Competency 230 – Python Excel

Plan

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Overview & Purpose

Python is a server language; one of its major strengths is working with data. In this set of exercises, we will start exploring that strength working with Excel.

Prerequisite

- 220 - File IO

References

- https://www.python.org/
- https://openpyxl.readthedocs.io/en/stable/tutorial.html

Exercise - The word is out

Do this exercise in teams of two or three. Use only one computer and close the lid of the computers you are not using.

The word is out of your great success in the EvolveU program. Every friend and friend of friends want you to help them. Many of your friends and new friends are not sure what a full stack developer is but they sure know you can help.

(Big Note… If you have an exercise you would like to substitute for this exercise, you are welcome. It must have at least two, preferably three, subject areas / tables that relate. See Larry first if you are planning to substitute).

You have decided to help Billy. He is just starting a small business. He needs to keep track of his clients, invoices, items sold, along with his product list and inventory. He has asked that you design a excel worksheet for him to last until he is large enough for you to write a custom system for him. All the invoices are done by hand right now and that's the way he wants to keep it. You just need to design a system for him to keep track of what is going on. He would like you to design the data so that it can be loaded directly into a database.

Design the spreadsheet so that you can create invoices from the data. There will be 4 sheets in this design. Design the data so it is "Normalized". The sheets should be:

- customers (one row for each customer)
- invoices (one row for each invoice)
- invoice line items (one row for each product on the invoice)
- product (one item for each product that you sell)

Create a python program that will relate the data in the 4 tables and create an invoice. The invoice does not need to be fancy.

Document your design. Review with the other groups and pick one of the designs to implement.

Review the rough design (paper / whiteboard / napkin) with Larry. You can review it several times. The design should include the following:

- invoice wireframe
- data model
- sample data

The design should allow for (but do not code or develop reports as follows:

- total invoiced amount to each client
- invoiced amount each day
- invoices by client

Only develop the code to create an Invoice given an existing invoice ID. Use the KISS approach. No PANDAS. Hard code or enter an invoice to be generated. Your output can be in the easiest format for you.

Exercise - Populate the data

Using the same design and template worksheet as the other groups, create some sample data that will represent one month of data. Each group take a different month. There should be:

- 10 - 15 clients (use 5ish clients that are the same as another group)
- 3 - 4 invoices per client
- 1 - 5 items per invoice
- about $15,000 of invoices per month

Exercise - Validate and Merge the data

Write python code and use the OpenPyXL package to validate that your worksheet is correct. Validate all the other groups data as well.

Write python code to merge all the other groups' data into a single well-formatted workbook. If you are the first group, create a second one and merge it.