Modeling the Gourmet Coffee System

Prerequisites, Goals, and Outcomes

Prerequisites: Before you begin this exercise, you need mastery of the following:

- *UML*
  - Knowledge of class diagram notation
- *Object-Oriented Design*
  - Knowledge of modeling concepts:
    - Identifying classes
    - Identifying relationships between classes
    - Identifying class attributes
    - Identifying class methods

Goals: Reinforce your object-oriented design skills

Outcomes: You will master the following skills:

- Produce a UML class diagram, from a specification, that shows:
  - classes
  - attributes
  - methods
  - relationships

Background

This assignment asks you to model a coffee store application.

Description

Gourmet Coffee is a store that sells coffee from countries around the globe. It also sells coffee brewing machines and other accessories for coffee consumption. The *Gourmet Coffee System* maintains a product catalog, processes orders, and tracks the store's sales.

The catalog maintains the following information about the store's products:

- Coffee
  - Code
  - Description
  - Price
  - Country of origin
  - Type of roast
  - Flavor
  - Aroma

    - Acidity
    - Body

- Coffee brewer
    - Code
    - Description
    - Price
    - Model of the brewer
    - Type of the water supply: *Pour-over* or *Automatic*
    - Capacity: number of cups

- Coffee accessory
    - Code
    - Description
    - Price

The following tables show some of the products sold by *Gourmet Coffee*.

Code	Description	Price	Origin	Roast	Flavor	Aroma	Acidity	Body
C001	Colombia, Whole, 1 lb	17.99	Colombia	Medium	Rich and Hearty	Rich	Medium	Full
C002	Colombia, Ground, 1 lb	18.75	Colombia	Medium	Rich and Hearty	Rich	Medium	Full
C007	Guatemala, Whole, 1 lb	17.99	Guatemala	Medium	Rich and complex	Spicy	Medium to high	Medium to full
C008	Guatemala, Ground, 1 lb	18.75	Guatemala	Medium	Rich and complex	Spicy	Medium to high	Medium to full

Figure 1 *Coffee*

Code	Description	Price	Model	Water Supply	Number of Cups
B001	Home Coffee Brewer	150.00	Brewer 100	Pourover	6
B002	Coffee Brewer, 2 Warmers	200.00	Brewer 200	Pourover	12
B003	Coffee Brewer, 3 Warmers	280.00	Brewer 210	Pourover	12
B004	Commercial Brewer, 20 cups	380.00	Quick Coffee 100	Automatic	20
B005	Commercial Brewer, 40 cups	480.00	Quick Coffee 200	Automatic	40

Figure 2 *Coffee brewers*

Code	Description	Price
A001	Almond Flavored Syrup	9.00
A002	Irish Creme Flavored Syrup	9.00
A005	Gourmet Coffee Cookies	12.00
A007	Gourmet Coffee Ceramic Mug	8.00
A009	Gourmet Coffee 36 Cup Filters	45.00

Figure 3 *Coffee accessories*

The *Gourmet Coffee System* processes orders. An order contains a list of products, their quantities, and the total cost. The following is an example of an order:

Quantity	Code	Description	Price
2	A001	Almond Flavored Syrup	9.00
1	C001	Colombia, Whole, 1 lb	17.99
1	B001	Home Coffee Brewer	150.00
Order Total:	185.99		

Figure 4 *Order*

In the *Gourmet Coffee System*, the user can:

- Display the catalog: lists the code and description of each product
- Display a product
- Display the current order: lists quantity, code, and price of each product in the current order, and the total of the order.
- Add a product to the current order—if the specified product is already part of the order, this command will modify the quantity of that product
- Remove a product from the current order
- Register the sale of the current order—this command adds the order to the store's sales and empties the current order
- Display the sales: lists all the orders that have been sold

Tasks

These steps will guide you for completing this assignment:

1. Model the *Gourmet Coffee System*.

   Identify the following:

   - The classes
   - The association relationships (include direction, multiplicity, and association attribute)
   - The specialization/generalization relationships
   - The attributes of each class
   - The methods of each class

   Your class diagram should include:

   - The class of the gourmet coffee application
   - The accessor methods
   - The mutator methods if are needed
   - For the collections:
     - The methods to add and access elements
     - The methods to remove elements if are needed
   - The methods that compute other values not included in the attributes.

Use Sun's coding conventions when naming classes, methods, and attributes.

2.Use Eclipse, Violet, PowerPoint, or another tool of your choosing to draw a UML class diagram. Save the diagram in a file named *uml-gou-cof*.