

EEB 174 Homework week 5

Feb 12, 2017

Preliminaries

Create a new ipython notebook called week-5-hw-eeb174.ipynb and save your answers in this notebook. Commit the notebook to your homework repo.

Commit all of your work as you go.

Part 1: In Class Challenge Continue, the shell

Get the data sets

We are going to work with data from

Cooney C.R., Bright J.A., Capp E.J.R., Chira A.M., Hughes E.C., Moody C.J.A., Nouri L.O., Varley Z.K., Thomas G.H. 2017. Mega-evolutionary dynamics of the adaptive radiation of birds. Nature.

The paper is available [here](#)

We want the data from Figure 1 which is available from this [Nature link](#)

You will also need a list of ALL of the bird species. Lets use the checklist from the Cornell Lab of Ornithology [here](#).

Questions (can be answered using shell or python commands)

1. How many families are in this file?
2. Which family has the most species represented?
3. How many families have only a single species in them?
4. How many families are present in the eBird data?
5. How many species are in each family of the eBird data?

Write the answers to these questions **in markdown format** within your python notebooks. Set off code blocks showing your shell commands using the appropriate markdown syntax.

Part II. Bird data in python

For this section you will need to write python code to import the nature and ebird data.

Questions

1. Create a dictionary where the keys are the species in the nature data set and the values are families. Write a loop that will give the output
Species XX belongs to Family YY for all key-value pairs
2. Do the same for the ebird data.
3. Write another loop that reports the number of species in each family in the ebird data set with this output There are

XX total species in Family YY. You may find the Counter object useful for this.

```
from collections import Counter

mylist = ["red", "blue", "blue", "red", "red", "orange"]
counted = Counter(mylist)
print(counted)
Counter({'red': 3, 'blue': 2, 'orange': 1})
```

Part III.

Read Chapter 5 of Python for Biologists and do all exercises on page 122.

Due Dates

Homework must be committed by **Wednesday, February 15th at 5:00 PM.**