

# **Independent Project (Winter 2023)**

## **Hotel Revenue Forecasting Using Machine Learning**

### **Code Documentation (GUI & Database)**

#### **Introduction**

The Hotel Revenue Forecasting application is a Graphical User Interface (GUI) tool designed to assist with revenue forecasting for hotels. The application allows users to upload and analyze Excel files containing forecast reports and historical data, perform calculations based on the data, and save the modified files.

#### **Installation**

The Hotel Revenue Forecasting application requires the following dependencies to be installed.

- Python (version 3.6 or above)
- Tkinter (Python's standard GUI toolkit)
- openpyxl (Python library for working with Excel files)
- NumPy (Python library for numerical operations)

#### **Usage**

- Launch the Hotel Revenue Forecasting application by running the Python script containing the application's code.
- The main window of the application will appear.
- Click the "Upload" button next to the "Forecast Report Format" label to upload an Excel file containing the forecast report format. The file should be in the .xlsx format.
- Click the "Upload" button next to the "History and Forecast Report" label to upload an Excel file containing the historical data and forecast report. The file should also be in the .xlsx format.

- Once both files are uploaded, the "Group Confirm" entry field will become enabled. Enter the desired value for the group confirmation and click the "Enter" button to update the 5th row of column K in the "History and Forecast Report" sheet with the entered value.
- Click the "Perform Operations" button to perform operations on the uploaded Excel files. This is the section where you must add code to manipulate the data using the openpyxl library. The existing code provides a skeleton for reading data from the sheets and gives access to the necessary variables.
- After the operations are performed, you can save the modified Excel file by clicking the "Save File" button. A file dialog window will appear to choose the save location and file name.
- The status label at the bottom of the window will display messages indicating the success or failure of the performed operations and file-saving process.

## Limitations

- The Hotel Revenue Forecasting application only supports Excel files in the .xlsx format.
- The application assumes specific sheet names ("Day on Day FC" and "History and Forecast Report") and column structures in the uploaded Excel files. Make sure the files adhere to the required structure for the application to function correctly.
- The application does not provide built-in functionality for data analysis or complex calculations. You need to add your own code within the "Perform Operations" function to perform specific operations based on your requirements.

## Conclusion

The Hotel Revenue Forecasting application simplifies the process of revenue forecasting for hotels by providing a user-friendly interface to upload, analyze, and manipulate Excel files. By leveraging the openpyxl library, users can extend the functionality of the application to perform various calculations and operations on the data.

## **Making .exe File**

Refer to the following link for converting this application to .exe file-

[https://www.youtube.com/watch?v=lv\\_dECet\\_oM](https://www.youtube.com/watch?v=lv_dECet_oM)

In case of the error “pyinstaller is not recognized as internal or external command” make sure that pyinstaller.exe is in the same folder as your python script or update the environment variable accordingly and then proceed with the steps described in the above link.

## **Database**

We have used SQLAlchemy for the database. We are iterating over all the excel files in the folder that was given to us. And then We iterate over each Excel row and if that row is not present in the database, we add that row to the database.