Cheatography

Python Cheat Sheet Cheat Sheet

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Vocabulary

Syntax	Grammar/Structure of language
Variable	Hold a value and can be change
Boolean	True/False
String	A list of character such as number, letter and symbols
Integer number	whole number/counting number
Float number	The number in decimal
List	use [ ] square brackets
Comment	hashtags/triple quotes
Character	Letters, numbers, spaces
Conditional	Like if/else
Modulo	Find the remainder(ex. 33%10==3)
if/elif/else	conditional
Loop	Something that repeats

Parameter	Something you give to the function
Argument	Something you give to the function
Function call	When we call the function by its name, so that it shows the code
Constants	Data stored in memory that cannot be changed after declaration

Vocabulary (cont)

Syntax error	Computer doesn't understand the instruction because it's typed incorrectly
Compile	Run the program
Statements	Instructions that do not evaluate to any value
Length	The length of the string

Exam Review 1

1. Converting between different data types:
word = str(3) #converts 3 to a string "3"
num = int("3.5") #converts "3.5" to integer 3
num = float("3") #converts "3" to a float 3.0
2. Printing values:
print("hello","there") #displays hello there
print("hello" + "there") #displays hellothere
3. Combining strings (concatenation)
"hi" + "there" == "hithere"
"hi" * 5 =="hihihihihi"
4.Comments
hashtag - everything after # is a comment no code
"""
Double quote/quotation marks - multi-line comment, everything in between three double quotes is a comment
"""
5. Comparing Values:
when you compare two values, the result is a boolean (true or false) ex. 2==3 is false
== is equal to
!= is not equal to
< less than
<= less than or equal to

Exam Review 1 (cont)

> greater than
>= greater than or equal to
and
or
not
true or anything is always true
false and anything is always false
True and False must be in capital letter

Exam Review 2

```
1. Forever while loop:
while True: #forever
user_input = input('Enter a number:')
number = int(user_input)
print('The number squared is', number**2)
2. 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
3. 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
    print('4 is less than 2')
elif 5<2:
    print(' 5 is less than 2')
else: #can have 0 or 1 else at the end
    print('none of the above are True')
4. Lists
mylist = [2,3,4,5] #create a list
#select an item from a list
```

Exam Review 2 (cont)

```
print(mylist[0]) #selects first item and displays 2
#len() determines the length of the list
print(len(mylist)) #displays 4
mylist.append(5) #add an item to the end of the list
#it will print [2,3,4,5,5]
5. while loop with list:
thelist = [4,3,2,1,0]
index = #start at the first item
while index < len(thelist):
       print(thelist[index])
#prints each item
       index = index + 1
6. for loop with list
forlist = [3,4,5,2,1]
for item in forlist:
     print(item)
7.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
8. Functions
#function with no parameters/arguments
#and no return value
#return is optional if you do not return a value
def nameOfFunction():
```

Exam Review 2 (cont)

```
     print('This function has no parameters')
     print('This function has no return value')
     return #no value, just exits the function
#function call
nameOfFunction()
#function with 1 parameter/argument
def testFunction(param):
     print('This function has 1 parameter')
     print(param)
#function call
testfunction('this is the parameter value')
#function with 2 parameters and a return value
def function3(param1, param2):
     print('This function has 2 parameters')
     return param1 + param2
#return value
#function call and store the result in a variable
returnValue = function3(2,3)
print(returnValue)
```

Conditionals

if else	If the statement is true then do command under then else do command under else.
elif	Similar to if else, but elif allows for more conditions (The keyword 'elif' is short for 'else if')
for loop	For loop will loop though every element of the set of elements
while loop	Loop Contains 3 basic parts: 1. initial value 2. ending condition 3. update

Conditionals (cont)

while true	Loops forever
Boolean	True or anything = always True
Boolean	False and anything = always False
Boolean	True/False always write in capital letter

