HONG KONG INSTITUTE OF VOCATIONAL EDUCATION (TSING YI)
DEPARTMENT OF INFORMATION TECHNOLOGY

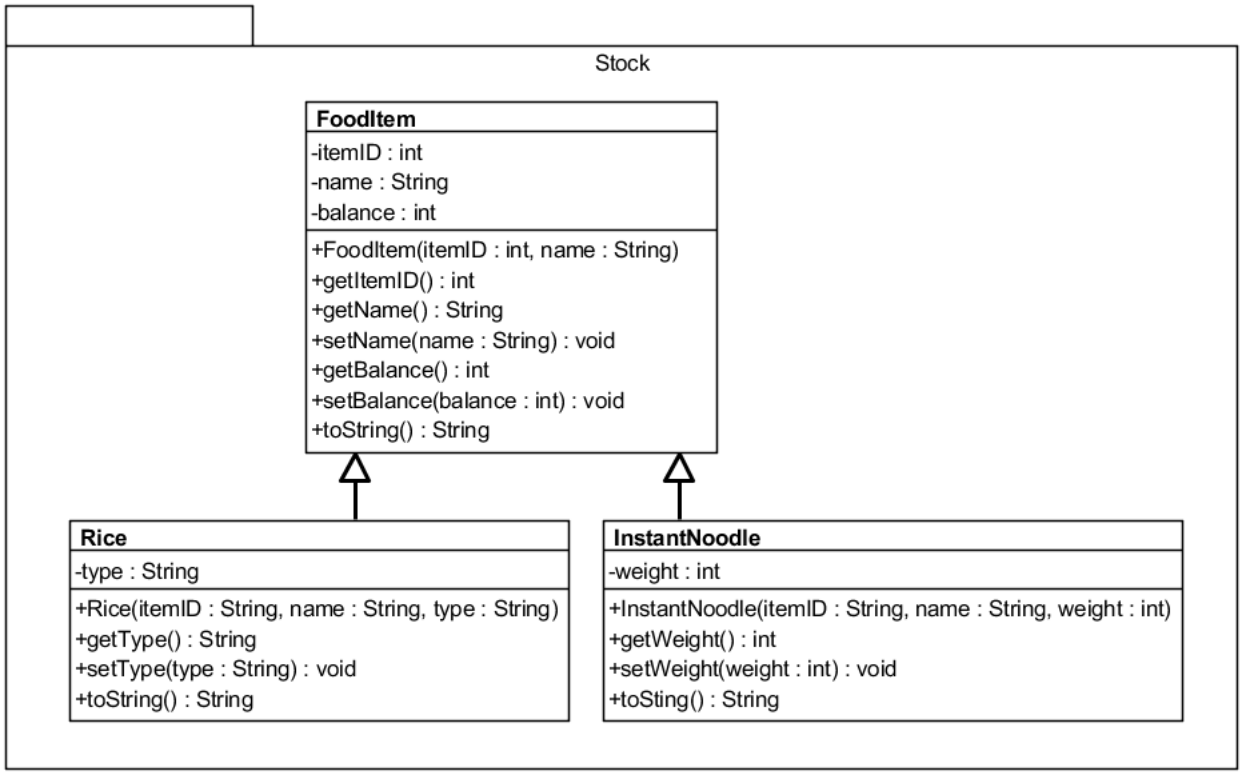
HIGHER DIPLOMA IN SOFTWARE ENGINEERING (IT114105)

Module Name:	Contemporary Topics in Software Engineering
Module Code:	ITP4507
Assignment Number:	One
Hand-in:	17 **November, 2017** (On or before 4:30 PM to Collection Boxes outside Room C440 and Moodle)
Weighting of This Assignment:	50% of the End of Module Assessment

This assignment must be done by individual only. Plagiarism will be treated seriously. Any assignments that are found involved wholly or partly in plagiarism (no matter the assignments are from the original authors or from the plagiarists) will score Zero mark. **Late submission will NOT be accepted**.

Task Specification

Mayfield Foods Corporation is a food trading company in Hong Kong. It is engaged primarily in sourcing various quality food products from around the world and selling food products to local market. The company plans to develop an advanced inventory management system (AIMS) for maintaining inventory records. The following is the simplified class diagram of existing data maintained by the company.



