

Hong Kong Institute of Vocational Education (Tsing Yi)
Department of Information and Communications Technology

Higher Diploma in Software Engineering

Contemporary Topics in Software Engineering **Module Assignment**

Submit Date: 14th November 2016

Student ID	Student Name	Class	Signature
150533022	Au Chi Chung	HDSE-2A	

Contemporary Topics in Software Engineering

Project Scenario: Advanced Portfolio Management System (APMS)

Name: Au Chi Chung

Student Number: 150533022

Class: IT114105/ HDSE-2A

Content Page

Contents

Content Page.....	1
Assumption	2
Application Design (Class Diagram)	3
Design Pattern.....	4
Open Closed Principle	4
Command Pattern.....	4
Factory Pattern	4
Memento pattern	4
User Guide	5
Create Security Record (Command – “n”)	5
Show Security Record (Command – “s”).....	6
Deposit Security (Command – “d”).....	7
Withdraw Security (Command – “w”)	8
Display Undo/Redo List (Command – “l”).....	9
Undo Last Command in Undo List (Command – “u”)	9
Redo Last Undo Command (Command – “r”).....	10
Exit System (Command – “q”).....	10
Test Plan & Test Cases	11
Test Plan.....	11
Test Cases.....	11

Assumption

1. "ExcelFund Corporation" is an asset management company in Hong Kong. And they engaged primarily in the business of investing in and managing a portfolio of securities. Also, the company plans to develop an advanced portfolio management system (APMS) for maintaining security records.
2. As a system analyst of the company, it required to design and developing the APMS.
3. The new system module should provide 8 of the main function. They are "create security function", "show security function", "deposit security function", "withdraw security function", "undo function", "redo function", "list undo and list redo function", and "exit system function". And all system action option is correspond with different key.
4. The system design should conform to the Open Closed Principle so that your design should easily support new functions (e.g. change of name of security) and securities, for example, creation of Bank Note record which is a subclass of Security.
5. The little modify of increase toString() method in class of "Bond", and "Stock" for display the value "yield" and "exchange" in the show security command.

Class: IT114105/ HDSE-2A

Design Pattern

Open Closed Principle

- Conform to the Open Closed Principle for easily support new functions and securities.
- The programmer can add or delete some class here easily because it is clearly to understand which command have relationship and which is not.

Command Pattern

- Provide the “create”, “display”, “deposit”, “withdraw”, “undo”, “redo”, “show undo/redo list” functions. And the command class are responsible for execute the command to complete missions.

Invoker:	Main
Command:	Command
Receiver:	SecurityFactory, Caretaker
Concrete Command:	CreateCommand, ShowCommand, DepositCommand, WithdrawCommand, ListCommand, ExitCommand

Factory Pattern

- Create different security objects include bond and stock.

Product:	Security
Concrete Product:	Bond, Stock
Creator:	SecurtyFactory
Concrete Creator:	BondFactory, StockFactory

Memento pattern

- Provide “undo” and “redo” functions. When user passing variables to undo or redo that system will create object to keep record for next action.
- The memento classes are responsible for record the user used process.

Originator:	Security (Bond, Stock)
Memento:	Memento (BondMemento, StockMemento)
Caretaker:	Caretaker

User Guide

Create Security Record (Command – “n”)

```
C:\Users\Alvin\Desktop>java Portfolio.Main
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system
n
Enter security type<bo = bond / st = stock> :
```

- When user enters the corresponding command key “n”, system will require user to input “bo” or “st”.

```
n
Enter security type<bo = bond / st = stock> :
bo
Enter code, name and yield:
CodeA, Company A, 5.5
New security record created.
```

- If user need to creates a security of bond, that he/she must enter the values of “code, name, and yield with floating point number”.

```
n
Enter security type<bo = bond / st = stock> :
st
Enter code, name and stock exchange:
CodeB, Company B, Exchange
New security record created.
```

- Otherwise, if user need to creates a security of stock, that he/she must enter the values of “code, name, and exchange”.

