CSIS215 Object Oriented Programming Project 2 Spring 20-21

The aim of this project is to strengthen your hands-on experience in applying class design, composition, inheritance and polymorphism.

In this project, the classes, the methods and the entire code must be documented:

- An introductory documentation showing the title of the project, the date, the author, the purpose, the list of the methods with brief description.

- Each method has to be preceded by a multi-line comment stating clearly: the **purpose** of the method, the **pre-condition** (what it takes as parameter(s) and if any precondition(s) should be respected in order to make the method functioning as it should be and the **post-condition** what will happens when the method ends and if there is a returned value.
- Variables, initial values, important code blocks must be also documented.

Write a code that respects the code standards of the Java programming language regarding:

- Variables' and method' names
- Space use
- Use of empty lines,
- Indentation
- ….

Your project is assessed based on the rubrics that you are encourage to download from the Moodle course page and keep it in mind while developing your code.

Project Description:

This project is to simulate a vending machine that meets the following specifications:

1- The application displays all items available into the vending machine to the user. It shows the id of the item, the name of the item and the price of this item.
2- The user can select an item to buy from the list of available items (Soft Drink, Chocolate, Chips, Water).
3- To get the selected item the user should insert first as many coins or money as needed.
4- The machine accepts only money of values 250, 500 and 1000.
5- When the sale is done, the selected item is removed from the vending machine and the user can buy another one if he still has money in the machine.
6- The price of any item is a multiple of 250.
7- The application should read the items from a text data file.

Define the following classes in order to meet the above requirements. Your implementation must be optimal in term of methods call to each other.

Class Item

Private members:

- **itemCompanyName**: a **String**. (default value empty string)
- **itemPrice**: an integer. (default value 0)

Public methods:

- no-arg constructor.
- Constructor that takes the two parameters.
- Setters. (the price should be positive).
- Getters.
- **toString** method that returns a **String** about an item. The returned **String** is as follows:
  Price: <**itemPrice**> **L.P.**, **company name:** <**itemCompanyName**>.

Example of Output: “price: 9000L.P., company name: DebsCo.”

Class SoftDrink that inherits from Item

Private attributes:

- **diet**: a boolean representing if a soft drink is diet or not.
- **quantity**: an integer represents the quantity of soft drink items in the memory.

Public methods:

- no-arg constructor.
- Constructor with parameters.
- Setters.
- Getters.
- **toString** method that returns a **String** about a soft drink. The returned **String** is as follows:
  Soft drink-> **Price:** <**itemPrice**> **L.P.**, **company name:** <**itemCompanyName**>, **Diet.** (If it is diet)
  Soft drink-> **Price:** <**itemPrice**> **L.P.**, **company name:** <**itemCompanyName**>, **Regular.** (If otherwise).

Example of Output: “SoftDrink-> price: 250L.P., company name: 7Up, Regular.”
“SoftDrink-> price: 500L.P., company name: Pepsi, Diet.”

Class Chocolate that extends the class Item

Private attributes:

- **weight**: an integer represents the weight of the chocolate bar (default weight is 50).
- **quantity**: an integer represents the quantity of chocolate items in the memory

Public methods:

- no-arg constructor.
- Constructor with parameters.
- Setters.
- Getters.
- **toString** method that returns a **String** about a chocolate. The returned **String** is as follows:
  Chocolate-> Price: <itemPrice> L.P., company name: <itemCompanyName>, Net weight: <weight> gr.

Example of Output: “Chocolate-> price: 1000L.P., company name: CoteDor, Net weight: 50 gr.”

Class Chips that extends the class Item

Private attributes:

- **diet**: a boolean representing if the chips bag is diet or not.
- **size**: an integer that can be either small (1)or medium (2) or large (3) (small is the default value).
- **quantity**: an integer represents the quantity of chips items in the memory.

Public methods:

- no-arg constructor.
- Constructor with parameters.
- Setters.
- Getters.
- **toString** method that returns a string displaying all data of a soft drink. The returned String is as follows:
  Example: If it is diet and large or any other combination.
  Chips-> Price: <itemPrice> L.P., company name: <itemCompanyName>, Diet, size: small.(if small (1) and diet)
  Chips-> Price: <itemPrice> L.P., company name: <itemCompanyName>, Regular, size: medium.(if medium (2) and not diet)
  Chips-> Price: <itemPrice> L.P., company name: <itemCompanyName>, Diet, size: large.(if large (3) and diet)
  …….
  The returned String must accommodate all possible cases for size and diet.

