

AI ASSISTED CODING

ASSIGNMENT:3.1

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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:

```

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:

```
... === 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:

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 :

```

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

```

```

# 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():

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.

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
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

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

=====