

Borland Together Architect 1.0

가

Together

가

Together

가

:

- 가
- : Together
- : Together
- 가

가

Together

가

. Together

(model diagram)

(class diagram)

가

가,

가 Java™, C++, Visual Basic®, C#

. Together

Together

가

Together

1. Together

2.

:

가

. Together

가

Together

. Together

: Together

Together
Together

(interface)

(layout)

- 1.
2. [Explorer Pane](#)
3. [Together](#)
4. [Option Inspector](#)

: Together

Java

Java

Together

. Together

Java

. (

Java

.)

- 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
 - 7.
 - 8.
 - 9.
 10. [Audit Metric](#)
 11. [Java](#)
-

가

Together www.borland.com, www.borland.co.kr

. Together Architect 15

가

Together 가

<http://bdn.borland.com/together>

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: 2005 3 4

Together

1 :

Together

CashSales

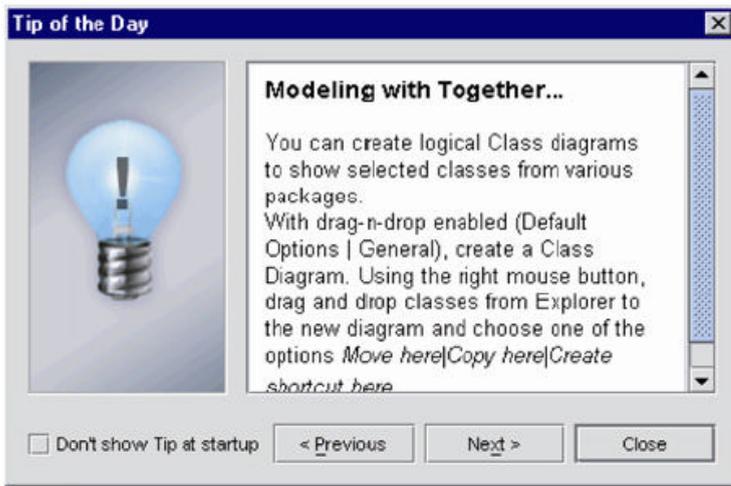
Java

Together

- -
 -
 - Pane
 - Properties Inspector
-

Together “Tip of the Day”

. Together가

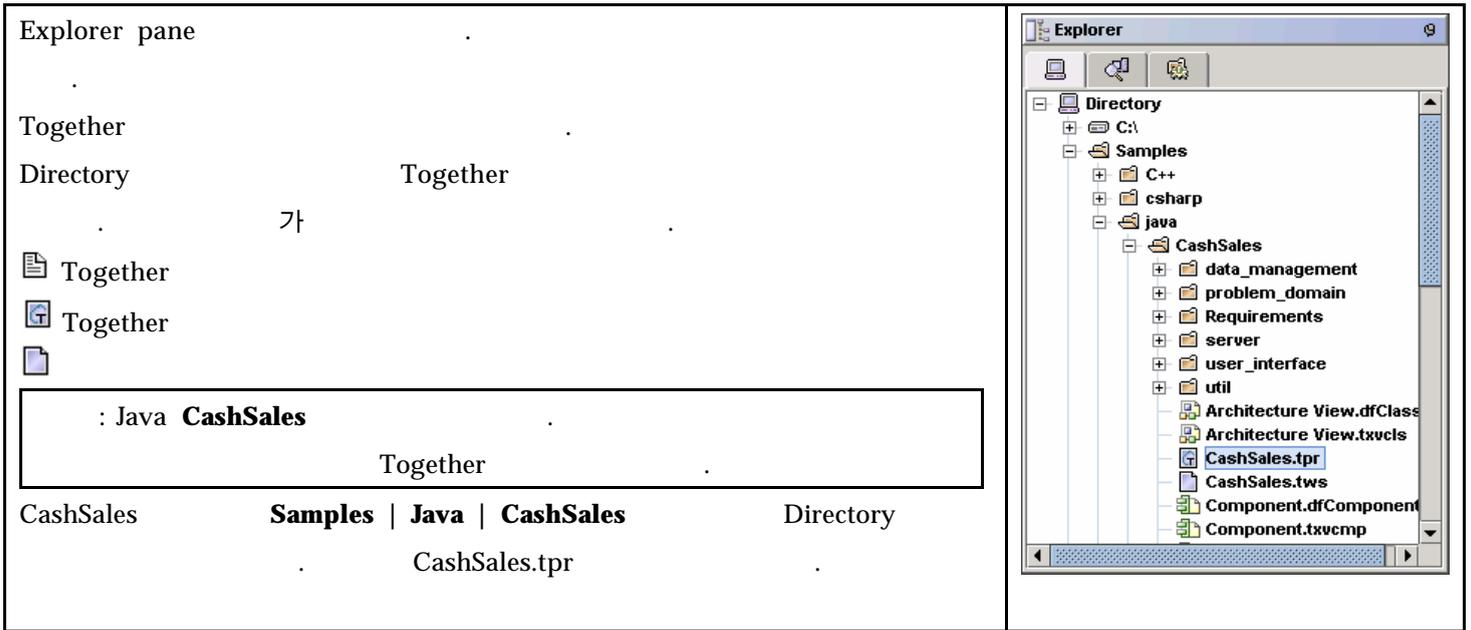


Together

Together

Explorer pane

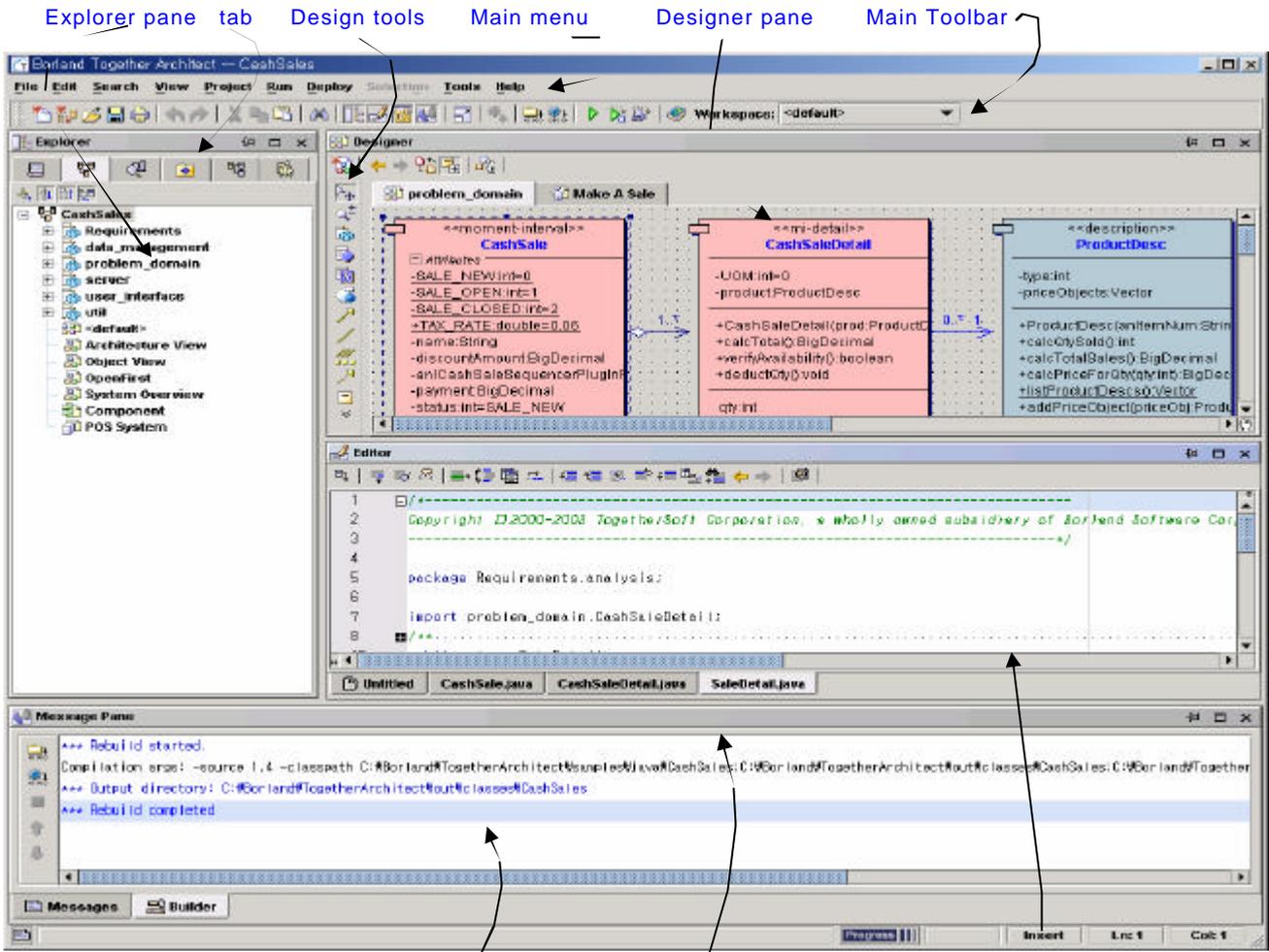
Explorer pane



CashSales Pane . Together Pane . Pane

	Explorer pane	
	Editor pane	
	Designer pane	UML
	Message pane	가

CashSales Java 가 Together . Designer pane 가



Message pane Title bar (for message pane) Editor pane

가 Editor pane
 Pane
 Pane
 Pane
 (, , ,)
 가 Pane

가 Pane,

File	가
Edit	“ ” / ()

Search	
View	
Project	
Run	
Deploy	J2EE
Selection	
Tools	
Help	

: Explorer Favorite .

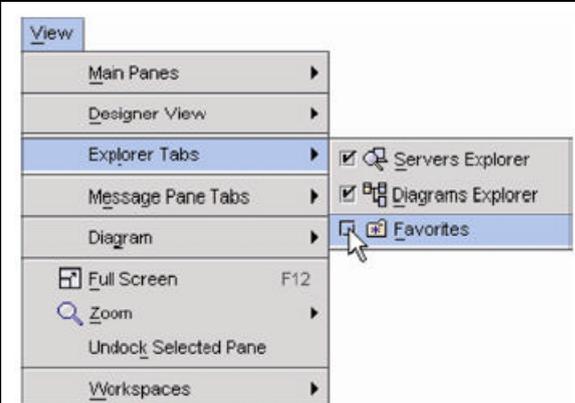
View

Explorer pane Favorites ()

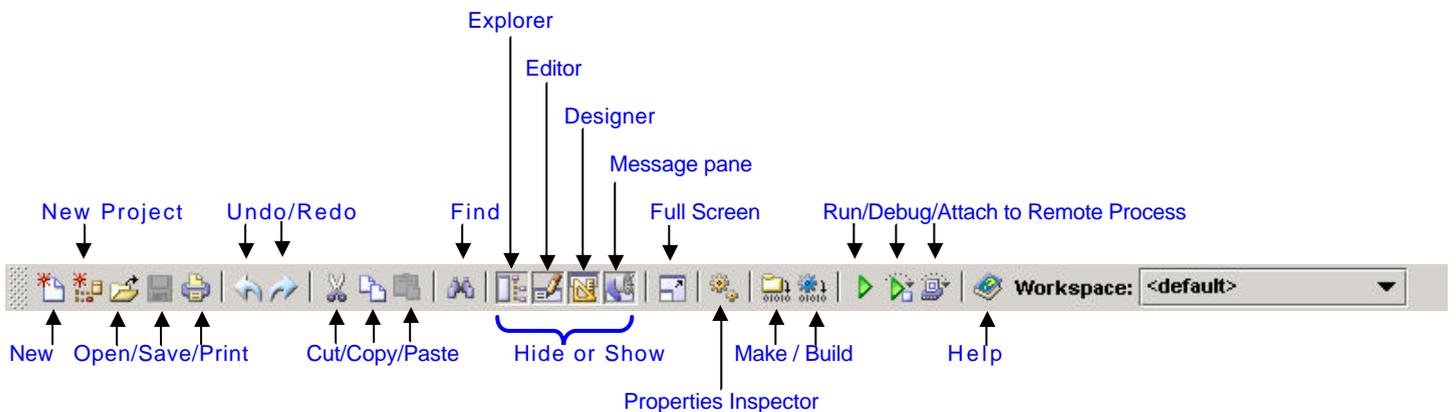
View | Explorer tabs | Favorites

가

Run | Debug **Ctrl + F9**



가 가



Labels for toolbar icons:

- New Project
- Undo/Redo
- Find
- Explorer
- Editor
- Designer
- Message pane
- Full Screen
- Run/Debug/Attach to Remote Process
- New
- Open/Save/Print
- Cut/Copy/Paste
- Hide or Show
- Make / Build
- Help
- Properties Inspector

: Editor pane

Editor

1. Editor pane
2. Editor pane
- 3.



: pane

(toggle) . Pane

Pane

Pane

Pane

Pane

: Designer pane

Designer pane

1. Designer pane



- 2.

