Random module
String formatting

Announcements

- Midterm on Tuesday 2/26 (all topics covered until lec 11)
- No class on Thursday 2/28

lab06

Your code will produce the following histogram by simulating die roll:

```
Distribution of dice rolls

 2:      7 (  2.8%)  *******
 3:     14 (  5.6%)  **************
 4:     29 ( 11.6%)  *****************************
 5:     26 ( 10.4%)  **************************
 6:     34 ( 13.6%)  **********************************
 7:     41 ( 16.4%)  *****************************************
 8:     30 ( 12.0%)  ******************************
 9:     23 (  9.2%)  ***********************
10:     23 (  9.2%)  ***********************
11:     16 (  6.4%)  ****************
12:      7 (  2.8%)  *******
----------------------------
250 rolls
```

Random numbers

```
from random import *

random()          # returns a number in the range [0,1)
randrange(x,y) # returns a random integer including x up to
                  # (but not including) y.
choice(somelist) # selects an element at random from somelist
```

Generating random numbers

Write a Python statement to generates a number between 0 and 100 (include floating point values like 55.5)

Assume you have the correct import statements

A. random()+100
B. random()*100
C. random()/100

Generating random numbers

Write a Python statement to generates a INTEGER between 50 and 100. Assume you have the correct import statements

A. random()*50
B. 50+ int(random()*50)
C. randrange(50,100)
D. Both B and C
E. None of the above

Lab06 warm up

```
def rollDice():
    '''
    returns the sum of rolling two six sided die'''


def rollDistribution(n):
    '''
    rolls a pair of die n times, returns the tally'''


def printDistribution(diceTally):
    '''
    prints the diceTally as a histogram'''
```

String Methods

```
s = "CS 8: Intro to Programming”
s.find(“8”)
s.find(“Math”)
s.startswith(“CS”)
s.startswith(“Computer”)
s.endswith(“ing”)
s.endswith(“Prog”)
s.count(‘m’)
'Mississippi'.count('i’)
s.replace(":", "#")
s.upper()
‘Mississippi’.lower()
```

Concept Question

```
MS = “Mississippi”
MS.replace(“i”, “!”)
print(MS)
```

What is printed?

A. Mississippi

B. M!ss!ss!pp!

C. Error

D. None of the above

lab06

* Notice that the output needs to be formatted
* Use the format method of string

```
Distribution of dice rolls

 2:      7 (  2.8%)  *******
 3:     14 (  5.6%)  **************
 4:     29 ( 11.6%)  *****************************
 5:     26 ( 10.4%)  **************************
 6:     34 ( 13.6%)  **********************************
 7:     41 ( 16.4%)  *****************************************
 8:     30 ( 12.0%)  ******************************
 9:     23 (  9.2%)  ***********************
10:     23 (  9.2%)  ***********************
11:     16 (  6.4%)  ****************
12:      7 (  2.8%)  *******
----------------------------
250 rolls
```

String formatting

Let's say you have an integer price:

```
price = 18.00
```

Write a statement to print:

```
The price is <price>. Wow that's cheap!
```

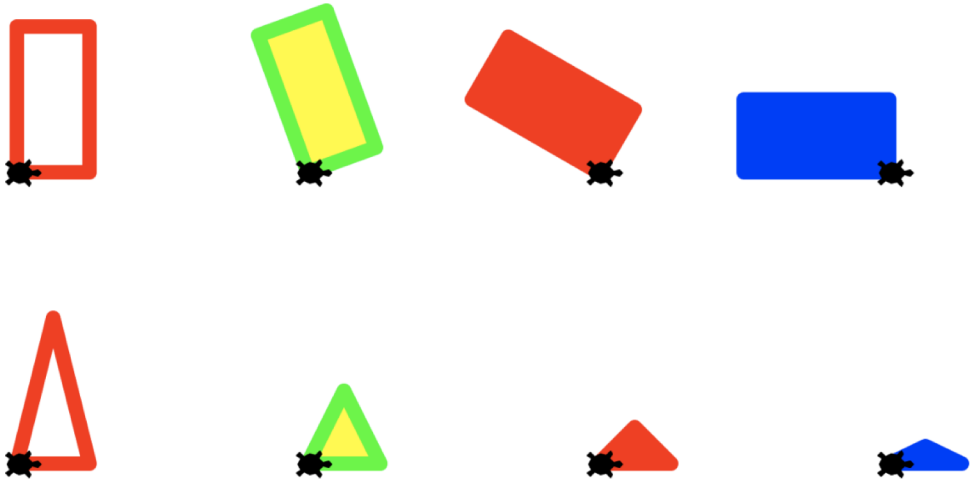
''' Format specification:
{ : }. Left side of colon say which argument to place into {}

To the right we specify a FIELD WIDTH (i.e., how many spaces/ columns on the screen to devote to this

```
print("-->{}<--".format(price))
print("-->{:20}<--".format(price))
# We can use '>' or '<' to justify left or right
print("-->{:<20}<--".format("18"))
print("-->{:>20}<--".format("18"))
# we can use '^' to center.
print("-->{:^20}<--".format("18"))
print("-->{:20.2f}<--".format(price))
# without 'f' , price appears in scientific notation
# width of 20, with 2 places after the decimal
```

HW

3. (10 pts) Section 4.2 discusses formatted output. What is the output of the following print statement? Please put one character per box to show the exact spacing. Try to figure it out by hand before checking your answer online. If you spoil the first grid, use the second.

```
print('{0:4},{2:6}'.format(123,456,789))
```

Project 01