Example of Output: "Chips-> price: 500L.P., company name: Master, Diet, size: Small."
"Chips-> price: 250L.P., company name: Chibbo, Regular, size: Medium."
"Chips-> price: 250L.P., company name: Chibbo, Regular, size: Large."

Class Water that extends the class Item

Private members:

- **size**: an integer variable that has a value of 250, 333, 500 or 1000 ml (250 is the default size).
- **quantity**: an integer represents the quantity of water items in the memory.

Public methods:

- - no-arg constructor.
- - Constructor with parameters.
- - Setters.
- - Getters.
- - **toString** method that returns a string displaying all data of a soft drink. The returned String is as follows:
  Example: If it is diet and large or any other combination
  Water-> Price: <itemPrice> L.P., company name: <itemCompanyName>, size: 330.(if the size = 330).
  …

Example of Output: "Water-> price: 250L.P., company name: Rim, size:250."

Class VendingMachine

Private attributes:

- **Items**: a reference to an array of **ArrayList**s.
- **totalSellings**: an integer variable that holds the total sellings of the vending machine from items sold to the user.

Public methods:

- Constructor with parameters.
- Setters.
- Getters.

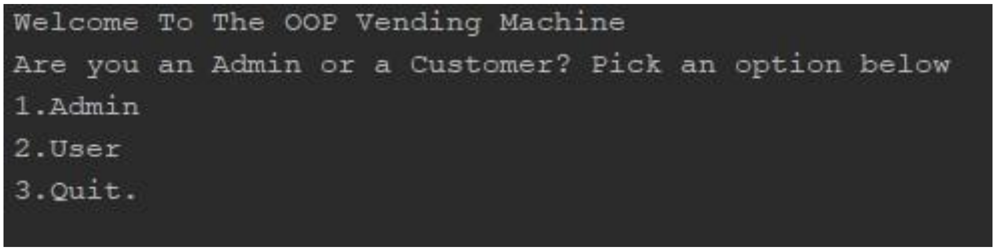
- **addItem** method that takes an **Item** object as a parameter and adds it to the ArrayList **Items** at the end of its right category.
- **buyItem** method that takes an integer number as a parameter representing the type of Item the user wants to buy (1 for Chocolate, 2 for Chips, 3 for Water, and 4 for Soft Drink). The method should add the price of the **first** item, from the right category of items that the user has requested to buy from, to **totalSellings** and remove that item from the list. For example, if the parameter was equal to 1, then the price of the first item from the Chocolate list will be added to the **totalSellings** and then it will be removed from the Chocolate list. The method must then return a Boolean value representing whether the operation was successful or not.
- **toString** method that returns a string holding all the Items available in the vending machine.

The tester

Write a main that:

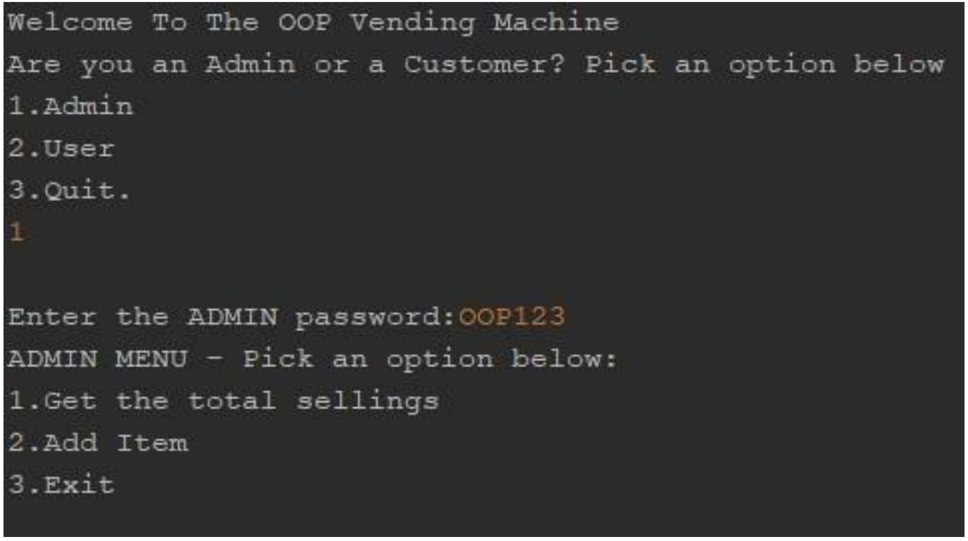
1. creates a vending machine and declare a string password. The password must be initialized to "OOP123".
2. Load the items from a text file and add them to the vending machine.
3. Create a main menu that would ask the user if he/she is an Admin or a Customer. The user should also have the option of Quitting from the main menu.
   a. If the user picks **Customer**, the vending machine should be displayed, then he/she should be given 2 options, to either buy an item or exit the customer menu. If the customer was able to buy an item, a message must be displayed informing the user. For example: "Enjoy your snack!". The only way the customer wouldn't be able to buy an item is if he/she, for example, decides to buy chocolate, but there are no chocolate left in the vending machine, so a message should be displayed to the user as well. For example: "Item not available, try buying another kind". **(keep in mind that the vending machine along with the customer menu should continue on being displayed until the customer decides to exit).**
   b. If the user picks **Admin**, then he/she should enter the right password in order to proceed with the admin menu. If the password is correct, then the menu should include 3 options. To either get the admins total selling's, add an item, or exit the admin menu. If the password is wrong, then a message is displayed informing him/her, and then the user is redirected to the main menu. If the admin decides to add an item to the vending machine, he/she must enter the type of Item they want to add as a string ("Chocolate", "Chips", "Water", or "SoftDrink"). Depending on the type of Item the user decides to add, you should ask for the right input from him/her in order to create the object and add it to the vending machine. For example, if the user decides to add "Chips", the program should ask for the admin to enter the **company name**, **price**, **True or False** depending on if it's diet or not, and the **size** (1 for small , 2 for medium, 3 for large). **Assume** here that the admin will add the input correctly. **(keep in mind that the admin menu must continue on being displayed until the admin decides to exit).**
   c. If the user decides to Quit from the main menu, then the program should stop running.

Example of the Main Menu:



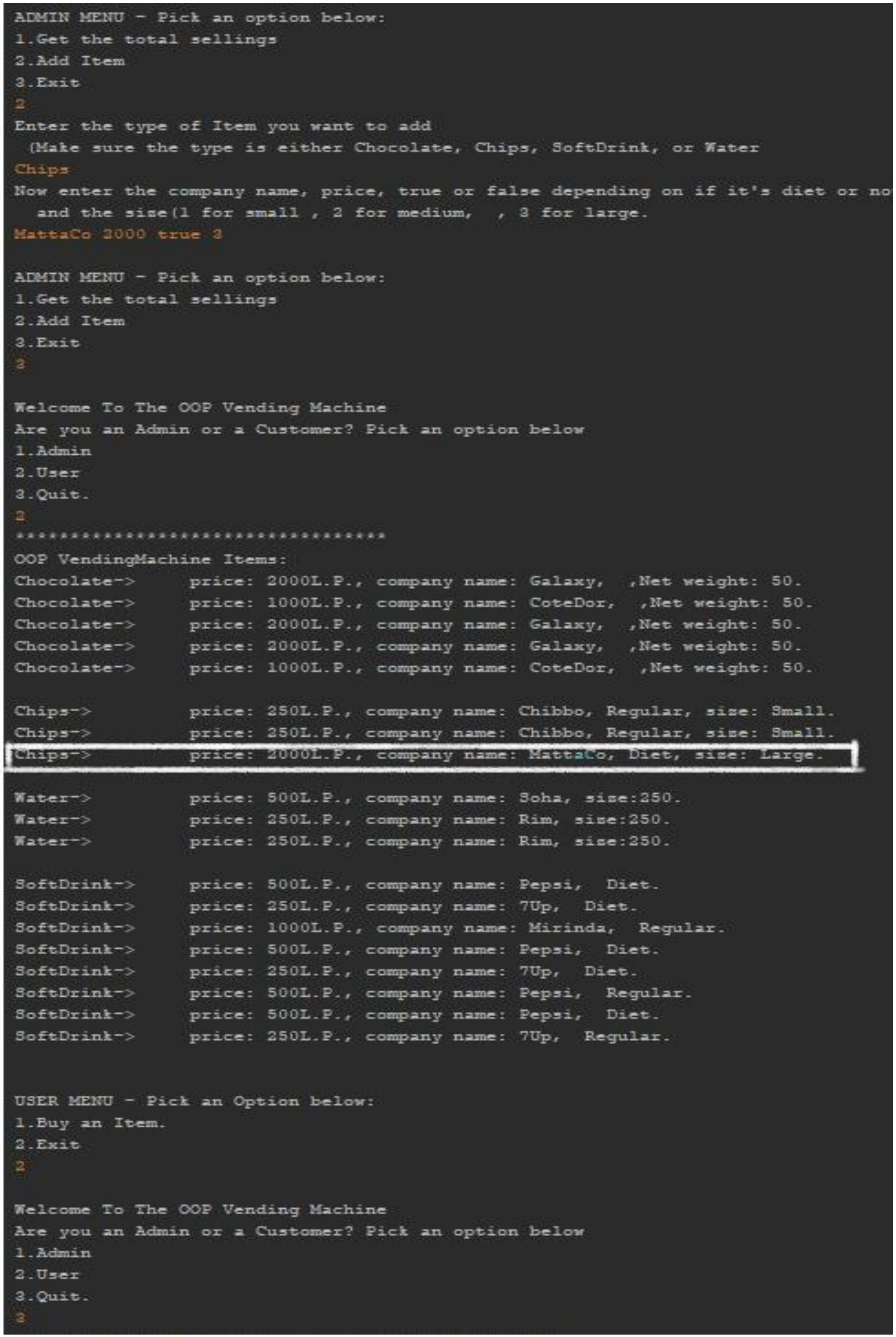
```
Welcome To The OOP Vending Machine
Are you an Admin or a Customer? Pick an option below
1.Admin
2.User
3.Quit.
```

Example of the Admin Menu:

