

Hong Kong Institute of Vocational Education

High Diploma in Software Engineering

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ITP4507 Contemporary Topics in Software Engineering

Assignment Report

Student Name:	
Student number:	

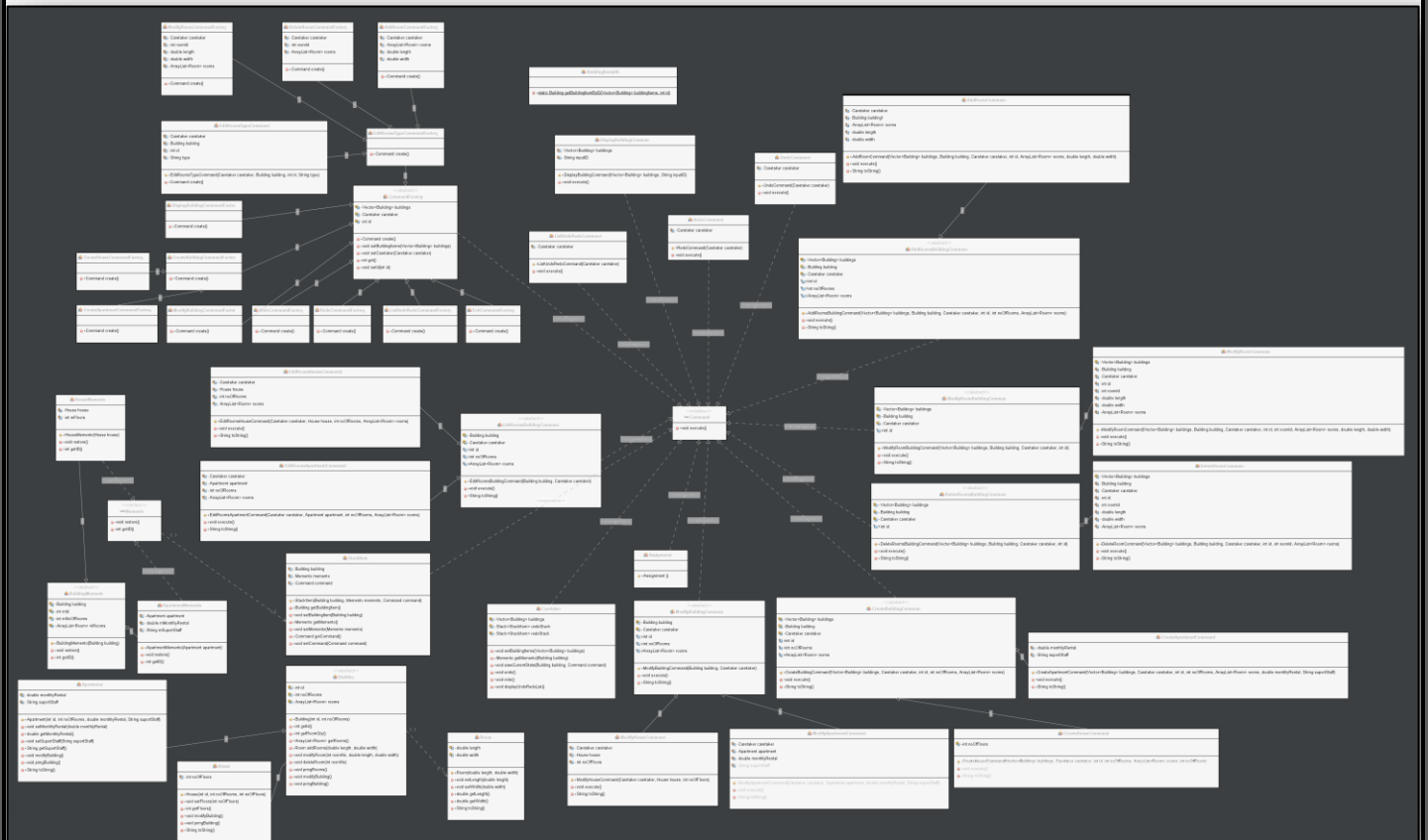
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Assumptions regarding the problem

- I. Design a develop a building management system for maintaining different kinds of building records.
- II. The design patterns of new system :
 - Command pattern
 - Memento pattern
 - Factory pattern or Abstract Factory Pattern
- III. The system need provide functions.
 1. Create a building record
 2. Modify a building record
 3. Display Building details
 4. Add, update or delete rooms in a building record
 5. Undo last command
 6. Redo the last undone command
 7. Show undo or redo list details
- IV. Users always input the right format data.

