CS 302 Week 8

Jim Williams

Where is the bug?

```java
import java.util.Scanner;
public class Factorial {
        public static int factorial(int n) {
            int result = 1;
            while( n-- > 0) {
                result *= n;
            }
            return result;
        }
        public static void main( String []args) {
                Scanner scnr = new Scanner( System.in);
                System.out.print("Find factorial of what number? ");
                int num = scnr.nextInt();
                int factorial = factorial( num);
                System.out.println( "The factorial of " + num + " is " + factorial);
                scnr.close();
        }
}
```

Office Hours this Week

Tuesday: 9am to noon, 3pm to 5pm

Wednesday: none (dept mtg)

Thursday: 1pm to 4pm

Getting Started on P2

Where to start?

Classes and Objects

class, instance, object

constructor, no-arg, default

field, attribute, instance variable

toString() instance method, overriding

this, super

printing object

Craig Larman: Applying UML and Patterns

Classes and Objects

public, private, protected, <package>

accessors (getters),mutators (setters)

state of an object

attributes
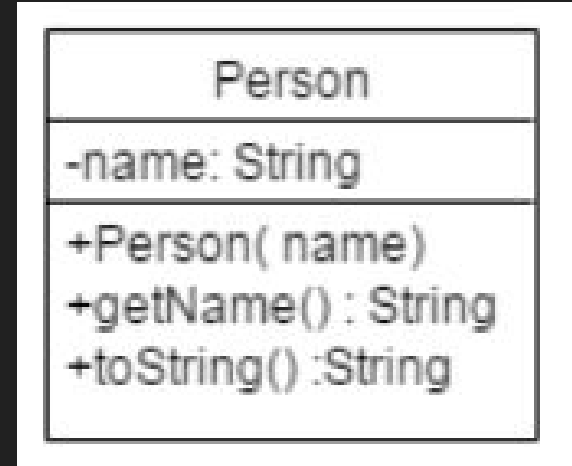
ArrayList

multiple argument constructors, initializing

equals

Please form groups of 2 or 3

Creating classes and instances today

Create a Person class

1. Provide a name attribute.
2. All attributes in all classes should be private.
3. Provide a constructor that sets the name attribute.
4. Provide an accessor for the name.
5. Provide a toString() method that returns the name attribute.

Person
-name: String
+Person(name) +getName() : String +toString() :String

Create a Car class

1. Include attributes: year, make, model, color, mileage. Write a constructor to initialize.
2. The attributes should be set when a car is created (instantiated).
3. Provide methods to access all attributes.
4. Provide a method to change color.
5. Provide a method that only increases mileage.

Car
-year
-make
-model
-color
-mileage
+getYear()
+getMake()
+getModel()
+getColor()
+getMileage()
+changeColor(newColor)
+addMileage(numMiles)

Test class

1. In the main method of a Test class, write the code to create 3 instances of Person with different names.
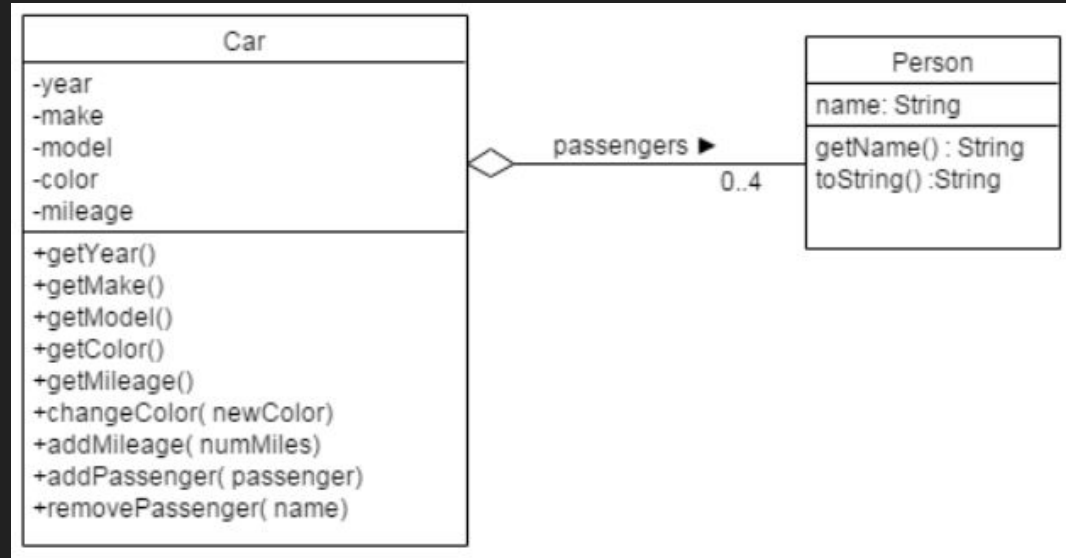2. Print out the names by passing the instance references to the System.out.println method.

personA: Person
name = Name A

personB: Person
name: Name B

personC: Person
name: Name C

Passenger List

1. Add a passenger list attribute to Car.
2. Provide a method to add a passenger at a time to the car.
3. Provide a method to remove a passenger by name.

Modify Test Class

1. Create an instance of a Car.
2. Add 4 passengers to the car.
3. Show which passengers are in the car.
4. Remove one of the passengers from the car, by name.