Show Security Record (Command – “s”)

```
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

s
Enter code(## to show all) :
```

- When user enters the corresponding command key “s”, system will require user to enter the code of security, or he/she can enter “##” to show all data in table.

```
s
Enter code(## to show all) :
CodeA

Security information
Code: CodeA
Name: Company A
Quantity: 0
Yield: 5.5

s
Enter code(## to show all) :
CodeC

Security information
The input value is not exist in database
```

- When user enters the corresponding security code “CodeA”, system will show one security record. Also, if user enters the non-existing value that it will display “The input value is not exists in database”.

```
s
Enter code(## to show all) :
##

Security information
Code      Name           Quantity    OtherInfo
CodeA     Company A       0           Yield: 5.5
CodeB     Company B       0           Exchange: Exchange
```

- When user enters the corresponding security code “##”, system will show all records in one table.

Deposit Security (Command – “d”)

```
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

d
Enter Code:
```

- When user enters the corresponding command key “d”, system will require user to enter the code of security for increase quantity.

```
d
Enter Code:
CodeA
Quantity to deposit:
10
Deposited 10 to CodeA. Current quantity is 10.
```

```
s
Enter code(## to show all) :
##

Security information
Code      Name           Quantity  OtherInfo
CodeA     Company A          10        Yield: 5.5
CodeB     Company B           0        Exchange: Exchange
```

- When user enters the corresponding security code “CodeA” and the quantity to deposit, system will show the deposit result.

```
d
Enter Code:
CodeA
Quantity to deposit:
-1
Please enter the positive value of quantity.

Enter Code:
CodA
Quantity to deposit:
100
Your code is not exist
```

- Also, if user enters the non-existing code or negative value that it will display warning message.

Withdraw Security (Command – “w”)

```
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

w
Enter code:
```

- When user enters the corresponding command key “w”, system will require user to enter the code of security for decrease quantity.

```
w
Enter code:
CodeA
Quantity to withdraw:
10
Withdraw 10 from CodeA. Current quantity is 0.
```

```
s
Enter code<## to show all> :
##

Security information
Code      Name           Quantity  OtherInfo
CodeA     Company A           0         Yield: 5.5
CodeB     Company B           0         Exchange: Exchange
```

- When user enters the corresponding security code “CodeA” and the quantity to withdraw, system will show the withdraw result.

```
w
Enter code:
CodeA
Quantity to withdraw:
-10
Please enter the positive value of quantity.

Enter code:
CodA
Quantity to withdraw:
10
Your code is not exist
```

- Also, if user enters the non-existing code or negative value that it will display warning message.

Display Undo/Redo List (Command – “l”)

```
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

l

Undo List:
Create CodeA
Create CodeB
Deposit 10 CodeA
Withdraw 10 CodeA

Redo List:
Empty
```

- When user enters the corresponding command key “l”, system will display the undo list and the redo list instantly.

Undo Last Command in Undo List (Command – “u”)

```
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

u
undo completed.

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

l

Undo List:
Create CodeA
Create CodeB
Deposit 10 CodeA

Redo List:
Withdraw 10 CodeA
```

- When user enters the corresponding command key “u”, system will execute an undo action.

Redo Last Undo Command (Command – “r”)

```
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

r
redo completed.

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

l

Undo List:
Create CodeA
Create CodeB
Deposit 10 CodeA
Withdraw 10 CodeA

Redo List:
Empty
```

- When user enters the corresponding command key “r”, system will execute a redo action.

Exit System (Command – “q”)

```
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

q

Leaving System...

C:\Users\Alvin\Desktop>pause
請按任意鍵繼續 . . .
```

- When user enters the corresponding command key “q”, system will exit the program instantly.