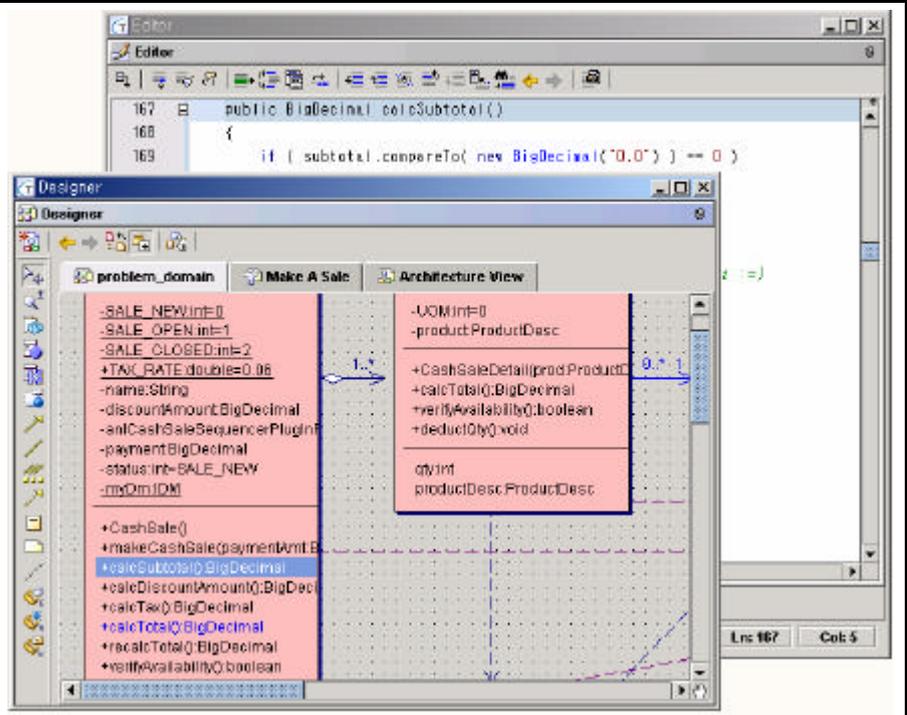
Designer pane



Designer

Editor가

Pane



: Pane



Pane

Property Inspector

Together

()가 . ((class node) (link)
Together 가 .
property Inspector가 .

: **CashSales** property Inspector .

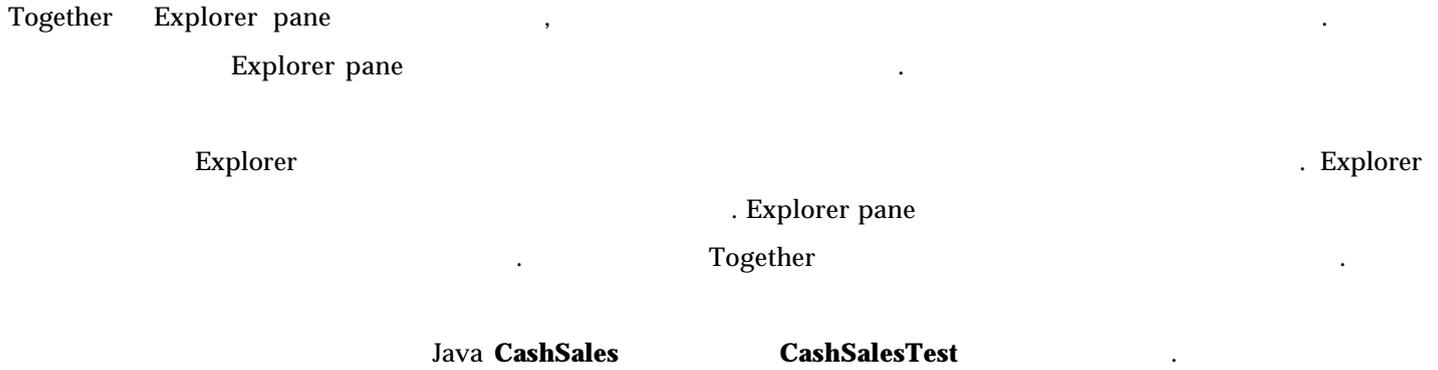
property Inspector Designer Explorer
pane
Properties ProductDesc
Inspector가
() Inspector
Inspector Explorer pane . Inspector
()

Name	Value
name	ProductDesc
package	problem_domain
stereotype	description
alias	
file	ProductDesc.java
public	<input checked="" type="checkbox"/>
final	<input type="checkbox"/>
abstract	<input type="checkbox"/>
extends	
implements	
invariants	
persistent	<input checked="" type="checkbox"/>

Press Ctrl+Alt+I to finish editing and close Inspector

Together

2 : Explorer Pane



- Explorer Pane
- Directory :
- Model :
- Server, Favorites, Diagram :
- Component :
- Module : Together
- Testing :

Explorer Pane

Explorer pane

	Directory	
	Model	
	Servers	Together
	Favorites	
	Diagram	
	Components	가
	Modules	
	Xplorer	XML

	UI Builder	
	Testing	

Directory Modules . 가 . UI Builder,
X(ML)plorer, Testing 가 .

: Java **CashSales** .

Directory :

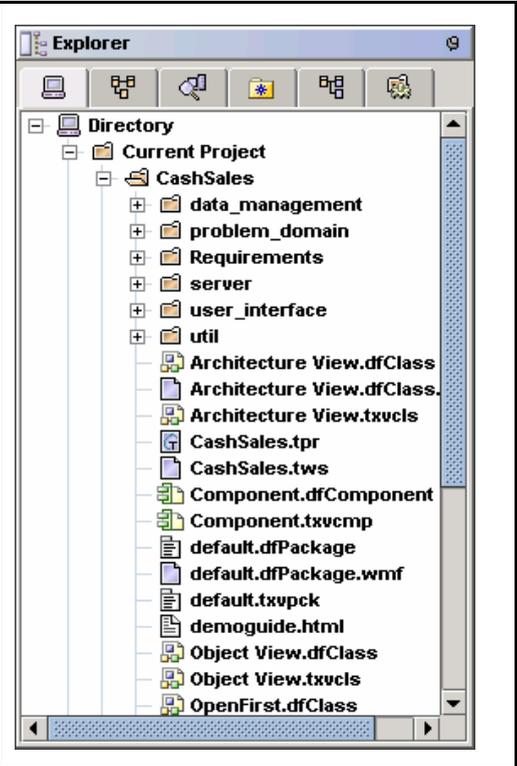
Directory

Directory Together 가 가

- Current project(가)
- Samples - Together
- User projects - Together
- Template - C++, C#, Java, CORBA IDL, Visual Basic, VB.NET Together

Current Project 가

: Explorer pane Java CashSales demoguide.html



: naviator.config Directory

Model :

Model 가 . 가

Model (Java)

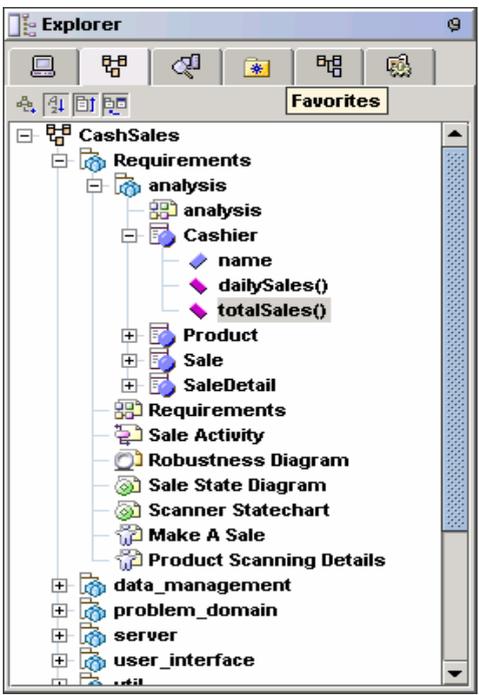
-
- **<default>**
-

Requirements 가
analysis 가
UML (sequence diagram) “ “

Model

: Explorer Model CashSales Requirements
Sale State Diagram

Sale State Diagram **Designer pane**
가
Designer pane . (



Model

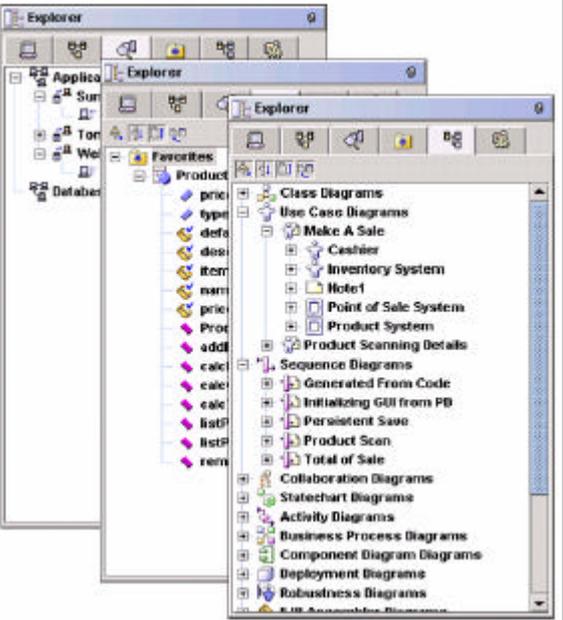
	가
	
	
	

Server, Favorites, Diagrams :

Server Framework가 Server Test Suites . Testing

Favorites

Diagram pane Designer

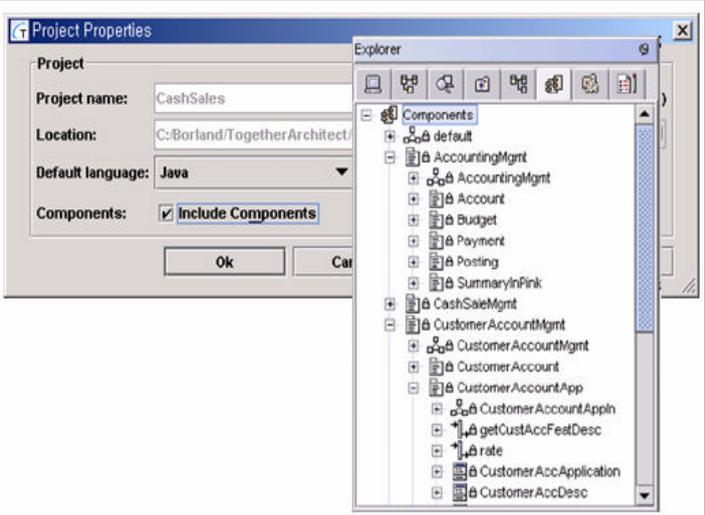
<p style="text-align: center;">가</p> <p>Server , 가 Favorites ,</p> <p>Diagrams</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">: Favorites problem_domain ProductDesc</p> <p style="text-align: center;">가</p> </div> <p style="text-align: center;">()</p> <p>Favorites 가</p> <ol style="list-style-type: none"> 1. Explorer Model 2. proble_domain Add to Favorites 3. ProductDesc Add to Favorites <p>Favorites 가 Editor</p> <p style="text-align: center;">Designer (class node)</p> <p style="text-align: center;">. Favorites Designer</p> <p style="text-align: center;">View Explorer</p>	
--	---

