Cheatography

Pyhton Cheat Sheet

by warisara via cheatography.com/25793/cs/6930/

Vocabulary

Variable	Hold a value and can be change
String	A list of character such as number, better and symbols
Integer number	Whole number/ counting number
Float number	The umber in decimal
Syntax	Grammar/Structure of language
Modulo	Find the remainder
Boolean	True/False

Addition

string+string	combines the strings together
string+number	crash
number+number	math(addition)

Multiplication and Exponents

string* string	crash
string* number	combines the string multiple times
number* number	math(multiply)
string** number	crash
number** number	exponent(math)

Multiplication and Exponents (cont)

string** string	crash

Example

```
mylist3 = [1, 'hello', 2.3]
print (mylist)
print (mylist2)
print (mylist3)
#how to make a list with all number
from 0-99
mynumbers = range(5)
for num in my numbers:
    print (num)
```

Example: Create function

```
def calc (num1,num2, operation) :
    if operation == "sum":
        return sum(num1,num2)
    elif operation == "product" :
        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 a /b
```

Example: Create function (cont)

```
    else:
        print("Error")

print (calc(10, 0, "div"))
print (calc(1,2,"sum"))
print (calc(4,2,"diff"))
print (calc(9,3,"div"))
print (calc(2,12,"product"))
```

Maximum

```
write a function that returns the
largest of two values
# name: max2
# arguments: num1, num2
# return: the largest value
def max2 (num1,num2):
    maxvalue = num1

    if num2 > maxvalue:
        maxvalue = num2
    return maxvalue
print (max2(3,4))
# write a function that returns the
largest of three values
# name: max3
# arguments: num1, num2, num3
# return: the largest value
def max3 (num1,num2,num3):
    maxvalue = num1

    if num2 > maxvalue:
        maxvalue = num2

    if num3 > maxvalue:
        maxvalue = num3

    return maxvalue
```

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Maximum (cont)

```
print (max3(3,4,8))
# write a function that returns the largest number in a list
# name: maxlist
# argument: list
# returns the largest value in the list
def maxlist (list):
    maxvalue = list[0]
    for item in list:
        if item > maxvalue:
            maxvalue = item

    return maxvalue
list = [1,2,3,6,19,50,2,4,5]
print (maxlist(list))
```

Range()

```
#creates a list of numbers from 0 to the specified
number
numberlist = range(5)
# is the same as creating the following list
numberlist2 = [0, 1, 2, 3, 4]
for num in range(100):
    print (num) # prints all numbers from 0 - 99
for num in range(5, 50):
    print(num) #prints all numbers from 5 - 49
```

From Worksheet

```
Write a program that repeatedly receives positive integers from the user. When the user enters a negative integer, exit the loop an print how many of the number entered were odd and even.
evencount = 0
```

From Worksheet (cont)

```
oddcount = 0
while True:
     user_input = int(input("Enter the number: "))
     if user_number < 0:
        print("Even: ",evencount)
        print("Odd: ",oddcount)
        break
     elif user_input > 0:
        if user_input % 2 ==0:#even
           evencount = evencount + 1
        else:
           oddcount = oddcount + 1
```

Even number from -100 to -1(While loop)

```
num = 0
while num > -100
   number = num -2
   print (num)
```

From worksheet

```
Determines that number is negative, positive or zero
Ex; 4 is positive / 0 is Zero / -8 is negative
user_num = input ("Enter the number")
user_num = int(user_num)
If user_num == 0
      print (user_num,"iszero")
elif user_num < 0:
      print (user_num," is negative")
elif user_num > 0:
      print( user_num, "is positive")
```

Write a function(multiplication table)

```
def multipicationTable():
   user_input = int(input("Enter a number: ")
   num = 1
   while num <= 10 :
       print (user_input, " ", "num", "=", "user_inputnum")
       num = num + 1
```

Functions

print()	Show information that you want on the screen
input()	Gain info from the user
int()	Change number to be number integer
float()	Change number to be decimal number
str()	All ;ist of number, letter and symbols
len()	The length of the string
#	Comment, no effect

