2403A51276
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Batch-12

AI ASSISTED CODING

ASSIGNMENT:3.1

TASK1:

Prompt:

Use Python programming and create an application that simulates mobile data billing for a telecom service provider. Read the following inputs from the user: Data Consumed (in GB) ,Plan Type (Prepaid / Postpaid) , Additional Services Used (e.g., caller tune, OTT subscription, etc.) .Implement billing logic to calculate: DC (Data Charges) – charges based on data consumption , VC (Value-added Charges) – charges for additional services ,Tax – applicable tax on the total bill , Display an itemized bill showing:
Plan Type , Data Usage and Charges , Value-added Services and Charges , Tax , Total Bill Amount
Requirements must be like Students must refer to their actual mobile bill for charge structure (data cost, service fees, taxes) to make the program realistic.

Code:

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```
    if services_input:
        try:
            selected_services = [int(s) for s in services_input.split(",")]
            for s in selected_services:
                if s in service_charges:
                    vas_details.append(service_charges[s])
                    vas_charge += service_charges[s][1]
        except ValueError:
            print("Invalid input for services. Skipping additional services.")

    # Tax Calculation (18% GST)
    subtotal = data_charge + vas_charge
    tax = subtotal * 0.18
    total = subtotal + tax

    # Display Bill
    print("\n===== Itemized Bill =====")
    print(f"Plan Type: {plan_type}")
    print(f"Data Usage: {data_consumed} GB @ ₹{data_rates[plan_type]}/GB = ₹{data_charge:.2f}")
    print("Value-added Services:")
    if vas_details:
        for service, cost in vas_details:
            print(f"  - {service}: ₹{cost}")
    else:
        print("  None")
    print(f"Value-added Charges (VC): ₹{vas_charge:.2f}")
    print(f"Tax (18% GST): ₹{tax:.2f}")
    print(f"Total Bill Amount: ₹{total:.2f}")
    print("========================")


# Run the billing system
telecom_billing()
```

```
def telecom_billing():
    print("=== Telecom Mobile Data Billing Simulation ===")

    # Input: Plan Type
    plan_type = input("Enter Plan Type (Prepaid/Postpaid): ").strip().capitalize()

    # Input: Data Consumed
    try:
        data_consumed = float(input("Enter Data Consumed (in GB): "))
    except ValueError:
        print("Invalid data usage entered. Please enter a number.")
        return

    # Input: Value-added Services
    print("\nSelect Additional Services Used (comma separated):")
    print("1. Caller Tune (₹30)\n2. OTT Subscription (₹150)\n3. International Roaming (₹500)")
    print("Enter choices like 1,2 or leave blank for none.")
    services_input = input("Your choice: ").strip()

    # Charges Setup
    data_rates = {"Prepaid": 10, "Postpaid": 8}
    service_charges = {1: ("Caller Tune", 30),
                       2: ("OTT Subscription", 150),
                       3: ("International Roaming", 500)}

    # Data Charges Calculation
    if plan_type not in data_rates:
        print("Invalid plan type! Please enter Prepaid or Postpaid.")
        return
    data_charge = data_consumed * data_rates[plan_type]

    # Value-added Charges
    vas_details = []
    vas_charge = 0
```

Output:

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```
=== Telecom Mobile Data Billing Simulation ===

Select Additional Services Used (comma separated):
1. Caller Tune (₹30)
2. OTT Subscription (₹150)
3. International Roaming (₹500)
Enter choices like 1,2 or leave blank for none.

===== Itemized Bill =====
Plan Type: Prepaid
Data Usage: 15.0 GB @ ₹10/GB = ₹150.00
Value-added Services:
  - OTT Subscription: ₹150
Value-added Charges (VC): ₹150.00
Tax (18% GST): ₹54.00
Total Bill Amount: ₹354.00
========================
```

Task2:

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Apply your Python programming skills and build an application that calculates the LPG bill
based on specified customer inputs and billing parameters.

Read the following user inputs: Cylinder Type (Domestic 14.2 kg / Domestic 5 kg / Commercial 19 kg / Commercial 47.5 kg) , Number of Cylinders Booked Subsidy Amount (applicable only for domestic cylinders) Refer to the given LPG Price List to determine the price per cylinder: Domestic LPG (14.2 kg) → ₹905.00 Domestic LPG (5 kg) → ₹335.50 Commercial LPG (19 kg) → ₹1,886.50 Commercial LPG (47.5 kg) → ₹4,712.00 Delivery Charges (₹10 to ₹50)
Implement the billing formula:
Bill Amount = (Price per Cylinder × Quantity) - Subsidy (if applicable) + Delivery Charges
Calculate and display an itemized bill including: Cylinder Type Number of Cylinders Base Amount
Subsidy ,Delivery Charges ,Total Bill Amount Deliverables

o Line-by-line explanation of the code

Code :

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```python
def lpg_billing():
    print("=== LPG Billing System ===")

    # LPG Price List (dictionary for easy lookup)
    prices = {
        "Domestic 14.2 kg": 905.00,
        "Domestic 5 kg": 335.50,
        "Commercial 19 kg": 1886.50,
        "Commercial 47.5 kg": 4712.00
    }

