On your way in...(on the side table)

Hand-in:
1. Homework 00 in the folder marked with a range matching your anonymous ID (i.e. AID ‘86’ goes in folder ‘70-90’)

Pick-up:
1. POGIL Activity 1
2. POGIL Activity 3
Before your lab on Monday/Tuesday...

• You **must** obtain your CS account name + password from Mary Bailey, our Systems Tech ([mary@cs.williams.edu](mailto:mary@cs.williams.edu)) before your lab!

• She’s available:
  - Mon, Feb 4: 10 - 11:30a, 3 - 4:30p
  - Tues, Feb 5: 10:30 - 11:30a, 3 - 4:30p

• Her office is in TCL312, it’s frequently behind a locked door
  - The combination is: #6-4-6-4-0-4
Welcome to CS 134!

Introduction to Computer Science

Iris Howley

-Starting Up-

Spring 2019
Question: How to install python3 on my machine?

• Install python3
  ▪ [https://www.python.org/downloads/](https://www.python.org/downloads/)

• Run python3 on Unix (Macs, Linux, not Windows PCs)
  ▪ You’ll need to type “python3 __name_of_file__” to use python3
What do these 4 applications have in common?
What do these 4 applications have in common?
Similar...
Terminal
Python

• Written into a **script** and then interpreted by Python
  - `python3 hello.py`

• **Interactive** mode
  - `python3`
  - `>>> print("hello!")`

• emacs and Python are two separate apps!
Emacs Keyboard Shortcuts

- Ctrl-p: places cursor at previous line
- Ctrl-n: cursor at next line
- Ctrl-f: Forward a character
- Ctrl-b: Back one character
- Ctrl-k: kills the line
- Ctrl-y: yanks it back into existence (paste)

Emacs shortcuts work in python, Chrome, etc. (Although, not Microsoft Word)
Lab Logistics
We have lab today and tomorrow!

Attend your scheduled lab!
Submitting Labs

TCL271a
Submitting Labs

TCL271a

git

[Image of people]
Submitting Labs

“shared repo”
Using git lets you access your work from any machine with Internet + git.

Git and emacs are tools that computer scientists use.
Process-Oriented Guided-Inquiry Learning (POGIL)
The Goal:
To think like a computer scientist.
POGIL: Activities

• Learning Objectives

• Critical Thinking Questions

• Application Questions

POGIL activities lead to longer term learning retention
POGIL

• Let’s step through a sample POGIL activity together.

• Look at POGIL worksheet 01.
2. Type and execute following code. What output is produced? Indicate if there is a problem.
   a. \texttt{print(“Hello, my name is Pat!”)}
   b. \texttt{print(Hello, my name is Pat)}
   c. \texttt{print(“Hello.\nMy name is Pat”)}

What caused the different output format for samples “a” and “c” in question 2?
POGIL

4. What do you think the following Python statements output? Enter the statements in the interactive mode of the Python interpreter to verify your answers.
   a. `print(2+5)`
   b. `print(2*5)`
   c. `print(“2+5”)`
   d. `print(“Age:”, 20)`

5. Examine the output for each statement in question 4.
   a. What is the difference in the output for the statements in “a” and “c” of question 4?

   b. What caused the difference?

   c. Which statements contain a *string literal*?

   d. What does the comma (,) do in the print statement in part “d” of question 4? How does it affect the spacing of the output?
See the program below + its output. What do the first two lines do?

```python
# (c) 2019 iris howley
# This program prints a welcome statement.
print("Hello, Iris!")
print("Welcome to programming in Python!")
```

What would happen if we placed a
# in front of print(“Hello, Iris!”)?
POGIL

• Let’s look at POGIL activity 03

What is the output for each statement?

print(16 + 3)
print(16 - 3)
print(16 * 3)
print(16 ** 3)
print(16 / 3)
print(16 // 3)
print(16 % 3)
Variables, Types & Assignment
The Readings
It turns out that `class` is one of Python’s **keywords**. The interpreter uses keywords to recognize the structure of the program, and they cannot be used as variable names.

Python 3 has these keywords:

<table>
<thead>
<tr>
<th>False</th>
<th>class</th>
<th>finally</th>
<th>is</th>
<th>return</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>continue</td>
<td>for</td>
<td>lambda</td>
<td>try</td>
</tr>
<tr>
<td>True</td>
<td>def</td>
<td>from</td>
<td>nonlocal</td>
<td>while</td>
</tr>
<tr>
<td>and</td>
<td>del</td>
<td>global</td>
<td>not</td>
<td>with</td>
</tr>
<tr>
<td>as</td>
<td>elif</td>
<td>if</td>
<td>or</td>
<td>yield</td>
</tr>
<tr>
<td>assert</td>
<td>else</td>
<td>import</td>
<td>pass</td>
<td></td>
</tr>
<tr>
<td>break</td>
<td>except</td>
<td>in</td>
<td>raise</td>
<td></td>
</tr>
</tbody>
</table>
QUESTIONS?
Leftover Slides
Computing Quadratic Formula

- $ax^2 + bx + c$

\[ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]

Open emacs

```python
a = float('Enter the x**2 coefficient: ')
b =
c =
rootPart = b*b - 4*a*c
rootPart = rootPart ** 0.5

root1 = (-b + rootPart)/(2*a)
root2 = (-b - rootPart)/(2*a)

print(root1)
print(root2)
```
POGIL Activities Lead to Longer Term Learning

• Selecting
  ▪ What are the key ideas?

• Organizing
  ▪ How are the key ideas related with each other?

• Integrating
  ▪ How do the key ideas relate to other things I know?

POGIL: Roles

Manager/Facilitator
Speaker/Presenter
Reflector/Strategy Analyst
Recorder