CS 153/453 Chapter 1 Highlights

Printing

```
print( 'some words' )
print ( "some other words" )
print ( x )
print ( "the answer is", x )
```

Python automatically adds a newline after printing unless you give the end= parameter.

```
print ( "the answer is", x, end=' ' )  # no newline
```

Variables and Types

Python is not strongly typed. No variable declarations are needed.

Variable names follow the same rules as other languages. Letters, digits, underscore are okay. You can't start a variable name with a digit.

You can use the underscore _ convention. `shoe_size`

Or you can use camel case convention. `shoeSize` `firstDayOfClass`

We'll use three common types: int, float, string

Getting Input

*** *The input function always returns a string. If you want some other type, you have to convert the string to another type.*

```
name = input( )                # get input with no prompt

name = input( 'Enter your name' )  # input with a prompt

# input a float

shoeSize = float( input ( "Type your shoe size" ) )

#input an integer

month = int( input( 'Enter the month' ) )
```

A statement that changes the value of a variable is called an assignment statement.

Arithmetic

```
+    -     *     /    %    **

% is the modulus operator
** is the exponent operator
```

Order of Operations

```
( )

**

*   /    %

+  -
```

Escape Characters

```
\t   tab
\n   newline
\"   quotation mark
\'   apostrophe
```

Example programs

cylinder.py

```
# -*- coding: utf-8 -*-
"""

@author: Esther Steiner
"""

# write a program that inputs the height and radius of a cylinder
# then calculates the volume of the cylinder

radius = float ( input( 'Enter the radius of the cylinder'))
height = float ( input ( 'Enter the height of the cylinder'))

#calculate the volume
volume = 3.14159 * radius * radius * height

#print the volume
print( 'The volume is', volume )
```

hypotenuse.py

```
# -*- coding: utf-8 -*-
"""

@author: Esther Steiner
"""

# Enter the two legs of a triangle
# and calculate the length of the
# hypotenuse

import math

leg1 = float( input( 'Enter leg 1: ' ))
leg2 = float( input( 'Enter leg 2: ' ))

#calculate the hypotenuse
hypotenuse = math.sqrt( leg1 * leg1 + leg2 * leg2 )

#output the hypotenuse
print( "The hypotenuse = ", hypotenuse )
```

test1.py

```
# -*- coding: utf-8 -*-
"""

@author: Esther Steiner
"""

#check the number of digits of precision on float values

x = 1/3
print("x =", x)

y = float( x )
print("\ny =", y)

z = 3/11
print("z ", z)
```