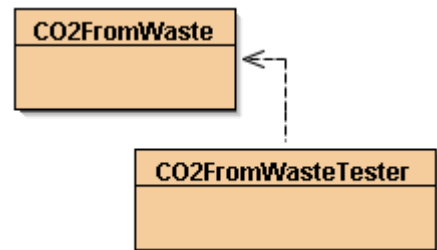


## 08.11 Assignment Instructions

**Instructions:** Write a program that calculates the amount of carbon dioxide produced in a year from waste by

your household and compare how recycling can reduce your CO<sub>2</sub> footprint.

1. If the 08.11 Assignments project has not yet been created in the Mod08 Assignments folder, please do so now.
2. Be sure to save a copy of these instructions in the Mod08 Documents folder.
3. Print a copy for your notebook.
4. Carefully read the instructions before you attempt the assignment.
5. The program should be written in OOP format by explicitly creating an **ArrayList** object of the **CO2FromWaste** class.
6. Open the 08.10 Class Documentation file in your web browser. This file contains documentation on how to write the **CO2FromElectricity** class.



7. On average, each individual accounts for 1,018 pounds of CO<sub>2</sub> generated from household waste. (This is listed under Total Emission in the example of expected output.)
8. Household CO<sub>2</sub> emissions can be reduced by recycling.

Recycling paper reduces CO<sub>2</sub> emissions by 184 pounds per person.  
Recycling plastic reduces CO<sub>2</sub> emissions by 25.6 pounds per person.  
Recycling glass reduces CO<sub>2</sub> emissions by 46.6 pounds per person.  
Recycling cans reduces CO<sub>2</sub> emissions by 165.8 pounds per person.

9. Your program should include the following methods:

```
public void calcGrossWasteEmission()  
public void calcWasteReduction()  
public void calcNetWasteReduction()
```

10. Use the following header for the **ArrayList**. (Review the ShapesV11 demo program.)

CO2FromWaste(int numPeople, boolean paper, boolean plastic, boolean glass, boolean cans)

11. Add records to the ArrayList in the following format: (3, true, false, true, true). This household consists of three people. They recycle paper, glass, and cans, but not plastic.
12. Make comparisons for at least six households. Vary the value of the arguments to produce some interesting results.
13. Before you try to write any calculation statements, make sure you can reproduce with a calculator the results shown in the expected output.
14. Print the results in a user-friendly format, to one decimal place (see expected output).
15. You will benefit from writing a pseudocode algorithm and a class diagram before you actually start writing code.

**Expected Output:** When your program runs correctly you should see output similar to the following screen shot.

						Pounds of CO2		
Household Waste Recycled						Total		Net
Index	People	Paper	Plastic	Glass	Cans	Emission	Reduction	Emission
0	1	true	true	true	true	1018.00	422.00	596.00
1	3	true	false	true	true	3054.00	1189.20	1864.80
2	4	false	false	false	false	4072.00	0.00	4072.00
3	1	true	true	true	true	1018.00	422.00	596.00
4	1	true	true	true	true	1018.00	422.00	596.00

**Grading:** Your assignment will be graded according to the following rubric.

Grading Rubric	Pts
Comments include name, date, and purpose of program.	1
Source code written in two classes.	2
Constructor correctly written.	2
ArrayList with multiple parameters correctly used.	3
Statement to invoke constructor included.	2
Method headers correctly written.	2
Individual methods invoked on an object from <b>main( )</b> method.	2
All calculations correct.	1
Decision statements correctly written.	2
Output formatted with <b>printf( )</b> .	1
No compiler or runtime errors.	1
Thoughtful PMR included.	1

**Submission:** Submit the files for the CO2FromWaste and CO2FromWasteTester classes as Assignment 08.11 for a grade.