As a system analyst of the Company, you are required to design and develop AIMS. You are reminded that the design of the existing classes: FoodItem, Rice and InstantNoodle must be kept

unchanged.

AIMS should provide the following functions:

1. Create a FoodItem record with zero quantity (Rice or InstantNoodle or any new kind of FoodItem in the coming future).
2. Show FoodItem details (such as itemID, name, balance, type/weight) by a given itemID (input code=* to show all records)
3. Receive FoodItem
4. Deliver FoodItem
5. Undo last command
6. Redo the last undone command
7. Show undo/redo list

Your system design should conform to the Open Closed Principle so that your design should easily be extended to support new functions (e.g. change of name of FoodItem) and food items, for example, creation of Oatmeal record which is a subclass of FoodItem.

You **MUST** apply the following design patterns for your new system

- **Command pattern** to provide the "create item", "show item", "receive item", "deliver item", "undo", "redo" and "display undo/redo list" functions
- **Factory pattern *or* Abstract Factory Pattern** to create different Command objects and FoodItem objects (e.g. Rice object, InstantNoodle object, etc.)
- **Memento pattern** to provide "Undo" and "Redo" functions

Assignment Report

In addition to the system development, you are required to write up a **Short Report** covers the following sections:

1. Assumptions regarding the problem context
2. Application design with class diagram
3. Discussion and explanation on each of the design patterns applied to the application
4. User Guide
5. Test Plan and Test Cases
6. Well documented Source Code

Mark Allocation

Your assignment work will be marked according to the following criteria.

Work	Mark Allocated
System Coding and Implementation	
a) Implementation of the system and coding style **(Hard-coded output will result in zero mark.)**	30%
b) Demonstration * (Hard-coded output will result in zero mark.)	15%
c) User Guide	5%
d) Test Plan and Test Cases (Will be used in testing your own application.)	5%
System Analysis and Design, and Discussion	
e) Design of your system and correct use of design patterns	20%
f) Application design with class diagram	10%
g) Discussion and explanation on each of the design patterns applied to the application	15%
Total	**100%**

Note: * Please note that you will be asked to recompile all you Java classes during demonstration,

and to answer questions regarding your implementation.

Submission of Assignment Work

1. The front page of your submission should include the programme title, module title, student identity number(s), student name(s), and group number.

2. Submit a hard copy of all your following work to Collection Boxes outside Room C440 and submit a zip file of all your work to the module's Moodle website (https://moodle1718.vtc.edu.hk/course/view.php?id=1360):
   - Well documented Source Code of your program. Store the Source Code files in Folder "source code\" of your zip file. Store compiled class files and the "run.bat" file for executing the program in Folder "bin\" of your zip file.
   - Report for analysis, design, discussion, user guide, test plan and test cases of your following work. Store the report in Folder "report\" of your zip file.
     A. The assumption made during analysis and design of the application
     B. System design on your application with class diagram
     C. Discussion on the design patterns that applied on your program
     D. User Guide and Test Plan with Test Cases (describe how your program works and develop different test cases for testing each functionality of your program – please include all the required screen dumps).

3. Submit according to the guideline on the top part of cover page. **Late submission will NOT be accepted**.

Extra Reference

This sample run is served for reference only. You are free to design your own user interface.

Sample Run of assignment

You may follow the design of user interface shown in this sample run in DOS command prompt.

User's inputs are in bold face.

1. Create FoodItem Record (c)

```
Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item,    s = show item,    g = receive item,    d = distribute item,
u = undo,    r = redo,    l = list undo/redo,    x = exit system

c
Enter food type (ri=rice/in=instant noodle):
ri
Enter id, name and type:
1010, Thailand Premium Rice, brown
New item record created.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item,    s = show item,    g = receive item,    d = distribute item,
u = undo,    r = redo,    l = list undo/redo,    x = exit system

c
Enter food type (ri=rice/in=instant noodle):
in
Enter id, name and weight:
2010, Quick Noodle, 100
New item record created.
```

