csv_search_generic_gg_polars

November 2, 2023

Jordan Jiosi

The Estate Registry

(Sample)

November 2, 2023

0.1 Import dependencies

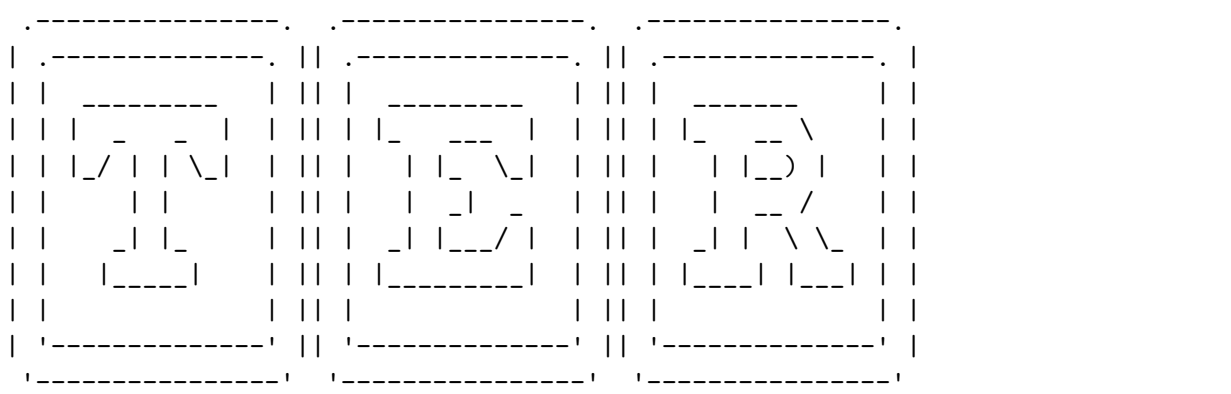
[83]:
```
import  glob, shutil, time, subprocess, sys, os, os.path, re, csv, json,␣
 ↪datetime
import pandas as pd
import polars as pl
from art import *
```

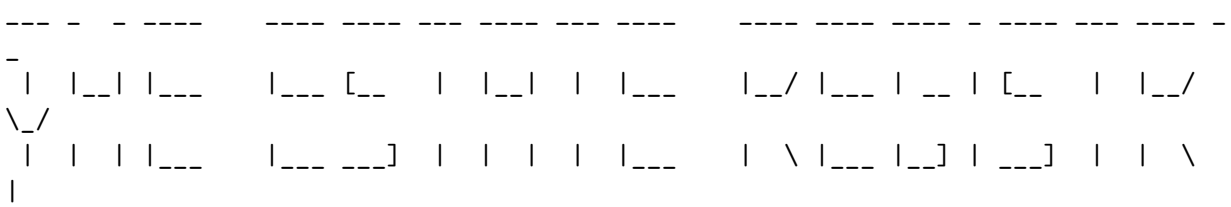
0.2 Set environment

[84]:
```
# Set styling
Art=text2art("TER",font='block',chr_ignore=True) # Return ASCII text with block␣
 ↪font
Art2=text2art("The Estate Registry",font='cybermedum',chr_ignore=True) # Return␣
 ↪ASCII text with block font
ArtLine=text2art("-"*25,font="cybermedum",chr_ignore=True) # Return ASCII text␣
 ↪with block font
ArtLine=text2art("-"*25,font="cybermedum",chr_ignore=True) # Return ASCII text␣
 ↪with block font
print(Art)
print(Art2)
print(ArtLine)

# ----- ----- -----
# Set results env
results_file = "search_results.txt"
results_file_csv = "search_results.csv"
```

```python
# Use os to determine the current operating system and classify as either␣
 ↪"Unix" or "Windows"
if os.name == "nt":
    os_type = "Windows"
    sourceDir = os.getcwd() + "\\NN\\Archive\\_"
    destinationDir = os.getcwd() + "\\results\\"
else:
    os_type = "Unix"
    sourceDir = os.getcwd() + "/data"
    destinationDir = os.getcwd() + "/results/"
print(f"Current OS type: {os_type}")
print(f"Source dir: {sourceDir}")
print(f"Destination dir: {destinationDir}")
```






```
Current OS type: Unix
Source dir: /Users/jordan/Documents/PCA/local/NN_CSV_search/data
Destination dir: /Users/jordan/Documents/PCA/local/NN_CSV_search/results/
```

Working through some initial logic... may refactor but this is a decent M*O(n)^2 search since there aren't that many files

[85]:
```
totalFileCount: int = 0
csvFileNamesReviewed: [str] = []
incFound: [str] = []
searchTerms: [str] = ["estate-registry", "jiosi"]
lnames: [str] = ["jiosi"]
```

