**Consultant Requirements Prediction Model Documentation**

**Introduction**

This document provides detailed documentation for the Consultant Requirements Prediction Model. The model is designed to predict the number of consultants needed per day for a given year and for each branch of a company. The model is based on the assumption that each consultant works 5 days a week and has 2 days off, and that the existing work model for consultants is to handle 6 files per day (4 existing files and 2 new files). A consultant must close a file within 2 days of receiving it. All figures are rounded up to the nearest whole number.

**Input Data**

The input data for the model consists of a DataFrame with the following columns:

branch\_name: The name of the branch.

consultant\_fullname: The full name of the consultant.

file\_date\_in: The date when the file was received.

days\_to\_close: The number of days the consultant has to close the file.

consultant\_days: The number of days the consultant works in a year.

files\_per\_day\_per\_branch: The number of files that need to be handled per day per branch.

**Output Data**

The output data for the model is a DataFrame with the following columns:

branch\_name: The name of the branch.

consultant\_fullname: The full name of the consultant.

file\_date\_in: The date when the file was received.

days\_to\_close: The number of days the consultant has to close the file.

consultant\_days: The number of days the consultant works in a year.

files\_per\_day\_per\_branch: The number of files that need to be handled per day per branch.

consultants\_per\_day: The number of consultants needed per day.

**Model Description**

The model is implemented in Python using the Pandas library. The main function of the model is create\_data(year), which takes a year as input and returns a DataFrame with the predicted consultant requirements for that year and for each branch. The function works as follows:

Create a DataFrame with all dates in the year.

Add columns for branch name and consultant full name.

Add columns for year, month, day of week, and week of year.

Add columns for days to close and consultant days.

Add column for files per day per branch.

Compute the number of consultants needed per day based on the assumption that each consultant works 5 days a week and has 2 days off, and that the existing work model for consultants is to handle 6 files per day (4 existing files and 2 new files).

Return the DataFrame with the predicted consultant requirements.

The create\_data(year) function is called for the years 2023 and 2024, and the resulting DataFrames are concatenated to create the final output data.

**Usage**

To use the Consultant Requirements Prediction Model, you need to have a DataFrame with the input data as described above. You can then call the create\_data(year) function for the desired year to create a DataFrame with the predicted consultant requirements for that year. You can analyze the output data using Pandas or other data analysis tools.

**Conclusion**

The Consultant Requirements Prediction Model is a useful tool for predicting the number of consultants needed per day for a given year and for each branch of a company. The model is based on reasonable assumptions about the work model for consultants and can be easily adapted to different scenarios. With the output data, companies can better plan their staffing needs and ensure that they have enough consultants to handle their workload.