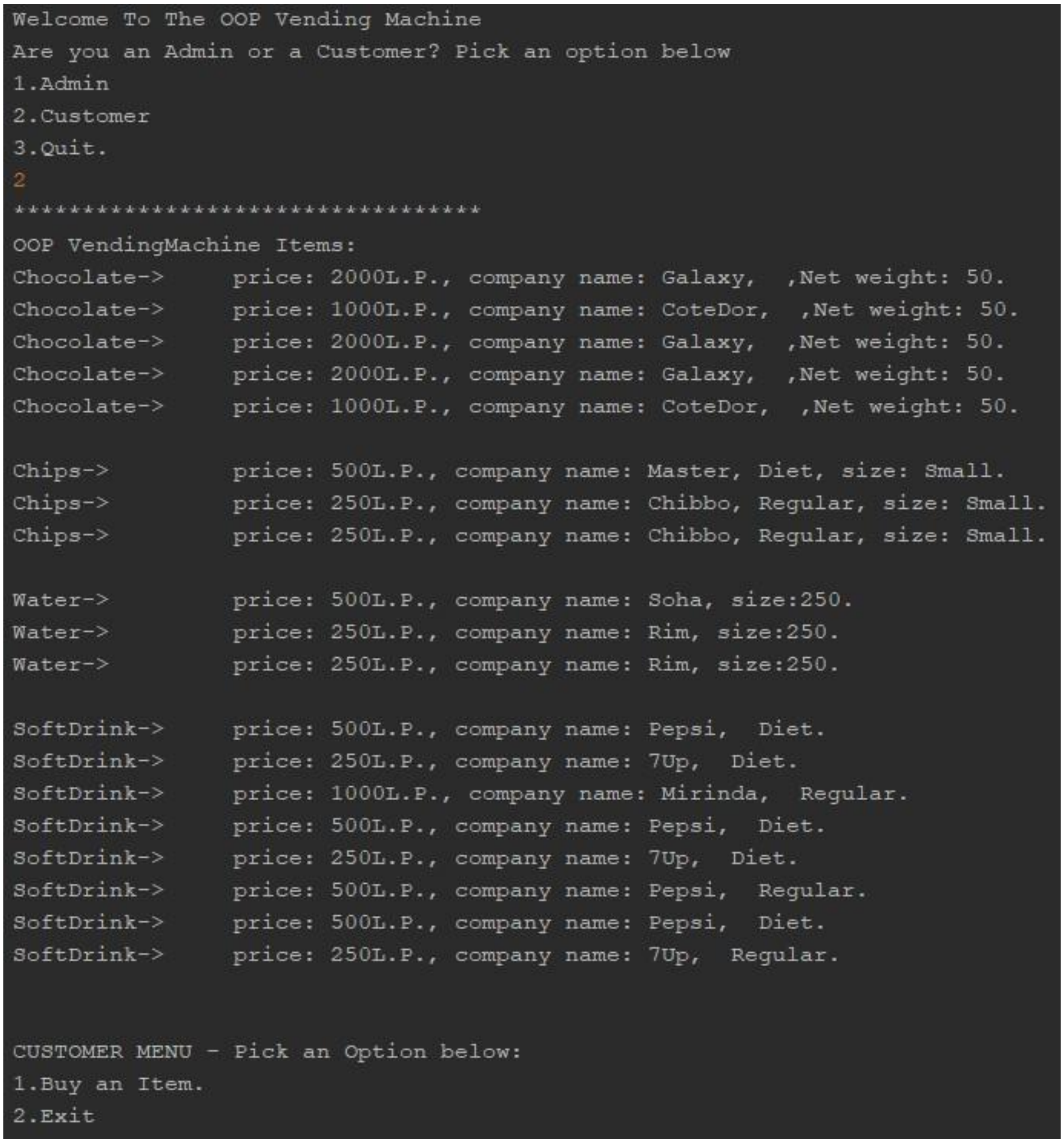


```
Welcome To The OOP Vending Machine
Are you an Admin or a Customer? Pick an option below
1.Admin
2.User
3.Quit.
1

