Project 2

Start Assignment

Due Thursday by 23:59 **Points** 100 **Submitting** a text entry box or a website url

For the ETL mini project, you will work with a partner to practise building an ETL pipeline using Python, Pandas, and either Python dictionary methods or regular expressions to extract and transform the data. After you transform the data, you'll create four CSV files and use the CSV file data to create an ERD and a table schema. Finally, you'll upload the CSV file data into a Postgres database.

Since this is a one-week project, make sure that you have done at least half of your project before the third day of class to stay on track.

Although you and your partner will divide the work, it's essential to collaborate and communicate while working on different parts of the project. Be sure to check in with your partner regularly and offer support.

Files

Download the starter code and files to help you get started:

Project 2 ETL files

Before You Begin

1. Create a new repository, named `Crowdfunding_ETL`, for this project. **Do not add this homework to an existing repository**.
2. Clone the new repository to your computer.
3. Rename the `ETL_Mini_Project_Starter_Code.ipynb` file with your first name initial and last name, for example, `ETL_Mini_Project_NRomanoff.ipynb`. Then, add this Jupyter notebook file and the Resources folder containing the `crowdfunding.xlsx` and the `contacts.xlsx` files to your repository.
4. Push the changes to GitHub

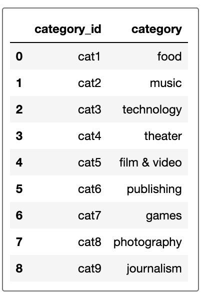
Instructions

The instructions for this mini project are divided into the following subsections:

- Create the Category and Subcategory DataFrames
- Create the Campaign DataFrame
- Create the Contacts DataFrame
- Create the Crowdfunding Database

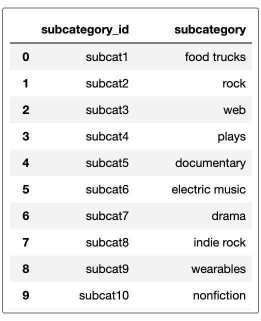
Create the Category and Subcategory DataFrames

1. Extract and transform the `crowdfunding.xlsx` Excel data to create a category DataFrame that has the following columns:
   - A "category_id" column that has entries going sequentially from "cat1" to "cat*n*", where *n* is the number of unique categories
   - A "category" column that contains only the category titles
   - The following image shows this category DataFrame:



	category_id	category
0	cat1	food
1	cat2	music
2	cat3	technology
3	cat4	theater
4	cat5	film & video
5	cat6	publishing
6	cat7	games
7	cat8	photography
8	cat9	journalism

2. Export the category DataFrame as `category.csv` and save it to your GitHub repository.
3. Extract and transform the `crowdfunding.xlsx` Excel data to create a subcategory DataFrame that has the following columns:
   - A "subcategory_id" column that has entries going sequentially from "subcat1" to "subcat*n*", where *n* is the number of unique subcategories
   - A "subcategory" column that contains only the subcategory titles
   - The following image shows this subcategory DataFrame:

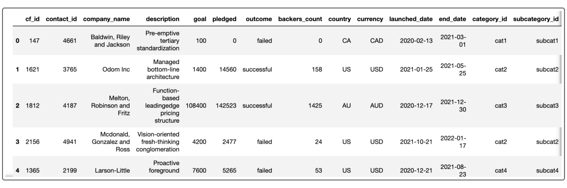


	subcategory_id	subcategory
0	subcat1	food trucks
1	subcat2	rock
2	subcat3	web
3	subcat4	plays
4	subcat5	documentary
5	subcat6	electric music
6	subcat7	drama
7	subcat8	indie rock
8	subcat9	wearables
9	subcat10	nonfiction

4. Export the subcategory DataFrame as `subcategory.csv` and save it to your GitHub repository.

Create the Campaign DataFrame

1. Extract and transform the `crowdfunding.xlsx` Excel data to create a campaign DataFrame has the following columns:
   - The "cf_id" column
   - The "contact_id" column
   - The "company_name" column
   - The "blurb" column, renamed to "description"
   - The "goal" column, converted to the `float` data type
   - The "pledged" column, converted to the `float` data type
   - The "outcome" column
   - The "backers_count" column
   - The "country" column
   - The "currency" column
   - The "launched_at" column, renamed to "launch_date" and with the UTC times converted to the `datetime` format
   - The "deadline" column, renamed to "end_date" and with the UTC times converted to the `datetime` format
   - The "category_id" column, with unique identification numbers matching those in the "category_id" column of the category DataFrame
   - The "subcategory_id" column, with the unique identification numbers matching those in the "subcategory_id" column of the subcategory DataFrame
   - The following image shows this campaign DataFrame:

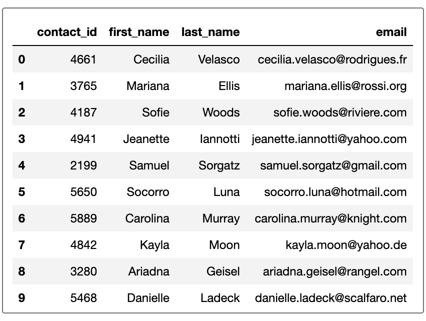


	cf_id	contact_id	company_name	description	goal	pledged	outcome	backers_count	country	currency	launched_date	end_date	category_id	subcategory_id
0	147	4661	Baldwin, Riley and Jackson	Pre-emptive tertiary standardization	100	0	failed	0	CA	CAD	2020-02-13	2021-03-01	cat1	subcat1
1	1621	3765	Odom Inc	Managed bottom-line architecture	1400	14560	successful	158	US	USD	2021-01-25	2021-05-25	cat2	subcat2
2	1812	4187	Melton, Robinson and Fritz	Function-based leadingedge pricing structure	108400	142523	successful	1425	AU	AUD	2020-12-17	2021-12-30	cat3	subcat3
3	2156	4941	Mcdonald, Gonzalez and Ross	Vision-oriented fresh-thinking conglomeration	4200	2477	failed	24	US	USD	2021-10-21	2022-01-17	cat2	subcat2
4	1365	2199	Larson-Little	Proactive foreground	7600	5265	failed	53	US	USD	2020-12-21	2021-08-23	cat4	subcat4

2. Export the campaign DataFrame as `campaign.csv` and save it to your GitHub repository.

Create the Contacts DataFrame

1. Choose one of the following two options for extracting and transforming the data from the `contacts.xlsx` Excel data:
   - **Option 1:** Use Python dictionary methods.
   - **Option 2:** Use regular expressions.
2. If you chose Option 1, complete the following steps:
   - Import the `contacts.xlsx` file into a DataFrame.
   - Iterate through the DataFrame, converting each row to a dictionary.
   - Iterate through each dictionary, doing the following:
     - Extract the dictionary values from the keys by using a Python list comprehension.
     - Add the values for each row to a new list.
   - Create a new DataFrame that contains the extracted data.
   - Split each "name" column value into a first and last name, and place each in a new column.
   - Clean and export the DataFrame as `contacts.csv` and save it to your GitHub repository.
3. If you chose Option 2, complete the following steps:
   - Import the `contacts.xlsx` file into a DataFrame.
   - Extract the "contact_id", "name", and "email" columns by using regular expressions.
   - Create a new DataFrame with the extracted data.
   - Convert the "contact_id" column to the integer type.
   - Split each "name" column value into a first and a last name, and place each in a new column.
   - Clean and then export the DataFrame as `contacts.csv` and save it to your GitHub repository.
4. Check that your final DataFrame resembles the one in the following image:



	contact_id	first_name	last_name	email
0	4661	Cecilia	Velasco	cecilia.velasco@rodrigues.fr
1	3765	Mariana	Ellis	mariana.ellis@rossi.org
2	4187	Sofie	Woods	sofie.woods@riviere.com
3	4941	Jeanette	Iannotti	jeanette.iannotti@yahoo.com
4	2199	Samuel	Sorgatz	samuel.sorgatz@gmail.com
5	5650	Socorro	Luna	socorro.luna@hotmail.com
6	5889	Carolina	Murray	carolina.murray@knight.com
7	4842	Kayla	Moon	kayla.moon@yahoo.de
8	3280	Ariadna	Geisel	ariadna.geisel@rangel.com
9	5468	Danielle	Ladeck	danielle.ladeck@scalfaro.net

Create the Crowdfunding Database

1. Inspect the four CSV files, and then sketch an ERD of the tables by using QuickDBD.
2. Use the information from the ERD to create a table schema for each CSV file.