Component :

Component (component model) . “ 가 ”
 가 :

1. **Project | Properties**
2. **Include Components**

Explorer Project Properties Component Together Coad
 가

<p>: Editor Coad CustomerAccDesc</p>	 <p>The screenshot shows the 'Project Properties' dialog for 'CashSales' with 'Include Components' checked. The 'Explorer' window shows a component tree with 'CustomerAccountMgt' selected, which contains sub-components like 'CustomerAccountMgt', 'CustomerAccount', 'CustomerAccountApp', and 'CustomerAccountAppIn'.</p>
<p>1. 2. CustomerAccountMgt CustomerAccountApp CustomerAccDesc Editor 가</p>	
<p>Together modules/components Explorer Component</p>	
<p>component</p>	

Modules : Together

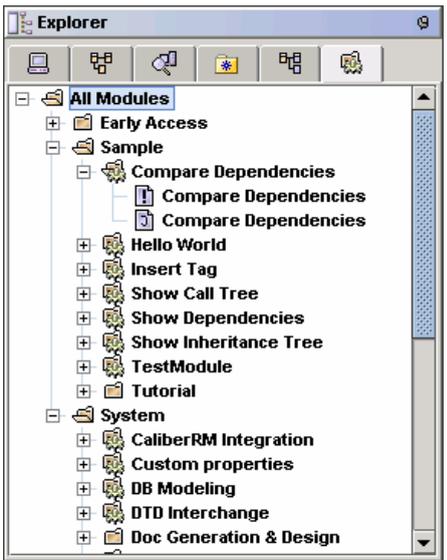
Java API Together API Together
 Together Java

\$TGHS/modules/com/togethersoft/moduls

Module

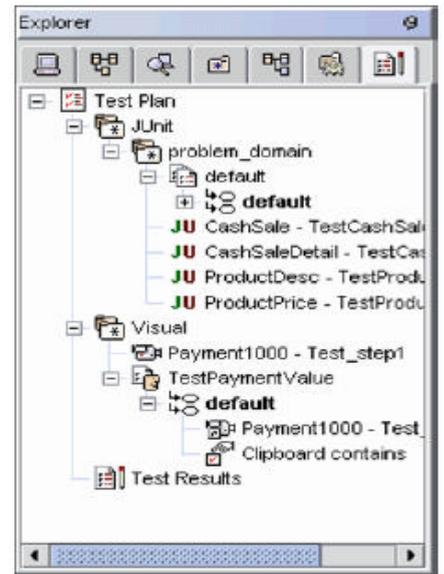
Together

3

<p>: Together Hello World</p>	
<ol style="list-style-type: none">1. Modules2. (+)3. Hello World(Java)() <p>Run</p> 	<p>Explorer pane</p> <p>Sample Hello World</p> 
<p>Explorer Modules</p> <ul style="list-style-type: none">JavaTcl <p>Sample/Tutorial</p>	<p>Editor</p> <p>Message pane</p>

Testing :

Together Explorer Testing	CashSalesTest
:	
<ol style="list-style-type: none"> 1. Directory 2. Samples java CashSales.Test 3. CashSalesTests.tpr 4. Together 	<p>. Yes</p>
<p>CashSales 가 (Together Framework Testing</p>	<p>CashSalesTests가) Testing Explorer Pane</p>



Together

3 : Together

Together

. Explorer pane

. Editor pane

Explorer, Designer, Editor pane

. Designer Editor pane

CashSaels

:

- Explorer
- Explorer
- Explorer Designer , Editor
- Designer

Explorer

Designer pane

: **CashSales** Java

Total of Sale

(sequence diagram)

Together 가 Designer pane

File | Open

Explorer 가 Model ()

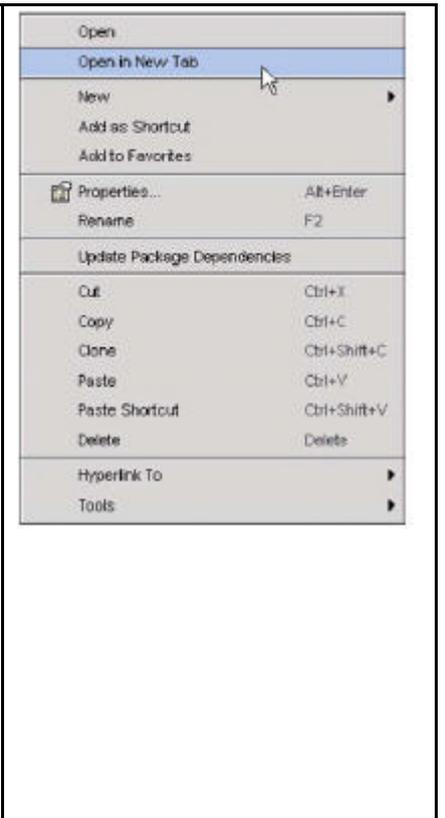
Diagram ()

Explorer () Designer pane

Explorer Open in New Tab Designer

Total of Sale Diagram **Sequence Diagrams,**

Model **problem_domain**



. Together UML 가 가 ,

	/ (class)		(sequence)		(state chart)		(component)
	(use case)		(collaboration)		(activity)		(deployment)

Explorer Model . Designer pane

Together 가 Enterprise J2EE

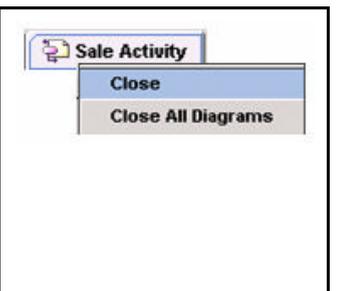
: Sale Activity

Designer pane

가

Designer pane

Close **Ctrl + F4**



Explorer

Directory(📁), Favorites(🌟), Model(📦), Diagram(📐) 가 Explorer

Directory pane (📁) (📄) (📦) Explorer Editor

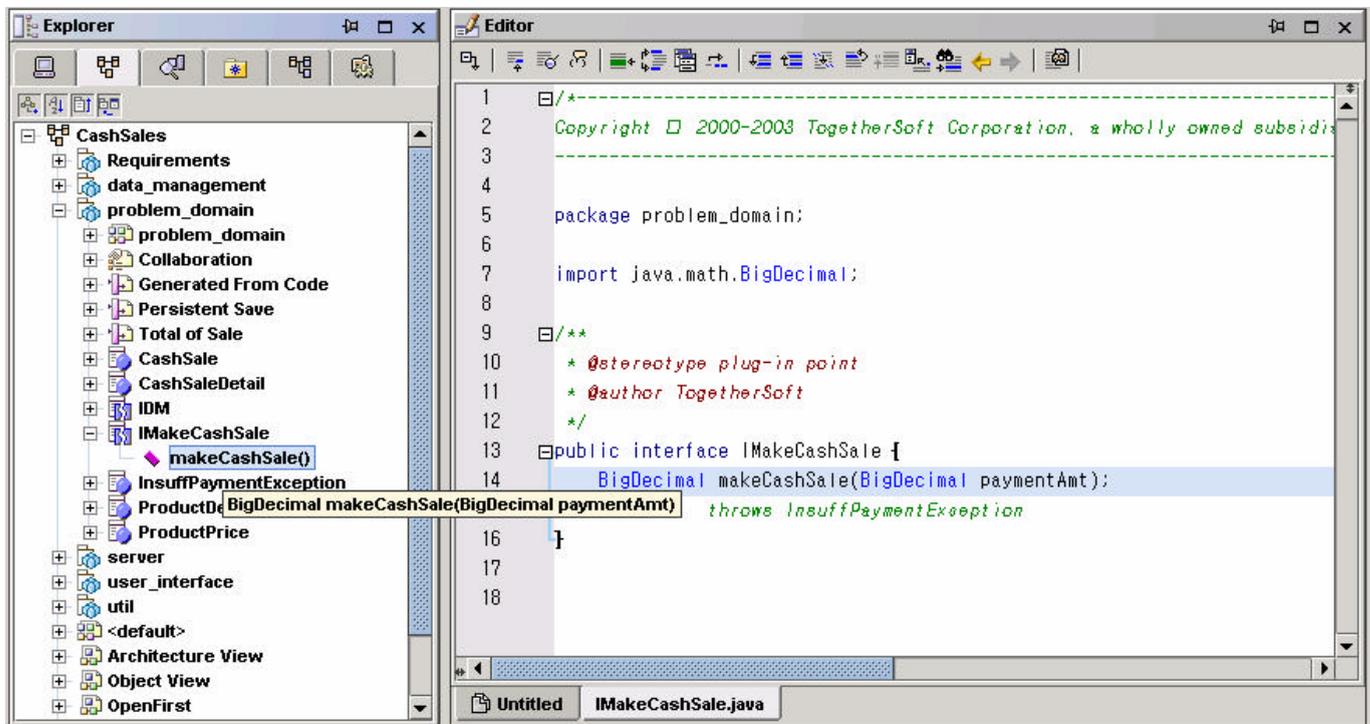
Model Favorites 가



: Editor ImakeCashSale

IMakeCashSale.java problem_domain . Explorer Directory Model

Model Favorites Editor pane
Explorer pane Model Editor (method)

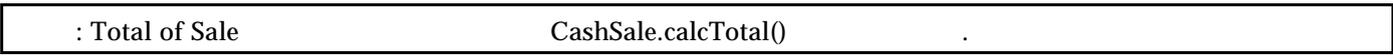
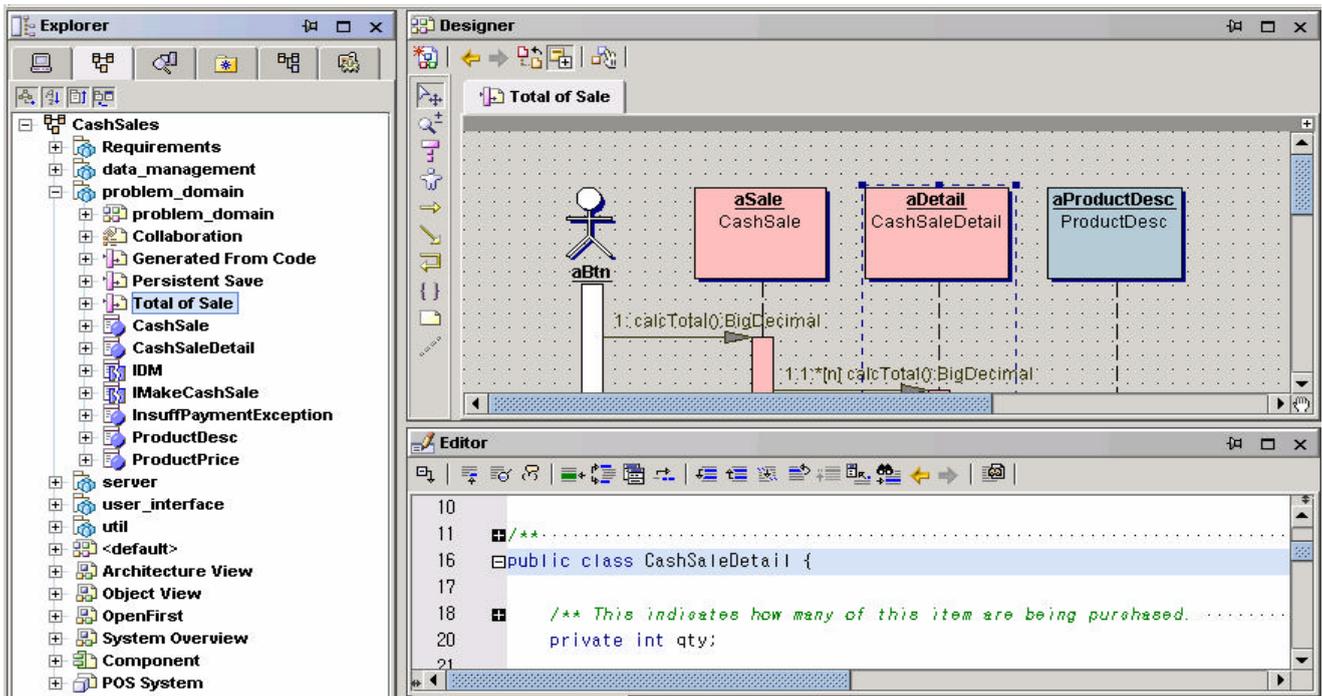