Enter the ADMIN password:OOP123
ADMIN MENU - Pick an option below:
1.Get the total sellings
2.Add Item
3.Exit
```

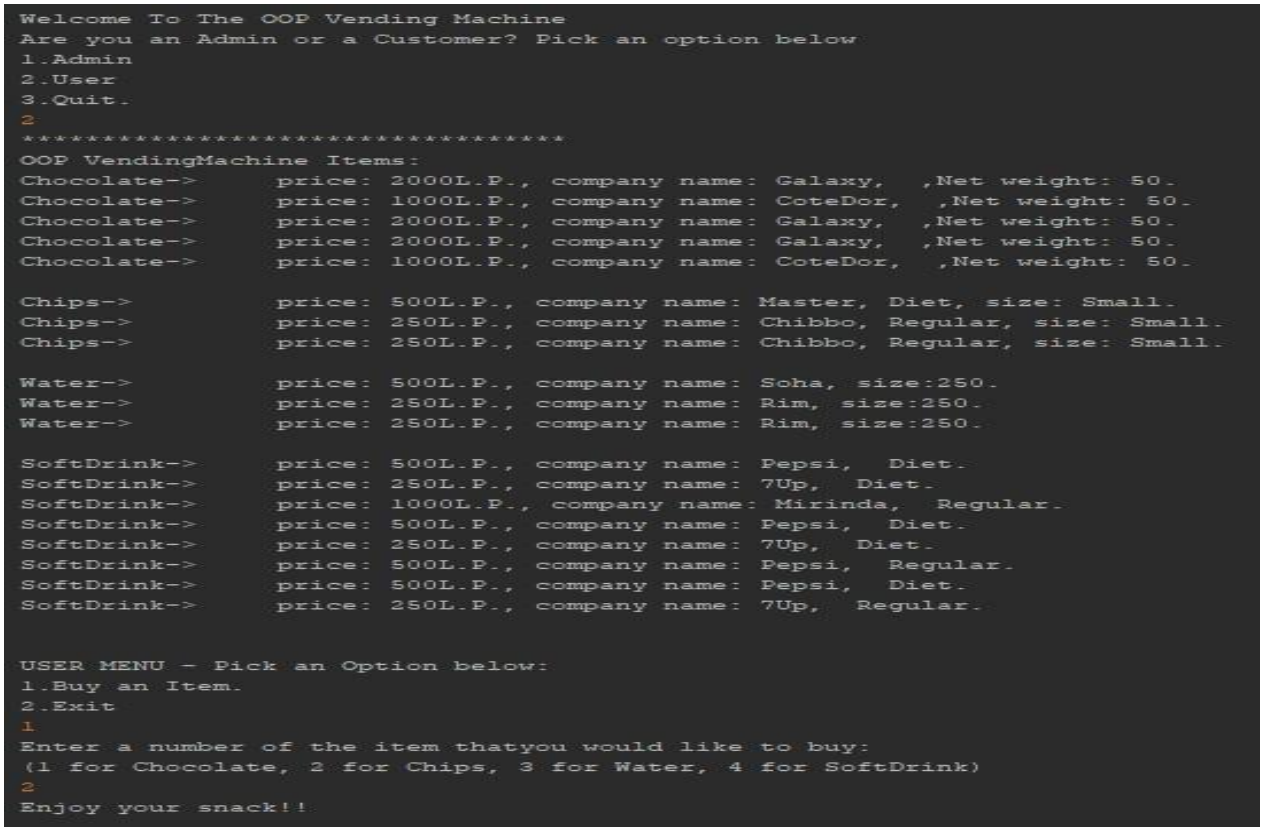
Example of the Customer Menu:



