Programming assignment Unit 3:

Part 1

The code below is a simple program that takes a number from the user, then based on this number the program decides using the counter() function whether the count is up or down by calling countup() and countdown() functions respectively.

Code:

def countdown(n):

if n <= 0:

print('Blastoff!')

else:

print(n)

countdown(n-1)

def countup(n):

if n >= 0:

print('Blastoff!')

else:

print(n)

countup(n+1)

def counter(n):

if n > 0:

countdown(n)

elif n < 0:

countup(n)

else:

print("please note that using zero is lead to use the default settings of the program,"

" which is counting down with value of 2\n",end="")

countdown(2)

x = input("please enter a number to start counting: ")

counter(int(x))

Because of input() value is considered as string, we use int() function to convert it to integer then used it as argument for counter().

Outputs:

Here is some output when receiving some different values from users.

First: positive number

please enter a number to start counting: 4

4

3

2

1

Blastoff!

Second: negative number

please enter a number to start counting: -5

-5

-4

-3

-2

-1

Blastoff!

Third: value of zero

please enter a number to start counting: 0

please note that using zero is lead to use the default settings of the program, which is counting down with value of 2.

2

1

Blastoff!

In case the value is zero, I decide to use countdown() with a value of 2, and print a message to let the user know that these are the defaults so they don't get confused.

Part 2

The code below represents a simple function that take two number as argument then print the result of divide them.

Code:

def divide\_numbers(x, y):

print(x/y)

divide\_numbers(4,2)

Output:

2.0

The function toke two arguments (4, 2) and then print the result which is 2.0

But there is a case where user may insert zero as second argument (denominator), which is mathematically undefine value when dividing by zero. Let’s try this case in our program:

Code:

divide\_numbers(4,0)

Output:

ZeroDivisionError: division by zero

As the output shows, we got an error called “ZeroDivisionError” in python. Now we need to upgrade our program to handle this error, because it’s common one. Here’s our modification:

Code:

def divide\_numbers(x, y):

if y == 0:

print("divide by zero is undefined please insert valid value!")

else:

return x / y

As we see there some new lines. We add condition that work as guardian of our program, so it not just crashed. It checks if the denominator (second argument) is zero then print message to user telling him that divide by zero is undefined and ask him to insert valid value. Let’s try it:

a = divide\_numbers(4,0)

print(a)

Output:

divide by zero is undefined please insert valid value!

None

You may also notice the other modification we made, which using a “return”. Our function is used to divide numbers so obviously the user needs the result to use it in other operation maybe, so instead of print the result to user to watch it in his display, we give him the value itself so he can store it, use it, or even delete it. This done using the return, the function handle everything then returns a value. We used print() at first version as “scaffolding” according to Downey. (Downey, p.53, 2015). Let’s try our program for last time with normal (none zero) values:

a = divide\_numbers(6,2)

print(a)

Output:

3.0

Thanks.

**Reference**

Downey, A. (2015). <https://greenteapress.com/thinkpython2/thinkpython2.pdf>