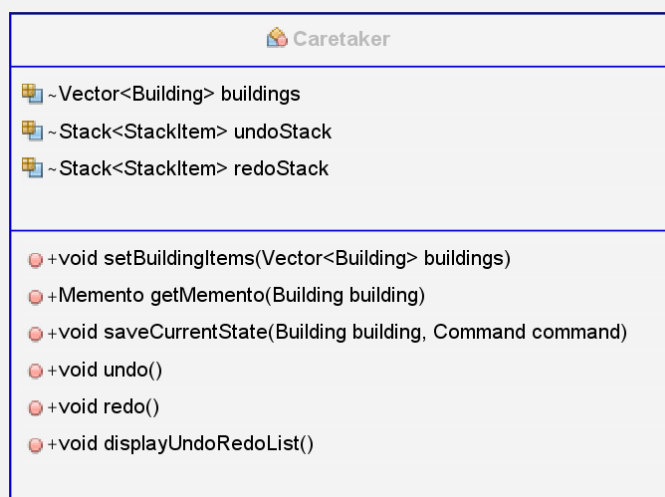
Application Design with class Diagram



Discussion

The class Caretake is the main class that will provide the main methods description of the methods of Caretake is shown below.

1. **setBuildingItems:** Used to set the building record data.
2. **getMemento:** Used to get the memento building record data.
3. **saveCurrentState:** Used to save this object record data.
4. **undo:** Used to undo the record data will restore.
5. **redo:** Used to redo the record data will recover.
6. **DisplayUndoRedoList:** Used to show undo list and redo list data state.



Command patterns are used in the abstract class which implements the Interface Command, that provides the main methods extends Command Factory use new Instance.

A memento pattern is used to undo or redo the number of products. The class Memento is created to save the status of products. When calling the undo or the redo function about the status of products, the object Memento returns the status of the buildings back.

Factory pattern is used for how the Apartment and House objects are created, edited, and deleted by users.

CreateBuildingCommand, EditRoomsBuildingCommand, DeleteRoomsBuildingCommand is an abstract class that provides the creation of CreateApartmentCommand or CreateHouseCommand.

EditRoomsApartmentCommand, EditRoomsHouseCommand, DeleteRoomCommand will use, saveCurrentState save memento to undo or redo Command backup.

This is Factory need to next functions new Instance.

1. CreateApartmentCommandFactory
2. CreateHouseCommandFactory
3. DisplayBuildingCommandFactory
4. ModifyBuildingCommandFactory
 1. AddRoomCommandFactory
 2. DeleteRoomCommandFactory
 3. ModifyRoomCommandFactory
5. ListUndoRedoCommandFactory
6. UndoCommandFactory
7. RedoCommandFactory
8. ExitCommandFactory

Command Execute:

1. CreateApartmentCommand: Create Apartment
2. CreateHouseCommand: Create House
3. ModifyBuildingCommand:Call
 1. ModifyApartmentCommand: Modify Apartment
 2. ModifyHouseCommand: Modify House
4. EditRoomsBuildingCommand:Call
 1. AddRoomCommand: Add Room
 2. EditRoomsApartmentCommand: Edit Rooms for Apartment
 3. EditRoomsHouseCommand: Edit Rooms for House
 4. DeleteRoomsBuildingCommand: Delete Rooms
5. DisplayBuildingCommand: Display Buildings
6. ListUndoRedoCommand: Display Undo Redo list
7. UndoCommand: Undo last action
8. RedoCommand: Redo last undo action
9. ExitCommand: Exit System