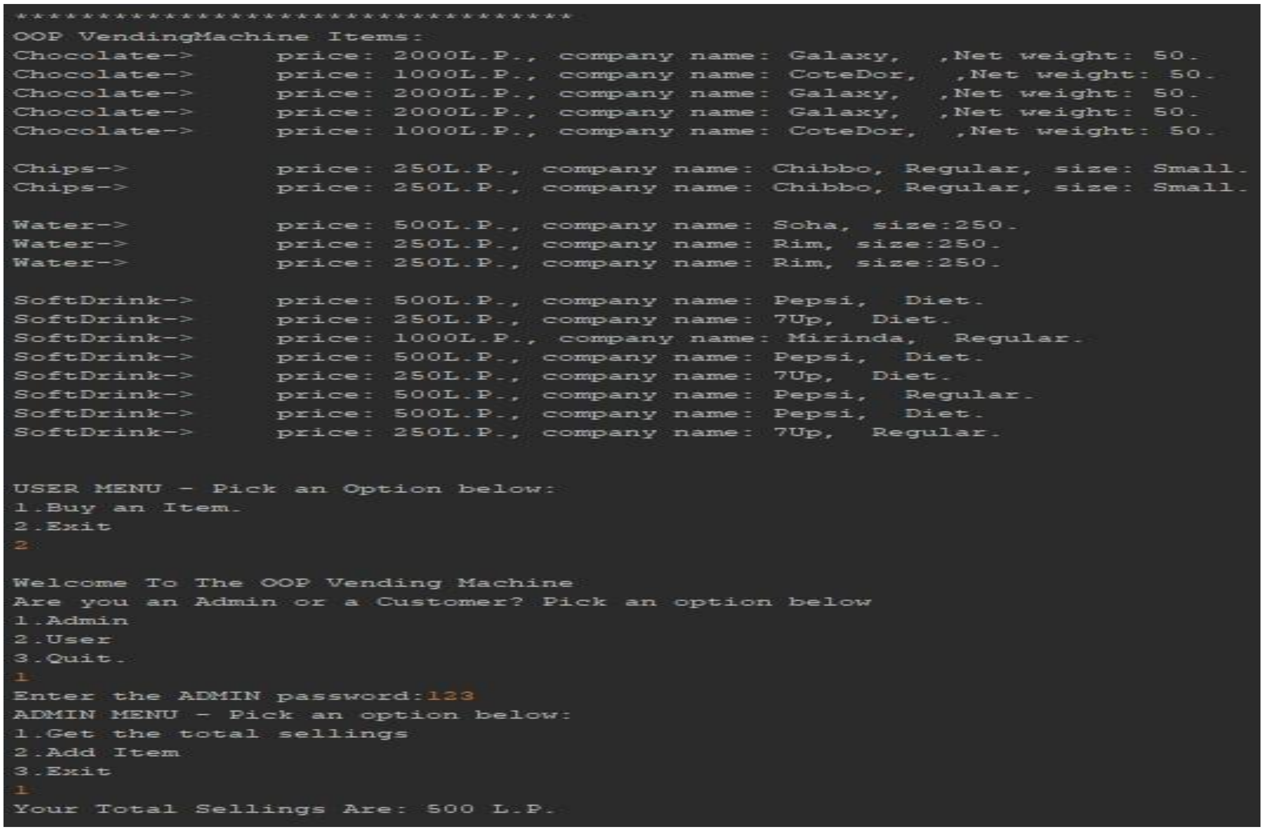
```
ADMIN MENU - Pick an option below:
1.Get the total sellings
2.Add Item
3.Exit
2
Enter the type of Item you want to add
 (Make sure the type is either Chocolate, Chips, SoftDrink, or Water
Chips
Now enter the company name, price, true or false depending on if it's diet or no
  and the size(1 for small , 2 for medium,  , 3 for large.
MattaCo 2000 true 3

ADMIN MENU - Pick an option below:
1.Get the total sellings
2.Add Item
3.Exit
3

Welcome To The OOP Vending Machine
Are you an Admin or a Customer? Pick an option below
1.Admin
2.User
3.Quit.
2
**********************************
OOP VendingMachine Items:
Chocolate->     price: 2000L.P., company name: Galaxy,  ,Net weight: 50.
Chocolate->     price: 1000L.P., company name: CoteDor,  ,Net weight: 50.
Chocolate->     price: 2000L.P., company name: Galaxy,  ,Net weight: 50.
Chocolate->     price: 2000L.P., company name: Galaxy,  ,Net weight: 50.
Chocolate->     price: 1000L.P., company name: CoteDor,  ,Net weight: 50.

Chips->         price: 250L.P., company name: Chibbo, Regular, size: Small.
Chips->         price: 250L.P., company name: Chibbo, Regular, size: Small.
Chips->         price: 2000L.P., company name: MattaCo, Diet, size: Large.

Water->         price: 500L.P., company name: Soha, size:250.
Water->         price: 250L.P., company name: Rim, size:250.
Water->         price: 250L.P., company name: Rim, size:250.

SoftDrink->     price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->     price: 250L.P., company name: 7Up,  Diet.
SoftDrink->     price: 1000L.P., company name: Mirinda,  Regular.
SoftDrink->     price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->     price: 250L.P., company name: 7Up,  Diet.
SoftDrink->     price: 500L.P., company name: Pepsi,  Regular.
SoftDrink->     price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->     price: 250L.P., company name: 7Up,  Regular.


USER MENU - Pick an Option below:
1.Buy an Item.
2.Exit
2

Welcome To The OOP Vending Machine
Are you an Admin or a Customer? Pick an option below
1.Admin
2.User
3.Quit.
3
```



```
Welcome To The OOP Vending Machine
Are you an Admin or a Customer? Pick an option below
1.Admin
2.Customer
3.Quit.
2
**********************************
OOP VendingMachine Items:
Chocolate->     price: 2000L.P., company name: Galaxy,  ,Net weight: 50.
Chocolate->     price: 1000L.P., company name: CoteDor,  ,Net weight: 50.
Chocolate->     price: 2000L.P., company name: Galaxy,  ,Net weight: 50.
Chocolate->     price: 2000L.P., company name: Galaxy,  ,Net weight: 50.
Chocolate->     price: 1000L.P., company name: CoteDor,  ,Net weight: 50.

Chips->         price: 500L.P., company name: Master, Diet, size: Small.
Chips->         price: 250L.P., company name: Chibbo, Regular, size: Small.
Chips->         price: 250L.P., company name: Chibbo, Regular, size: Small.

Water->         price: 500L.P., company name: Soha, size:250.
Water->         price: 250L.P., company name: Rim, size:250.
Water->         price: 250L.P., company name: Rim, size:250.

SoftDrink->     price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->     price: 250L.P., company name: 7Up,  Diet.
SoftDrink->     price: 1000L.P., company name: Mirinda,  Regular.
SoftDrink->     price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->     price: 250L.P., company name: 7Up,  Diet.
SoftDrink->     price: 500L.P., company name: Pepsi,  Regular.
