SI@UCF Introduction to Programming in Python

Test #1
July 14, 2014

1) (6 pts) Write a single python statement to print out the following:

```
\Week 2\
\SI@UCF\
\Begins\
```

print("\\Week 2\\\n\\SI@UCF\\\n\\Begins\\")
Grading: 1 pt print, 1 pt (), 1 pt "", 1 pt reg text, 1 pt \n, 1
**pt **

2) (10 pts) What are the values of the following expressions in Python?

a) `3 + 4*5`   **23**

b) `17%8`   **1**

c) `3 - 2*(5 - 4//3)`   **-5**

d) `7/4 + 18%5 - 3//4`   **4.75**

e) `13 + 18/(13 - 2*(200%20) + 5%1237)`   **14.0**

Grading: 2 pts each, all or nothing

3) (5 pts) Your parents have left town for vacation and because they are worried about you, have left *a lot* of beef stew in the fridge for you and your brother. You know that the two of you eat 3 pounds of stew a day. Complete the blank in the program below so that it calculates the number of days the two of you will be fully fed. (For example, if there was 7 pounds of stew in the fridge, both of you would be fully fed for 2 days, since you'd run out sometime in the middle of the third day.)

```
def main():

    stew = int(input("How many pounds of stew are there?\n"))

    print("You are fully stocked for", stew//3 , "days.")

main()
```

Grading: 1 pt div, 1 pt stew, 1 pt 3, 2 pts int div

4) (10 pts) In a soccer match, the team that wins earns 3 points and the team that loses earns 0 points. In the event of a tie, both teams earn 1 point. Complete the program below so that it properly prints out how many points both teams A and B have earned after playing against each other. (Note: A team wins by scoring more goals than the other team and a tie occurs when both teams score the same number of goals.)

```python
def main():

    teamA = int(input("How many goals did team A score?\n"))
    teamB = int(input("How many goals did team B score?\n"))

    ptsA = 0                          # 1 pt for both
    ptsB = 0

    if teamA == teamB:                # 2 pts
        ptsA = 1                      # 1 pt
        ptsB = 1                      # 1 pt
    elif teamA > teamB:               # 2 pts
        ptsA = 3                      # 1 pt
    else:                             # 1 pt
        ptsB = 3                      # 1 pt

    print("Team A earned", ptsA, "points.")
    print("Team B earned", ptsB, "points.")

main()
```

5) (15 pts) A geometric sequence is one where the ratio between successive terms is constant. For example, 3, 6, 12, 24, 48 and 96 is a geometric sequence with 6 terms, starting with 3 and a common ratio of 2. Complete the program below so that it calculates and prints the sum of the geometric sequence described by the user input.

```python
def main():

    numTerms = int(input("How many terms in the sequence?\n"))
    term = int(input("What is the first term?\n"))
    ratio = int(input("What's the common ratio between terms?\n"))

    total = 0

    for i in range(numTerms):         # 5 pts for each line
        total = total + term
        term = term*ratio

    print("The sum of the sequence is ",total)

main()
```

6) (10 pts) What is the output of the following Python program?

```python
def main():

    a = 1
    b = 3
    while b < 100:
        print(a,end=" ")
        c = a + b
        a = b
        b = c
    print(a,b)

main()
```

1 3 4 7 11 18 29 47 76 123   # Grading: 1 pt each

7) (15 pts) Give three examples of errors you made in a program that the error messages the compiler printed out helped you fix. Summarize the mistake, the error message and how you fixed the mistake for each example.

print("hi) produces the following interpreter output:

SyntaxError: EOL while scanning string literal

This means that the computer was looking for the end of a string, which is denoted with ", usually, and didn't find it before the end of the line.

This is fixed as follows: print("hi")

num = int(input("What is your number?\n")

produces the error, "unexpected EOF while parsing", indicating that the interpreter was waiting for something, in this case a matching close parenthesis:

num = int(input("What is your number?\n"))

In the loan program, I didn't charge interest on the last payment. I noticed my mistake when I realized that the last payment value was less than it was supposed to be. I changed this by fixing my while loop condition to

while money_owed > 0: (Note: Many correct answers here!!!)

8) (15 pts) In class we wrote a program that printed out the star design on the flag of the United States of America. Complete the program below so that prints out a general design with *n* rows (where *n* is odd) and *s* stars on the odd numbered rows and *s-1* stars on the even numbered rows, spaced out accordingly. For example, if *n = 5* and *s = 12*, the design would be:

```
*  *  *  *  *  *  *  *  *  *  *  *
 *  *  *  *  *  *  *  *  *  *  *
*  *  *  *  *  *  *  *  *  *  *  *
 *  *  *  *  *  *  *  *  *  *  *
*  *  *  *  *  *  *  *  *  *  *  *
```

```
def main():

    n = int(input("How many rows of stars?\n"))
    s = int(input("How many stars on the odd rows?\n"))


    for i in range(n):                          # 3 pts

        if i%2 == 0:                            # 3 pts
            print("* "*s, end="")               # 4 pts
        else:                                   # 1 pt
            print(" *"*(s-1), end="")           # 4 pts


main()
```

9) (10 pts) Recall that the function random.randint(a,b) returns a random integer in between a and b, inclusive. Write a segment of code that produces a million random numbers in between 1 and 100, inclusive and prints out their sum. (Assume random is imported.)

```
total = 0                                       # 2 pts
for i in range(1000000):                        # 3 pts
    total = total + random.randint(1, 100)      # 4 pts
print(total)                                    # 1 pt
```

10) (4 pts) Quinn Callander, a 7 year old boy from Canada, raised $24,000 dollars for his friend with cerebral palsy, who needs a surgery, by running a lemonade stand? What did he sell at his stand?

Lemonade (give to all)