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

Vocabulary

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

Example

| Print (2) - integer |
| Print (2.5) - floating point |
| Print ("Hello") - string |
| Print (mystr) - variable |
| Print (mystr, "Hi", 2, 1.0) -- commas |

Reverse

```
#Finish this program so that it
gets a word from the user and
prints
#that word backwards
reverse = "" #do not change
letter_num = 0 #do not change
word = input("Please enter a word:
")#get a word from the user
'''
while letter_num <
len(word):#compare the letter_num
to the lenght of the word
reverse =
word[letter_num]+reverse#kepp
adding the letter to the front of
reverse
letter_num = letter_num+1#go to the
next letter in the word
'''
for lette in word :
reverse = letter + revers
print ("Reverse: ",reverse)
#creating list
mylist = [1,2,3,4,5,6]
mylist2 = ['hi',
'hello','anything']
mylist3 = [1, 'hello', 2.5]
```

Area of the circle

```
_var1 = 1
_var1 = 3
_var1 + 100
print(_var1)
def bacon(): #use the keyword def
and end with a colon:
    print("hello it's bacon")
    return
```

Area of the circle (cont)

```
bacon()
bacon()
bacon()
bacon()
bacon()
def bacon():
    print("hello it's bacon")
    print("line 2")
    print("line 3")
    print("line 4")
    print("line 5")
    print("line 6")
    print("line 7")
    print("line 8")
    return
bacon()
bacon()
bacon()
def myprint(text): #single
parameter
    print ("" + str(text) + "")
    return
myprint(1)
myprint("hello")
myprint(1+2)
def myprint2(text, decoration):
    print(decoration + str(text) +
decoration)
    return
myprint2(12312321312, "++++")
myprint2("hello", "<<>>")
def doubleIt(number):
    return number * 2
```

Area of the circle (cont)

```
myvar = 2
myvarDouble = doubleIt(myvar)
print(doubleIt("hello"))
myvar = doubleIt(doubleIt(3)) #same
as doubleIt(6)
print (myvar)
def sumIt(num1, num2):
    return num1 + num2
print(sumIt("a", "b"))
print(sumIt(2,3))
def areaOfCircle (radius):
    pi = 3.1415
    area = pi radius*2
    return area
user_radius = input('Enter the
radius: ')
radius = float(user_radius)
print("The area of the circle is",
areaOfCircle(radius))
def areaOfCircle(r):
    if r <= 0:
        return "Error: radius <= 0"
    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))
```

Math

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

Addition

string+string	Combine together
string+string	CRASH!
Number+number	Addition(Math)

Multiplication and Exponents

string*number	Combine the string
string*string	CRASH!
number*number	Multiply(math)
string**string	CRASH!
number**number	Exponent(math)
string**number	CRASH!

Convert Hexadecimal

```
#write a program that convert a
number to binary
while True:
#get a number from the user
user_number = input("please enter
the number")
#convert to integer
number = int(user_number)
hex_string = ''
while (number > 0):#the number is
greater than 0)
remainder = number % 16#user
Modulo %
if remainder == 10:
```

Convert Hexadecimal (cont)

```
remainder = 'A'
elif remainder == 11:
remainder = 'B'
elif remainder == 12:
remainder = 'C'
elif remainder == 13:
remainder = 'D'
elif remainder == 14:
remainder = 'E'
elif remainder == 15:
remainder = 'F'
hex_string = str(remainder) +
hex_string #remainder +
hexadecimal string
number = number // 16#must use //
when you divide
#after the loop print the
Hexadecimal string
print ("Hexadecimal string is 0x" +
hex_string)
#expected output - 5 = 101
#expected output - 3 = 11
#expected output - 2 = 10
```

Convert Binary

```
#write a program that convert a
number to binary
while True:
#get a number from the user
user_number = input("please enter
the number")
#convert to integer
number = int(user_number)
binary_string = ''
while (number > 0):#the number is
greater than 0)
remainder = number % 2#user Modulo
%
```

