P2: The Taco Stand

Prologue

You have been hired to create an application to manage your local taco stand. As an up-and-coming software engineer and designer, you know that using design patterns on this application will ensure that there will be minimal coupling and allow for the most efficient flexibility. Besides, with how well the stand is doing, franchising is just beyond the horizon.

Overview

For this project, you will design a system to manage the ordering and creation of food for The Taco Stand, using Decorator and Composite, in the *Java* Language.

Flow of commands should be as follows: walk up to stand -> displays menu with options to pick an item or to build a custom item -> staff member gives you the food -> walk away (clean exit to the program).

You can place one order at a time or multiple orders at a time, *it is up to you*. However, basic input handling is expected. It should not crash if I try to place more than one order.

Use the **Decorator** to add sauces, extra toppings, any customization past the base food type (taco, burrito, or bowl), the price of the food items should be updated accordingly (PER DECORATOR).

Use the **Composite** pattern to manage the combos and large orders consisting of many items. The price must be totaled at the end by traversing the composite structure.

Other patterns that may be of use are: **Observer, Visitor, Abstract Factory, Prototype, State**

Structure

This project is broken up into 3 main parts:

1) Planning Document
2) Code Implementation
3) Postmortem Document

Menu Format

Taco, Burrito, Bowl

- Should provide 3 prebuilt options in addition to a "build your own".
  - Ex: steak taco with lettuce and sour cream, shrimp taco with cabbage and chili sauce, vegetarian taco with beans, rice, salsa, corn, and cheese.
- You can add sauces or extra toppings, but each addition will incur an additional cost
- You should also be able to order a prebuilt and ask for something in that prebuilt to be **removed**

Taco Salad

- Bowl filled with 3 Tacos that have been "crushed"

Double-decker Taco

- A Taco filled with another Taco... and yes that could be another Double-decker, *evil laughter*

An Order of Tacos

- This consists of 3 Tacos
  - they can be the same three Taco configurations or all different

Traveler's Pack

- 2 Tacos (*individual configurations*)
- 1 Burrito

Sampler Pack

- 1 Taco
- 1 Burrito
- 1 Bowl

Party Platter

- 3 Orders of Tacos
- 2 Burritos
- 1 Bowl

Hypothetical Toppings & Sauces

- **Proteins** (e.g., Steak, shrimp, tofu)
- **Veggies** (e.g., lettuce, tomato, corn, cabbage, beans, rice, refried beans*)
- **Sauces** (e.g., salsa, guac, sour cream, chili sauce)
- **Bonus toppings** (e.g., cheese, jalapenos, pineapple)

Milestone 1: Planning Document   *(DUE 03/21/2021)*

The planning document should include:

2 different sequence diagrams:

1. How a meal is decorated with sauces/food allergies:
   - ex: steak bowl with no beans and extra tomatoes
2. How a multi-meal order is gathered and returned to a customer:
   - ex: 1 Party Platter, 4 burritos, and a bowl

A sketch diagram for a Double-decker Taco ordered as so:

- double decker taco with queso, stuffed with another double decker taco made of a taco with lettuce and salsa and stuffed with a beef taco (3 taco layers, 2 calls to double decker where both outer tacos are *decorated*)

Class diagrams for ALL menu items.

This is in addition to any other planning you may have needed to do. I recommend some flow diagram for how you foresee the menu working (something akin to an Activity diagram).

**You can use one other person in the class as a sounding board during the planning phase, if this is the case you must put their name as a comment when you submit.

What to submit in the planning document **(single PDF)**

- 2 Sequence diagrams
- 1 sketch diagram
- Class diagrams
- Other planning diagrams/drawings

Milestone 2: Program & Postmortem   *(DUE 03/29/2021)*

The milestone document should contain:

- Clean, organized source code
    - Do **NOT** leave in debugging print statements.
    - **DO** leave descriptive comments.
    - **This will be compiled through the terminal, be sure to test on CISE servers.**
- An instruction page (*if necessary*) for the input commands for using the program.
- The postmortem document will be a reflection on the assignment and its components.

Helpful questions to discuss include:

- What insights did you gain during the planning stage?
- How much of your design changed once implementation started?
    - Were these changes the result of language nuances (e.g., data passing)
- Was this assignment harder or easier than you anticipated?
- If you could change something about the exercise what would it be and why?
- What approach did you like better, creational or structural?
    - Did you feel limited by having prescribed pattern usage over total free form?

Submission

What you turn in:

- Planning Doc PDF

    - (DUE 03/21/2021) in own assignment

- Source Code (in a .zip file) and Postmortem PDF

    - (Due 03/29/2021)

Frequently Asked Questions

- Your **composite leaves** ARE: **Taco, Burrito, Bowl**
    - *all toppings and fillings will be added with a Decorator (they are added as Layers)*
- The **combo packs are not leaves**! **They are composites,** just ones with prescribed children rather than the children all being directly added individually by the client.