

### Addition

|                 |                  |
|-----------------|------------------|
| string + string | combine together |
| string + number | crash            |
| number + number | math-addition    |

### Math

|    |                                |
|----|--------------------------------|
| == | equal to                       |
| != | no equal to                    |
| <  | less than                      |
| >  | more than                      |
| <= | less than or equal to          |
| /  | divide and quotient is float   |
| // | divide and quotient is integer |
| ** | exponent                       |
| %  | modulo: remainder              |

### 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
- first+name

### List code

```
import random
inlist = [1, 2, 3, 4, 5]
random_int =
random.choice(inlist)
print(inlist, random_int)
fplist = [1.1, 1.2, 1.3, 1.4, 5]
random_fp = random.choice(fplist)
print(fplist, random_fp)
strlist = ["tien", "love", "opal"]
random_str =
random.choice(strlist)
print(strlist, random_str)
mylist = ["opal", 1, 1.2]
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)
[1, 2, 3, 4, 5] 1
[1.1, 1.2, 1.3, 1.4, 5] 5
['tien', 'love', 'opal'] tien
['opal', 1, 1.2] 1.2
[1, 2, 3] 3
```

### Basic function

```
def myprint(text):
    print ("****" + str(text) +
    "****")
    return
myprint("opal")
hello it's bacon
***opal***
def myprintnew(text, decoration):
    print (decoration + str(text)
+ decoration)
    return
myprintnew("opal", "m")
hello it's bacon
***opal***
mopal
def doubleit(number):
    return number * 2
print (doubleit(3))
print (doubleit(doubleit(4)))
hello it's bacon
***opal***
mopal
6
16
```

### maxlist

```
def maxlist(list):
    maxvalue = list[0]
    for item in list:
        if item > maxvalue:
            maxvalue = item
```



### maxlist (cont)

```
return maxvalue
mylist = [1,2,3,4,55,66,777,0,1]
print(maxlist(mylist))
```

777

### palindrome

```
def isPalindrome(word):
    reverse = ""
    letter_num=0
    while
letter_num<len(user_input):
    reverse =
user_input[letter_num]+reverse
    letter_num = letter_num+1
    if reverse==word:
        return True
    else:
        return False

while True :
    user_input = input("Enter a
word")
    if user_input == "quit":
        break

    isPal =
isPalindrome(user_input)

    if isPal == True:
        print (user_input,'is
parindorm')
    else:
        print (user_input,'is not
parindorm')
        break
```

```
Enter a word113311
113311 is parindorm
Enter a word123
123 is not parindorm
Enter a wordquit
>>>
```

### Sample code

```
mystr = "hellp THERE"
print (mystr.upper()) -all letters
will become big HELP THREE
print (mystr.lower()) -all letters
will become small help three
print (mystr.capitalize()) -First
letter of first word will become
big Help three
print (mystr.title())- first
letter of each words will become
big Help Three
```

### Multiplication and Exponent

|                  |                     |
|------------------|---------------------|
| string * number  | combine that string |
| string * string  | crash               |
| number * number  | Multiply (Math)     |
| string ** string | CRASH!!             |
| number ** number | Exponent ( Math)    |
| String ** number | CRASH!!             |

### Short word per line

```
mystr = "Hello"
letter_num = 0
while letter_num < len(mystr):
    print (mystr[letter_num])
    letter_num = letter_num +
1
H
e
l
l
o
```

### Sample code

```
mystring = "hello"
print (mystring)
firstname = input( "what is your
first name?")
lastname = input( "what is your
last name?")
fullname = firstname + " " +
lastname
print (fullname)
letternumber = int(input( " what
is letter number? " ))
if letternumber >len(fullname):
    print ( " invalid letter
number, try again! " )
else:
    letter = (
fullname[letternumber] )
    print (letter)
    numberletter = int(input( "how
many times to print letter " ))
    if numberletter >100:
        print ( " too many letters
to print! " )
    else:
        print (letter *
numberletter )
```

### Guessing game code

```
print("'-'-'-'-'-'-'-'-'-'-'-'-'-'-'-'')
print("Guessing Game")
print("'-'-'-'-'-'-'-'-'-'-'-'-'-'-'')

import random
mylist = ['opal', 'game', 'pin',
'timmy', 'tupkung']
random_item =
random.choice(mylist)
print("Words :",mylist)
```