SoftDrink->     price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->     price: 250L.P., company name: 7Up,  Regular.


CUSTOMER MENU - Pick an Option below:
1.Buy an Item.
2.Exit
```



```
Welcome To The OOP Vending Machine
Are you an Admin or a Customer? Pick an option below
1.Admin
2.User
3.Quit.
2
***********************************
OOP VendingMachine Items:
Chocolate->      price: 2000L.P., company name: Galaxy,   ,Net weight: 50.
Chocolate->      price: 1000L.P., company name: CoteDor,   ,Net weight: 50.
Chocolate->      price: 2000L.P., company name: Galaxy,   ,Net weight: 50.
Chocolate->      price: 2000L.P., company name: Galaxy,   ,Net weight: 50.
Chocolate->      price: 1000L.P., company name: CoteDor,   ,Net weight: 50.

Chips->          price: 500L.P., company name: Master, Diet, size: Small.
Chips->          price: 250L.P., company name: Chibbo, Regular, size: Small.
Chips->          price: 250L.P., company name: Chibbo, Regular, size: Small.

Water->          price: 500L.P., company name: Soha, size:250.
Water->          price: 250L.P., company name: Rim, size:250.
Water->          price: 250L.P., company name: Rim, size:250.

SoftDrink->      price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->      price: 250L.P., company name: 7Up,  Diet.
SoftDrink->      price: 1000L.P., company name: Mirinda,  Regular.
SoftDrink->      price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->      price: 250L.P., company name: 7Up,  Diet.
SoftDrink->      price: 500L.P., company name: Pepsi,  Regular.
SoftDrink->      price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->      price: 250L.P., company name: 7Up,  Regular.


USER MENU - Pick an Option below:
1.Buy an Item.
2.Exit
1
Enter a number of the item thatyou would like to buy:
(1 for Chocolate, 2 for Chips, 3 for Water, 4 for SoftDrink)
2
Enjoy your snack!!
```



```
***********************************
OOP VendingMachine Items:
Chocolate->      price: 2000L.P., company name: Galaxy,   ,Net weight: 50.
Chocolate->      price: 1000L.P., company name: CoteDor,   ,Net weight: 50.
Chocolate->      price: 2000L.P., company name: Galaxy,   ,Net weight: 50.
Chocolate->      price: 2000L.P., company name: Galaxy,   ,Net weight: 50.
Chocolate->      price: 1000L.P., company name: CoteDor,   ,Net weight: 50.

Chips->          price: 250L.P., company name: Chibbo, Regular, size: Small.
Chips->          price: 250L.P., company name: Chibbo, Regular, size: Small.

Water->          price: 500L.P., company name: Soha, size:250.
Water->          price: 250L.P., company name: Rim, size:250.
Water->          price: 250L.P., company name: Rim, size:250.

SoftDrink->      price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->      price: 250L.P., company name: 7Up,  Diet.
SoftDrink->      price: 1000L.P., company name: Mirinda,  Regular.
SoftDrink->      price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->      price: 250L.P., company name: 7Up,  Diet.
SoftDrink->      price: 500L.P., company name: Pepsi,  Regular.
SoftDrink->      price: 500L.P., company name: Pepsi,  Diet.
SoftDrink->      price: 250L.P., company name: 7Up,  Regular.


USER MENU - Pick an Option below:
1.Buy an Item.
2.Exit
2

Welcome To The OOP Vending Machine
Are you an Admin or a Customer? Pick an option below
1.Admin
2.User
3.Quit.
1
Enter the ADMIN password:123
ADMIN MENU - Pick an option below:
1.Get the total sellings
2.Add Item
3.Exit
1
Your Total Sellings Are: 500 L.P.
```