Vocabulary

variable	something that can change
string	a list of characters
integer number	pos/neg natural numbers and zero
floating point	decimal number
length	the length of the string
Modulo	Finds the remainder
Boolean	True/False
Syntax	Grammar/Structure of language
range (1,10)	the numbers 1-9
range(10)	the numbers 0-10

Conditionals

If..... :then..... else.......	If the statement is true then do command under then else do command under else
while......	While **this** is true loop the command under the conditional
While True	loops forever

Conditionals (cont)

for **each item** in **name of list**	For every item in the list repeat the command under the loop that many times. (a string is a list too)

Naming Conventions

Rules for naming variables:

- letters
- numbers
- underscores (_)
- can start with **letters** or **underscores** ONLY
- NO SPACES

Valid names:

- _mystr
- my3

Hello_there

Invalid names:

- **3**my= "hi" -- cannot start with number
- first name = "hi" -- no spaces allowed
- first**-**name -- dashes are not accepted

Lists

```
#this is how you maek a list in python
shoppinglist = ['coke zero', 'bacon', 'water', 'jelly', 'gummy bears']
print (shoppinglist)
```

Lists (cont)

```
print (shoppinglist[0])
#prints the first item of the list
list_num = 0
while list_num < len(shoppinglist):
    print ("List:", shoppinglist[list_num])
    list_num =list_num+1

#for loop--> same as the above
    #For every item in that list we're going to print it.
for item in shoppinglist:
    print (item)
numbers = range(1,5)
#print up until less then the last number.
for item in numbers:
    print (item)
# a string is a list of characters, letters, numbers, etc.
mystr = "hello"
for letter in mystr:
    print (letter)
```

Adding strings number

```
mystring = ""
count = 0
while count < 5:
    mystring = mystring + str(count)
    print (mystring)
```

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Adding strings number (cont)

```
    count = count + 1
```

Symbols

==	equal to
!=	not equal to
<	less than
<=	less than or equal to
>	greater than
>=	greater than or equal to
+	add
-	subtract
*	multiply
/	divide and quotient is float
//	divide and quotient is integer
**	exponent
%	modulo: the remainder
[...]	The position of the item in the list or the letter in a word

Multiplication & Exponents

string * string	CRASH!!!
string * number	combines the strings multiple time
number * number	math (multiply)

Multiplication & Exponents (cont)

string ** number	CRASH!!!
number ** number	Exponent(Math)
string ** number	CRASH!!!

Even/odd using counters

```
even_value = 0
odd_value = 0
while True:
    user_input = input("Enter a positive number: ")
    number = int(user_input)
    if number < 0:
        print ("There were ", even_value ,"even numbers and there were " , odd_value ,"odd numbers.")
        break
    if number % 2 == 0:
        even_value = even_value + 1
    else:
        odd_value = odd_value +1
```

Addition

string + string	squishes them together
string + number	crash
number + number	math(addition)

Area of circle

```
def areaofCircle(r):
    if r <= 0:
        return "Error: invalid radius"

    pi = 3.1415
    area = pi (r*2)
    return (area)
user_radius = input('Enter the radius: ')
radius = float(user_radius)
print("The area of the circle is", areaofCircle(radius))
```

fibonacci

```
num1= 0
num2=1
mystr = '0'
while num1 + num2 < 89:
    Fibonacci = num1 +num2

    num1= num2

    num2=Fibonacci
    mystr= mystr+"," + str(num1)
print (mystr)
```

Functions

```
def calc(num1, num2, operation):

    if operation == "sum":
        return sum(num1, num2)
    elif operation == "product":
```

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Functions (cont)

```
        return product(num1, num2)
    elif operation == "diff":
        return diff(num1, num2)
    elif operation == "div":
        return div(num1, num2)

def sum(a, b):
    return a+b
def product(a, b):
    return a*b

def diff (a, b):
    return a-b


def div(a, b):
    if b == 0:
        return ("Error")
    elif b != 0:
        return a/b


print (calc(1,2,"sum"))
print (calc(4,2, "diff"))
print (calc (9,0, "div"))
print (calc (2,12, "product"))
calc(1, 2, "sum")
```

Functions

print()	displays information on the screen
input()	receives info from the user
int()	converts the value into an integer
str()	converts the value to a string
float()	converts the value to a floating point
len()	The length of the string
#	One line comment not include in code
'''	Multi-line comment
def name(variable)-:	defines a block as in subbing the name for lines of commands. The variable in the parentheses can be replaced by inputing the desire value into those parentheses.
range (100)	range of numbers from 0 to one less then that.

Spelling a string out in reverse code

```
word = input("Type in an word: ")
reverse = ""
for letter in word:
    reverse = letter + reverse
print ("Reverse: ", reverse)
```

This prints the true or false value using boolean

```
print(True)
print (2<3)
print (2 != 2)
```

Countdown Code

```
user_number = input("Please enter a number: ")
number = int(user_number)
countdown_string = ""
while number > 0:
    countdown_string = countdown_string + " " + str(number)
    number = number-1
print (countdown_string)
```

palindrome and efficient loops

```

def isPalindrome(word):



    letter_num =0
    while letter_num < len(word)-1-letter_num:

        if word[letter_num] == word[len(word)-1-letter_num]:
            letter_num = letter_num +1

```

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palindrome and efficient loops (cont)

```
        else:
            return False
    return True

while True:
    user_input = input("Please type in a word: ")
    if user_input == "quit":
        break
    #print (isPalindrome(user_input))
    myvalue = isPalindrome(user_input)
    if myvalue == True:
        print (user_input + " is a palindrome.")
    elif myvalue == False:
        print (user_input + " is not a palindrome.")
```

list loops #2

```
word = input("Type in an word: ")
reverse = ""
for letter in word:
    reverse = letter + reverse
"""
letter_num = 0
reverse = ''
while letter_num < len(word):
    reverse = (word[letter_num] + reverse)
    letter_num = letter_num + 1
"""

print ("Reverse: ", reverse)
```

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