Software Engineering + Data Wrangling with SQL - Combined Assessment

Summary:-

1) At the start of the program, it checks whether AllSurveyData.csv (containing our required view on SQL Server) is present or not.

2) For the first time implement AllSurveyData.csv is not present. hence we create dynamic SQL query which implements [fn_GetAllSurveyDataSQL]

3) Once DB connection is achieved and SQL query [fn_GetAllSurveyDataSQL] is generated, we complete our task (2) as given in the assignment.

4) Afterward, we proceed with [trg_refreshSurveyView] functionality, here I am extracting SurveyStructure table into a dataframe using read_sql (pandas) and generating hash-value of this dataFrame containing the SurveyStructure and storing this hash-value in a .txt file in my system, along with this [vw_AllSurveyData] view is generated in SQL server containing view for [fn_GetAllSurveyDataSQL] SQL query.

5) In next run, it checks for AllSurveyData.csv (which is present now) and checks the hash-value of SurveyStructure and compares it with the hash-value in the .txt file which was generated in Step 4. If there is change in SurveyStructure table, hash value will be different then AllSurveyData.csv is updated and [vw_AllSurveyData] view is altered. Hence this implements [trg_refreshSurveyView] functionality.

The next page consist of a flow-chart diagram.

```
                    Start of .py program


                          │
                          ▼
              ┌────────────────────┐                              ┌────────────────────┐
               First time          │          No                   Change in            │          No
              │ execution ?        │──────────────────────────────│ SurveyStructure     │─────────────────────────────►
               ◆                                                    table                
              └────────┬───────────┘                              └────────┬───────────┘
                       │ Yes                                                │ Yes
                       ▼                                                    ▼
          ┌─────────────────────────┐                          ┌─────────────────────────┐
          │ Create SQL Statement    │                          │ Create SQL Statement    │
          │ for [fn_GetAllSurveyDataSQL] │                      │ for [fn_GetAllSurveyDataSQL] │
          └────────────┬────────────┘                          └────────────┬────────────┘
                       │                                                     │
                       ▼                                                     ▼
          ┌─────────────────────────┐                          ┌─────────────────────────┐
          │ Get the DataFrame of AllSurveyData │               │ Get the DataFrame of AllSurveyData │
          │ and store it in .csv format │                      │ and store it in .csv format │
          └────────────┬────────────┘                          └────────────┬────────────┘
                       │                                                     │
                       ▼                                                     ▼
          ┌─────────────────────────┐                          ┌─────────────────────────┐
          │ Implement [trg_refreshSurveyView] │                │ Update hash-value of    │
          │ functionality using hash-value of │                │ SurveyStructure table   │
          │ SurveyStructure table   │                          └────────────┬────────────┘
          └────────────┬────────────┘                                       │
                       │                                                     ▼
                       ▼                                       ┌─────────────────────────┐
          ┌─────────────────────────┐                          │ Alter [vw_AllSurveyData] view on │
          │ Create [vw_AllSurveyData] view on │                │ SQL Server.             │
          │ SQL Server.             │                          └────────────┬────────────┘
          └────────────┬────────────┘                                       │
                       │                                                     │
                       └──────────────────────┬──────────────────────────────┘

                              ┌─────────────┐                                    ┌─────────────┐
                              │    End      │                                    │    End      │
                              └─────────────┘                                    └─────────────┘
```