### Guessing game code (cont)

```

chance = 5
score = 0
while chance > 0:
    user_guess = input("Guess a
word: ")
    if user_guess == random_item:
        print("That's correct!")
        score = score+100
        print ("score: ",score)
        print ("chance remaining:
",chance)
        random_item =
random.choice(mylist)
    else:
        chance = chance-1
        if user_guess in mylist:
            print("Sorry, wrong
choice!")
        else:
            print("Sorry, That
is not even in the list")
            print("chance: ",chance)
print ("Game over! The word was",
random_item)
print ("Final score is :", score)

```

### reverse

```

reverse = ""
letter_num = 0
while True==True : #loop will go
forever
    user_input = input('type in a
string: ')
    while letter_num <
len(user_input):
        reverse =
user_input[letter_num] + reverse
        letter_num = letter_num + 1
    if user_input == reverse:

```

### reverse (cont)

```

        print("user_input is the
parindorm")
    else:
        print("user_input is not a
parindorm")

```

type in a string: 235  
user\_input is not a parindorm  
type in a string: 12021  
user\_input is not a parindorm

### maxvalue

```

def max2(num1,num2):
    maxvalue = num1
    if num2 > maxvalue:
        maxvalue = num2

    return maxvalue
print (max2(4,5))
print (max2(33,5))
def max3(num1,num2,num3):

    maxvalue = num1
    if num2 > maxvalue:
        maxvalue = num2
    if num3 > maxvalue:
        maxvalue = num3

    return maxvalue
print (max3(1,2,3))

```

5  
33  
3

### Function

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

### Convert to binary

```

user_number = ' '
while user_name != ' '
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)

```

### Definition

|                |                                |
|----------------|--------------------------------|
| String         | list of letters/symbol/numbers |
| Variable       | value that can be changed      |
| Integer        | whole number                   |
| Floating Point | decimal                        |
| Syntax         | grammar/structure              |
| Boolean        | True/False                     |

### circle area

```
def areaofcircle(radius):
    if radius <= 0:
        return "Error: invalid
raadius"
    pi = 3.1415
    area = pi (radius*2)
    return area
user_radius = float(input("Enter
the radius: "))
print('The area of the circle is',
areaofcircle(user_radius))
Enter the radius: 2
The area of the circle is 12.566
Enter the radius: 0
The area of the circle is Error:
invalid raadius
```

### simple function

```
def printdefinitions(word):
    if word == ("variable"):
        print ("""A variable is the
value that can change""")
```

### simple function (cont)

```
elif word == ("function"):
    print ("""A function is the
blog of code that can be
reused""")
elif word == ("parameter"):
    print ("""A parameter is
something given to the
function""")
elif word == ("argument"):
    print ("""An argument is
something given to the
function""")
elif word == ("string"):
    print ("""A string is a
lsit of characters""")
elif word == ("function call"):
    print ("""A function call
makes your function run""")
else:
    print ("Unknown word")
return
while True: #keep the loop go
forever
    user_input = input("Enter word:
")

printdefinitions(user_input)
```

```
Enter word: hello
Unknown word
Enter word: function
A function is the blog of code that can be
reused
Enter word: variable
A variable is the value that can change
Enter word:
```

### area/volume of triangle

```
def areaofTriangle(b,h):
    return 0.5 b h
user_base = float(input('Enter the
base of triangle: '))
user_height = float(input('Enter
the height of the trianglr: '))
print('The area of triangle is',
areaofTriangle(user_base,
user_height))
def volumeofprism(b,h,l):
    volume = areaofTriangle(b,h) *
l
    return(volume)
user_base = float(input('Enter the
base of triangle: '))
user_height = float(input('Enter
the height of the trianglr: '))
user_length = float(input('Enter
the length of the triangle: '))
print('The volume of prism is',
volumeofprism(user_base,
user_height, user_length))
```

```
Enter the base of triangle: 6
Enter the height of the trianglr: 6
The area of triangle is 18.0
Enter the base of triangle: 6
Enter the height of the trianglr: 6
Enter the length of the triangle: 6
The volume of prism is 108.0
```