Explorer Designer Editor

CashSales



1. Explorer pane Model **problem_domain**
2. Model **Total of Sale**
3. Designer pane **aDetail**
4. Designer pane **aDetail** Editor



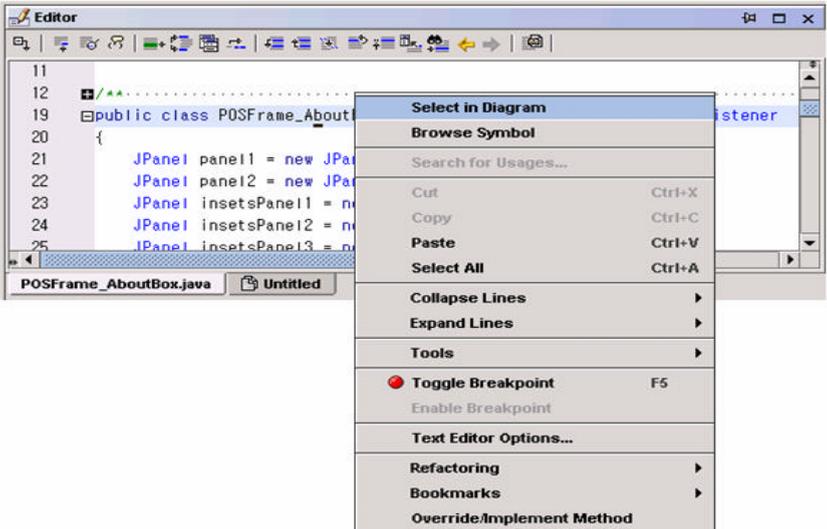
Editor

가 Editor

Editor Designer

: Explorer Editor POSFrame_AboutBox.java Editor user_interface

POSFrame_AboutBox Explorer Model user_interface Editor

<p>Editor Designer :</p> <p>1. 가</p> <p>2. Select in Diagram</p> <p>Together</p> <p>, Together Designer pane</p> <p>(method) Editor</p>	
---	---

Designer

Designer (☞) 가

: Pane 가 Designer pane

Together

4 : , ,

configuration , Together 가

Inspector Options 가
Together

CashSales

:

-
-
-
-

(workspace)

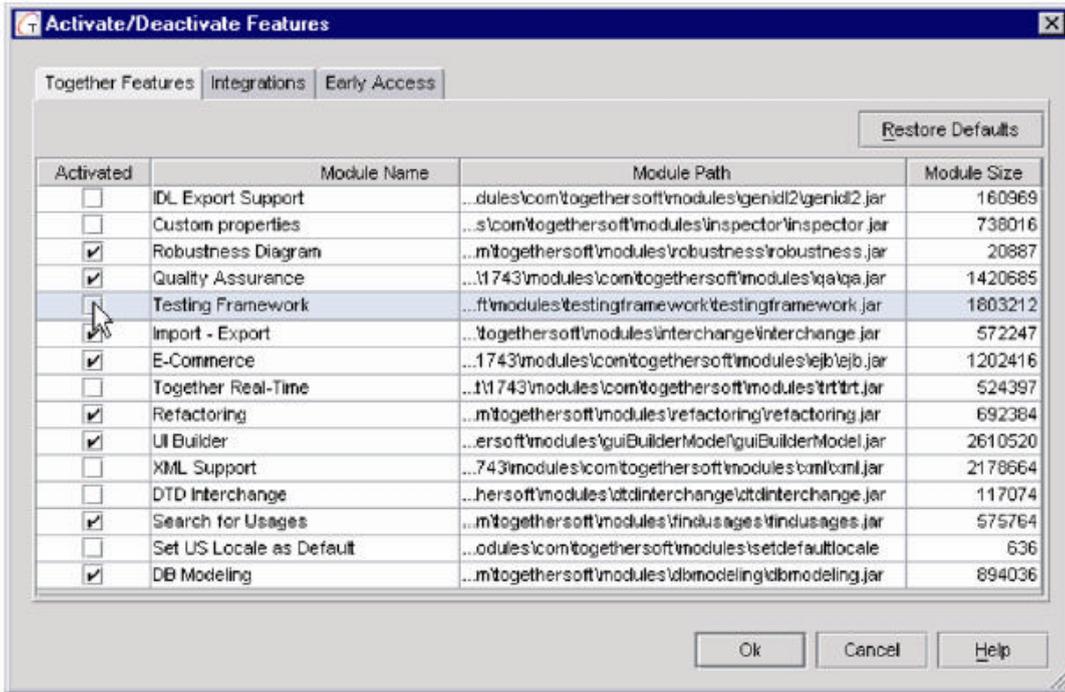
Together

() 가

: UI Builder	. Testing Framework
--------------	---------------------

Together

1. **Tools | Activate/Deactivate Features**
- 2.



: Together



Tools | Options

Default, Project, Diagram

. Diagram

Project, Default

: Explorer Model

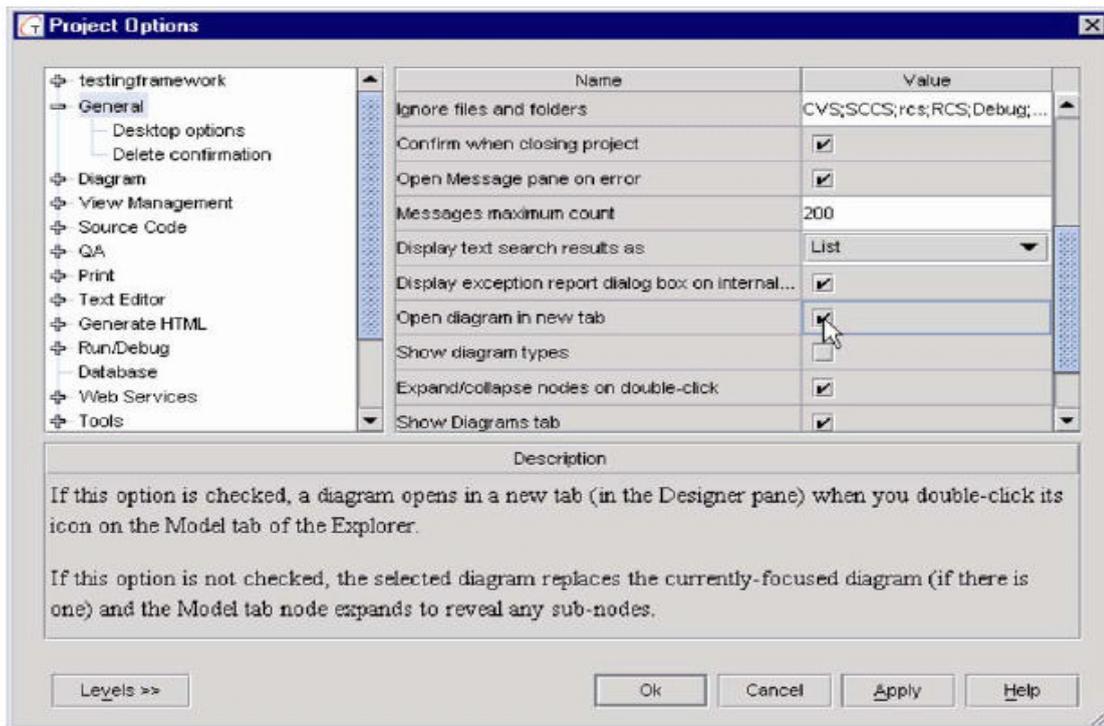
Tools | Options | Project

가

General

()

“Open diagram in new tab”



가
가 Pane

: (Direct) (Rectilinear)