1 The Saving, Searching, & pd/terminal Pretty-Printing Algorithms

[86]:
```
def save_results_csv(filename, df, directory=destinationDir):
    """
    Save the provided polars DataFrame to a CSV file.
    """
    filepath = os.path.join(directory, filename)

    # Use Polars' to_csv function to save DataFrame to CSV
    df.write_csv(filepath)

    print(f"Results saved to CSV: {filepath}")

def search_csv_files_for_term(sourceDir=sourceDir, search_terms=searchTerms,␣
↪save_file=results_file):
    """
    Search CSV files for specified terms and save the results, displaying the␣
↪data using pandas for easy viewing.
    """
    totalFileCount = 0
    csvFileNamesReviewed = []
    df_c: pl.DataFrame = None
    error_message = None  # capture any error messages

    print(f'*'*25 + " Search Parameters " + '*'*25)
    print(f'Searching the following directory: {sourceDir}')
    print(f'Searching for the following terms: {search_terms}')
    print(f'*'*25 + "="*15 + '*'*25)

    try:
        for file in os.listdir(sourceDir):
            full_path = os.path.join(sourceDir, file)  # Using full path
            print(f"Searching file: {full_path}")
            if file.endswith(".csv"):
                totalFileCount += 1
                csvFileNamesReviewed.append(full_path)

                # Load CSV data into a pandas DataFrame -- Let's try Polars
                # df_pan = pd.read_csv(full_path, header=1)
```

```
                # df_pls = pl.read_csv(full_path, has_header=True,␣
↪truncate_ragged_lines=True, skip_rows=1) # In-memory

                df = pl.scan_csv(full_path, skip_rows=1, has_header=True).
↪collect() # Lazily loaded
                cols = df.columns
                print('-'*10)
                print("All emails in file:")
                print(df.select(["Email Address"]).filter(pl.col("Email␣
↪Address").is_not_null())
                        .group_by('Email Address').count())
                print("All last names in file:")
                print(df.select(["Last Name"]).filter(pl.col("Last Name").
↪is_not_null())
                        .group_by('Last Name').count())
                print("Matches and date found:")
                print(df.select(['Created Date', 'Email Address', 'Last Name']).
↪filter(pl.col("Email Address").str.contains(search_terms[0])))

                # Aggregate by "Last Name" and cast to i64
                res = df.select(["Email Address", "Last Name"]).filter(
                    (pl.col("Email Address").str.contains(search_terms[0])) &
                    (pl.col("Email Address").is_not_null())
                ).group_by(["Email Address"]).agg(
                    count_email=pl.col("Email Address").count().cast(pl.Int64)
                )

                # select, filter total count matching search terms && cast to␣
↪i64
                filtered_df = df.select(["Email Address", "Last Name"]).filter(
                    (pl.col("Email Address").str.contains(search_terms[0])) &
                    (pl.col("Email Address").is_not_null())
                )
                total_count = filtered_df.shape[0]
                print(f"Matches found: {total_count}")
                print('-'*10)

                filename_column = pl.DataFrame({
                    "Filename": [file for _ in range(filtered_df.shape[0])]  #␣
↪Repeats the filename for each row in filtered_df
                })
                filtered_df_with_filename = filtered_df.hstack(filename_column)
                # This is the same DataFrame--CSV save we want like last time␣
↪with expected quick-peek BAU expected output
                columns_order = ["Filename", "Email Address", "Last Name"]
```

```
                filtered_df_ordered = filtered_df_with_filename.
↪select(columns_order)
                df_c = filtered_df_ordered

                # DF with int type for "count_email" for simplicity
                agg_total = pl.DataFrame({
                    "Email Address": ["Total"],
                    "count_email": [int(total_count)]  # cast to int inferred␣
↪as i64 by polars
                })

                # Concatenated results for roll-up
                rollup_result = pl.concat([res, agg_total])

                print(f'Roll-up results: {rollup_result}')
                print('-'*25)
                print(f'Final results: {df_c}')
                print('-'*10)
                print('-'*40)

    except Exception as e:
        # Capture the error message
        error_message = f"An error occurred during the file search: {str(e)}"

    print(f'*'*25 + " Search Results " + '*'*25)
    print(f"Total files reviewed: {totalFileCount}")
    print(f"Files reviewed: {csvFileNamesReviewed}")
    print(f'Match criteria: {search_terms}')
    print(f"Matches found: {df_c.shape[0]}")
    print(f'*'*25 + "="*15 + '*'*25)
    print(f"Saving results to {save_file}")
    print(f'*'*25 + "="*15 + '*'*25)
    print(f'*'*25 + "="*15 + '*'*25)

    save_results_csv(results_file_csv, filtered_df_with_filename)

    # If there was an error, print the error message
    if error_message:
        print(error_message)

    return totalFileCount, csvFileNamesReviewed, df_c.shape[0]
```