Convert Binary (cont)

```
binary_string = str(remainder) +
binary_string #remainder + binary
string
number = number // 2#must use //
when you divide
#after the loop print the binary
string
print ("Binary string
is",binary_string)
#expected output - 5 = 101
#expected output - 3 = 11
#expected output - 2 = 10
```

Print definitions calc

```
def calc(num1, num2, operation):
    # use if/elif/else to check
what operation to do
    if operation == "sum":
        return sum(num1, num2)
    elif operation == "div":
        return div(num1, num2)
    elif operation == "product":
        return product(num1, num2)
    else:
        print ("unknown
operation")
    # use the function below to
compute the operation
    # return the answer
def sum(a, b):
    # calculate the sum of a and b
    return a + b
    # return the answer
def product(a, b):
    # calculate the product of a
and b
    return a * b
    # return the answer
def diff(a, b):
    # calculate the difference
between a and b
```

Print definitions calc (cont)

```
    return a - b
    # return the answer
def div(a, b):
    # calculate the division of a
and b
    return a / b
    # return the answer
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
```

Create/Write a Function

```
# how to create a function
def nameOfFunction(myvar1, myvar2):
#parameters or arguments
    print ("hello") #must indent
each line that is part of the
function
    return myvar1 + myvar2
#function call
nameOfFunction('hi')
#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: '))
print ('The area of the triangle
is', )
```

Countdown

```
# Create a program that receives a
number from the user and counts
down
# from that number on the same line
# receive the number from the user
as a string
user_number = input("7")
#convert the user number to an
integer
number = int(user_number)
#setup the countdown string
countdown_string = '7 6 5 4 3 2 1
0'
while number > 0:
# add the number to the string
countdowm_string = something +
str(somethingelse)
# subtract 1 from the number
number = number - 1
print (countdown_string)
```

Radius of Circle

```
while True:
#Ask the user for a radius of a
circle
user_radius = input("Please enter
the radius of the circle")
#Convert the given radiusto a
floating point
radius = float(user_radius)
#make a variable called pi
pi = 3.1415
#Calculate the area of the circle
using exponents
area = pi radius *2
#display the area of the circle to
the user
print("The area of the circle is",
area)
```

Random

```
import random
# Create a list of integers
inlist = [1,2,4,5,7,9]
random_int =
random.choice(intlist)
print (inlist, random_int) #print
the entire list andthe random item
# Create a list of floating point
numbers
fplist = [1.5,2.2,1.0,100.999]
random_fp = random.choice(fplist)
print (fplist, random_fp) #print
the entire list and the random item
# Create a list of strings
strlist = ['dog', "cat", 'match',
"it's me", '"hi"']
random_str =
random.choice(strlist)
print (strlist, random_str) #print
the entire list and the random item
# Create a list of integers and
floating point numbers and string
mylist = [1,2,2.2,3.2, 'string',
"hi"]
random_item =
random.choice(mylist)
print (mylist, random_item) #print
the entire list and the random item
# create alist of following
variable
myvar1 = 1
myvae2 = 2
myvar3 = 3
varlist = [myvar1, myvar2, myvar3]
random_var =
random.choice(varlist)
print (varlist, random_var) #print
the entire list and the random item
```

Print Definitions

```
# write definitions for the
following words and print them
using
# a multi-line string
def printDefinitions ():

    if word == "variable":
        #variable
        print ("""
        A variable is ....

        """)
    elif word == "function":
        #function
        print ("""
        A function is something

        """)
    elif word == "parameter":
        print ("""
        A parameter is ...

        """)
    elif word == "argument":
         print ("""
         A argument is
         """)
    elif word == "string":
        print ("""
        A string is ...

        """)
    elif word == "function call":
        print ("""
        A function call is ...

        """)

        else:
```

Print Definitions (cont)

```
        return "unknown word"
#ask the user for the name of the
word to define
user_input = input ("Enter the word
to define: ")
printDefinitions(user_input )
```

Max value

```
# 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 > num1:
        maxvalue = num2
    return maxvalue
print(max2(10,9))
print(max2(1,9))
# 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
print(max3(3,5,9))
```

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Page 4 of 4.