Test Plan & Test Cases

Command User guide

Actions	Way
Adding a new building	<ol style="list-style-type: none">1. Input a2. Input the type of building according the format.3. Input building information according the format.
Display building (s)	<ol style="list-style-type: none">1. Input d2. Input the building ID that you want to query. (input * will show information of all buildings.
Modify building	<ol style="list-style-type: none">1. Input m2. Input the building No..3. Input the Apartment or House information you want to modify.
Edit rooms	<ol style="list-style-type: none">1. Input e2. Input the building ID that you want to edit.3. Entry the command for add room, delete room or modify room(a/d/m)4. Input the room information
Undo last action	Input u
Redo last undo action	Input r
Show Undo List & Redo List	Input l
Exit System	Input x

Black-Box Testing was used to test the system.

Below are the test cases:

Test case	Add building record (a)
Case ID	T01
User	Normal user
Test Flows	Input: a a 1001 21000 Alan Po 2 15 20 10 20 a a 1002 24000 Peter Chan 1 7 10
Input Data	1. The command of adding a new apartment. 2. Type of the new apartment 3. Information of the new apartment
Expected Results	Display “ New Building Added: Building No: 1001 Support Staff: Alan Po Monthly Rental: 24000.0 Room No.: 1, Length: 15.0 , Width: 20.0 Room No.: 2, Length: 10.0 , Width: 20.0

	New Building Added: Building No: 1002 Support Staff: Peter Chan Monthly Rental: 24000.0 Room No.: 1, Length: 7.0 , Width: 10.0 “
Pass/Fail	Pass

a

Test case	Add building record (a)
Case ID	T02
User	Normal user
Test Flows	Input: a h 2001 2 3 12 10 20 10 18 20
Input Data	1. The command of adding a new house. 2. Type of the new house 3. Information of the new house
Expected Results	Display “ New Building Added: Building No: 2001 No. of Floors: 2 Room No.: 1, Length: 12.0 , Width: 10.0 Room No.: 2, Length: 20.0 , Width: 10.0 Room No.: 3, Length: 18.0 , Width: 20.0 “
Pass/Fail	Pass

Test case	Display one Building record
Case ID	T03
User	Normal user
Test Flows	Input: d 1001
Input Data	1. The command of querying Apartment or House. 2. apartment or house ID
Expected Results	Display “ Building No: 1001 Support Staff: Alan Po Monthly Rental: 24000.0 Room No.: 1, Length: 15.0 , Width: 20.0 Room No.: 2, Length: 10.0 , Width: 20.0 ”
Pass/Fail	Pass

Test case	Display all Building records
Case ID	T04
User	Normal user
Test Flows	Input: d *
Input Data	1. The command of querying Apartment or House. 2. apartment or house ID
Expected Results	Display “ Building No: 1001, Support Staff: Alan Po, Monthly Rental: 21000.0 Building No: 1002, Support Staff: Peter Chan, Monthly Rental: 24000.0 Building No: 2001, No. of Floors: 2 ”
Pass/Fail	Pass

Test case	Modify Building
Case ID	T05
User	Normal user
Test Flows	Input: m 1001 18000 John Chan m 2001 3
Input Data	1. The command of modify Apartment or House. 2. apartment or house ID 3. Modify information of the building
Expected Results	Display “ Building is modified: Building No: 1001, Support Staff: John Chan, Monthly Rental: 18000.0 Building is modified: Building No: 2001, No. of Floors: 3 ”
Pass/Fail	Pass

Test case	Edit rooms (e) and then add room (a)
Case ID	T06
User	Normal user
Test Flows	Input: e 1001 a 12 14
Input Data	<ol style="list-style-type: none"> 1. The command of editing Apartment or House. 2. apartment or house ID. 3. The command of add room. 4. Information of the new room.
Expected Results	Display “ Updated Building: Building No: 1001 Support Staff: John Chan Monthly Rental: 18000.0 Room No.: 1, Length: 15.0 , Width: 20.0 Room No.: 2, Length: 10.0 , Width: 20.0 Room No.: 3, Length: 12.0 , Width: 14.0 ”
Pass/Fail	Pass

