**Project Title: Monthly Bill Generator**

**Purpose:**  
 To automate the calculation of monthly charges for customers who use services/resources that are billed based on how long and how much they used them during a particular month.

**Objective:**

To generate monthly billing from a list of items based on their active date ranges and associated rates. The system computes accurate, grouped, and pro-rata charges for resources or services provided within a specific month.

**Key Features:**

1. **User-Defined Input:**
   * Accepts a list of billable items (item\_list) containing:
     + Item Code
     + Quantity (qty)
     + Rate
     + Start and Stop Dates
2. **Bill Calculation Logic:**
   * Filters items that are active in the target billing month.
   * Calculates daily rate and overlap days to determine the pro-rata charge.
   * Groups charges based on:
     + item\_code
     + rate
     + billing\_period (active duration within the target month)
3. **Output Generation:**
   * Returns a dictionary with:
     + line\_items: Grouped billing data for each active item.
     + total\_revenue: Sum of all grouped charges.

 Groups items with similar attributes and sums their total charge.

 Outputs a summary bill showing:

* Each item group
* Quantity used
* Billing period
* Amount charged

**Target Month:**

result = generate\_monthly\_bill(item\_list, "2024-11")

print(result)

**Output:**

{'line\_items': [{'item\_code': 'Executive Desk (4\*2)',

'rate': 1080.0,

'qty': 25,

'amount': 27000.0,

'billing\_period': '2024-11-01 to 2024-11-30'},

{'item\_code': 'Executive Desk (4\*2)',

'rate': 1000.0,

'qty': 5,

'amount': 5000.0,

'billing\_period': '2024-11-01 to 2024-11-30'},

{'item\_code': 'Manager Cabin',

'rate': 5000.0,

'qty': 5,

'amount': 25000.0,

'billing\_period': '2024-11-01 to 2024-11-30'},

{'item\_code': 'Parking (2S)',

'rate': 1000.0,

'qty': 10,

'amount': 10000.0,

'billing\_period': '2024-11-01 to 2024-11-30'},

{'item\_code': 'Parking (2S)',

'rate': 0.0,

'qty': 10,

'amount': 0.0,

'billing\_period': '2024-11-01 to 2024-11-30'},

{'item\_code': 'Executive Desk (4\*2)',

'rate': 1100.0,

'qty': 8,

'amount': 4693.33,

'billing\_period': '2024-11-15 to 2024-11-30'},

{'item\_code': 'Manager Cabin',

'rate': 5200.0,

'qty': 3,

'amount': 5200.0,

'billing\_period': '2024-11-01 to 2024-11-10'},

{'item\_code': 'Conference Table',

'rate': 20000.0,

'qty': 1,

'amount': 10666.67,

'billing\_period': '2024-11-05 to 2024-11-20'},

{'item\_code': 'Parking (2S)',

'rate': 1000.0,

'qty': 5,

'amount': 2666.67,

'billing\_period': '2024-11-15 to 2024-11-30'},

{'item\_code': 'Reception Desk',

'rate': 7000.0,

'qty': 2,

'amount': 14000.0,

'billing\_period': '2024-11-01 to 2024-11-30'},

{'item\_code': 'Reception Desk',

'rate': 7000.0,

'qty': 1,

'amount': 3733.33,

'billing\_period': '2024-11-10 to 2024-11-25'}],

'total\_revenue': 107960.0}

**Technologies Used:**

* Python (with datetime, collections.defaultdict)
* Jupyter Notebook (for development/testing)

**Use Cases:**

* Coworking space resource billing
* Rental or subscription services
* Any item/service billing requiring prorated monthly charges