    # Step 1: Input Cylinder Type
    print("\nSelect Cylinder Type:")
    for idx, ctype in enumerate(prices.keys(), start=1):
        print(f"{idx}. {ctype} - ₹{prices[ctype]}")

    choice = int(input("Enter choice (1-4): "))
    cylinder_type = list(prices.keys())[choice - 1]

    # Step 2: Input Number of Cylinders
    quantity = int(input("Enter number of cylinders booked: "))

    # Step 3: Subsidy Amount (only for Domestic cylinders)
    subsidy = 0.0
    if "Domestic" in cylinder_type:
        subsidy = float(input("Enter subsidy amount (₹): "))

    # Step 4: Delivery Charges
    delivery = float(input("Enter delivery charges (₹10 - ₹50): "))

    # Step 5: Bill Calculation
    price_per_cylinder = prices[cylinder_type]
    base_amount = price_per_cylinder * quantity
    total_bill = base_amount - subsidy + delivery
```

```python
    # Step 6: Display Itemized Bill
    print("\n===== LPG Bill =====")
    print(f"Cylinder Type     : {cylinder_type}")
    print(f"Number of Cylinders: {quantity}")
    print(f"Base Amount       : ₹{base_amount:.2f}")
    print(f"Subsidy           : ₹{subsidy:.2f}")
    print(f"Delivery Charges  : ₹{delivery:.2f}")
    print(f"Total Bill Amount : ₹{total_bill:.2f}")
    print("====================")


# Run the program
lpg_billing()
```

```
[4]  ✓ 8.1s

=== LPG Billing System ===

Select Cylinder Type:
1. Domestic 14.2 kg - ₹905.0
2. Domestic 5 kg - ₹335.5
3. Commercial 19 kg - ₹1886.5
4. Commercial 47.5 kg - ₹4712.0

===== LPG Bill =====
Cylinder Type     : Domestic 14.2 kg
Number of Cylinders: 5
Base Amount       : ₹4525.00
Subsidy           : ₹10000.00
Delivery Charges  : ₹50.00
Total Bill Amount : ₹-5425.00
====================
```

Explanation:

🟩 Line-by-Line Explanation

1. **Define function**
2. def lpg_billing():

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We define a function lpg_billing() that contains the whole logic.

3. **Print header**
4. print("=== LPG Billing System ===")

Displays a title for the billing system.

5. **Price list dictionary**
6. prices = {
7. "Domestic 14.2 kg": 905.00,
8. "Domestic 5 kg": 335.50,
9. "Commercial 19 kg": 1886.50,
10. "Commercial 47.5 kg": 4712.00
11. }

Stores price per cylinder for each type in a dictionary for quick lookup.

12. **Show cylinder type menu**
13. for idx, ctype in enumerate(prices.keys(), start=1):
14. print(f"{idx}. {ctype} - ₹{prices[ctype]}")

Prints options like:

1. Domestic 14.2 kg - ₹905.0

2. Domestic 5 kg - ₹335.5

...

15. **Take user choice**
16. choice = int(input("Enter choice (1-4): "))
17. cylinder_type = list(prices.keys())[choice - 1]

Converts user input to index, then fetches cylinder type from dictionary.

18. **Take number of cylinders**
19. quantity = int(input("Enter number of cylinders booked: "))

User enters how many cylinders they want.

20. **Subsidy only for domestic cylinders**
21. subsidy = 0.0
22. if "Domestic" in cylinder_type:
23. subsidy = float(input("Enter subsidy amount (₹): "))

Checks if cylinder type contains "Domestic". If yes, ask subsidy.

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24. **Delivery charges**
25. delivery = float(input("Enter delivery charges (₹10 - ₹50): "))
26. **Bill calculation**
27. price_per_cylinder = prices[cylinder_type]
28. base_amount = price_per_cylinder * quantity
29. total_bill = base_amount - subsidy + delivery

Formula:

Bill Amount=(Price per Cylinder×Quantity)−Subsidy+Delivery Charges\text{Bill Amount} = (\text{Price per Cylinder} \times \text{Quantity}) - \text{Subsidy} + \text{Delivery Charges}Bill Amount=(Price per Cylinder×Quantity)−Subsidy+Delivery Charges

30. **Display bill**
31. print("\n===== LPG Bill =====")
32. print(f"Cylinder Type : {cylinder_type}")
33. print(f"Number of Cylinders: {quantity}")
34. print(f"Base Amount : ₹{base_amount:.2f}")
35. print(f"Subsidy : ₹{subsidy:.2f}")
36. print(f"Delivery Charges : ₹{delivery:.2f}")
37. print(f"Total Bill Amount : ₹{total_bill:.2f}")
38. print("====================")

Shows a clean, itemized bill.

Sample Run

=== LPG Billing System ===

Select Cylinder Type:

1. Domestic 14.2 kg - ₹905.0

2. Domestic 5 kg - ₹335.5

3. Commercial 19 kg - ₹1886.5

4. Commercial 47.5 kg - ₹4712.0

Enter choice (1-4): 1

Enter number of cylinders booked: 2

Enter subsidy amount (₹): 100

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Enter delivery charges (₹10 - ₹50): 25

===== LPG Bill =====

Cylinder Type : Domestic 14.2 kg

Number of Cylinders: 2

Base Amount : ₹1810.00

Subsidy : ₹100.00

Delivery Charges : ₹25.00

Total Bill Amount : ₹1735.00

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