

Software Dev. & Problem Solving I

Homework 3

Due on 30/11/2021

Goals of the Assignment

For this assignment you will be creating a system for ordering pizzas! This pizza company only sells pizza in pairs.

Each pizza will be composed of some number of toppings that fit into three categories:

- Cheese (Only one cheese)
- Meats (0 or more)
- Veggies (0 or more)

Your implementation will allow the customer to place an order for two pizzas.

Rubrics

- 1- The ability to implement methods mentioned in the assignment (Step-5) (30%)
- 2- The ability to code in human-readable format, adding comments, docstrings, and meaningful variable declarations. (10%)
- 3- The ability to implement classes, slots, private fields, constructors (60%)

Activities

1. Start by creating a new `pizza_main.py` file. This is going to be your main file. In addition to main, your program will be comprised of the following components (each of which are described in more detail in subsequent activities):
 - a. A class used to store a topping. (different file)
 - b. A class used to store a pizza. (different file)
 - c. Dictionaries that maps topping codes to toppings.
 - d. Methods to allow customers to easily place an order. (They should be defined within the classes)
2. Each pizza topping has a name, a one letter order code, and a price. Create a class that encapsulates the topping's state.

- Make sure to write a constructor that allows you to initialize the topping's attributes.
3. All pizzas allow multiple toppings which are separated into three categories: cheese, veggies, meats. Each pizza has a base cost of \$5 and each topping adds to the total price for that pizza. Create a class that represents a pizza.
Besides encapsulating the state, make sure to create a constructor to initialize the pizza.
 4. There are three major topping categories: cheese, meats, and veggies. All of the available toppings will be stored in one of the three categories.
 - a. You will need to implement a system that allows you to quickly find a topping within a category.
 - b. Whatever strategy you choose, you will need three of them. One for each category.
 - c. It is up to you to name the toppings, determine their order code, and assign a price.
 - d. The categories will be constant in nature. As such you will most likely find it easiest to hard code the entries.
 5. Create methods that allow you to perform the following operations using the data structures outlined above.
 - a. Print options which is used to print all of the options for a specific topping category. This should display the name, order code, and price for each topping in the specified category.
 - b. Order a pizza by selecting all the toppings for each category. You should allow the user to enter the codes for multiple toppings (within a category) at the same time. This method should return a pizza. The price will be the total price of all toppings on the pizza plus the pizzas base price.
 - c. Print the contents of a pizza, including each topping and a total price for the entire pizza.
 - d. A main function that performs any setup, takes an order for two pizzas, and prints each pizza and the total price.
 - e. You will most likely want to create some helper functions to handle repetitive tasks.

Notes:

- Don't forget to use `__slots__` so you don't accidentally create attributes on the fly.
- You will want to standardize on how you track toppings and use that strategy consistently. I.E. Always internally refer to toppings by either name or by code but not by both.
- You need to use private fields for some classes. So, for accessing and modifying these fields you need to define get and set methods! There are certain objects can have unexpected behavior if you use private fields too. Only for those objects, don't use.
- Submit all of your codes in editable format, so don't upload any screenshots.
- Your code should be in running condition as it is. Additional packages or third-party libraries will not be installed during evaluation.

A Sample Run:

Welcome to Pizza Factory, where all orders include two pizzas!

For your first pizza ...

Choose one type of cheese (0 for options): 0

Cheese Options:

Fresh Mozzarella(f): \$1.0 Shredded Cheese(s): \$0.0 Cheddar(c): \$0.5

Choose one type of cheese (0 for options): s

Choose your meats (0 for options): 0

Meat Options:

Pepperoni(p): \$1.5 Sausage(s): \$1.5 Bacon(b): \$1.0 Meatball(m): \$2.0

None(n): \$0.0

Choose your meats (0 for options): p s

Choose your veggies (0 for options): 0

Veggie Options:

Mushrooms(m): \$1.0 Bell Peppers(b): \$1.0 Jalapeno Peppers(j): \$1.0

Pineapple(p): \$1.5 None(n): \$0.0

Choose your veggies (0 for options): n

For your second pizza ...

Choose one type of cheese (0 for options): f

Choose your meats (0 for options): n

Choose your veggies (0 for options): j p

Your order is :

One pizza with Shredded Cheese, Pepperoni, Sausage : \$8.0

One pizza with Fresh Mozzarella, Jalapeno Peppers, Pineapple : \$8.5

Total due: \$16.5