[87]:
```
total_files, files_reviewed, inc_found = search_csv_files_for_term()
```

```
************************ Search Parameters ************************
Searching the following directory:
/Users/jordan/Documents/PCA/local/NN_CSV_search/data
Searching for the following terms: ['estate-registry', 'jiosi']
```

```
**********************************************************************
Searching file:
/Users/jordan/Documents/PCA/local/NN_CSV_search/data/22-807_o7jp.pdf
Searching file: /Users/jordan/Documents/PCA/local/NN_CSV_search/data/2023-10-
26_d6e0ed93-b667-44b1-9191-d92b179b4163_TEST_EXAMPLE_FILE_TRANSFER.csv
----------
All emails in file:
shape: (8, 2)

 Email Address                count
 ---                          ---
 str                          u32

 jjiosi@estate-registry.com   1
 pfiumano@gmail.com           1
 rhorn@gmail.com              1
 pfiumano@phillips-cohen.com  1
 user@sparkouttech.com        1
 perkins@gmail.com            1
 superuser@gmail.com          1
 user@estate-registry.com     1

All last names in file:
shape: (1, 2)

 Last Name   count
 ---         ---
 str         u32

 Perkins     1

Matches and date found:
shape: (2, 3)

 Created Date   Email Address               Last Name
 ---            ---                         ---
 str            str                         str

 26/10/2023     jjiosi@estate-registry.com  null
 26/10/2023     user@estate-registry.com    null

Matches found: 2
----------
Roll-up results: shape: (3, 2)

 Email Address                count_email
 ---                          ---
 str                          i64
```

```
 jjiosi@estate-registry.com   1
 user@estate-registry.com     1
 Total                        2

-------------------------
Final results: shape: (2, 3)

 Filename                              Email Address                Last Name
 ---                                   ---                          ---
 str                                   str                          str

 2023-10-26_d6e0ed93-b667-44b1-91…   jjiosi@estate-registry.com   null
 2023-10-26_d6e0ed93-b667-44b1-91…   user@estate-registry.com     null

----------
----------------------------------------
Searching file: /Users/jordan/Documents/PCA/local/NN_CSV_search/data/2023-10-
26_d6e0ed93-b667-44b1-9191-d92b179b4163.csv
----------
All emails in file:
shape: (5, 2)

 Email Address                 count
 ---                           ---
 str                           u32

 superusersudoroot@gmail.com   1
 user@estate-registry.com      1
 randomuser@gmail.com          1
 randomuser_2@gmail.com        1
 jjiosi@estate-registry.com    1

All last names in file:
shape: (2, 2)

 Last Name   count
 ---         ---
 str         u32

 Jiosi       1
 Lyson       1

Matches and date found:
shape: (2, 3)

 Created Date   Email Address                Last Name
 ---            ---                          ---
```

```
 str           str                          str

 26/10/2023    jjiosi@estate-registry.com   null
 26/10/2023    user@estate-registry.com     null

Matches found: 2
----------
Roll-up results: shape: (3, 2)

 Email Address                count_email
 ---                          ---
 str                          i64

 jjiosi@estate-registry.com   1
 user@estate-registry.com     1
 Total                        2

-------------------------
Final results: shape: (2, 3)

 Filename                             Email Address                Last Name
 ---                                  ---                          ---
 str                                  str                          str

 2023-10-26_d6e0ed93-b667-44b1-91…    jjiosi@estate-registry.com   null
 2023-10-26_d6e0ed93-b667-44b1-91…    user@estate-registry.com     null

----------
----------------------------------------
************************* Search Results *************************
Total files reviewed: 2
Files reviewed: ['/Users/jordan/Documents/PCA/local/NN_CSV_search/data/2023-10-
26_d6e0ed93-b667-44b1-9191-d92b179b4163_TEST_EXAMPLE_FILE_TRANSFER.csv', '/Users
/jordan/Documents/PCA/local/NN_CSV_search/data/2023-10-26_d6e0ed93-b667-44b1-
9191-d92b179b4163.csv']
Match criteria: ['estate-registry', 'jiosi']
Matches found: 2
************************************************************
Saving results to search_results.txt
************************************************************
************************************************************
Results saved to CSV:
/Users/jordan/Documents/PCA/local/NN_CSV_search/results/search_results.csv
```

2 Show some basic stats

[88]:
```
print(f"Total files reviewed: {total_files}")
print(f"Files reviewed: {files_reviewed}")
# Load the CSV data into a pandas DataFrame
df_res = pd.read_csv(os.path.join(destinationDir, results_file_csv))
print("\n")
print(f"Matches found:\n {df_res.head()}\n")
print(f"Prelims: {df_res.shape[0]} matches found in {len(files_reviewed)}␣
 ↪file[s] reviewed")
```

```
Total files reviewed: 2
Files reviewed: ['/Users/jordan/Documents/PCA/local/NN_CSV_search/data/2023-10-
26_d6e0ed93-b667-44b1-9191-d92b179b4163_TEST_EXAMPLE_FILE_TRANSFER.csv', '/Users
/jordan/Documents/PCA/local/NN_CSV_search/data/2023-10-26_d6e0ed93-b667-44b1-
9191-d92b179b4163.csv']


Matches found:
                 Email Address  Last Name  \
0  jjiosi@estate-registry.com        NaN
1    user@estate-registry.com        NaN

                                             Filename
0  2023-10-26_d6e0ed93-b667-44b1-9191-d92b179b416…
1  2023-10-26_d6e0ed93-b667-44b1-9191-d92b179b416…

Prelims: 2 matches found in 2 file[s] reviewed
```