Test case	Edit rooms (e) and then modify room (m)
Case ID	T07
User	Normal user
Test Flows	Input: e 1001 m 2 9 18
Input Data	<ol style="list-style-type: none"> 1. The command of editing Apartment or House. 2. Apartment or house ID. 3. The command of modify room. 4. Modify Information of the room.
Expected Results	Display “ Updated Building: Building No: 1001 Support Staff: John Chan Monthly Rental: 18000.0 Room No.: 1, Length: 15.0 , Width: 20.0 Room No.: 2, Length: 9.0 , Width: 18.0 Room No.: 3, Length: 12.0 , Width: 14.0 ”
Pass/Fail	Pass

Test case	Edit rooms (e) and then delete room (d)
Case ID	T08
User	Normal user
Test Flows	Input: e 1001 d 1
Input Data	<ol style="list-style-type: none"> 1. The command of editing Apartment or House. 2. Apartment or house ID. 3. The command of delete room. 4. The room ID to delete.
Expected Results	Display “ Updated Building: Building No: 1001 Support Staff: John Chan Monthly Rental: 18000.0 Room No.: 1, Length: 9.0 , Width: 18.0 Room No.: 2, Length: 12.0 , Width: 14.0 ”
Pass/Fail	Pass

Test case	Display the Undo/Redo List (I)
Case ID	T09
User	Normal user
Test Flows	Input: I
Input Data	The command of Show Undo List & Redo List
Expected Results	<p>Display</p> <p>“</p> <p>Undo List:</p> <p>Add Building: Building No.: 1001, Support Staff: Alan Po, Monthly Rental: 21000.0</p> <p>Add Building: Building No.: 1002, Support Staff: Peter Chan, Monthly Rental: 24000.0</p> <p>Add Building: Building No.: 2001, No. of Floors: 2</p> <p>Modify Building: Building No.: 1001, Support Staff: John Chan, Monthly Rental: 18000.0</p> <p>Modify Building: Building No.: 2001, No. of Floor: 3</p> <p>Add Room: Building No:1001, Room No. 2, Length: 12.0, Width: 14.0</p> <p>Modify Room: Building No: 1001, Room No. 2, Length: 9.0, Width: 18.0</p> <p>Delete Room: Building No: 1001, Room No. 1, Length: 15.0, Width: 20.0</p> <p>Redo List:</p> <p>Empty</p> <p>”</p>
Pass/Fail	Pass

Test case	Undo the last command in the Undo List (u)
Case ID	T10
User	Normal user
Test Flows	Input: u u u l d 1001 u u u l d *
Input Data	1. The undo command 2. The command of Show Undo List & Redo List 3. The command of Display building 4. Apartment or house ID.
Expected Results	Display “ undo completed. undo completed. undo completed. Undo List: Add Building: Building No.: 1001, Support Staff: Alan Po, Monthly Rental: 21000.0 Add Building: Building No.: 1002, Support Staff: Peter Chan, Monthly Rental: 24000.0 Add Building: Building No.: 2001, No. of Floors: 2 Modify Building: Building No.: 1001, Support Staff: John Chan, Monthly Rental: 18000.0 Modify Building: Building No.: 2001, No. of Floor: 3 Redo List: Delete Room: Building No: 1001, Room No. 1, Length: 15.0, Width: 20.0

