**2013 SI@UCF Introduction to Programming in Python Test #1 Solutions**

**Date: 7/15/2013**

1) (5 pts) Produce a single Python statement that prints out the following (shown below):

This is a haiku.

“What beautiful poetry”

Now I can sleep well.

(Hint: Use an escape sequence.)

print(“This is a haiku.\n\”What beautiful poetry\”\nNow I can sleep well.”)

// Grading: 1-print, 1-(“”), 3 pts for escape sequences)

2) (10 pts) What is the value of each of the following expressions in python?

a) 7 // 3 2

b) 100 \*\* 1 / 2 50

c) 100 \*\* (1/2) 10

d) 6 + 7\*3 27

e) (17 – 13%4)//6 2

Grading: 2 pts each

3) (9 pts) What is the output of executing the segment of code below?

x = 2

while x < 25:
 x = x \* 2 + 4

 print(x,” “,end=””)

8 20 44 (Grading 3 pts each)

4) (9 pts) What will be the output of this program?

x = 10

y = -3

if(x >= 10):

 print("Bacon")

if(y < 0 and x > 20):

 print("Turnips")

elif(y + x < 15):

 print("Eggplant")

elif(y == -3):

 print("Gouda")

else:

 print("Fried Chicken")

if (x != 10):

 print("Corn")

if(y == 9 or x < 79):

 print("Pasta")

Bacon

Eggplant

Pasta

Grading: 3 pts each

5) (10 pts) Briefly explain integer division and its function. Give an example of a problem that could be solved using integer division.

Integer division is just like regular division, but we get rid of the fractional part. By definition, it’s the largest integer less than or equal to the real number division, in python. If we wanted to figure out how many boxes of a particular size fit in a room, placed in the exact same orientation, we would use integer division for each dimension, since we can’t fit a fractional box in a space smaller than one box. There are many possible examples here.

Grading: 3 pts for definition, 7 pts for example

6) (12 pts) Write a complete python program that asks the user to enter the price of an item in dollars and the sales tax as a percent, and outputs the total cost of the item.

def main():

 price = float(input(“What is the cost of your item?\n”))

 tax = float(input(“What is the percent sales tax?\n”))

 price = price\*(1+tax/100)

 print(“Your total cost is”,price)

main()

Grading: 2 pts for each read, 6 pts for the calculation, 2 pts for the print

7) (15 pts) Write a python program that prints out the sum of the numbers 3 + 7 + 12 + 18 + … + 1269.

def main():

 total = 0 // 1 pt

 skip = 4 // 1 pt

 term = 3 // 1 pt

 while term <= 1269: // 2 pts

 total = total + term // 2 pts

 term = term + skip // 2 pts

 skip = skip + 1 // 2 pts

 print(“The sum is”, total) // 1 pt

8) (20 pts) Write a python program that uses the turtle to print the design of a digital 8. (Note: a digital eight is created with one square directly on top of another square. Check the board for a depiction.)

import turtle

turtle.pendown()

for i in range(4): // 10 pts for this square

 turtle.forward(100)

 turtle.right(90)

for i in range(4): // 10 pts for this square

 turtle.forward(100)

 turtle.left(90)

9) (7 pts) Describe one problem/bug you have fixed while working on your assignments. How did you catch the mistake?

Almost any real description of what happened will do here. I’ll talk about a bug fix in the last program I completed on Sunday. I was writing a program to calculate the number of ways to tile a rectangular grid with two types of tiles. Any of the large cases I tested were incorrect, but a few of my small cases were correct. I iteratively started testing larger cases to find the first case that failed. This was the 2 x 4 rectangular grid. I knew that one way to tile this was using two 2 x 2 tiles, but my program printed that there were 0 ways to tile this grid. So, I went to the spot in my program where I was supposed to be adding a 2 x 2 tile to the right end of the 2 x 4 grid, leaving a 2 x 2 square to be tiled. What had happened was that I wasn’t storing the fact that there was 1 way to tile a 2 x 2 grid. I was storing this value in a different place. To fix my issue, I had to copy where I stored the correct values for smaller grids into a different location where I was looking up that information to build larger tilings.

Grading: Up to grader discretion

10) (3 pts) For what breakfast food is Dunkin Donuts known? Donuts