Math

==	equal to
!=	no equal to
<	less than
>	more than
<=	less than or equal to
>=	more than or equal to
%	Modulo, Find the remainder

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Reverse Word

```
while True:
word = input("Please enter word")
index = 0
reverse = ' '
while int(index)<len(word)
        reverse = word[index] +
(reverse)
        index = int(index) + 1
print("Reverse:", reverse)
```

Import random

```
import random
intlist = [1,2,3,4,5]
random_int =
random.choice(intlist)
print (intlist, random_int)
fplist = [1.5,2.5,3.5,4.5,5.5]
random_fp = random.choice(fplist)
print (fplist, random_fp)
strlist = ['1', '2', '3', '4', '5']
random_str =
random.choice(strlist)
print (strlist, random_str)
mylist = [1, 2, 3, 4, 5, 1.5, 2.5,
3.5, 4.5, 5.5, '1', '2', '3', '4',
'5']
random_item =
random.choice(mylist)
print (mylist, random_item)
myvar1 = 1
myvar2 = 2
myvar3 = 3
varlist = [myvar1, myvar2, myvar3]
random_var =
random.choice(varlist)
print (varlist, random_var)
```

Function call

```
def printDefinitions (word):
     if word == "variable":
        # variable
        print ("""
        a variable is are nothing
but reserved memory locations to
store values or something that can
be change.
        """)
    elif word == "function":
        # function
        print ("""
        a function is the thing
that define and put the code in
there to reuse it again.
        """)
    elif word == "function call":
        #function call
        print ("""
        a function call is function
that already have code and can use
it.
        """)
    elif word == "parameter":
        #parameter
        print ("""
        a parameter is something
that we put in function to define
variable
        """)
    elif word == "argument":
        #argument
        print ("""
        a argument is the
parameter.
        """)
```

Function call (cont)

```
    elif word == "string":
        #string
        print ("""
        a string is a letter.
        """)
    else:
         print ("Unknown word")
while True:
      user_input = input("Enter a
word to define: ")
      printDefinitions(user_input)
# function call
```

Forever While Loop

```
while True: # forever
      user_input = input('Enter a
number: ')
      number = int(user_input)
      print ('The number squared
is', number ** 2)
```

Decision Making/Conditional Statements:

```
if 3 < 2: #if statement must
compare two Booleans
    print ('3 is less than 2')
elif 4 < 2: #can have 0 or more
elif statements
    print ('4 is less than 2')
elif 5 < 2:
   print ('5 is less than 2')
else: #can have 0 or 1 else
statement at the end
   print ('none of the above are
True')
```

Lists:

```
mylist = [2,3,4,5] # create a list
#select an item from a list
print (mylist[0]) #selects first
item and displays 2
# len() determines the length of
the list
```


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Lists: (cont)

```
print (len(mylist)) # displays 4
mylist.append(5) # adds an item to
the end of the list
```

Exercise

```
'''1. Write a program that uses a
for loop to print out all the items
from a list
   called theList'''
theList = [1,2,3,4]
for item in theList:
    print(item)
'''2. Write a program that uses a
while loop to print out all the
items from a list
   called whileList'''
whileList=['bacon', 'cokezero',
'pepsi']
num = 0
while num < len(whileList):
    print(whileList[num])
    num = num + 1
'''3. Write a program that
repeatedly accepts user input,
prints out the length of
   whatever they type in and quits
when the user enters the word
'exit' '''
while True:
    user_input = input('Enter a
word: ')
    if user_input == 'exit':
        break
    else:
        print (len(user_input))
'''4. Create a function called
theFunction, that has no parameters
```

Exercise (cont)

```
and returns nothing. This function
should repeatedly accept user
input until
the user enters the word 'stop'.
Call this function and run it.'''
def theFunction():
    while True:
        user_input = input('Enter a
word: ')
        if user_input == 'stop':
            break
    return
#call the function(function call)
theFunction()
'''5. Create a function called
computeThis, that takes two
parameters, a1 and b2.
The function should return the
product of both parameters. Call
this function
and print the result.'''
def computeThis(a1, b2):
    return a1 * b2
print ("Product of 2 and 3 =
",computeThis(2,3))
'''6. Create a function called
finalFunction, that has 1 argument
called string.
The function should print the
argument surrounded by "**" and
return nothing.
Call this function. '''
def finalFunction(string):
    print ('*' + string + '*')
finalFunction('hello')
```

