Lab #5

Due Date: 02/16/2018, 11:59PM

Instructions:
- The work in this lab must be completed alone.
- If you need guidance, attend to your recitation class.
- **Read the "Submitting assignments to Vocareum" file for instructions on how upload your script to this lab**
- Do not change the function names or given code on your script
- The file name must be LAB5.py (incorrect name files will get a 0 score)
- You are responsible for testing your code. Use `python -i LAB5.py` in your terminal (or command prompt) to provide input to your functions. Test with as many data as you feel comfortable
- Each function must return the output (Do not use print in your final submission)
- Do not include test code outside any function in the upload. Remove all your testing code before uploading your file. If you are using input() to insert values in your functions and print to see the values, remove them.

Exercise 1 [2 pts]. Without using the Python interpreter, what is the final value of the enrollment variable after following statements are executed? Insert your answer in the function *answers()* provided in the starter code. If your answer has multiple values, separate them by commas.

```python
class Student:
    enrollment=0

    def __init__(self, name, program, year):
        self.name = name
        self.program = program
        self.year = year
        Student.enrollment+=1

    def graduated(self):
        Student.enrollment-=1
        return "{} has graduated".format(self.name)

    def check_enrollment(self):
        return Student.enrollment
```

```python
x1=Student("Sarah Miller","CSE",2017)
x2=Student("Deirdre Hunter","ME",2009)
x3=Student("Sandra Flores","PHY",2012)
x4=Student("Allan Yi","CS",2016)
x5=Student("John Brown","CSE",2002)
x6=Student("George Hilton","ART",2015)
x1.graduated()
x6.graduated()
x7=Student("Alex Hudson","MATH",2018)
x5.check_enrollment()
Student.enrollment
```

Exercise 2 [3 pts]. Write the function *power*(*value*, *exp*) that **returns** the result of performing *value* to the power *exp*. Do NOT use the pow() method or the exponent operator (**), you will not get credit if you use them.

  - *value* can be integer and float, positive and negative
  - *exp* can be only integer, positive and negative

EXAMPLES:

```
>>> power(2,0)
1
>>> power(5,-3)
0.008
>>> power(-2.1,2)
4.41
```

Exercise 3 [5 pts]. Write the class *Line* that stores the coordinates of two points in a line and provides the distance between the two points and the slope of the line. Class methods must **return** the value. *Hint*: https://www.pdesas.org/ContentWeb/Content/Content/21083/Lesson%20Plan

  - Use tuples or lists to provide the coordinates when initializing your class instances
  - **Format your output for 3 decimals.** Incorrect format will result in -1 pt from your score

EXAMPLES:

```
>>> line1=Line((8,3),(0,-4))   #Coordinates provided as tuple
>>> line1.distance()
10.63                #The result is 10.630146, since we are formatting
                      the output with 3 decimals, the 0 does not appear.
                      For these cases, this is a correct output
>>> line1.slope()
0.875
>>> line1=Line([8,3],[0,-4])   #Coordinates provided as list
>>> line1.distance()
10.63
>>> line1.slope()
0.875
>>> line1=Line((-1.5,8),(3,-2.3))
>>> line1.distance()
11.24
>>> line1.slope()
-2.289
>>> line1=Line((-7,-9),(1,5.6))
>>> line1.distance()
16.648
>>> line1.slope()
1.825
>>> line1=Line([2,6],[2,3])
>>> line1.distance()
3.0
>>> line1.slope()
'Infinity'          #Quotes mean it returned a string, no need to append
                     Them if they don't show up
```