and Color, automatically sets the unique identifier.

Instance Methods: Number of Wheels and id can be accessed but not changed. Color can be changed. Add a toString() method to return all instance field values in String form.

Class Method: returns the number of bikes created.

Draw the UML diagram and then write the code.

Create a BikeShop class that creates 10 bikes and stores in an array.

Print out each bike's number of wheels, color and id using the toString method.

Portal Snake UML