Diagram Options

Tools | Options | Diagram

. **Diagram**

(

) **Links**

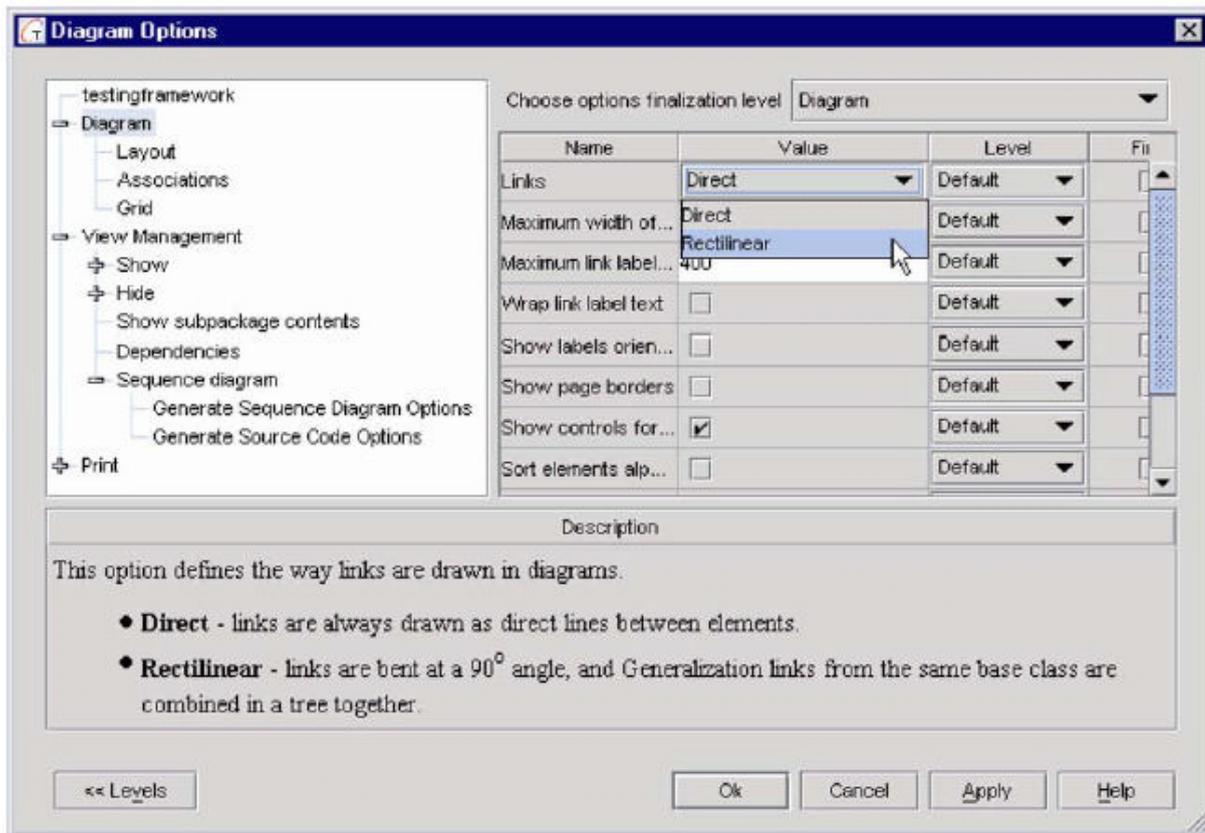
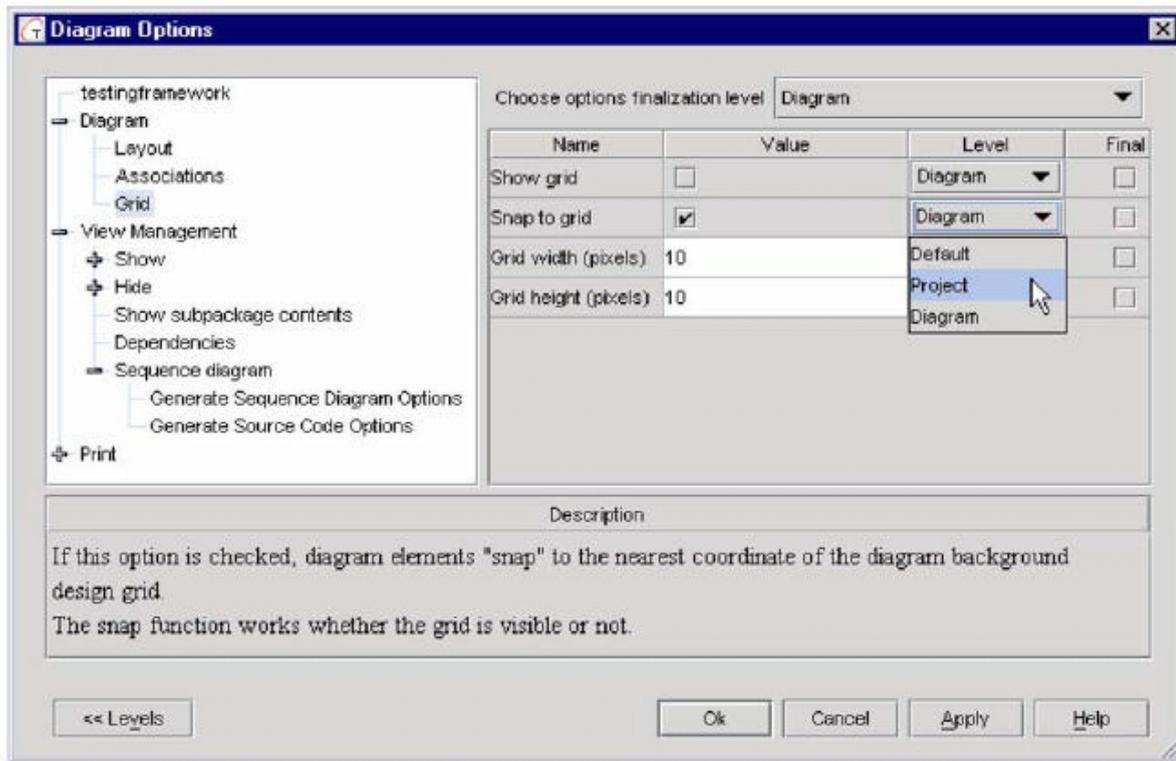


Diagram | Grid

Levels



Show grid

가

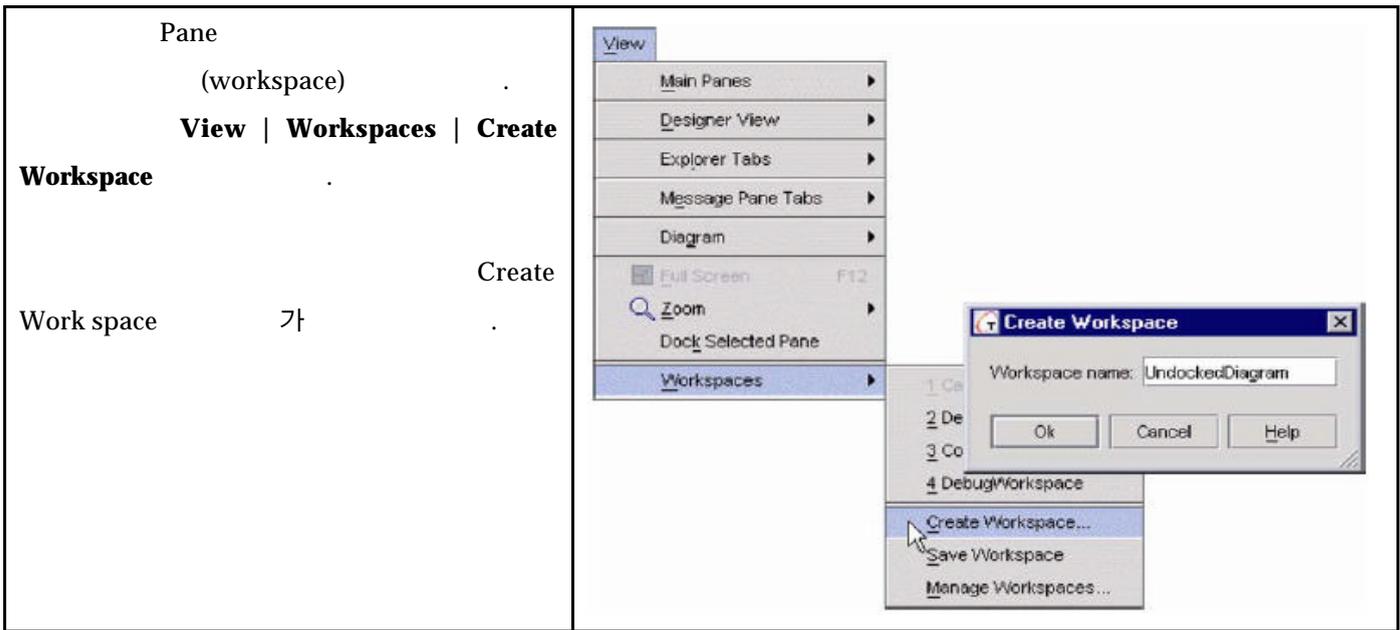
(workspace)

Together configuration Pane (workspace)

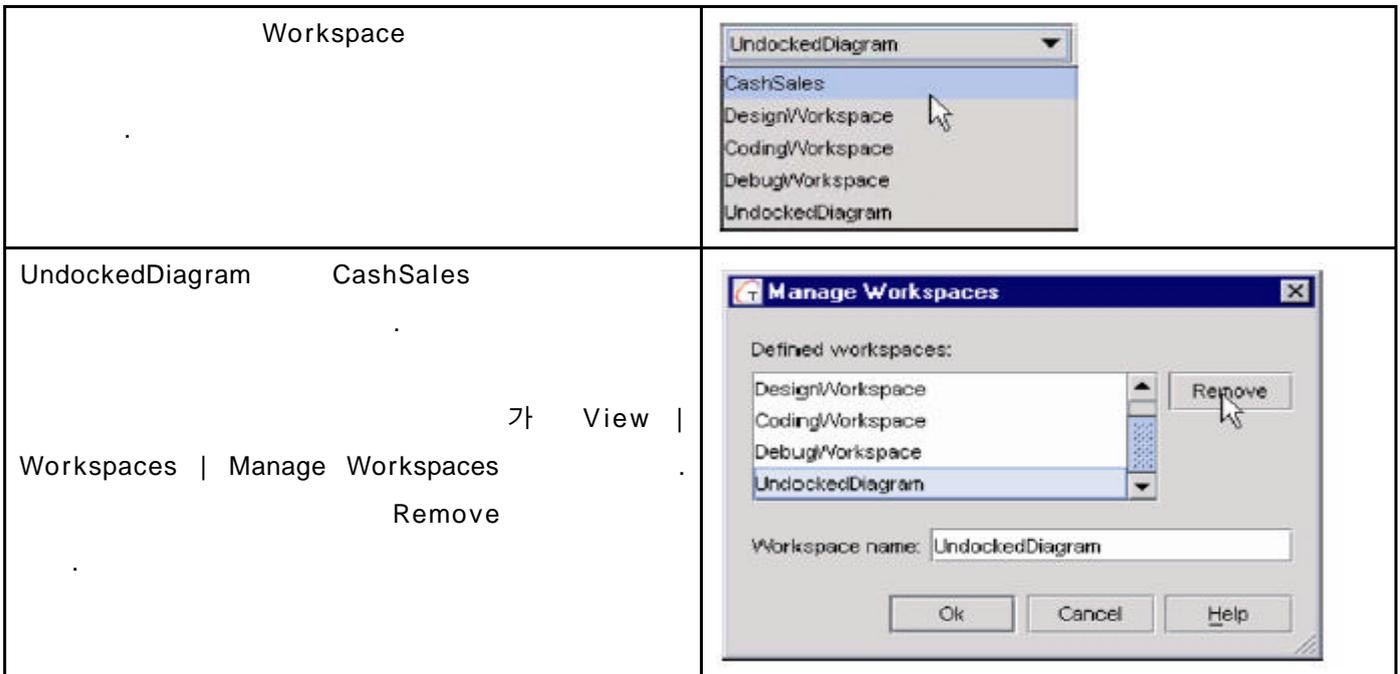
: Designer pane "UndockedDiagram"
configuration

Designer pane

(+)



: (workspace) ()
UndockedDiagram



Together

1 :

Together

가

Together

Together

Together

. Together

LiveSource™

•

•

• <default>

•

•

• (Tip) (Trick)

Together

“

”

Together

:	airline	Java
---	---------	------

Together

File | New

Object Gallery

1. Categories pane

General

.(General

.)

2. Template pane

New Project

Together

(airline)

(Java)

New Project

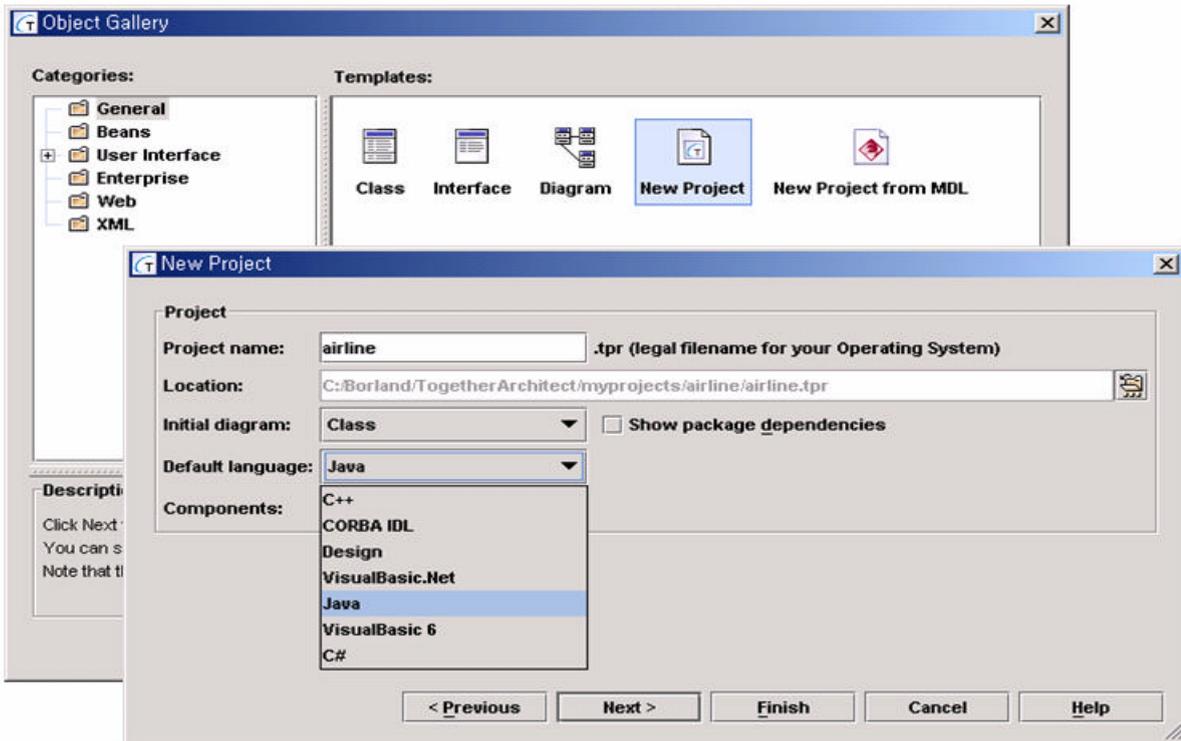
가

Finish

Object Gallery가

New Project

가



- , Together \$TOGETHER_HOME\$/myprojects
- . Together Java, VisualBasic, VisualBasic.Net, CORBA IDL,
- C# 가
- Design 가
- (tpr )
- (default.dfPackage)
- airline 가 Together airline
- default.dfPackage
- airline.tpr
- airline.tws()
- Windows Windows 가 . (
- Project Default .)
- default.dfPackage.wmg (Windows)

Explorer pane Directory User Projects \$TOGETHER_HOME\$/mypro
 jects . airline User Projects . airline
 Current Project .

