IMMILYTICS
HARNESS THE POWER OF DATA

OPERATIONAL PROCESS AUTOMATION – REPORTING SERVICES– BRD

1. Name of program:

Operational Process Automation – Reporting.

2. Objective:

A code based solution using Python and SQL that will automate the process of importing data, preparing reports, and delivering reports on/at scheduled days/times, to designated stakeholders.

3. Scope – Summary:

- Project - Requirements
- Folder Structure Creation for the program flow
- Source file creation through web-scraping
- Program-Execution:
    - Read the source files for data
    - Export the read data to DBMS as per the provided mappings.
    - Report generation from DBMS to an new excel file with necessary customizations.

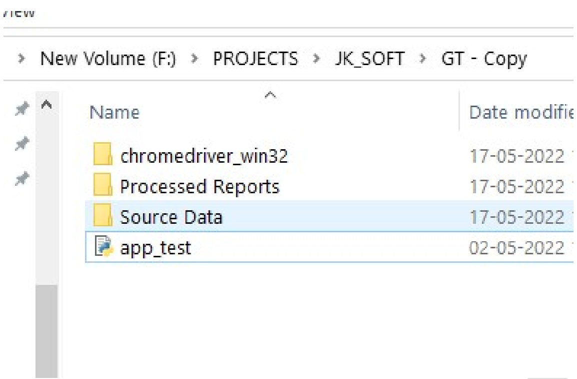
- **Project – Requirements**

    - Pyodbc – To establish connection between Python code and DBMS
    - Pandas – To retrieve and manipulate source file data
    - Chardet – for encoding
    - Xlsxwriter – to write data from data frames to external excel files
    - Glob – tp search for files in a respective path
    - Openpyxl – for excel formatting
    - Email – to enabling E-mailing functionality from script
    - Fernet – for data encryption

- **Folder Structure for the program flow:**

    - The following folders will be manually created at the path where the code will be placed for the ease of flow of program

- Processed Reports
- Source Data
- chromedriver_win32



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Name	Date modifie
chromedriver_win32	17-05-2022
Processed Reports	17-05-2022
Source Data	17-05-2022
app_test	02-05-2022

- Processed Reports folder - The path that will hold the processed output files
- Source data folder - The path that will hold the Source files
- chromedriver_win32 - The path that will hold the chrome exe for web scraping purpose.
- Source file creation through web-scraping (chrome.exe should be replaced as per the machine’s OS of the user)

- **Program-Execution:**

  - Reads the source files for data (Beneficiary File):

- Thus the acquired source files namely Reports Automation - Beneficiary Data (HQ Based) (for ImmiLytics), Reports Automation - Case Data (HQ Based) will be renamed as per the below conventions

  - Reports Automation_Beneficiary Data_(client-name) _mmddyyyy
  - Reports Automation_Case Data_(client-name)_mmddyyyy

and will be placed in the source file folder.

- Now the code searches and picks for the Beneficiary data file in the source folder contains the current date in its filename.

  - This uses pandas framework to read the content of the file and stores within as data frames
  - Now the code reads the number of rows the dataframe has and loops repetitive for 'n' number of rows the the dataframe holds.
  - During each looping it reads the data of all the columns of the each respective rows and assigns to the respective columns as defined by the mappings and pushes/adds the data of each rows to the Beneficiary table as denoted in the respective SQL code.
  - The loop ends once feeding data of all the rows in dataframe that's extracted from the source beneficiary file.

- **Reads the source files for data (Case data File):**
  - Once the insertion of data to the DBMS from the beneficiary data is completed the same identical process is restarted for case file as elaborated below
  - The code now searches and picks for the Case data file in the source folder that contains the current date in its filename
  - This uses pandas framework to read the content of the file and stores within as data frames.
  - Now the code reads the number of rows the dataframe has and loops repetitive for 'n' number of rows the the dataframe holds.
  - During each looping it reads the data of all the columns of the each respective rows and assigns to the respective columns as defined by the mappings and pushes/adds the data of each rows to Case table as denoted in the respective SQL code.
  - The loop ends once feeding data of all the rows in dataframe that's extracted from the source beneficiary file.

- **Report generation:**

  - Now once all the datas from the beneficiary files are available in the DBMS it's time to query all the tables as per the requirements to create a output file as required.

  - The code queries the Client data table in the database for record that has a definite delivery date in it.

  - And creates the Output file with the following tabs:
    - Open Cases -
    - Filed & Pending Cases
    - Approved & Closed Cases
    - Cases on Hold
    - Priority Date Report
    - Active Beneficiary List

  - Further it moves to create Document Expiration Report with the below tab name
    - Doc Exp Report - 8 Months Out

  - The sheet enlists all active beneficiaries whose any one of the below criteria did not yet expire

    - I797ExpirationDate
    - FinalNivDate
    - VisaPedDate
    - EadExpirationDate
    - AdvanceParoleExpirationDate
    - Ds2019ExpirationDate
    - ReEntryPermitExpirationDate
    - GreenCardExpirationDate

- MostRecentPassportExpirationDate
- VisaExpirationDate BETWEEN

- **Sending mail:**

- Once all the reports are ready it's time to mail the clients

- The code checks for availability of the recipient mail id's from ClientsDetails table further checks if the SEND_MAIL option is enabled/disabled

- In case enabled:
- The code gets the mail ID's of the primary recipient and secondary recipient
- Further only in an account of SEND_MAIL_TO_CLIENT is too enabled the secondary recipients are also considered.

- An send_exp_report option is set to provide an option to whether include are not the "Document Expiration Report" in the mailing attachments.

- Once the report being sent the "report_sent_on" column of clientsdetails table are updated accordingly.

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