You will find a private GitHub repo called `<github-username>-hw` where you will submit all your homework assignments. Clone this repo and create a `hw2` directory inside. Add this directory to the repo using `$ git add hw2`. All your code should appear in a file called `hw2.py` that lives inside the `hw2` directory. Make sure to add `hw2.py` to the repo and commit your changes with `$ git commit -a -m "good log message"`.

Question 1 (10 points)**.** *A* run-length encoding *of a string compresses* runs *of consecutive identical characters into a pair* (x, y) *where* x *is the character and* y *is the count. For example, a run-length encoding of the string*

``aaabbccccddddddabbb''

is the list

```
[('a', 3), ('b', 2), ('c', 4), ('d', 6), ('a', 1), ('b', 3)]
```

(a) *Define a function* `run_length_encode(s)` *that takes a string and produces a run-length encoded representation (*i.e., *a list of 2-tuples that appropriately encodes* `s`*). Remember, your function should return the run-length encoded representation and not print it.*

(b) *Define a function* `run_length_decode(l)` *that takes a run-length encoded list and returns the appropriately decoded string. You may find the following example* `for` *loop syntax useful. Let* `lst = [('a',3), ('b',2), ('c',6)]`*. Consider the following loop.*

```
>>> for (x,y) in lst:
...    print("{} {}".format(x,y))

a 3
b 2
c 6
```

Your code should contain an informative doc string *and should be edited for clarity.*

Question 2 (5 points)**.** *Write a class called* `PieChart` *that represents a traditional pie chart. Each slice in the pie chart is a pair* `(label,amount)`*. You should store the items in an instance variable called* `slices`*, which will be a list of pairs. You may also elect to have an instance variable called* `total` *that stores the total amount of things labelled in the chart. You will find that reading* `https://mkaz.com/2012/10/10/python-string-format/` *is helpful when writing the* `__str__` *method.*

```
class PieChart:

  def __init__(self):

  def add_slice(self, label, amount):

  def percentage(self, label):

  def __str__(self):
```

```
>>> p = PieChart()
>>> p.add_slice("Entertainment", 10000)
>>> print(p)
Entertainment: 10000 (1.00)
>>> p.add_slice("Travel", 5000)
>>> p.add_slice("Food",20000)
>>> print(p)
Entertainment: 10000 (0.29)
Travel: 5000 (0.14)
Food: 20000 (0.57)
```