Step-by-Step Execution Workflow for Calculating Ideal Votable Supply (IVS)

--By Chain_L and Team

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Overview of Files, Descriptions, and Data Dependencies

01_calculate_indexes.ipynb

1. **File Description**: Calculates indexes like AVPI, PR, and LAR based on raw data using predefined formulas.
2. **Files Used**:
    - Dataset\Historical_Data\Actual_Voting_Power_Index\AVPI_Raw_Data.csv
    - Dataset\Historical_Data\Participation_Ratio\PR_Raw_Data.csv
    - Dataset\Historical_Data\Liquidity_Activity_Ratio\LAR_Raw_Data.csv
3. **Files Generated**:
    - Dataset\Historical_Data\Actual_Voting_Power_Index\AVPI_Historical_Data.csv
    - Dataset\Historical_Data\Participation_Ratio\PR_Historical_Data.csv
    - Dataset\Historical_Data\Liquidity_Activity_Ratio\LAR_Historical_Data.csv

02_prepare_historical_data.ipynb

1. **File Description**: Cleans and merges historical data.
2. **Files Used**:
    - Dataset\Historical_Data\Participation_Ratio\Historical_PR_Data.csv
    - Dataset\Historical_Data\Liquidity_Activity_Ratio\Historical_LAR_Data.csv
    - Dataset\Historical_Data\OP_Price\Historical_OP_Price_Data.csv
    - Dataset\Historical_Data\Actual_Voting_Power_Index\Historical_AVPI_Data.csv
    - Dataset\Historical_Data\Votable_Supply\VS_Historical_Data.csv
    - Dataset\Historical_Data\Circulating_Supply\CS_Historical_Data.csv
3. **Files Generated**:
    - Dataset\Ideal_Votable_Supply_Data\All_Parameters_Historical_Data.csv

03_calculate_future_circulating_supply.ipynb

1. **File Description**: Calculates the future circulating supply.
2. **Files Used**:
    - Dataset\Historical_Data\Circulating_Supply\CS_Historical_Data.csv
3. **Files Generated**:
    - Dataset\Future_Circulating_Supply\FCS_Daywise_Data.csv

04_prepare_future_data.ipynb

1. **File Description**: Merges predicted future data.
2. **Files Used**:
    - Dataset\Prediction_Data\Actual_Voting_Power_Index\Future_AVPI_Data.csv
    - Dataset\Prediction_Data\OP_Price\Future_OP_Price_Data.csv
    - Dataset\Prediction_Data\Liquidity_Activity_Ratio\Future_LAR_Data.csv
    - Dataset\Prediction_Data\Participation_Ratio\Future_PR_Data.csv
    - Dataset\Future_Votable_Supply\FVS_Daywise_Data.csv
    - Dataset\Future_Circulating_Supply\FCS_Daywise_Data.csv
3. **Files Generated**:
    - Dataset\Ideal_Votable_Supply_Data\All_Parameters_Future_Data.csv

05_merge_and_scale_data.ipynb

1. **File Description**: Merges historical and future data, scales parameters, and calculates correlations.
2. **Files Used**:
    - Dataset\Ideal_Votable_Supply_Data\All_Parameters_Historical_Data.csv
    - Dataset\Ideal_Votable_Supply_Data\All_Parameters_Future_Data.csv
3. **Files Generated**:
    - Dataset\Ideal_Votable_Supply_Data\All_Parameters_Data.csv

06_generate_weight_combinations.ipynb

1. **File Description**: Generates valid weight combinations based on parameter weight ranges that is retrieved by executing 05_merge_and_scale_data.ipynb
2. **Files Used**:
    - Dataset\Ideal_Votable_Supply_Data\All_Parameters_Data.csv
3. **Files Generated**:
    - CSV files inside Dataset\Ideal_Votable_Supply_Data\all_weight_combinations\ folder

07_calculate_IVS_all_weight_combinations.ipynb

1. **File Description**: Calculates IVS for each weight combination.
2. **Files Used**:
    - Dataset\Ideal_Votable_Supply_Data\all_weight_combinations\ (CSV files)
3. **Files Generated**:
    - Updated CSV files inside Dataset\Ideal_Votable_Supply_Data\all_weight_combinations\

08_find_ideal_weights.ipynb

1. **File Description**: Finds the ideal weight combination for parameters.
2. **Files Used**:
    - Dataset\Ideal_Votable_Supply_Data\all_weight_combinations\ (CSV files)
3. **Files Generated**:
    - Dataset\Ideal_Votable_Supply_Data\all_weight_combinations\ideal_weights.csv

09_calculate_final_IVS.ipynb

1. **File Description**: Computes final IVS and stores daily and monthly IVS.
2. **Files Used**:
    - Dataset\Ideal_Votable_Supply_Data\ideal_weights.csv
    - Dataset\Ideal_Votable_Supply_Data\All_Parameters_Data.csv
3. **Files Generated**:
    - Dataset\Ideal_Votable_Supply_Data\Calculated_IVS\All_Parameters_Data_with_IVS.csv
    - Dataset\Ideal_Votable_Supply_Data\Calculated_IVS\Calculated_Monthly_VS_and_IVS.csv

10_predict_IVS.ipynb

1. **File Description**: Predicts future IVS using a polynomial regression model.
2. **Files Used**:
    - Dataset\Ideal_Votable_Supply_Data\Calculated_IVS\All_Parameters_Data_with_IVS.csv
3. **Files Generated**:
    - Dataset\Ideal_Votable_Supply_Data\Predicted_IVS\IVS_Predictions.csv
    - Dataset\Ideal_Votable_Supply_Data\Predicted_IVS\Predicted_Monthly_VS_and_IVS.csv

Execution Order

To ensure accuracy and consistency in deriving the **Ideal Votable Supply (IVS)**, the execution of the **Jupyter Notebook (.ipynb) files** must follow a strict sequential order. Each step in the process depends on the successful execution of the preceding files, as the outputs generated at each stage serve as inputs for subsequent calculations.

The execution flow is outlined as follows:

1. Index Calculation (01_calculate_indexes.ipynb)
2. Historical Data Preparation (02_prepare_historical_data.ipynb)
3. Future Circulating Supply Calculation (03_calculate_future_circulating_supply.ipynb)
4. Future Data Preparation (04_prepare_future_data.ipynb)
5. Data Merging and Scaling (05_merge_and_scale_data.ipynb)
6. Weight Combination Generation (06_generate_weight_combinations.ipynb)
7. IVS Calculation for Weight Combinations (07_calculate_IVS_all_weight_combinations.ipynb)
8. Optimal Weight Selection (08_find_ideal_weights.ipynb)
9. Final IVS Computation (09_calculate_final_IVS.ipynb)
10. IVS Prediction (10_predict_IVS.ipynb)

Execution Guidelines:-

- The files must be executed sequentially, **from 01_calculate_indexes.ipynb to 10_predict_IVS.ipynb**, as each step builds upon the outputs of the previous step.
- Any deviation from this order may result in missing datasets, incorrect computations, or inconsistencies in the final IVS predictions.
- After execution, all output files will be stored in the respective **Dataset directories**, ensuring proper organization and accessibility for analysis.