	<p>Modify Room: Building No: 1001, Room No. 2, Length: 9.0, Width: 18.0</p> <p>Add Room: Building No:1001, Room No. 2, Length: 12.0, Width: 14.0</p> <p>Building No: 1001</p> <p>Support Staff: John Chan</p> <p>Monthly Rental: 18000.0</p> <p>Room No.: 1, Length: 15.0 , Width: 20.0</p> <p>Room No.: 2, Length: 10.0 , Width: 20.0</p> <p>undo completed.</p> <p>undo completed.</p> <p>undo completed.</p> <p>Undo List:</p> <p>Add Building: Building No.: 1001, Support Staff: Alan Po, Monthly Rental: 21000.0</p> <p>Add Building: Building No.: 1002, Support Staff: Peter Chan, Monthly Rental: 24000.0</p> <p>Redo List:</p> <p>Delete Room: Building No: 1001, Room No. 1, Length: 15.0, Width: 20.0</p> <p>Modify Room: Building No: 1001, Room No. 2, Length: 9.0, Width: 18.0</p> <p>Add Room: Building No:1001, Room No. 2, Length: 12.0, Width: 14.0</p> <p>Modify Building: Building No.: 2001, No. of Floor: 3</p> <p>Modify Building: Building No.: 1001, Support Staff: John Chan, Monthly Rental: 18000.0</p> <p>Add Building: Building No.: 2001, No. of Floors: 2</p> <p>Building No: 1002, Support Staff: Peter Chan, Monthly Rental: 24000.0</p> <p>Building No: 1001, Support Staff: Alan Po, Monthly Rental: 21000.0</p> <p>”</p>
Pass/Fail	Pass

Test case	Undo the last command in the Undo List (u)
Case ID	T10
User	Normal user
Test Flows	Input: r r l d 1001 x
Input Data	<ol style="list-style-type: none"> 1. The redo command 2. The command of Show Undo List & Redo List 3. The command of Display building 4. Apartment or house ID.
Expected Results	<p>Display</p> <p>"</p> <p>undo completed.</p> <p>undo completed.</p> <p>undo completed.</p> <p>undo List:</p> <p>Add Building: Building No.: 1001, Support Staff: Alan Po, Monthly Rental: 24000.0</p> <p>Add Building: Building No.: 2001, No. of Floors: 2</p> <p>Modify Building: Building No.: 1001, Support Staff: John Chan, Monthly Rental: 18000.0</p> <p>Redo List:</p> <p>Delete Room: Building No: 1001, Room No. 1, Length: 15.0, Width: 20.0</p> <p>Modify Room: Building No: 1001, Room No. 2, Length: 9.0, Width: 18.0</p> <p>Add Room: Building No:1001, Room No. 2, Length: 12.0, Width: 14.0</p> <p>"</p>
Pass/Fail	Pass

Test case	Redo the last command in the Redo List (r)
Case ID	T11
User	Normal user
Test Flows	Input: r r r l d *
Input Data	<ol style="list-style-type: none"> 1. The redo command 2. The command of Show Undo List & Redo List 3. The command of Display building 4. Apartment or house ID.
Expected Results	<p>Display</p> <p>“redo completed.</p> <p>redo completed.</p> <p>redo completed.</p> <p>Undo List:</p> <p>Add Building: Building No.: 1001, Support Staff: Alan Po, Monthly Rental: 21000.0</p> <p>Add Building: Building No.: 1002, Support Staff: Peter Chan, Monthly Rental: 24000.0</p> <p>Add Building: Building No.: 2001, No. of Floors: 2</p> <p>Modify Building: Building No.: 1001, Support Staff: John Chan, Monthly Rental: 18000.0</p> <p>Modify Building: Building No.: 2001, No. of Floor: 3</p> <p>Redo List:</p> <p>Delete Room: Building No: 1001, Room No. 1, Length: 15.0, Width: 20.0</p> <p>Modify Room: Building No: 1001, Room No. 2, Length: 9.0, Width: 18.0</p> <p>Add Room: Building No:1001, Room No. 2, Length: 12.0, Width: 14.0</p> <p>Building No: 1002, Support Staff: Peter Chan, Monthly Rental: 24000.0</p> <p>Building No: 1001, Support Staff: John Chan, Monthly Rental: 18000.0</p> <p>Building No: 2001, No. of Floors: 3”</p>
Pass/Fail	Pass

End of the report