2. Show one FoodItem record (s)

```
Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item,    s = show item,    g = receive item,    d = distribute item,
u = undo,    r = redo,    l = list undo/redo,    x = exit system

s
Enter ID (* to show all):
1010

Food item information
ID: 1010
Name: Thailand Premium Rice
Quantity: 0
Type: brown
```

Show all records

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

s
Enter id (* to show all):
*****

Food item information

ID	Name	Quantity	Other Info
1010	Thailand Premium Rice	0	brown
2010	Quick Noodle	0	100

3. Receive FoodItem (g)

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

g
Enter code:
1010
Quantity to receive:
200
Received 200 packs of Thailand Premium Rice. Current quantity is 200.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

g
Enter code:
2010
Quantity to deposit:
100
Received 100 packs of Quick Noodle. Current quantity is 100.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

s
Enter code (* to show all):
*****

Food item information

ID	Name	Quantity	Other Info
1010	Thailand Premium Rice	200	brown
2010	Quick Noodle	100	100

4. Distribute FoodItem (d)

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

d
Enter code:
1010
Quantity to distribute:
100
Distributed 100 packs of Thailand Premium Rice. Current quantity is 100.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

d
Enter code:
2010
Quantity to distribute:
50
Distributed 50 packs of Quick Noodle. Current quantity is 50.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

s
Enter code (* to show all):
*****

Food item information

ID	Name	Quantity	Other Info
1010	Thailand Premium Rice	100	brown
2010	Quick Noodle	50	100

Distributing an invalid quantity (current balance < distributing quantity) from FoodItem will display a warning message. Note that this invalid operation should not be shown in Undo List afterward.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

d
Enter code:
1010
Quantity to distribute:

200
Invalid quantity (current balance < distributing quantity).

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

5. Display the Undo/Redo List (l)

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

l

Undo List:
Create 1010 Thailand Premium Rice
Create 2010 Quick Noodle
Receive 200 1010 Thailand Premium Rice
Receive 100 2010 Quick Noodle
Distribute 100 1010 Thailand Premium Rice
Distribute 50 2010 Quick Noodle

Redo List:
Empty

6. Undo Last Command in the Undo List (u)

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

u
undo completed.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

l

Undo List:
Create 1010 Thailand Premium Rice
Create 2010 Quick Noodle
Receive 200 1010 Thailand Premium Rice
Receive 100 2010 Quick Noodle
Distribute 100 1010 Thailand Premium Rice

Redo List:
Distribute 50 2010 Quick Noodle

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

u
undo completed.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

l

Undo List:
Create 1010 Thailand Premium Rice
Create 2010 Quick Noodle
Receive 200 1010 Thailand Premium Rice
Receive 100 2010 Quick Noodle

Redo List:
Distribute 50 2010 Quick Noodle
Distribute 100 1010 Thailand Premium Rice

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

s
Enter code * to show all):
*****

Food item information

ID	Name	Quantity	Other Info
1010	Thailand Premium Rice	200	brown
2010	Quick Noodle	100	100

7. Redo the last undo command (r)

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g= receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

l

Undo List:
Create 1010 Thailand Premium Rice
Create 2010 Quick Noodle
Receive 200 1010 Thailand Premium Rice
Receive 100 2010 Quick Noodle

Redo List:
Distribute 50 2010 Quick Noodle
Distribute 100 1010 Thailand Premium Rice

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

r
redo completed.

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

s
Enter code (* to show all):
*****

Food item information

ID	Name	Quantity	Other Info
1010	Thailand Premium Rice	100	brown
2010	Quick Noodle	100	100

Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item, s = show item, g = receive item, d = distribute item,
u = undo, r = redo, l = list undo/redo, x = exit system

l

Undo List:
Create 1010 Thailand Premium Rice
Create 2010 Quick Noodle
Receive 200 1010 Thailand Premium Rice
Receive 100 2010 Quick Noodle
Distribute 100 1010 Thailand Premium Rice

```
Redo List:
Distribute 50 2010 Quick Noodle
```

8. Exit the System (X)

```
Advanced Inventory Management System
Please enter command: [c | s | g | d | u | r | l | x]
c = create item,    s = show item,    g = receive item,    d = distribute item,
u = undo,    r = redo,    l = list undo/redo,    x = exit system

x

Leaving System...
```

End of Sample Run

***** END *****