Vocabulary

Variable	Hold a value, can be change
string	A list of number/letter/symbols
Float number	Whole number/counting number
integer number	The number in decimal
boolean	True/False
Modulo	Fine the remainder
syntax	Grammar/structure of lauguage
length	the length of the string

Function

print()	Show information that you want on the screen
input()	Gain information from user
Float()	Change to the decimal number
int()	change to the number integer
str()	A list of number/letter/symbols
len()	The length of the string
#	To note, no effect
""	Multi-line comment

Conditionals

If..... :then..... else.....	If the statement is true then do command under then else do command under else
while.....	While this is true loop the command under the conditional
While True	loops forever
for each item in name of list	For every item in the list repeat the command under the loop that many times. (a string is a list too)

Naming Conventions

Rules for naming variable:

- letters
- numbers
- underscores (_)
- can start with letters or underscores ONLY
- NO SPACES

Valid names:

- _mystr
- my3

Hello_there

Invalid names:

Naming Conventions (cont)

- 3my= "hi" -- cannot start with number
- first name = "hi" -- no spaces allowed
- first-name -- dashes are not accepted

Example8-Guessing game

```
import random
mylist = ['lion', 'cheetah',
'panther', 'cougar', 'leopard']
random_item =
random.choice(mylist)
Chances = 5
Score = 0
while Chances > 0:
    print("Words:['lion',
'cheetah', 'panther', 'cougar',
'leopard']")

    user_guess = input("Guess a
word: ")
    if user_guess == random_item:
            print("That's
correct!")
            Score = Score+100
            print("Chances
remaining",'',Chances)
            random_item =
random.choice(mylist)
            print("Score
is",'',Score)
    else:

        if user_guess in mylist:
                print("Sorry, wrong
choice!")
                Chances = Chances -
1
                print("Chances
remaining",'',Chances)
                print("Score
is",'',Score)
```

Example8-Guessing game (cont)

```
        else:
                print("Sorry, that
is not even in the list!")
                Chances = Chances -
1
                print("Chances
remaining",'',Chances)
                print("Score
is",'', Score)
if Chances == 0:
    print("Gameover",'',"The word
is",'',random_item)
    print("Final score
is",'',Score)
```

Example13- def printDefinitions

```
def printDefinitions(word):

    #variable

    if word == "variable":
        print ("""
        A varible is value that can
be change
        """)
    #function
    elif word == "function":
        print ("""
        A function is block of
quote can be reused
        """)
    #parameter
    elif word == "parameter":
        print ("""
        A parameter is value that
inside the blacket of the function
        """)
```

Example13- def printDefinitions (cont)

```
    #argument
    elif word == "argument":
        print ("""
        A argument is value that
inside the blacket of the function
        """)
    # function call
    elif word == "function call":
        print ("""
        A function call is
something that make the function
run
        """)
    #string
    elif word == "string":
        print ("""
        A string is list of
character
        """)
    else:
        print("unknown word")

    return
user_input=input("Enter word")
printDefinitions(user_input)
```

Example17-The largest value

```
#write a function that returns the
largest of two values
#name : max2
#agruments: num1, num2
# return: largest value
# write a functrion that returns
the largest of three values
# name : max3
#agrument: num1, num2, num3
# return: largest value
def max2(num1,num2):
    if num1 >= num2:
        max_value = (num1)
    if num2 > num1:
        max_value = (num2)
    return max_value
num1 = input('Enter the the first
value')
num2 = input('Enter the the second
value')
print (max2(num1,num2))
def max3(num1,num2,num3):
    if num1 >= num2 and num1 >=
num3:
        max_value = (num1)
    if num2 > num1 and num2 >=
num3:
        max_value = (num2)
    if num3 >= num2 and num3 >=
num1:
        max_value = (num3)
```

Example17-The largest value (cont)

```
    return max_value
num3 = input('Enter the the third value')
print (max3(num1,num2,num3))
```

Symbols

==	equal to
!=	not equal to
<	less than
<=	less than or equal to
>	greater than
>=	greater than or equal to
+	add
-	subtract
*	multiply
/	divide and quotient is float
//	divide and quotient is integer
**	exponent
%	modulo: the remainder

Multiplication & Exponents

string * string	CRASH!
number * number	math (multiply)
string * number	combines the strings multiple time

Multiplication & Exponents (cont)

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

Addition

string + string	squishes them together
string + number	CRASH!
number + number	math(addition)

Important

True or anything =	True
False and anything =	False
range(5) =	[0,1,2,3,4]
print("hello", "there")	#displays hello there
print("hello" + "there")	#displays hellothere
"hi" + "there"	== "hithere"
"hi" * 5	== "hihihihihi"
while True:	# forever

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
```

For-Loop with List:

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

Example5-print out each item in list

```
mystr = "hello123"
numbers = [1,2,3,4,5,6]
print (numbers)
shoppinglist = ['shoes','bags','pants','shirts']
print (shoppinglist)
mixed = [1, 'hello', 2.5, True, False]
print (mixed)
letter_num = 0
while letter_num < len(mystr):
    print (mystr[letter_num])
    letter_num = letter_num + 1
for myletterisawesome in mystr:
    print(myletterisawesome)
for tientien in shoppinglist:
    print(tiemtiem)
out = 0
for mrtim in shoppinglist:
    out = out + 1
```

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Example10-Def / function