Test Plan & Test Cases

Test Plan

Test	Description	Date
CreateCommand	Execute different input	12 - 11 - 2016
ShowCommand	Execute different input	12 - 11 - 2016
DepositCommand	Execute different input	12 - 11 - 2016
WithdrawCommand	Execute different input	12 - 11 - 2016
ListCommand	Check the list display	12 - 11 - 2016
ExitCommand	Test command display	12 - 11 - 2016

Test Cases

Create Security Record (n)

Test Command	Expect Result	Actual Result
Step - (1)		
Input "n" (✓ Successful Case)	Ask user for enter the security code of "bo" or "st"	✓ Meet the exception
Input "N" (✓ Successful Case)	Ask user for enter the security code of "bo" or "st"	✓ Meet the exception
Input " n" (✓ Successful Case)	Ask user for enter the security code of "bo" or "st"	✓ Meet the exception
Input "中文" (X Wrong Case)	Display error message and require the user input again	✓ Meet the exception
Step - (2)		
Input "bo" or Input "BO", " bo" (✓ Successful Case)	Ask user for enter the details of (code, name, yield with floating point number)	✓ Meet the exception
Input "st" or Input "ST", " st" (✓ Successful Case)	Ask user for enter the details of (code, name, exchange)	✓ Meet the exception
Step - (3)		
After input "bo", Input "CodeA, Company A, 5.5" (✓ Successful Case)	Display the successful message	✓ Meet the exception
After input "bo", Input "CodeA, Company A, ABC" (X Wrong Case)	Display the error message	✓ Meet the exception
After input "st", Input "CodeA, Company A, 5.5" (✓ Successful Case)	Display the successful message	✓ Meet the exception

```
F:\Program Source>java Portfolio.Main
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

中文
Please enter the corresponding command from existing option.

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

n
Enter security type<bo = bond / st = stock> :
BO
Enter code, name and yield:
CodeA, Company A, ABC
Please enter the corresponding command from existing option. <Create Security>

Enter security type<bo = bond / st = stock> :
bo
Enter code, name and yield:
CodeA, Company A, 5.5
New security record created.

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

n
Enter security type<bo = bond / st = stock> :
st
Enter code, name and stock exchange:
CodeB, Company B, Exchange
New security record created.

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system
```

Contemporary Topics in Software Engineering

Project Scenario: Advanced Portfolio Management System (APMS)

Name: Au Chi Chung

Student Number: 150533022

Class: IT114105/ HDSE-2A

Show Security Record (s)

Test Command	Expect Result	Actual Result
Step - (1)		
Input "s" or " s" or "S" (✓ Successful Case)	Ask user for enter the security code or enter "##" to show all detail in table	✓ Meet the exception
Step - (2)		
Input existing security code "CodeA" (✓ Successful Case)	Display single security record	✓ Meet the exception
Input non-existing security code "CodeC" (✗ Wrong Case)	Display error message	✓ Meet the exception
Input "##" to show all details (✓ Successful Case)	Display all existing details in table	✓ Meet the exception

```
s
Enter code(## to show all) :
CodeA

Security information
Code: CodeA
Name: Company A
Quantity: 0
Yield: 5.5

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

s
Enter code(## to show all) :
CodeC

Security information
The input value is not exists in database

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

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

Security information
Code      Name      Quantity  OtherInfo
CodeA     Company A    0        Yield: 5.5
CodeB     Company B    0        Exchange: Exchange
```

Deposit Security (d)

Test Command	Expect Result	Actual Result
Step - (1)		
Input "d" or " d" or "D" (✓ Successful Case)	Ask user for enter the security code	✓ Meet the exception
Step - (2)		
Input non-existing security code "CodeC" (✗ Wrong Case)	Display error message and require for re-enter	✓ Meet the exception
Input existing security code "CodeA" (✓ Successful Case)	Display single security record	✓ Meet the exception
Step - (3)		
Input "-20" (✗ Wrong Case)	Display error message	✓ Meet the exception
Input "20" (✓ Successful Case)	Display successful message	✓ Meet the exception

```

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

d
Enter Code:
CodeC
Quantity to deposit:
20
Your code is not exist

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

d
Enter Code:
CodeA
Quantity to deposit:
-20
Please enter the positive value of quantity.

Enter Code:
CodeA
Quantity to deposit:
20
Deposited 20 to CodeA. Current quantity is 20.