Sample Exam 1

```
# Practice exam
# 1. Make the loop not to go forever
gameover = 0
while (gameover == 0):
    print("hello")
    gameover = 1 # or break
# 2. Make each number of the list mylist printed out on a seperate line
mylist = [1,2,3,4,5]
for number in mylist:
    print(number)
# 3. Make the program prints out the fifth character from the variable myword
myword = "hellothere"
print(myword[4])
# 4. Write a program that receives input from the user in a loop. Convert the input to an integer and print out that integer multiplied by 10.
while True:
    user_input = input("Please enter a number:")
    user_input1 = int(user_input)
    user_input2 = user_input1*10
    print(user_input2)
```

Sample Exam 1 (cont)

```
# 5. Write a program that uses a
while loop to print out each item
in the following list:
wlist = [2,4,5,6,7,8]
listnum = 0
while listnum < len(wlist):
    print(wlist[listnum])
    listnum = listnum + 1
# 6. Write a program that uses a
for loop to print out each item in
the following list:
forlist = ['hi', 'hello',
'goodbye']
for item in forlist:
    print(item)
```

Sample Exam 2

```
# Sample Exam 2
# 1. Receive input from the user as
a float , and print out half of
that number.
user_input = input("Please enter a
number:")
print(float(user_input/2))
# 2. What is the putput of the
following code:
y = True
print(not y or 2 < 3)
print(True)
# 3. Consider the following code:
message = "hello"
if (len(message)> 5):
    print ("Message is too long")
else:
    print("Message is good")
   # line 3 has an error because
there is no indentation.
# 4. Program to receive a number
from teh user and determine if that
number is divisible by 3.
```

Sample Exam 2 (cont)

```
    # 9 is divisible by 3
    # 7 is not divisble by 3
user_input = input("Please enter a
number;")
if user_input%3 == 0:
    print(user_input, "is divisible
by 3")
else:
    print(user_input, "is not
divisible by 3")
# 5. Print all the even numbers
from 1 to 100 using a while loop
num = 2
while num <= 100:
    print(num)
    num = num + 2
# 6. What is the output of the
following code:
condition = True
number = 5
if condition == False:
    number = number ** 2
elif number < 5:
    number = number * 2
elif condition == true:
    number = number % 2
else:
    number = number /2
    print(number)
# 7 . Given a list called mylist,
print all the elements from the
list using a loop
      #for loop solution
       mylist = [ 1,2,3,4,5]
       for number in mylist:
           print(number)
       #while loop solution
```

Sample Exam 2 (cont)

```
       mylist = [1,2,3,4,5]
       num = 0
       while num < len(mylist)
           print(mylist[num])
           num = num + 1
# 8. Use a for loop a print the
following
     #0
     #01
     #012
     #0123
     #01234
mystring = ""
for number in range[5]: #
[0,1,2,3,4,5]
     mystring = mystring
+str(number)
     print(mystring)
# 9. Write a function called
multiplicationTable that asks the
user for a user for a number and
computes its multiplication table.
example: If the users enters 5, the
output should be
     # Enter a number: 5
     # 5*1 = 5
     # 5*2 = 10
     def multiplicationTable():
         user_input = input("Enter
a number:")
         num = int(user_input)
         count = 1
         while count <= 10:
             print(num, " ",
count, "=", numcount)
             count = count+1
        #function call
        multiplicationTable()
```

Sample Exam 3

```
# Sample Exam 3
#1. Write a program that receives input from the user, converts it to an integer, and prints the product of the integer and 5
user_input = input("Enter a number:")
user_input = int(user_input)
print(user_input*5)
#2. What is the output of the following code:
x = False
print(x and True or 1==1)
      #output is True
#3. no indentation
#4. Write a program that receives a number from the user and determines if that number is zero or positive
    #output of the program
    #4 is positive, 0 is zero, -8 is negative
user_input = int(input("enter a number:"))
if user_input>0:
    print(unser_input, "is positive")
elif user_input<0:
    print (user_input, "is negative")
else:
    print(user_input, "is zero")
#5. Write a program that prints all the even numbers from -100 to -1 using while loop
mynum = -100
while mynum <-1:
    print(mynum)
    mynum = mynum +2
#7. Given a list called mylist, write a program that prints all the items in the list using a loop
```