```
def myprintnew(text, decoration):
    print(decoration + str(text) +
decoration)
    return
myprintnew(1, "+++")
myprintnew('hello', '-=-=-=-=-=-=-
=-=')
myprintnew(1, "@@@@@@@")
```

Example12-Circle area

```
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))
```

Example11 - doubleit

```
def doubleit(number):
    return number * 2
print (doubleit(3))
print (doubleit(doubleit(4)))
myvar = 12
myvar = doubleit(myvar)
myvar = doubleit(myvar)
print (myvar)
```

Example13.5- def printDefinitions + loop

```
def printDefinitions(word):

    #variable

    if word == "variable":
        print ("""
        A varible is value that can
be change
        """)
    #function
    elif word == "function":
        print ("""
        A function is block of
quote can be reused
        """)
    #parameter
    elif word == "parameter":
        print ("""
        A parameter is value that
inside the blacket of the function
        """)
    #argument
    elif word == "argument":
        print ("""
        A argument is value that
inside the blacket of the function
        """)
    # function call
    elif word == "function call":
        print ("""
```

Example13.5- def printDefinitions + loop (cont)

```
        A function call is
something that make the function
run
        """)
    #string
    elif word == "string":
        print ("""
        A string is list of
character
        """)
    else:
        print("unknown word")

    return
while True:

    user_input=input("Enter
word")
    printDefinitions(user_input)
```

Example17.5-The largest value from list

```
#write the 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
```

Example17.5-The largest value from list (cont)

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

Example18- Palindrome+loop

```
while True :
    user_word = input("Enter your
word")
    if user_word != ("quit"):
        print(len(user_word))
    if user_word == ("quit"):
        break
    reverse = ""
    letter_num = 0
    while letter_num <
len(user_word):
        reverse =
user_word[letter_num] + reverse
        letter_num = letter_num + 1
    if user_word == reverse:
        print (user_word, "is
palindrome")
    else:
        print (user_word, "is not
palindrome")
```

Example1-Spelling a string out in reverse code

```
word = input("Type in an word: ")
reverse = ""
for letter in word:
    reverse = letter + reverse
```

Example1-Spelling a string out in reverse code (cont)

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

Example2-Using boolean

```
print(True)
print (2<3)
print (2 != 2)
```

Example3-Countdown Code

```
user_number = input("Please enter
a number: ")
number = int(user_number)
countdown_string = ""
while number > 0:
    countdown_string =
countdown_string + " " +
str(number)
    number = number-1
print (countdown_string)
```

Example4-Print Name

name = *jaja YOOYUEN*
print (name.upper()) --- JAJA YOOYUEN
print (name.lower()) --- jaja yooyuen
print (name.capitalize()) --- Jaja yooyuen
print (name.title()) --- Jaja Yooyuen

Example6

```
word = input("What is the word ?")
reverse = ""
"""
letter_num = 0
while letter_num < len(word):
    reverse = word[letter_num] +
reverse
    letter_num = letter_num + 1
"""
for letter in word:
    reverse = letter + reverse
print ("Reverse: ",reverse)
out = 0
for letter in word:
    out = out + 1
    print(out)
```

Example7-Convert to binary

```
user_number = input("Please enter
a number")
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)
```

Example9-Random and other

```
import random
inlist = (1,2,3,4,5,6,7)
random_int = random.choice(inlist)
print (inlist, '', random_int)
fplist =
(1.1,2.1,3.1,4.1,5.1,6.1,7.1)
random_fp = random.choice(fplist)
print (fplist, '', random_fp)
strlist =
('love','captain','verymuch')
random_str =
random.choice(strlist)
print (strlist, '', random_str)
mylist =
(1,2,3,4,5,6,7,1.1,2.1,3.1,4.1,5.1,
6.1,7.1,'love','captain','verymuch'
)
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)
```

Example14-reverse

```
reverse = ""
letter_num = 0
word = input('type in a word: ')
while letter_num < len(word):
    reverse = word[letter_num] +
reverse
    letter_num = letter_num + 1
```

Example14-reverse (cont)

```
    letter_num = letter_num + 1
```

Example15-palindrome

```
#create a function that will ask
user for a string
#and then say if that string is
palindrome or not
reverse = ""
letter_num = 0
word = input('type in a word: ')
while letter_num < len(word):
    reverse = word[letter_num] +
reverse
    letter_num = letter_num + 1
if word == reverse:
    print ("It is palindrome")
else:
    print ("It is not palindrome")
```

Example16- Area(Triangle) and volume (Prism)

```
#write a function that computes the
area of triangle
#name: areOfTriangle
#parameter: b, h
#return: area
def areaOfTriangle(b, h):
    if user_base <= 0:
        return "Error: invarid
radius"
    if user_height <= 0:
        return "Error: invarid
radius"
```

Example16- Area(Triangle) and volume (Prism) (cont)

```
    area = b * h / 2
    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 triangle is',
areaOfTriangle(user_base,
user_height))
#write a function that computes the
volume of a prism
#name: volumeOfPrism
#return: volume
def volumeOfPrism(b, h, l):
    if user_length <= 0:
        return "Error: invarid
radius"
    volume = b * h * l / 2
    return volume
user_length = float(input('Enter
the length of the prism: '))
print('The volume of the prism
is',volumeOfPrism(user_base,
user_height, user_length))
```

Example18.5

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

    if user_word == ("quit"):
        break

    if isPalindrome(user_word):
        print(word)
        print (user_word, "is palindrome")

    else:
        print(word)
        print (user_word, "is not palindrome")
```