Together 가 Default, Project, Diagram level Editor
 . 가 .

: 가 airline .

Tools | Options | Project Level . Together

가

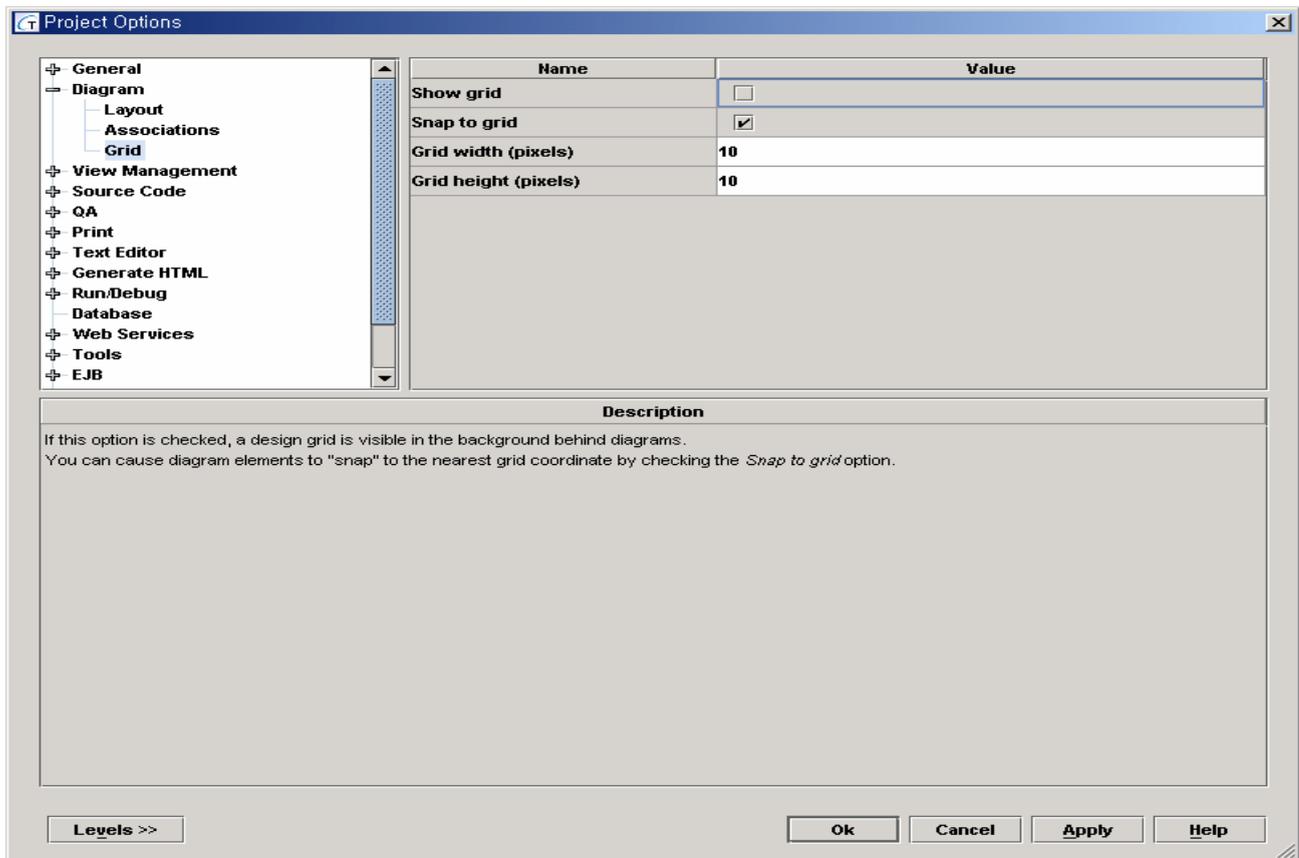


Diagram Grid . Show Grid

가 . Grid off . Ok
 Cancel .

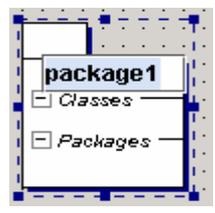
<default>

Together <default> . <default>
 . (. (.)

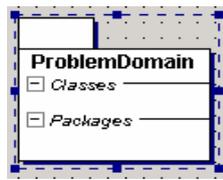
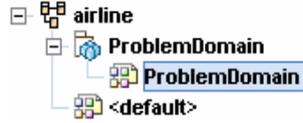
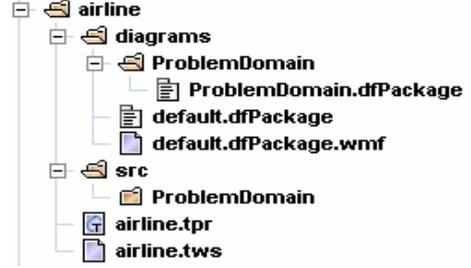
	<p>가 (airline) (diagrams) 가 (src)가 . .tpr Together (workspace) . ASCII .tws Together</p>
	<p>가 .</p>

<default> . Airline

: <default> ProblemDomain .

<p>Designer () 가 in-place . Enter</p>	
---	---

Togther LiveSource . Togther
 Together

Designer pane <default> 가	
Explorer pane Model Package 가 가	
Explorer Directory 가 ProblemDomain 가 ProblemDomain.dfPackage <i>new directory new diagram file</i>	

ProblemDomain

Explorer Model

: <default>	UserInterface DataManagement	가
-------------	------------------------------	---

. Ctrl

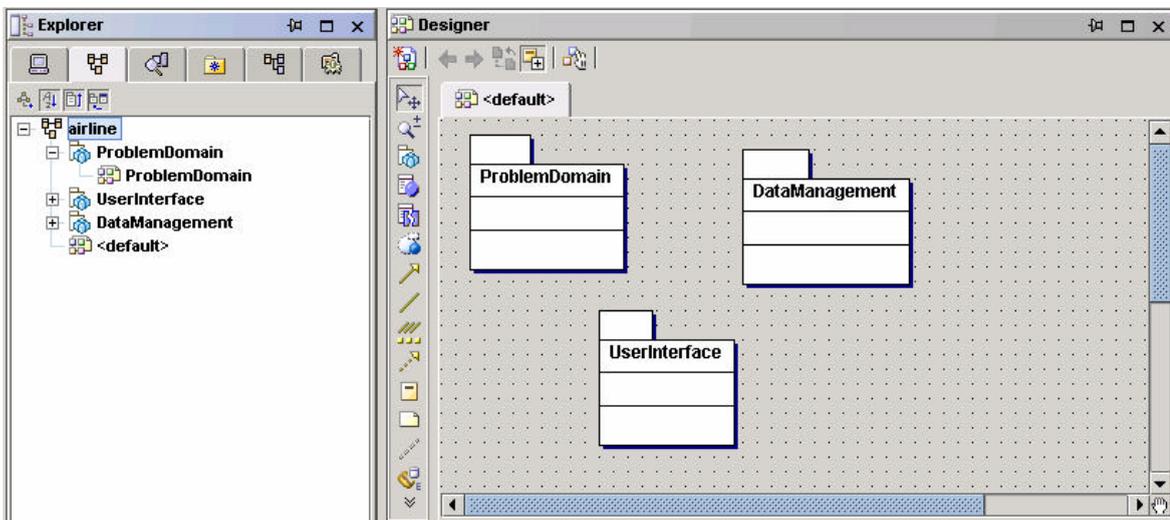
Designer pane

가

. ()

가

Undo

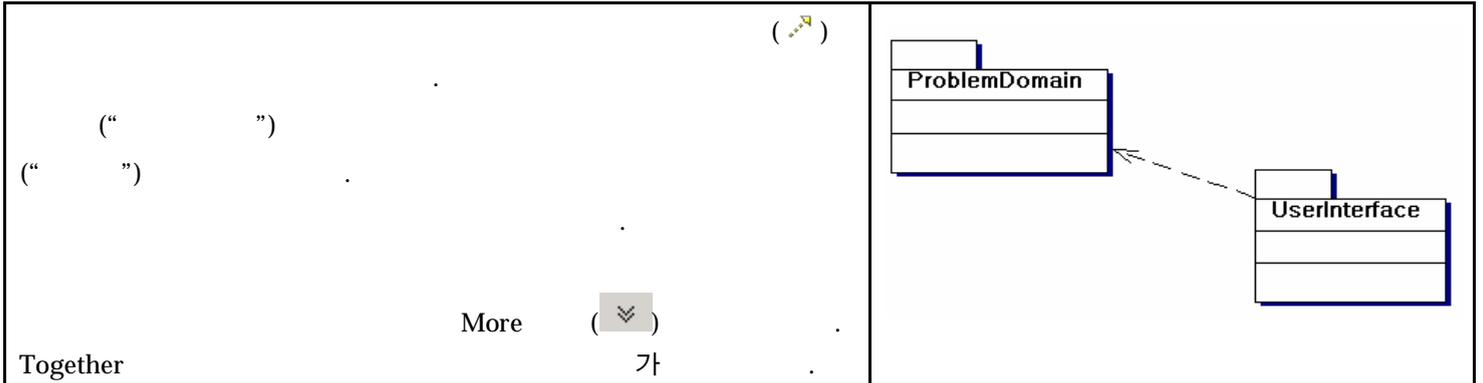


Designer pane

UML

가

: UserInterface ProblemDomain



(Tip)

(Trick)

■

■

.tpr Together

. Together

ASCII

■

■

Ctrl

가

Together

2 :

가 가

가

-
-
-
-

가 가

:

-
-
-
-
-

(actor), (use case), (system boundary)

(Tip) (Trick)

airline

. <default>

.(Designer pane

.)

: **MakeReservation**

MakeReservation

가

가 가

1.

File | New

New



2.

Categories

General

Templates

New Diagram

Designer

New Diagram (🗑️)

Ctrl + Alt + N

Together
가 .

Use Case
.
(<default>
Package
)

Together
.
가
 Include in current diagram

가 (Designer
pane 가)
가

New Diagram
X

UML Together


Class


Use Case


Sequence


Collaboration


Statechart


Activity


Component Diagram


Deployment

Diagram name: 예약

Package name: <default> UML 2.5

Include in current diagram

Description:

비행기 티켓 예약을 위한 시나리오입니다.

Click Ok to create a new diagram.

