

Commands/ Functions

print()	displays information of the screen
input()	receives info from the the user
float()	converts a value to decimal
int()	integer; coverts a value to an integer
str()	string; coverts a value to a string
#	Comment; no effect

Vocabulary

variable	something that can change
string	a list of characters
Integer	Whole number/ counting number
Float	The number in decimal number
Syntax	Grammar/ Structure of language
Modulo	Find the remainder
Boolean	True/False

Example

Print (2) – integer
 Print (2.5) – float
 Print ("Hello") – string
 Print (mystr) – variable
 Print (str,"Hi",2,1.0) – commas
 mystr = "Hi"
 mystr – name

Example (cont)

"Hi" – value can change
 print (int(1.5)) – 1
 print (int("2")) – 2
 print(float(1)) - 1.0 anything to a float

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	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	Multiply (Math)
string ** number	CRASH!

Multiplication and Exponents (cont)

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

Naming Convention

Rule for giving name

- letter
- numbers
- underscore_

Valid name

- _myStr
- my3
- Hello_name

Invalid name

- 3my="hi" -- cannot start with number
- first name="hi"
- first-name

Reverse word

```
word = input("please enter a word.")
" " "
letter_num = 0
reverse = ' '
while letter_num < len(word) :
    reverse = word[letter_num] + reverse
    letter_num = letter_num + 1
" " "
reverse = ' '
for letter in word:
    reverse = letter + reverse
```



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Reverse word (cont)

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

Countdown Machine

```
while True:
    use r_n umber =
input( " Please enter a
number ")
    number = int(us er_ -
number)
    cou ntd own _string =
" "
    while number > 0:
        cou ntd own -
_string = countd own _string +
str(nu mber)
        number = number
- 1
    print (count dow n_s -
tring)
```

List

```
shoppinglist = ['coke zero',
'bacon', 'water', 'jelly',
'gummy bears']
print (shopp ing list)
print (shopp ing lis t[0])
list_num =0
while list_num < len(sh opp -
ing list):
    print ("Li st: ",
shoppi ngl ist [li st_ num])
    lis t_ num = list_num + 1
for item in shoppi ngl ist:
    print (item)
numbers = range (1,6)
for num in numbers:
    print (num)
# a string is a list of charac -
ters, letters, numbers etc.
mystr = " hel lo"
for letter in mystr:
    print (letter)
```

List (cont)

```
> shoppinglist = ['coke zero', 'bacon', 'water',
'jelly', 'gummy bears']
num = 0
for w in shoppinglist:
    num = num + 1
    print (num)
shoppinglist = ['coke zero', 'bacon', 'water',
'jelly', 'gummy bears']
num = 0
for w in shoppinglist:
    num = num + 1
print (num)
```

Finding area of a circle

```
while True:
    use r_r adius =
input( " Please enter the radius
of the circle :")
    radius = float( use -
r_r adius)
    pi = 3.1415
    area = (pi*radius*2)
    print ("The area of the
circle is", area)
```

Calculator program

```
def calc (num1, num2,
operation):
    if operation == " sum ":
        return sum
(num1, num2)
    elif operation == " pro -
duc t":
        return product
(num1, num2)
    elif operation == " dif -
f":
        return diff
(num1, num2)
    elif operation == " -
div ":
```

Calculator program (cont)

```
> return div (num1,num2)
# use if/elif/else to check what operation
to do
# call the correct function and return the
answer
def sum (a, b):
    return a+b
# calculate the sum of a and b
# return the answer
def product (a, b):
    return a*b
# calculate the product of a and b
# return the answer
def diff (a, b):
    return a-b
# calculate the difference between a and
b
# return the answer
def div (a, b):
    if b!=0:
        return a/b
    else:
        return ("Error")
# calculate the division of a and b
# return the answer
print (calc (10, 0, "div"))
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
```

Finding the area of the triangle and its prism

```
#write a function
#name: areaof Tri angle
#param eters: base height
#return: area
user_base = float( input ('Enter
the base of the triangle: '))
user_h eight = float( inp -
ut( 'Enter the height of the
triang le:'))
def areaOf Tri angle (base,
height):
    return 0.5*height #or
    1/2
#funct ioncall
print ('The area of the triangle
is', areaOf Tri ang le( use -
r_base, user_h eight))
#write function compute volume
of prism
#name: volume OfPrism
#param eters: base, height,
prism_ height
#return volume
def volume OfPrism (base, hei -
ght ,pr ism_ he ight):
    # area * prism_ height
    volume = areaOf Tri -
angle (base, height) * prism_ -
height
    return areaOf Tri angle
(base, height) * prism_ height
user_p ris m_h eight = float( -
inp ut( 'Enter the height of the
prism:'))
print ('The area of the prism
is', volume OfPrism (user_ bas -
e,u ser_ he igh t,u ser _pr ism -
_ he ight))
```

