Python Basics

A Simple Program

```
print "Comp Sci Rocks!"
```

Output

Comp Sci Rocks!

Python Output

To output a line use print

```
print "Comp Sci"
print "Rocks!"
```

Output

```
Comp Sci
Rocks!
```

Python Output

To print on the same line add a comma after the first print

```
print "Comp Sci",
print "Rocks!"
```

Output

Comp Sci Rocks!

Escape Sequences

**To print certain characters or add lines you will need to add **

```
print "Comp Sci \\Rocks!"
print "Comp Sci\tRocks!"
```

Output

```
Comp Sci \Rocks!
Comp Sci    Rocks!
```

Escape Sequences

frequently used combinations

Name	Use
\t	tabs over five spaces
\n	moves to front of next line
\r	moves to front of current line
\\	displays one backslash \ when printed
\"	displays one double quote " when printed
\'	displays one single quote ' when printed

open output.py

Python Comments

```
# Single line comment

"""
This is a multi line comment
"""
    # this line prints stuff on the screen
    print "stuff"
```

Python Comments

```
# Single line comment

"""
This is a multi line comment
"""

    """
    This prints out stuff
    """
    print "stuff"
```

Variables

Variables allow us to store values.

```
grade = 86
student = "Bob"
theEnd = False
```

Data Types

Used for variables

Type	What it stores
boolean	True or False
integer	A whole number (ex. 50)
float	A decimal number (ex. 5.02)
string	A series of characters – this can be letters, words, or numbers (ex. "60 seconds)
list	A series of variables (ex. [23, "Hi", False])
tuple	An unchangeable list (ex. (23, "Hi", False))

Identifiers

This is the name you give your variables. Identifiers can contain letters and numbers, but should start with a letter.

```
grade = 86
student = "Bob"
theEnd = False
```

Identifiers

Use descriptive identifiers that mean something

Bad

```
supercalifragilisticexpialidocious  = 86
thatOneGuy = "Bob"
asdfghjkl = False
```

Good

```
grade = 86
student = "Bob"
theEnd = False
```

Spelling

Spelling matters

Name is not the same as **name**
Name is not the same as **mane**

Input

Sometimes we want the user to give us information. We can store it in a variable.

```
name = raw_input("What is your name? ")
print "Your name is ", name
```

Input

Output

What is your name? **Bob**
Your name is Bob

Input with numbers

Strings use raw_input()
Numbers use input()

```
num = input("Pick a number: ")
print "Your number is ", num
```

Input

Output

Pick a number: **13**
Your number is 13

Output with Variables

Commas allow you to print multiple thing on the same line

```
name = Bob
print "Name is ", name

num = 54
print "Num is ", num
```

Output

Name is Bob
Num is 54

open variables.py

Math Operators

To do math expressions, you use math operators

total = one + two + three
product = four * five

Math Operators

+	Addition
-	Subtraction
*	Multiplication
/	Division
%	Modulus (getting the remainder)
**	Exponential (ex. 5**2 is 25)

Operator Precedence

(expression)	Parenthesis – thing inside parenthesis happen first
**	Exponential
-x	Negation (-5**2 is -25)
*, /, %	Multiplication, Division, Modulus
+, -	Addition, Subtraction

Integer Math vs. Real Math

If there is a decimal number, the result is a decimal. If all numbers are integers, the result is an integer.

```
total = 3 + 4
product = 1.5 * 12
print "Total is", str(total)
print "Product is", str(product)
```

Output

```
Total is 7
Product is 18.0
```

Integer Math vs. Real Math

```
intDiv = 3 / 4
decDiv = 3 / 4.0
print "Integer division is", intDiv
print "Decimal division is", decDiv
```

Output

Integer division is 0
Decimal division is 0.75

Shortcut Operators

num = num + 1 can also be written num += 1. All of the math operators can be used like this.

```
num = 3
num *= 2
print num
```

Output

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open math.py

Start work on Basics Labs