Ok Explorer pane Model, Directory, Diagram
Designer pane

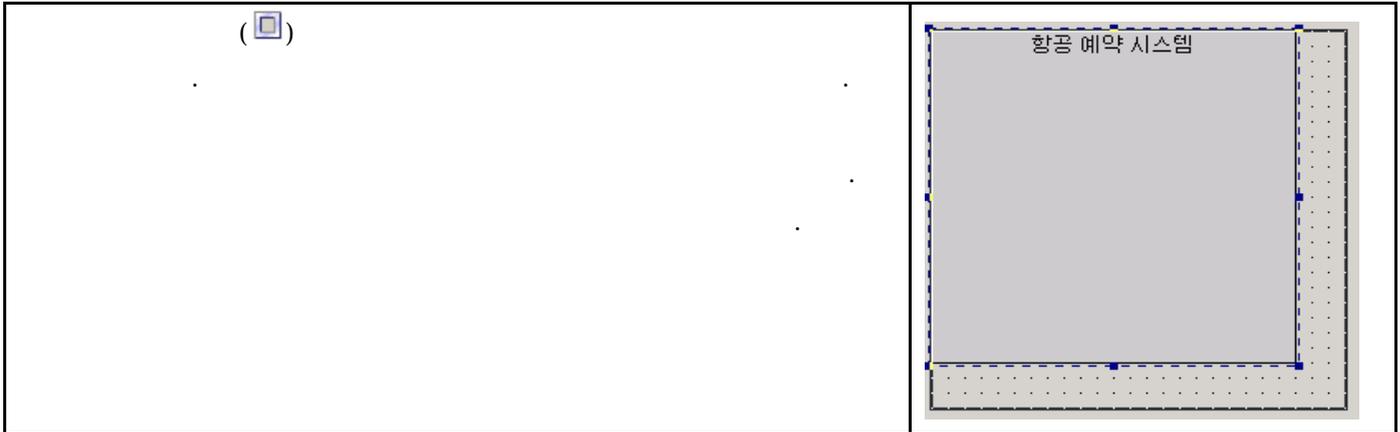
Designer pane

:
(system boundary)

Designer pane

	(Actor)
	(Use Case)
	(Communicates)
	(Extend)
	(Include)

	(Generalization)
	(System boundary)
	(Note)
	(Note Link)

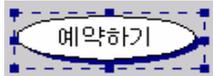


: , ,

 Designer pane in-place	 승객
---	---

Ctrl Designer 가
Designer
. Ctrl

: , , 가

 . In-place	 예약하기
---	---

가 , 가

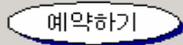
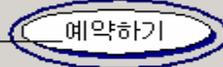
가 가 가 가 가 가

:

- 1.
- 2.
- 3.
- 4.
- 5.

Designer



가 가 가	 
가 가	 

가 가 가 ()

:

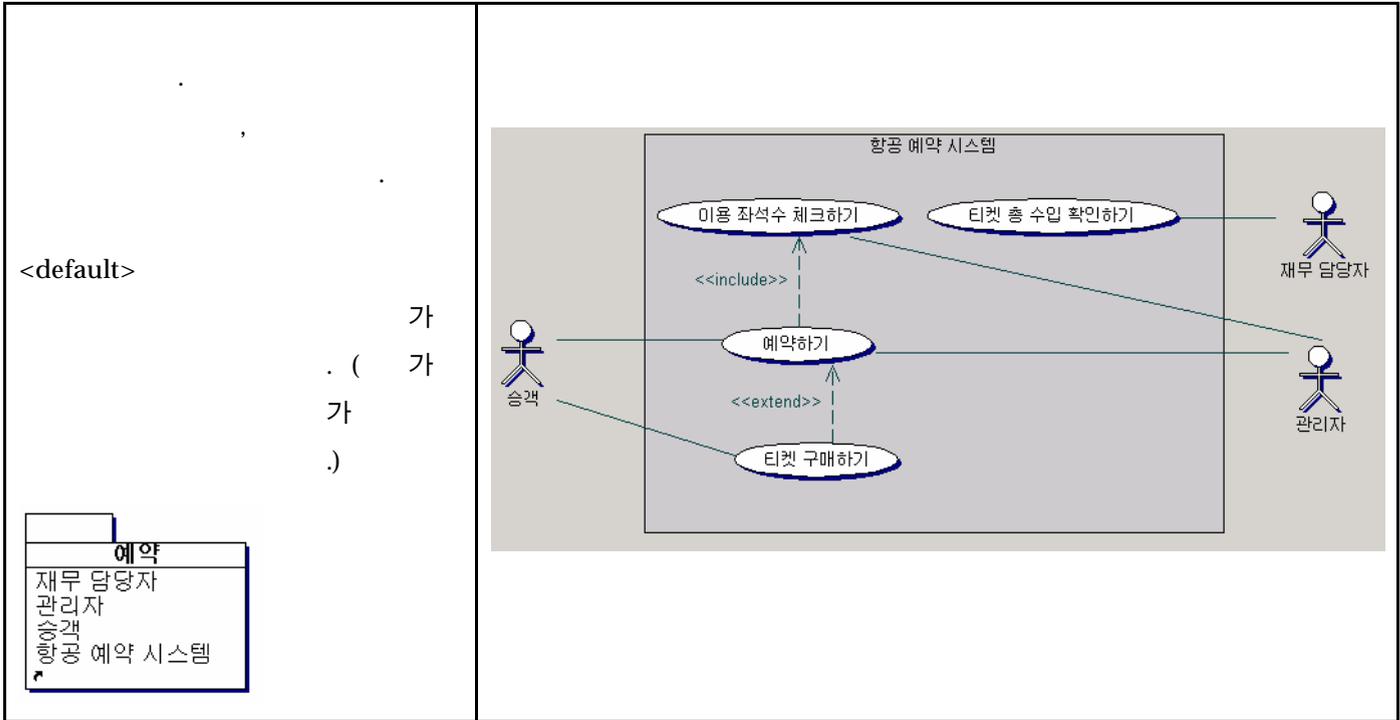
- 1.
- 2.

Designer

0

가 가

가



Together

Together

Undo (↶)

Undo

: (가) .

Delete(Delete) Delete 가

(Tip)

(Trick)

- , 가 가 .
 - in-place
 - Rename(F2)
 - Inspector Properties
- , 가 가
- /
- Undo (Ctrl + Z) . Redo (Ctrl + Y)
 . (misc.config Undo 4096KB .
)

Together

3 :

(activity diagram)

가

-
-
-
-

가 가

(Activity Diagram) “ ”가

:

-
-
-
-
-

(Fork), (Joins), (Decisions)

(Tip) (Trick)

“ ” ?
가

가

: <default>

Designer pane

New Diagram

New Diagram

Together

Include in current diagram

“include in current diagram”

<default>

가 가

New Diagram

UML Together

Class

Use Case

Sequence

Collaboration

Statechart

Activity

Component Diagram

Deployment

Diagram name: 예약 요청

Package name: <default> ▶

Include in current diagram

Description:

이 다이어그램은 이용 가능한 좌석수 체크와 티켓 발급을 포함하여 어떻게 예약하는지에 대해서 설명합니다.

Click Ok to create a new diagram.

	(Activity)		(Decision)
	(Start)		(End)
	(Horizontal Fork/Join)		(Vertical Fork/Join)
	(Transition)		(Swinlane)
	(Note)		(Note Link)

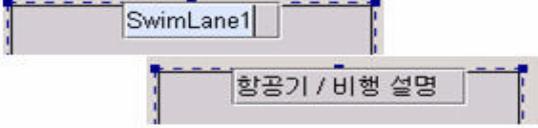
- / :
- :
- / :

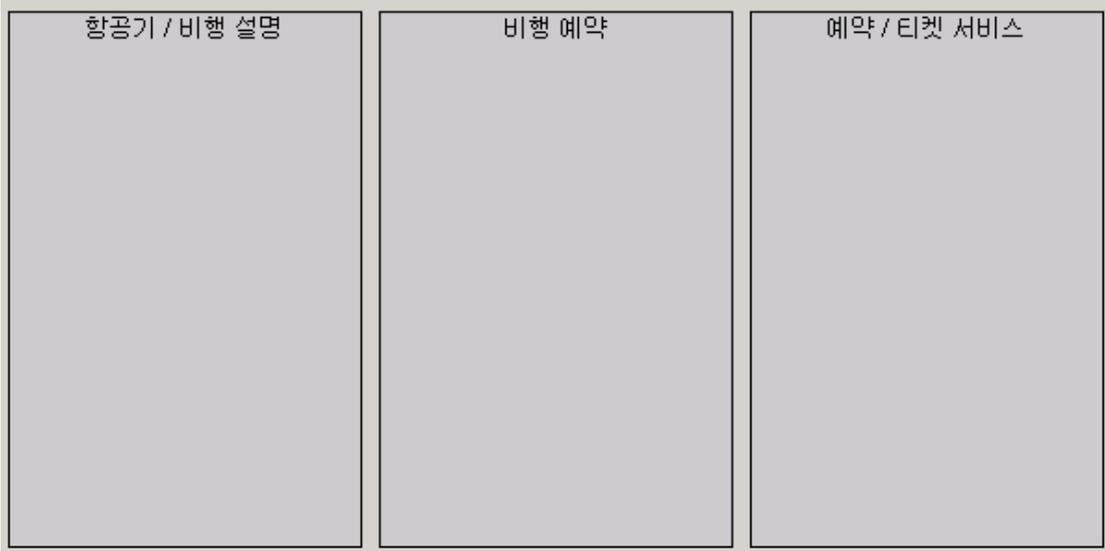
(class diagram)

1. /

2. 가

3. /

()	Designer pane	
	in-place	



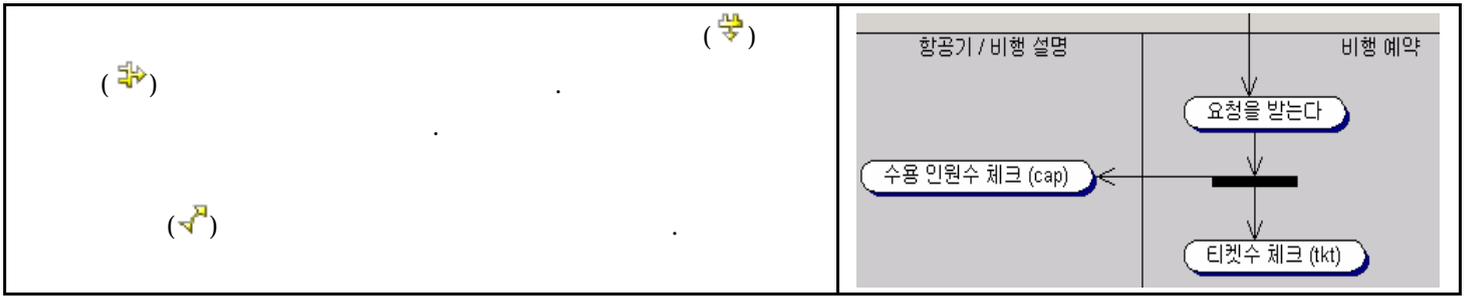
: ()

Designer pane

가

가

: “ ”



