HOMEWORK #8 - File Manipulation and Email
REGULAR VERSION

PART I - UNIQUE RANDOM NUMBERS

Often in experimental studies, each participant needs to be issued a unique random integer ID to ensure anonymity. While you could generate a random number between 1 and 10^10 for each participant, there is no guarantee that these numbers would be unique.

In order to generate a unique random ID, we must record what IDs have been given out in order to ensure that we don't repeat any of them.

Write a script, that when run, generates a random 6 digit integer and checks to see if it's been used. If not, then the script should return it to the user (Your ID is XXXXXX!). If so, the script should try again and again until it can find an unused random 6 digit integer. All used random integers should be stored in a text file called `used_ids.txt`.

Please name the module, `id_generator.py` and place it in your **python > week8** directory. Before submitting, make sure all executable code is encapsulated in a `main()` function as described in the notes.

PART II - GELATO

Create a CSV file that looks like this:

LDAP	FULLNAME	SCORE	LOCATION
alberthwang	Albert Hwang	11	US-MTV-CL5
satishm	Satish Musurunu	60	US-MTV-40
smadaan	Saurabh Madaan	40	US-MTV-CL5
tiffanyliu	Tiffany Liu	90	US-MTV-43
ninaye	Nina Ye	49	US-MTV-CL5

***Feel free to use other people's ldaps/names if you're not comfortable emailing these folks using a python script. The locations and scores are also arbitrary. Make sure there are at least 5 rows and these exact columns.**

Write a script that reads the csv file and generates emails to each of these people (from you). Each email should follow this format:

Hi Albert!

You got a 11% on your Final Exam. The average score was 50%. This means that you scored below the average.

You can pick up your test in the lobby of US-MTV-CL5.

*Note: this is a homework assignment for a programming course I am in. Please disregard!

The dynamically generated values should be these:

Hi {{ first name }}!

You got a {{ score }}% on your Final Exam. The average score was {{ class average }}%. This means that you scored {{ above/below/at }} the average.

You can pick up your test in the lobby of {{ location }}.

*Note: this is a homework assignment for a programming course I am in. Please disregard!

A few notes:

1. **You should greet them only by their first name, not their full name (you can assume that their first name is the first word in their name).**
2. **The class average should be dynamically calculated, not statically defined. Take a look at the aggregate functions shortcuts here.**
3. **Tell them they are above/below the average based on their actual score.**
4. **(Hint) You shouldn't recreate a new SMTP object for each email sent.**

Please name the module, `exam_mailer.py` and place it in your **python > week8** directory. Before submitting, make sure all executable code is encapsulated in a `main()` function as described in the notes.

PART III - OPTIONAL BUT HIGHLY RECOMMENDED! - EXTRA CREDIT

HIGHLY recommended for those in data-centric roles.*

Get the `contributions.xls` file from my home directory with this command (copy and paste into terminal):

cp /home/alberthwang/python/week8/hw_files/contributions.xls contributions.xls

Open the file and take a look at it. Each row is a separate employee's information and their contribution amount **(all of this is dummy data that was randomly generated)**.

Write a script that produces summary rollups of the contribution data by office, region, and OC member for the dimensions of sum, max, min, and mean (these aggregate function shortcuts may help). The final result should be an XLS file that looks EXACTLY like the one here:

/home/alberthwang/python/week8/hw_files/contributions_output_sample.xls

Look through all the tabs of the sample output and write a script that can regenerate this file dynamically.

A few notes:

1. **All values should be dynamically generated, so no coding in any region, office, or OC names...the script has to find these from the data file and be able to change the results if the data file changes.**
2. **This assignment is really fun, so please have fun!**

Please name the module, `contributions_rollup.py` and place it in your **python > week8** directory. Before submitting, make sure all executable code is encapsulated in a `main()` function as described in the notes.