   Note: Remember to specify the data types, primary keys, foreign keys, and other constraints.
3. Save the database schema as a Postgres file named `crowdfunding_db_schema.sql`, and save it to your GitHub repository.
4. Create a new Postgres database, named `crowdfunding_db`.
5. Using the database schema, create the tables in the correct order to handle the foreign keys.
6. Verify the table creation by running a `SELECT` statement for each table.
7. Import each CSV file into its corresponding SQL table.
8. Verify that each table has the correct data by running a `SELECT` statement for each.

Hints

- To split each "category & sub-category" column value into "category" and "subcategory" column values, use `df[["new_column1","new_column2"]] = df["column"].str.split()`. Make sure to pass the correct parameters to the `split()` function.
- To get the unique category and subcategory values from the "category" and "subcategory" columns, create a NumPy array where the array length equals the number of unique categories and unique subcategories from each column. For information about how to do so, see numpy.arange in the NumPy documentation.
- To create the category and subcategory identification numbers, use a list comprehension to add the "cat" string or the "subcat" string to each number in the category or the subcategory array, respectively.
- For more information about creating a new Pandas DataFrame, see the pandas.DataFrame in the Pandas documentation.
- To convert the "goal" and "pledged" columns to the `float` data type, use the `astype()` method.
- To convert the "launch_date" and "end_date" UTC times to the `datetime` format, see the `Transform_Grocery_Orders_Solved.ipynb` activity solution.
- For more information about how to add the "category_id" and "subcategory_id" unique identification numbers to the campaign DataFrame, see the pandas.DataFrame.merge in the Pandas documentation.

Support and Resources

Your instructional team will provide support during classes and office hours. You will also have access to learning assistants and tutors to help you with topics as needed. Make sure to take advantage of these resources as you collaborate with your partner on this project.

Requirements

A Category DataFrame is Created (15 points)

- The DataFrame contains a "category_id" column that has entries going sequentially from "cat1" to "cat*n*", where *n* is the number of unique categories (5 points)
- The DataFrame has a "category" column that contains only the category titles (5 points)
- The category DataFrame is exported as `category.csv` (5 points)

A Subcategory DataFrame is Created (15 points)

- The DataFrame contains a "subcategory_id" column that has entries going sequentially from "subcat1" to "subcat*n*", where *n* is the number of unique subcategories (5 points)
- The DataFrame contains a "subcategory" column that contains only the subcategory titles (5 points)
- The subcategory DataFrame is exported as `category.csv` (5 points)

A Campaign DataFrame is Created (30 points)

- The DataFrame has the following columns: (25 points)
  - A "cf_id" column
  - A "contact_id" column
  - A "company_name" column
  - A "description" column
  - A "goal" column that is a `float` data type

    - A "pledged" column that is a `float` data type
    - An "outcome" column
    - A "backers_count" column
    - A "country" column
    - A "currency" column
    - A "launch_date" with the time formatted as "YYYY-MM-DD"
    - An "end_date" with the time formatted as "YYYY-MM-DD"
    - A "category_id" column that contains the unique identification numbers matching those in the "category_id" column of the category DataFrame
    - A "subcategory_id" column that contains the unique identification numbers matching those in the "subcategory_id" column of the subcategory DataFrame
- The campaign DataFrame is exported as `campaign.csv` (5 points)

A Contacts DataFrame is Created (15 points)

- The DataFrame has the following columns: (10 points)
    - A "contact_id" column
    - A "first_name" column
    - A "last_name" column
    - An "email" column
- The contacts DataFrame is exported as `contacts.csv` (5 points)

A Crowdfunding Database is Created (25 points)

- A database schema labelled, `crowdfunding_db_schema.sql` is created (5 points)
- A `crowdfunding_db` is created using the `crowdfunding_db_schema.sql` file (5 points)
- The database has the appropriate primary and foreign keys and relationships (5 points)
- Each CSV file is imported into the appropriate table without errors (5 points)
- The data from each table is displayed using a `SELECT *` statement (5 points)

This project will be evaluated against the requirements and assigned a grade according to the following table:

Grade	Points
A (+/-)	90+
B (+/-)	80–89
C (+/-)	70–79
D (+/-)	60–69
F (+/-)	< 60

Submission

You are required to submit the URL of your GitHub repository for grading.

NOTE

> Projects are requirements for graduation. While you are allowed to miss up to two Challenge assignments and still earn your certificate, projects cannot be skipped.

References

Data for this dataset was generated by edX Boot Camps LLC, and is intended for educational purposes only.

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