ENGL 516X:
Methods of Formal Linguistic Analysis

Semester: Spring '18

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Announcements, Reminders etc.

- Assignment 5 is due this weekend.
- Start working on your final project.
- Try to spend more time on python in these last few weeks.

Questions about Last week

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Assignment 4 discussion

- Answers seem to be slightly different among people (primarily because of different pre-processing)
- Different formats of displaying outputs

-Like a nice teacher, I tolerated all these. So, I want 2 nice student volunteers - one for each question, to show their solutions.

Topic for the week: Databases

- What is a database? How can we work with it?
- How can we "query" and modify databases with Structured Query Language?
- How can we integrate a database and a UI in Python?

What is a database?

- A database is a file (or files) used to save data in a structured manner.
- We can visualize it as a table (or collection of tables), with many rows and columns.
- Each row is similar to a dictionary in python. There is a key, and a set of values associated with it.
- However, while a dictionary is something that is stored in a program and goes away when the program closes, databases are things that are stored on your hard drive.
- Databases are a way to store and retrieve data quickly, and we can also make permanent changes to them in python programs.
- Some popular examples: spreadsheets, comma separated value (csv) files etc.

Terminology

- Database Management System: Software that allows users/programmers to interact with a database and work with the data in it.
- Table, Rows, Columns
- Keys: The unique identifier of a row in a table.
- querying: issuing commands to a database to access or update data.

Basic operations with a database

- Create: create a table or a collection of tables
- inserting new rows or new columns into tables
- updating (editing) an existing row in a table
- deleting something from a table
- selecting some rows from a table to view/print them or do something with them.
- Developing relations between two or more tables by creating either common keys, or mapping one table's key to another etc.

Databases in python

- we will use sqllite3 - a python library that will allow us to access a database stored on our hard disk and manipulate it.
- To talk to the database, sqllite3 uses a format called "Structured Query Language (SQL)"
- To view a database, it is good to have an excel like software. In Firefox, a plugin called SQLLiteManager allows you to do that (or install SQLite browser from http://sqlitebrowser.org/)
- So, we write code to read/write info from database, and we can use SQLLiteManager to see if our code is really working.

SQL Tutorial

- Work in groups of 2-3 people, and do some lessons at: `http://www.w3schools.com/sql/`
- In the left panel, you see lesson names. Do: SQL Intro, Syntax, Select, Where, Insert into, Update, Delete
- Let us say you spend about 30-40 min on this.

Additional practice material

- `http://sqlzoo.net/`

Working with databases in Python

- CreatingADBExample.py
- InsertingIntoADBExample.py
- PrintEditDeleteExamples.py

(I will continue with these examples on Thursday)

Next Class

- SQL in Python
- TODO: Read Chapter 15 in textbook (There is a lot of stuff in it, that I will not discuss, though)
- TODO: Take a look at these code examples.