


# CSI31 Introduction to Computer Programming I



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# Software Development Process

- Analyze the problem. Specifically, what problem are you solving?
- Determine specifications. Describe what your problem will do in words and in detail. What inputs and outputs? How are they related?
- Create a design. What is the structure of the solution? Describe it in words.
- Implement the design. Write the program code for your solution.
- Test/debug the program. Does it work as expected? If it has bugs, fix them.
- Maintain the program. Improve it as needs of users change, as your programming skills improve.

# Problem

- Write a program that converts distance measured in kilometers to distance measured in miles.
- Follow the software development process.
- Use techniques from programs you have seen.

# Software Development Process

- Analyze the problem
- Determine specifications.

# Software Development Process

- Create a design.
- Implement the design.

- Test/debug the program.

- Maintain the program.

# Python terminology and syntax

- A Python identifier must begin with letter or underscore `_`, which can be followed by a sequence of letters, digits, underscores.
- Identifiers are used as names.
- Examples?
- Some strings are reserved words or keywords Table 2.1
- Don't re-use the name of a function already defined.

# Expressions in Python

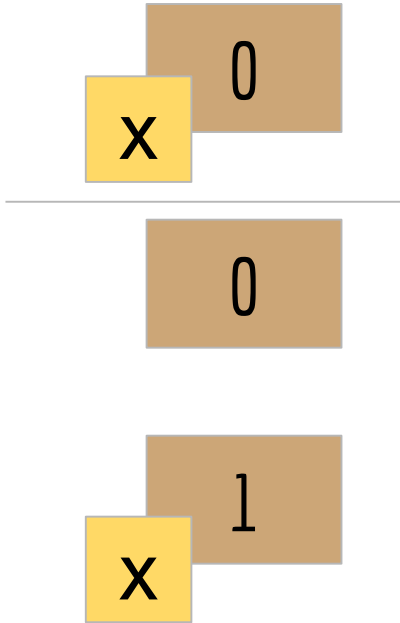
- A literal indicates a specific value: number 2, 2.0, - 3.47, or string “Hello”, “Enter a number.”
- A literal is an expression.
- An identifier is an expression.
- Literals and identifiers combined with operators are expressions.
- Arithmetic operators, + for concatenation of strings



# Assignment

- $\langle \text{variable} \rangle = \langle \text{exp} \rangle$
- Evaluate RHS, associate that value with the variable
- $x = 0$
- $x = x+1$
- Usual image: A variable is a name for a box that holds a value.
- Words that mean assignment?

# Sticky-note view of assignment in Python



The value is stored in memory.

The identifier is attached to the value like a sticky-note.

The identifier can be moved to be attached to another value stored in memory somewhere else.

# Reference view of assignment in Python



# CodeLab

Section Access Code : **CUNY-26557-WMUP-38**

## REGISTRATION INSTRUCTIONS FOR STUDENTS:

- 1) Go to [www.tcgo1.com](http://www.tcgo1.com) OR [www.tcgo2.com](http://www.tcgo2.com)
- 2) Click '**Register for CodeLab**'
- 3) Later, during enrollment, use the following Section Access Code: (**CUNY-26557-WMUP-38**)

# CodeLab

## LOGIN INSTRUCTIONS FOR STUDENTS:

- 1) Go to [www.tcgo1.com](http://www.tcgo1.com) OR [www.tcgo2.com](http://www.tcgo2.com)
- 2) Click '**Login to CodeLab**'

The username is the email address given during registration.  
The password is the password selected during registration.

# CodeLab

Once registered, students can submit solutions to 10 exercises.

To be able to work with all exercises, the student needs to obtain full access:

## **GETTING FULL ACCESS:**

- 1) Log in to CodeLab
- 2) Click **LOBBY**
- 3) Click the button '**Get Full Access**'
- 4) Follow the directions (options include paypal, ecommerce, check for a \$2 handling fee, and payment keys)