Maximum

```
# write a function that returns
the largest of two values
# name: max2
# arguments: num1, num2
# return: the largest value
def max2 (num1, num2):
    max value = num1
    if num2 > maxvalue:
        max value = 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, num 2,n um3):
    max value = num1
    if num2 > maxvalue:
        max value = num2
    if num3 > maxvalue:
        max value = num3
    return maxvalue
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):
```

Maximum (cont)

```
> 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))
```

1. Multiplying number

```
#Receive input from the user as
a float, and print out half of
that number. e.g. user enters
12.5, print out 6.25
user_input = input( " Please
enter a number :")
number = float( use r_i nput)
finaln umber = 0.5*number
print( fin aln umber)
```

2. Output

```
#What is the output of the
following code:
y = True
print (not y or 2<3)
#output is True
```

3. Error

```
message = "hello"
if (len(m essage) >5)
print ("Me ssage too long")
else:
    print ("Me ssage is
good")
line 3 has an error because it
has no indent
```

4. Divisible by 3

```
#create a program to receive a
number from the user and
determine if that number
#is divisible by 3
user_input = input( " Please
enter a number :")
number = int(us er_ input)
if number %3 == 0:
    pri nt( num ber ,"is
divisible by 3")
else:
    print (number, "is not
divisible by 3")
```

5. Even Number

```
# print all the even numbers
from 1 to 100 using a while loop
num = 2
while num <= 100:
    print (num)
    num = num+2
```

6. Output 2

```
#What is the output of the
following code?
condition = True
number = 5
if condition == False: #False
    number = number ** 2
elif number <5: #False
    number = number * 2
elif condition == True: #True
    number = number%2 #5%2=1
else:
    number = number/2
print (number) # output = 1
```

7. my list (method 1)

```
#Given a list called mylist,
print all elements from the list
using a loop
mylist = ["Mi lly " ,"Pr -
im", " Piz za"]
for item in mylist:
    print (item)
```

7. List: while loop (method 2)

```
#while loop solution
mylist = [1,2,3 ,4,5]
num = 0
while num < len(my list):
    print (mylis t[num])
    num = num+1
```

9. Multiplication Table

```
#Write a function called
multiplicationTable that asks
the user for a number and
#computes its multip lic ation
table.
def multip lic ati onTable ():
    use r_input = input
    ("Enter a number :")
    num = int(us er_ input)
    count=1
    while count <= 10:
        print
        (num,"" ,co unt ,"=",count)
        count = count+1
#function call
multip lic ati onT able()
```

1) Multiply 5

```
#Write a program that receives
input from the user, converts it
to an integer,
#and print the product of the
integer and 5
user_input = input( " Please
enter a number.")
user_input = int(us er_ input)
product = user_input * 5
print (product)
```

2) Output

```
#What is the output of the
following code?
x = False
print (x and True or 1 == 1)
#False and True = False
# False or True = True
# output is True
```

3) Error 2

```
#condisder the following code
def double Val ue( value):
    return value*2
print (doubl eVa lue(4))
#line 2 has error because it is
not indented
```

4) Types of number

```
#write a program that receives a
number from the user and
determines if that
#number is negati ve,zero or
positive.
user_input = int(in put ("Please
enter a number :"))
if user_input > 0:
    print (user_ inp -
ut, "is positi ve")
elif user_input == 0:
    print (user_ inp -
ut, "is zero")
```

4) Types of number (cont)

```
> else:
    print (user_input,"is negative")
```

5) Even numbers while loop

```
# write a program that prints
all the even numbers from -100
to -1 using a
#while loop
num = -100
while num <= -2:
    print (num)
    num = num + 2
```

6) Output 2

```
#What is the output of the
following code:
condition = 2<3 #True
number = 3
if condition != True: #True !=
True ;False
    number = number ** 2
elif number <= 0: #3 <= 0 ;False
    number = number * 3
elif number > 3: # 3>3 ; False
    number = number%10
else: #every thing is False do
must do else
    number = number - 1 * 2
# number - 2; 3-2=1; 1
print (number) # 1
```

8) 0.....

```
#complete the program below by
filling in the blank
# Expected output of program
# 0
# 01
```

8) 0..... (cont)

```
> # 012
# 0123
# 01234
mystring = ""
count = 0
while count <= 4:
    mystring = mystring +str(count)
    print (mystring)
    count = count + 1
```

9) Area of Ellipse

```
# Write a function called
areaOfEllipse () that computes
the area of an ellipse
#using the equation  $\pi r_1 r_2$ 
# The function should be given 2
parameters (radius1 and radius
2) and should
#return the area
def areaOf Ellipse (radius1, -
radius2):
    pi = 3.1415
    area = radius1radius1*radius2
    return area
#function call
area1 = areaOf Ellips e(2,3)
print( area1)
```

11) Even and Odd

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

11) Even and Odd (cont)

```
> evencount = 0
oddcoun t = 0
while True:
    user_input = int(input("Enter a
number:"))
    if user_input < 0:
        print ("Evencount=", evencount)
        print ("Oddcount=",oddcoun t)
        break
    elif user_input > 0:
        if user_input % 2 == 0:
            evencount = evencount + 1
    else:
        oddcount = oddcount + 1
```

