

LAB 5 GROUP PROJECT :

MAKING A RATION SYSTEM USING DICTIONARIES AND STRUCTURES:

```
[1]: pds_data = {
    "taluk1": [
        "shop101": [
            {"name": "PDS Shop A",
             "address": "123 Main Street, Taluk 1",
             "products": [
                 {"name": "Rice", "price": 20, "quantity": 100},
                 {"name": "Wheat", "price": 15, "quantity": 150},
                 {"name": "Sugar", "price": 30, "quantity": 50}
             ]
         },
        "shop102": [
            {"name": "PDS Shop B",
             "address": "456 Oak Avenue, Taluk 1",
             "products": [
                 {"name": "Rice", "price": 22, "quantity": 80},
                 {"name": "Wheat", "price": 16, "quantity": 120}
             ]
         }
    ],
    "taluk2": [
        "shop201": [
            {"name": "PDS Shop X",
             "address": "789 Pine Lane, Taluk 2",
             "products": [
                 {"name": "Rice", "price": 21, "quantity": 200},
                 {"name": "Oil", "price": 80, "quantity": 70}
             ]
         }
    ]
}

[2]: def display_shops_in_taluk(taluk_name):
    taluk_shops = pds_data.get(taluk_name) # Using .get() to handle non-existent taluks gracefully

    if taluk_shops: # Check if the taluk exists and has shops
        print(f"Shops in {taluk_name}:")
        for shop_id, shop_info in taluk_shops.items():
            print(f" Shop ID: {shop_id}, Name: {shop_info['name']}, Address: {shop_info['address']}")

[3]: def add_or_update_product(taluk_name, shop_id, product_name, price, quantity):
    if taluk_name in pds_data and shop_id in pds_data[taluk_name]:
        shop_products = pds_data[taluk_name][shop_id]['products']
        found = False

        for product in shop_products:
            if product['name'] == product_name:
                product['price'] = price
                product['quantity'] = quantity
                found = True
                print(f"Updated {product_name} in {pds_data[taluk_name][shop_id]['name']} to price {price} and quantity {quantity}.")
                break

        if not found:
            shop_products.append({"name": product_name, "price": price, "quantity": quantity})
            print(f"Added {product_name} to {pds_data[taluk_name][shop_id]['name']} with price {price} and quantity {quantity}.")
    else:
        print("Invalid taluk or shop ID.")

[4]: def get_products_in_taluk(taluk_name):
    products_in_taluk = []
    if taluk_name in pds_data:
        for shop_id, shop_info in pds_data[taluk_name].items():
            for product in shop_info['products']:
                product_name = product['name']
                if product_name not in products_in_taluk:
                    products_in_taluk[product_name] = {"total_quantity": 0, "shops": []}
                    products_in_taluk[product_name]["total_quantity"] += product["quantity"]
                    products_in_taluk[product_name]["shops"].append({
                        "shop_id": shop_id,
                        "shop_name": shop_info['name'],
                        "product_qty": product['quantity'],
                        "product_name": product['name'],
                        "product_price": product['price']
                    })
                else:
                    products_in_taluk[product_name]["total_quantity"] += product["quantity"]
                    products_in_taluk[product_name]["shops"].append({
                        "shop_id": shop_id,
                        "shop_name": shop_info['name'],
                        "product_qty": product['quantity'],
                        "product_name": product['name'],
                        "product_price": product['price']
                    })
```

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else:
    print(f"Added {product_name} to {pds_data[taluk_name][shop_id]['name']} with price {price} and quantity {quantity}.")
else:
    print("Invalid taluk or shop ID.")

[4]: def get_products_in_taluk(taluk_name):
    products_in_taluk = {}
    if taluk_name in pds_data:
        for shop_id, shop_info in pds_data[taluk_name].items():
            for product in shop_info["products"]:
                product_name = product["name"]
                if product_name not in products_in_taluk:
                    products_in_taluk[product_name] = {"total_quantity": 0, "shops": []}
                products_in_taluk[product_name]["total_quantity"] += product["quantity"]
                products_in_taluk[product_name]["shops"].append({
                    "shop_id": shop_id,
                    "shop_name": shop_info["name"],
                    "quantity": product["quantity"],
                    "price": product["price"]
                })
    return products_in_taluk
else:
    return None # No products found for the given taluk

[*]: # Initial PDS Data
pds_data = {
    "taluk1": {
        "shop101": {
            "name": "PDS Shop A",
            "address": "123 Main Street, Taluk 1",
            "products": [
                {"name": "Rice", "price": 20, "quantity": 100},
                {"name": "Wheat", "price": 15, "quantity": 150},
                {"name": "Sugar", "price": 30, "quantity": 50}
            ]
        }
    }
}

[5]: # Test the function
products_in_taluk = get_products_in_taluk("taluk1")
print(products_in_taluk)

{'Rice': {'total_quantity': 100, 'shops': [{"shop_id": "shop101", "shop_name": "PDS Shop A", "quantity": 100}], 'name': 'Rice'}, 'Wheat': {'total_quantity': 150, 'shops': [{"shop_id": "shop101", "shop_name": "PDS Shop A", "quantity": 150}], 'name': 'Wheat'}, 'Sugar': {'total_quantity': 50, 'shops': [{"shop_id": "shop101", "shop_name": "PDS Shop A", "quantity": 50}], 'name': 'Sugar'}}
```

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(1): while True:
    print("\n--- POS Management System ---")
    print("1. View shops in a Taluk")
    print("2. Add/Update product in a shop")
    print("3. View products available in a Taluk")
    print("4. Exit")

    choice = input("Enter your choice: ")

    if choice == '1':
        taluk_name = input("Enter taluk name: ")
        display_shops_in_taluk(taluk_name)
    elif choice == '2':
        taluk_name = input("Enter taluk name: ")
        shop_id = input("Enter shop ID: ")
        product_name = input("Enter product name: ")
        price = float(input("Enter product price: "))
        quantity = int(input("Enter product quantity: "))
        add_or_update_product(taluk_name, shop_id, product_name, price, quantity)
    elif choice == '3':
        taluk_name = input("Enter taluk name: ")
        products = get_products_in_taluk(taluk_name)
        if products:
            print(f"Products available in {taluk_name}:")
            for product_name, details in products.items():
                print(f" {product_name}: Total Quantity = {details['total_quantity']}")
                for shop_detail in details['shops']:
                    print(f"   - Shop: {shop_detail['shop_name']} ({shop_detail['shop_id']}), Quantity: {shop_detail['quantity']}, Price: {shop_detail['price']}")
        else:
            print(f"No products found for {taluk_name}.")
    elif choice == '4':
        print("Exiting POS Management System. Goodbye!")
        break
    else:
        print("Invalid choice, please try again!")

--- POS Management System ---
1. View shops in a Taluk
2. Add/Update product in a shop
3. View products available in a Taluk
4. Exit
Enter your choice: 1
```