Naming Convention

```
Rule for giving name
- letter
- numbers
- underscore_

Valid name
- _myStr
- my3
- Hello_there
Invalid name
- 3my="hi" --cannot start with
number
- first name="hi'
- first-name
```

Convert to binary

```
user_number = ' '
while user_number != ' 0 ' :
      user_number = input("Enter a
number to convert to binary")
      number = int(user_number)
      binary_string = ' '
while(number > 0):
       remainder = number%2
       binary_string =
str(remainder)+ binary_string
       number = number/ /2
print("Binary string is",
binary_string)
number = number/ / 2
print("Binary string is",
binary_string)
```


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Countdown Machine

```
user_number = input(:What number do you want to countdown?")
number = int(user_number)
countdown_string = ' '
while number > 0:
      countdown_number = countdown_string + str(number) + " "
      number = number - 1
#print(number)
print (countdown_string)
```

Example

Print (2) - integer
Print (2.5) - floating point
Print ("Hello") - string
Print (mystr) - variable
Print (mystr. "Hi",2,1.0) -- commas
mystr = "Hi"
mystr ◀ name
"Hi" ◀ value can change
mtstr (int(int)) ➤ 1
print (int("2")) ➤ 2
print (float(1)) ➤ 1.0 anything to a float

Example

```
def myprint(text) : #mtvar is an argument (parameter) to he function
    print (" " + str(text) + "")
    return #return exists the function
myprint(1)
myprint(2.5)
myprint("hello")
```

Example (cont)

```
def myprintnew(text, decoration) : #text and decoration are arguments to the function
    print (decoration + text + decoration)
    return
myprintnew("hello", "+++")
myprintnew("hello", "-=-=-=-=-=")
myprintnew("hello", ">>>>>>")
def doubleIt(number) :
    return number * 2 #return value
print (timesTwo(2))
myvar + timesTwo(timesTwo(3))
#same as timesTwo(6) bacuse timesTwo(3) == 6
print (myvar) # it will display 12
def areaOfCircle(r):
    if r <= 0:
        return "Error: invalid radius"

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

Conditional While Loop

```
count = 0 # start at zero
while count < 10: # loop while count is less than 10
        print(count) #will print numbers 0 - 9
        count = count + 1 #must increase count
```

Printing values:

```
print("hello", "there") #displays hello there
print("hello" + "there") #displays hellothere
```

For-Loop with List:

```
forlist = [3, 4, 5, 2, 1]
for item in forlist:
   print(item)
```

While Loop with List:

```
thelist = [4, 3, 2, 1, 0]
index = 0 # start at the first item
while index < len(thelist):
      print (thelist[index])
#prints each item
      index = index + 1
```

Comments

```
# hashtag - everything after # is a comment not code
"""
Double quote - Multi-line comment, everything in
between three double quotes is a comments
"""
''' Single quote - Multi-line comment, everything in
between three single quotes is a comments '''
```

From worksheet

```
0
01
012
0123
01234
mystring = " "
```


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From worksheet (cont)

```
count = 0
while count < 5:
    mystring = mystring +
str(count0
    print (mystring)
    count = count + 1
```

From worksheet

```
Use a for loop to print the
following:
0
012
0123
01234
mystring = ""
for num in range(5)
     mystring = mystring + str(num)
     print (mystring)
```

From worksheet

```
Create a program to receive a
number from the user and determine
if that number is divisible by3.
Example:
- 9 is divisible by 3.
- 7 is not divisible by 3.
user_num = int(input("Enter the
number: "))
if user_num%3 == 0:
   print(user_num, "is divisible by
3")
else:
   print(user_num, " is not
divisible by 3")
```

Print all items in the list

```
Give a list called mylist, print
all items in the list using a loop.
mylist = [1,2,3,4]
for item in mylist:
    print (mylist)
Another method
num = 0
while num < len(mylist)
     print(mylist[num])
     num = num + 1
```


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