Lab 1 Hello World!

Learning Goals

0. Create and save a Python program using the IDLE editing program.

1. Practice Python's **print( )** statement.

2. Assign values to variables.

3. Experiment with "character strings."

4. Try some very basic "Turtle Graphics" displays.

Resources

Our textbook: Practical Programming 2nd Edition

Details

Start IDLE, make sure you are using Python 3.

Type this (use your name instead of Jane Doe)
 # by Jane Doe

print("Hello World")   then press return

You should see
Hello World

Now create a file:

File menu, New Window

Save **hello.py**

Run menu, Run Module
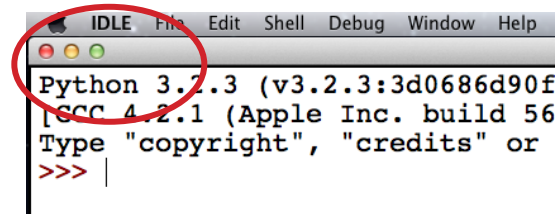
problems? Fix them and try again.

Experiments
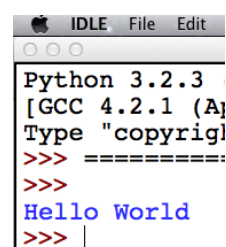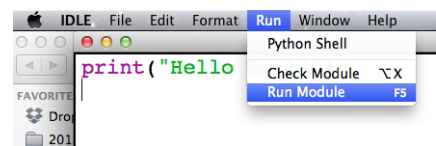
Which of these work?
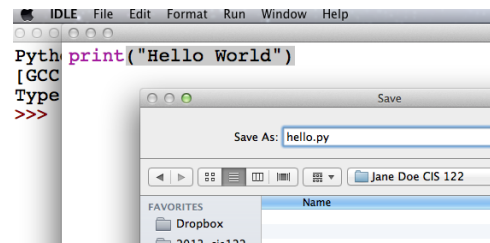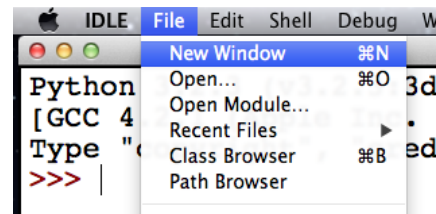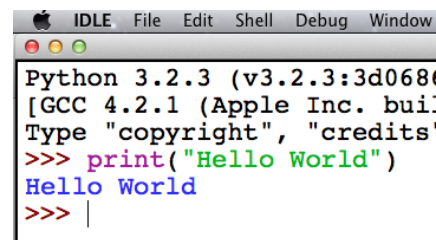Try each, then add a comment
Example:

hello00.py: Run, add comment, save
```
PrintHello
```
```
# Got an error message (# starts a comment)
```

We use Python 3 – you should see something like this when you start up.

If you see Python 2, check with your lab TA for help in starting the right version.

The result of running this hello.py
Notice the
Hello World   result

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hello1.py:
```
Print("Hello World") # does capital P work?
```

hello2.py:
```
print "Hello World" # do I need ( )  ?
```

hello3.py:
```
print(Hello World) # no quotes
```

hello4.py
```
print('Hello World')
```

hello5.py
```
print  ("Hello World")
```

Create a variable and print it

Lab1-1.py   Using a variable

Named areas called variables can store a value. In Python, = means "is assigned the value of "

```
message = "Hello World"
print(message)
```

Lab1-2.py   Adding character strings

```
greeting = "Hello"
planet = "Earth"
message = greeting + planet
print(message)
```

Oops! - prints HelloEarth
Try to fix so it looks like `Hello Earth`

Lab1-3.py   Using variables with numbers

```
amount = 8
boxes = 5
total = amount * boxes
print(total)
```

Lab1-4.py   Can you assign a new value to a variable?
```
amount = 16
print(amount)
amount = 75.22
print(amount)
```

Lab1-5.py   Are capitals and lower-case variable names the same?
```
amount = 16
Amount = -99
print(amount)
print(Amount)
```

If you are not quite sure about what you just did, try pasting your program code into the University of Waterloo's CS Circles web site's visualizer. Your lab TA can help you.

Rules for naming variables

See if you can figure out some rules for naming variables in Python with a few experiments.

Try these super-short experiments in the Python interactive >>> mode; keep notes about your conclusions.

Can a variable name begin with a number?
```
>>>8dinners = 34.75
```

Can a variable name contain some numbers?
```
>>>bottle44 = "Syrup"
```

Can you put a space into a variable name?
```
>>>too many = 99
```

Can a variable name contain a $?
```
>>>4$ = 4.00
>>>cost$ = 76
```

Can a variable name get really long?
```
>>>abcdefghijklmnopqrstuvwxyz = "car"
```

Grading Rubric

20 points total:

4 points - hello.py as a Python 3 program
        It must run correctly to count.
1 point each, up to 5 points total for:
        hello1.py, hello2.py ... hello5.py
1 point Lab1-1.py   using a variable
2 points Lab1-2.py   adding characters
1 point   Lab1-3.py   variable with numbers
1 point   Lab1-4.py   new value for variable?
5 points Notes on naming variables
5 points Lab 1-6 turtle graphics - move, turn the turtle several times

+1 add some color to your turtle graphics
+2 create an equilateral triangle (all 3 sides the same length).

Turtle notes, very briefly

```
import turtle        # required
turtle.forward(100)
turtle.right(45)
turtle.forward(50)

turtle.color('blue')
turtle.left(90)
turtle.forward(120)  # draws a blue line
```