Sample Exam 3 (cont)

```
mylist = ['cokezero', 'bacon', 'pepsi']
for item in mylist:
    print(item)
#8. Complete the program below by filling in the blank:
        #Expected output of the program:
        #0
        #01
        #012
        #0123
        #01234
mystring =""
count = 0
while count < 5:
       mystring = mystring + str(count)
       print(mystring)
       count = count + 1
#9. Write a unction called areaOfEllipse() that computes the area of an ellipse using the equation: pirr
    #The function should be given two parameterss( radius 1 and radius2) and should return the area
def areaOfEllipse(radius1, radius2):
        pi = 3.1415
        area = pi radius1radius2
        return area
    #function call
    area1 = areaOfEllipse(2,3)
    print(area1)
```

Sample Exam 3 (cont)

```
#11.Wrie a program that repeatly receives positive integers from the user. When the user enters a negative integer, exit the loop and orint how many of the numbers entered were even and odd.
evenCount = 0
oddCount = 0
while True:
       num = int(input("Enter a positive integer:"))
       if num < 0 :
         print("Even numbers:", evenCount)
         print("Odd numbers:", oddCount)
         break
       else:
            if(num%2) == 0
                evenCount = evenCount + 1
            else:
                oddCount = oddCount + 1
```

Basic Math Operation

==	Equal to
!=	No equal to
<	Less than
>	More than
<=	Less than or equal to
>=	More than or equal to
+	Add
-	Subtract
*	Multiply
**	Exponent
/	Divide and quotient is float
//	Divide and quotient is integer
%	Modulo, Find the remainder(33%10==3)

Addition

string + string	Combine togehter
string + number	CRASH!
number + number	Addition (Math)

Multiplication and Exponents

string * number	Combine that string
string * string	CRASH!
number * number	Multiply (Math)
string ** string	CRASH!
number ** number	Exponent (Math)
string ** number	CRASH!

Function

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

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

Example (cont)

print (int(1.5)) - 1
print (int("2')) - 2

Naming Convention

Rule for giving name
- letter
- number (number cannot be the first letter)
- underscore_
- can start with letters or underscores ONLY
- no spaces
Valid name
- myStr
- my3
- Hello_there
Invalid name
- 3my = "hi" (cannot start with number)
- first name = "hi" (no spaces allowed)
- first-name (dashes are not accepted)

Area of circle Python

```
#Ask the user for a radius of a circle
while True:
    user_radius = input("Please enter the radius of the circle:")
    radius = float(user_radius)
    pi = 3.1415
    area = (pi*radius*2)
    print("The area of the circle is", area)
```

Area of triangle & Volume of prism Python

```
#write a function
#name : areaOfTriangle
#parameters : base height
#return : area
user_base = float(input('Enter the base of the triangle:'))
user_height = float(input('Enter the height of the triangle:'))
def areaOfTriangle (base, height):
    return 1/2 user_base user_height
#function call
print('The area of the triangle is',areaOfTriangle (user_base, user_height))
#write function compute volume of prism
#name : volumeOfPrism
# parameters : b,h,prism_height
# return volume
def volumeOfPrism(base, height, prism_height):
    # area* prism_height
    volume = areaOfTriangle(base,height) * prism_height
    return volume
user_prism_height = float(input('Enter the prism height:'))
print ('The volume of the prism is', volumeOfPrism(user_base, user_height, user_prism_height))
```

Convert to binary Python

```
user_number = ' '
while user_number != '0' :
   user_number = input ("Enter a number to convert to binary")
   number = int(user_number)
```