```

Withdraw Security (w)

Test Command	Expect Result	Actual Result
Step - (1)		
Input "w" or " w" or "W" (✓ Successful Case)	Ask user for enter the security code	✓ Meet the exception
Step - (2)		
Input existing security code "CodeA" (✓ Successful Case)	Display single security record	✓ Meet the exception
Step - (3)		
Input "-20" (✗ Wrong Case)	Display error message	✓ Meet the exception
Input "30" (> current value) (✗ Wrong Case)	Display error message	✓ Meet the exception
Input "20" (✓ Successful Case)	Display successful message	✓ Meet the exception

```

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

w
Enter code:
CodeA
Quantity to withdraw:
-20
Please enter the positive value of quantity.

Enter code:
CodeA
Quantity to withdraw:
30
Invalid quantity (current quantity < withdrawal quantity).

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

w
Enter code:
CodeA
Quantity to withdraw:
20
Withdrew 20 from CodeA. Current quantity is 0.

```


Contemporary Topics in Software Engineering

Project Scenario: Advanced Portfolio Management System (APMS)

Name: Au Chi Chung

Student Number: 150533022

Class: IT114105/ HDSE-2A

Display the Undo/Redo List (l)

Test Command	Expect Result	Actual Result
Step - (1)		
Input "l" or " L" or "L" (✓ Successful Case)	Display the undo list and redo list	✓ Meet the exception

```

Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw secur
ity, u = undo, r = redo, l = list undo/redo, q = exit system

l

Undo List:
Create CodeA
Create CodeB
Deposit 20 CodeA
Withdraw 20 CodeA

Redo List:
Empty
  
```

Undo Last Command in the Undo List (u)

Test Command	Expect Result	Actual Result
Step - (1)		
Input "u" or " u" or "u" (✓ Successful Case)	Begin the undo action	✓ Meet the exception

Redo the last undo command (r)

Test Command	Expect Result	Actual Result
Step - (1)		
Input "r" or " r" or "r" (✓ Successful Case)	Begin the redo action	✓ Meet the exception

```

u
undo completed.
  
```

```

l
Undo List:
Create CodeA
Create CodeB
Deposit 20 CodeA
Withdraw 20 CodeA

Redo List:
Withdraw 20 CodeA
  
```

```

r
redo completed.
  
```

```

l
Undo List:
Create CodeA
Create CodeB
Deposit 20 CodeA
Withdraw 20 CodeA

Redo List:
Empty
  
```

Contemporary Topics in Software Engineering

Project Scenario: Advanced Portfolio Management System (APMS)

Name: Au Chi Chung

Student Number: 150533022

Class: IT114105/ HDSE-2A

Exit System (q)

Test Command	Expect Result	Actual Result
Enter "q" (✓ Successful Case)	Display the leaving message "Leaving System ..." and stop the program	✓ Meet the exception
Enter "Q" (✓ Successful Case)	Display the leaving message "Leaving System ..." and stop the program	✓ Meet the exception
Enter " q" (✓ Successful Case)	Display the leaving message "Leaving System ..." and stop the program	✓ Meet the exception

```
F:\Program Source>java Portfolio.Main
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

q

Leaving System...

F:\Program Source>pause
Press any key to continue . . .
```

```
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

Q

Leaving System...

F:\Program Source>pause
Press any key to continue . . .
```

```
F:\Program Source>java Portfolio.Main
Advanced Security Management System
Please enter command: [n | s | d | w | u | r | l | q]
n = create security, s = show security, d = deposit security, w = withdraw security, u = undo, r = redo, l = list undo/redo, q = exit system

q

Leaving System...

F:\Program Source>pause
Press any key to continue . . .
```