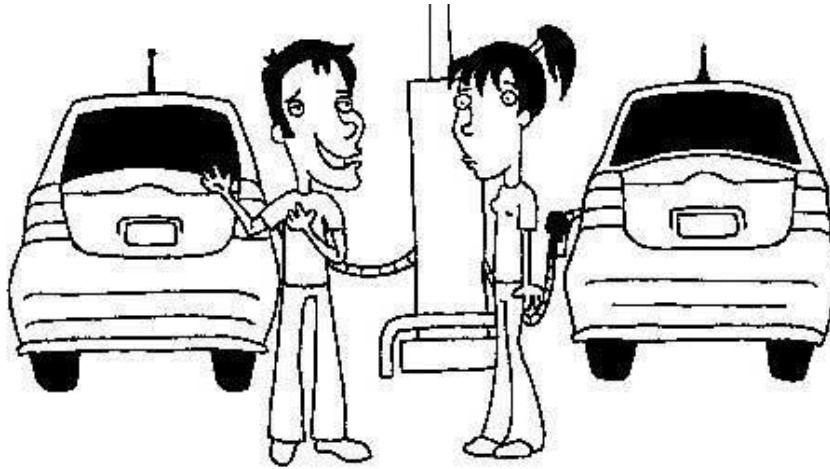


ISAT 252 - Analytical Methods IV
Python Lab #3: Variables and Calculations (40 pts)
Spring 2015

Science and Business Calculations



*Electric? Forget that. MY hybrid runs on a mix of gasoline
and shredded documents from the EPA's library.*

Due Date:

Objectives

When you complete this lab you should be able to:

- Create and use **variables** and **constants** in Python
- Write Python code that will **perform numeric calculations**
- Obtain the value contained in a `input()` function in and convert it into a numeric form that can be used in calculations
- Identify situations in which you can write a program that will help you solve a scientific problem

Deliverables:

1. A working program that can calculate solutions based on input data. You should upload all program files (source code) to an appropriate folder on the course FTP server:
<ftp://wireless.isat.jmu.edu>
2. Answers to the questions at the end of the lab. You should upload a soft copy (i.e. a Word .doc or .docx) to Canvas.

The Problems (a python file for *each* program!)

1. Total Purchase

A customer in a store is purchasing five items. Write a program that asks for the price of each item, and then displays the subtotal of the sale, the amount of sales tax, and the total. Assume the sales tax is 6 percent. **Write an algorithm for this problem using a flowchart**

2. Miles-per-Gallon

A car's miles-per-gallon (MPG) can be calculated with the following formula:

$$MPG = \text{Miles driven} / \text{Gallons of gas used}$$

Write a program that asks the user for the number of miles driven and the gallons of gas used. It should calculate the car's MPG and display the result.

3. Celsius to Fahrenheit Temperature Converter

Write a program that converts Celsius temperatures to Fahrenheit temperatures. The formula is as follows:

$$F = 9/5 C + 32$$

The program should ask the user to enter a temperature in Celsius, and then display the temperature converted to Fahrenheit.

Don't forget to use the correct program sections:

'declare variables

'get input

'do processing

'display output

Worksheet 3: Variables and Calculations

Name: _____ Section: _____

1. What type of error produces incorrect results but does not prevent the program from running?

- a. syntax
- b. logic
- c. grammatical
- d. human

2. After the execution of the following statement, the variable **price** will reference the

```
value _____. price = int(68.549)
```

- a. 68
- b. 69
- c. 68.55
- d. 68.54

If value1 is 2.0 and value2 is 12, what is the output of the following command?

```
print(value1 * value2)
```

- a. 24
- b. value1 * value2
- c. 24.0
- d. 2.0 * 12

4. True/False: Python allows programmers to break a statement into multiple lines.

5. True/False: Python formats all floating-point numbers to two decimal places when outputting using the `print` statement.