Convert to binary Python (cont)

```
   binary_string = ' '
while (number > 0):
   remainder = number%2
   binary_string = str(remainder) +
binary_string
   number = number // 2
   print ("Binary string is",
binary_ string)
```

Countdown String Python

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

Define Python

```
def calc(num1, num2, operation):
    #use if/elif/else to check what
operation to do
    #call the correct function and
return the answer
    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):
    #calculate the sum of a and b
```

Define Python (cont)

```
    #return the answer
    return a+b
def product(a,b):
    #calculate the product of a and
b
    #return the answer
    return a*b
def diff(a,b):
    #calculate the difference
between a and b
    #return the answer
    return a-b
def div(a,b):
    if b != 0:
        return a//b
    else:
        print("Error")
    #calculate the division of a
and b
    #return the answer

print(calc(10,0,"div")) #division
by zero
print(calc(1,2,"sum")) #output
should be 3
print(calc(4,2,"diff"))#output
should be 2
print(calc(9,3,"div"))#output
should be 3
print(calc(2,12,"product"))#output
should be 24
```

Define Python

```
_var1 = 1
_var1 = 3
_var1 + 100
print(_var1)
def bacon():
    print("hello")
    return
bacon()
#anything after return will not be
printed
```

Define Python (cont)

```
def bacon():
    print("hello")
    print("line1")
    return
    print("bye")
bacon()
def myprint(text):#
    print("" + str(text) + "")
    return #return exits the
function
myprint(1)
myprint(2.5)
myprint("hello")
def myprint2 (text, decoration):
#text and decoration are
arguments(parameter) to the
function (something you're giving
to the function)
    print(decoration + text +
decoration)
    return
myprint2("hello", "+++")
myprint2("hello", "-=-=-=-=-=-")
myprint2("hello", ">>>>>>>")
def doubleIt(number):
    return number*2 #return value
print (doubleIt(2))
myvar = doubleIt(doubleIt(3))
#same as doubleIt(6) because
doubleIt(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
```

Define Python (cont)

```
user_radius = input("Enter the
radius:")
radius = float(user_radius)
print("The area of the circle is",
areaOfCircle(radius))
```

Max value + For loops Python

```
# write a function that returns the
largest of two values
# name: max2
# arguments: num1, num2
# return: the largest value
def max2(num1, num2):
    if num1 > num2:
        maxvalue = num1
    elif num2 > num1:
        maxvalue = num2
    return maxvalue
print(max2(2656,3))
def max2(num1, num2):
    maxvalue = num1
    if num2 > maxvalue:
        maxvalue = num2
    return maxvalue
print(max2(2,3))
# 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
```

Max value + For loops Python (cont)

```
    if num3 > maxvalue:
        maxvalue = num3
    return maxvalue
print(max3(2,3,4))
# write a function that returns the
largest number in a list
# name: maxlist
# arguments: 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

mylist = [23,4342,468,56,7873]
print(maxlist(mylist))
```

Name Python

```
firstname = input("What is your
first name?")
lastname = input("what is your last
name?")
fullname = firstname + " " +
lastname
print (fullname)
letternumber = int(input("What is
the letter number?"))
if letternumber >= len(fullname):
    print("Invalid letter
number,try again.")
else:
    print(fullname[letternumber])
    #letter number is a string
    times = int(input("How many
times to print the letter"))
    if times > 100:
```

Name Python (cont)

```
        print ("Too many letters to
print!")
    else:
        print
(fullname[letternumber]*times)
    #square brackets select a
letter inside a string
```

Return function Python

```
#how to create a function
def nameOfFunction (myvar1,
myvar2):
    print("hello")
    return myvar1 + myvar2
#function call
nameOfFunction (2,3)
myanswer = nameOfFunction (4,1)
print(myanswer)
print(nameOfFunction(nameOfFunction
(2,1),4))
# it will
print(nameOfFunction(3,4))
```

Reverse Word Python

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