In many office kind of environments, keeping track of various rented facilities such as executive desks, manager cabins, and parking spaces becomes complex especially when contracts begin and end at different times. This project introduces a Python-based Monthly Billing System designed to automatically calculate billing amounts based on active usage periods specified as query.

The system takes a list of items (with their rates, quantities, and rental durations) and computes the revenue for any specified month. It produces a detailed, grouped bill that can be easily shared with clients or used for internal accounting.

**Objectives**

* Automate the monthly revenue calculation from item usage data
* Accurately bill for full and partial usage periods
* Group similar items logically for clean reporting
* Generate clear and detailed bills for any target month

**Technologies Used**

* Python – Core logic and data processing
* Jupyter Notebook – Interactive coding and visualization
* Pandas – Organizing data in tabular form
* Datetime & Calendar – Date calculations and comparisons
* Matplotlib – Visual representation of billing breakdowns

**Core Features**

* Pro-Rated Billing  
  The system intelligently calculates charges based on how many days an item was active during the billing month—even if the item wasn’t used for the full month.
* Dynamic Grouping  
  Items are grouped by type, rate, and usage period, which avoids clutter and creates a concise invoice.
* Flexible Billing Period  
  Bills can be generated for any given month by changing a single input parameter.
* Scalable Input Format  
  Data can be provided as Python lists, or imported from spreadsheets or JSON files.

**How It Works**

1. Input: The user supplies a list of rented items. Each item includes:
   * item\_code (name/type)
   * qty (number of units)
   * rate (cost per unit per month)
   * start\_date and stop\_date (rental period)
2. Billing Calculation:
   * The program calculates how many days each item was active in the billing month.
   * It then computes a daily rate and multiplies it by the number of active days.
3. Output:
   * A detailed bill showing item type, quantity, rate, usage period, and calculated amount.
   * A summary of total revenue for the month.

**Sample Output – November 2024**

* **Total Revenue**: ₹107,960.00
* **Billed Items Include**:
  + Executive Desks
  + Manager Cabins
  + Parking Spaces
  + Reception Desks
  + Conference Tables

Each item entry shows:

* Quantity
* Rate
* Billing Period specified
* Total amount for that entry