가 (entity) Message pane



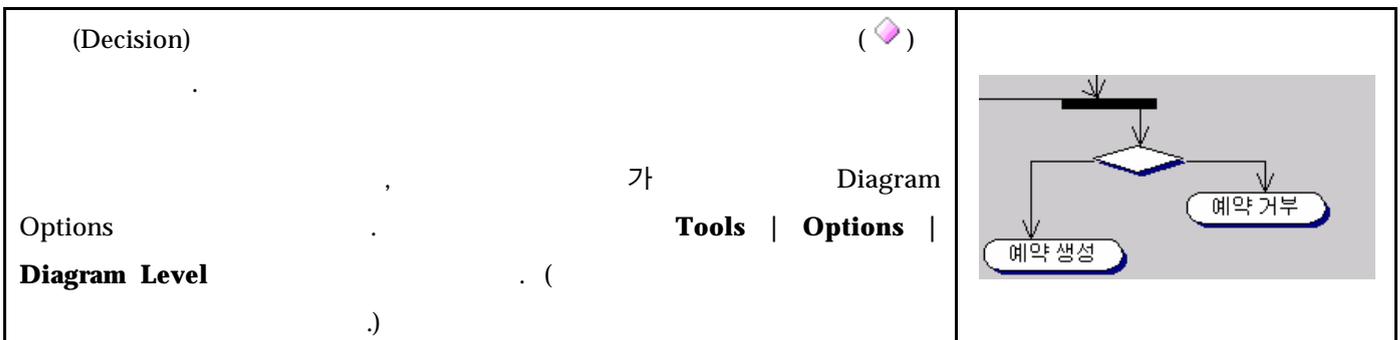
: (Joins)

가

: (Decision) 가

가

가



가

: 가

- #tkt < cap
- #tkt >= cap

Property Inspector

Property Inspector 가

Link . Requirements

가 . Description

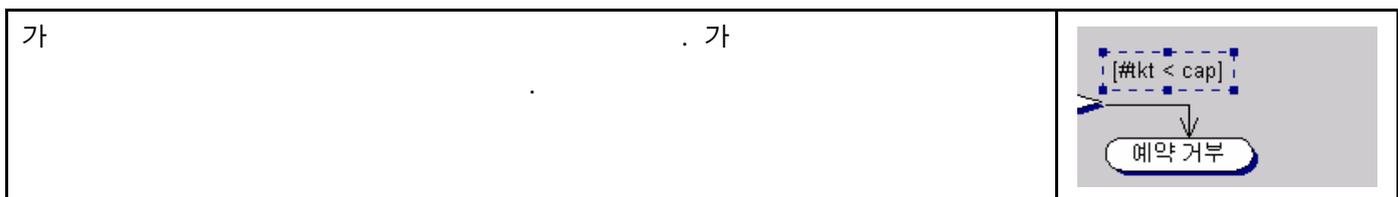
가 .

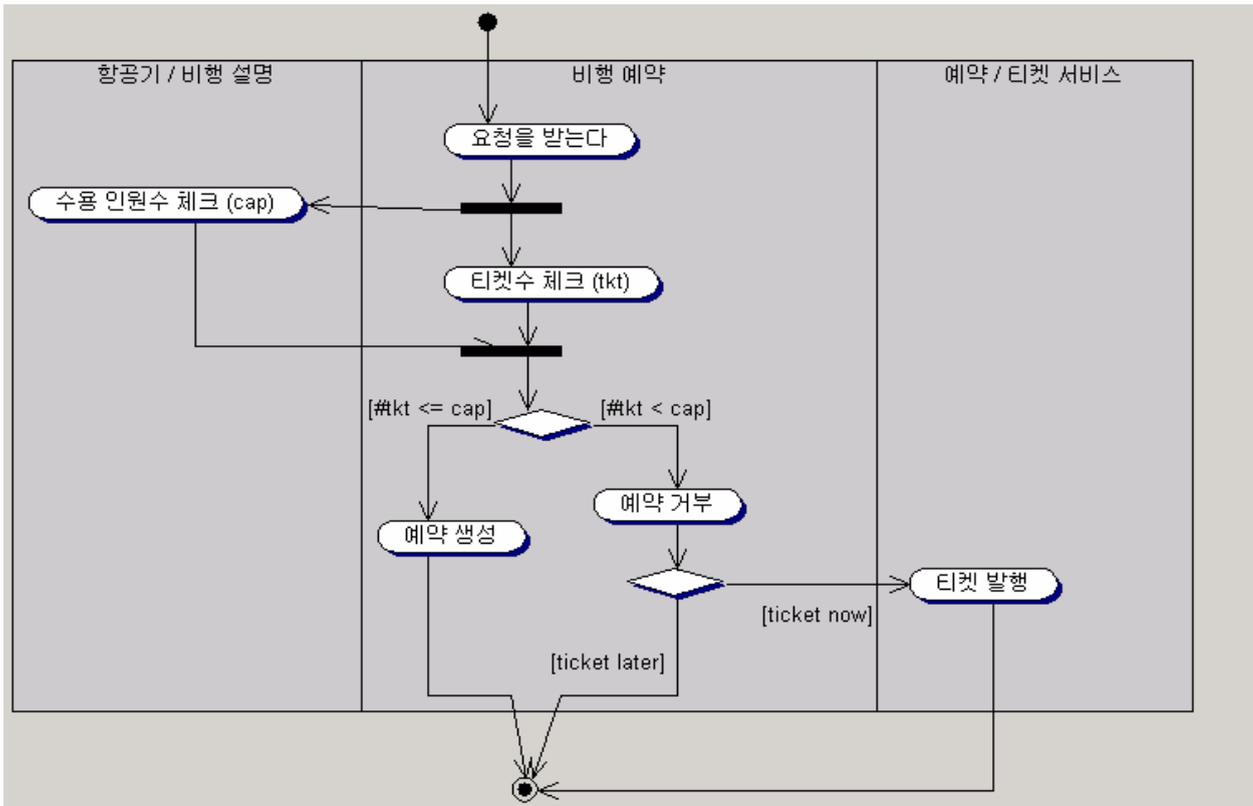
Inspector

Name	Value
client	Decision1
supplier	Create reservation
event name	
event arguments	
guard condition	#tkt < cap
action expression	
send clause	
send time	

Press Ctrl+Enter to finish editing and close Insp...

- : 가 (decision) ,
- 1.
 2. , **ticket now** 가
 3. **(End)** , **ticket later** 가
 4. **(End)**
 5. **(End)**





(Tip)

(Trick)

-
- Together
- Together 가
- “Choose Destination” 가
- Tools | Options | Diagram Options
- 가
- ()

Together

4 :

(task) Together LivceSource™
Together

:

-
- LiceSource™
- Together
- (attribute) 가
- (operation) 가
-
- Property
- (Tip) (Trick)

airline

-
-
- 가 가
-

가

	FlightDescription	ScheduleFlight	Reservation	Ticket	Agent
	DepartureTime arrivalTime origin	date	name	basePrice	name

Together

. Explorer pane

: (Inner class)가 ,

가

Designer pane

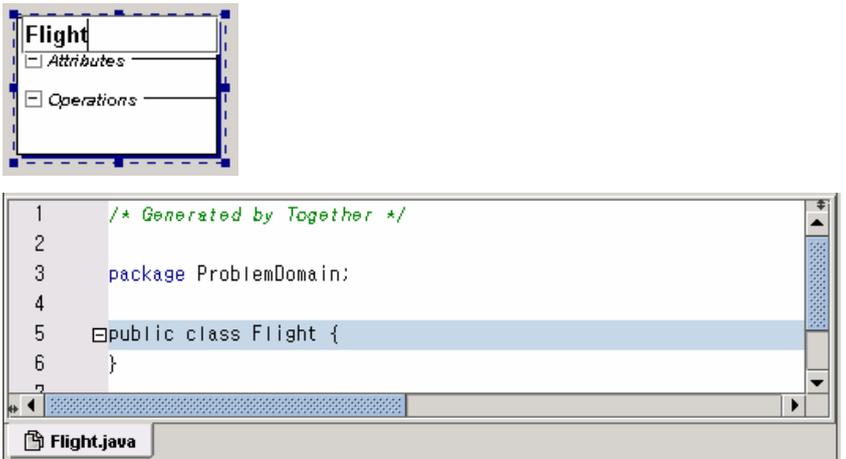
LiveSource™

Together

가

Together LiveSource™

: Designer pane ScheduledFlight Flight

<p>Designer pane</p>	 <p>The screenshot shows a class browser for 'Flight' with sections for 'Attributes' and 'Operations'. Below it is a code editor for 'Flight.java' containing the following code:</p> <pre> 1 /* Generated by Together */ 2 3 package ProblemDomain; 4 5 public class Flight { 6 } 7 </pre>
<p><default> ProblemDomain</p>	<p>Together</p>  <p>The screenshot shows a class browser for 'ProblemDomain' with the following members listed:</p> <ul style="list-style-type: none"> +FlightDescription +Flight +Ticket +Agent +Reservation

: <default> ProblemDomain AirlinePD

<default>

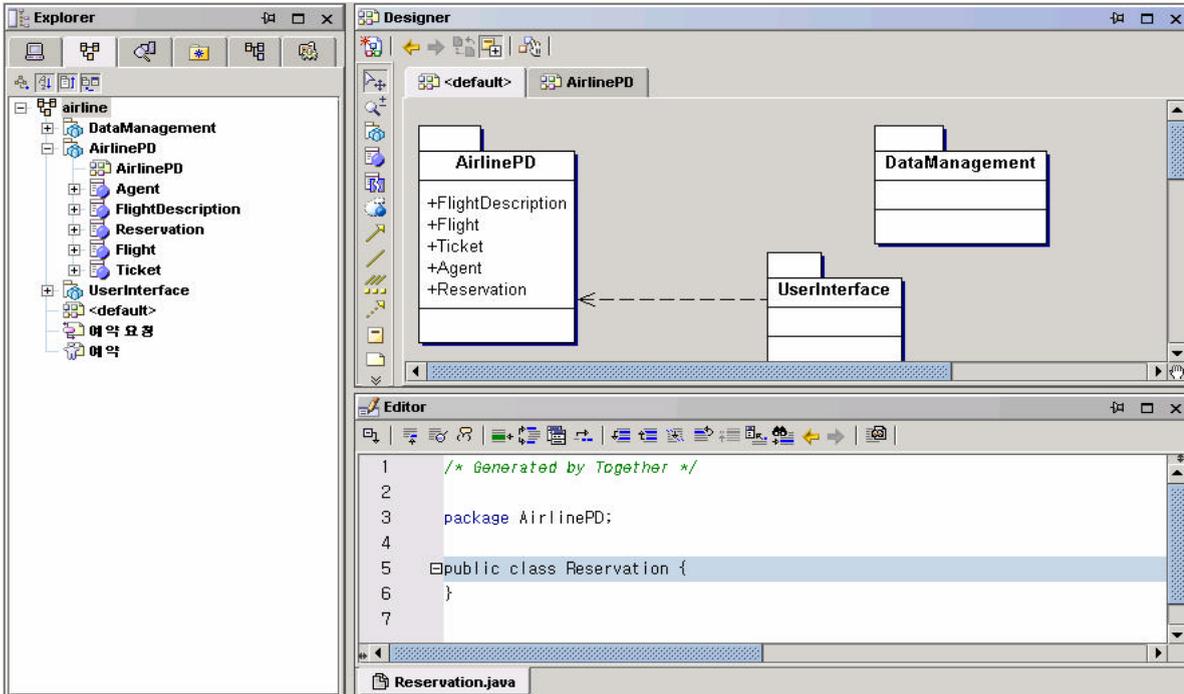
ProblemDomain

Together

가

. (Explorer pane Directory

.)



Together

Together

. Together

Editor

Tools | External Editor

Select in Diagram		
Browse Symbol		
Search for Usages...		
Cut	Ctrl+X	
Copy	Ctrl+C	
Paste	Ctrl+V	
Select All	Ctrl+A	
Collapse Lines		▶
Expand Lines		▶
Tools		▶
Toggle Breakpoint	F5	
Enable Breakpoint		
Text Editor Options...		
Refactoring		▶
Bookmarks		▶
Override/Implement Method		
		Format Source Ctrl+T
		External editor
		EditPlus
		C++Builder
		Make File Shift+F8
		Rebuild File Ctrl+Shift+F8

: FlightDescription.java . Origin destination String 가

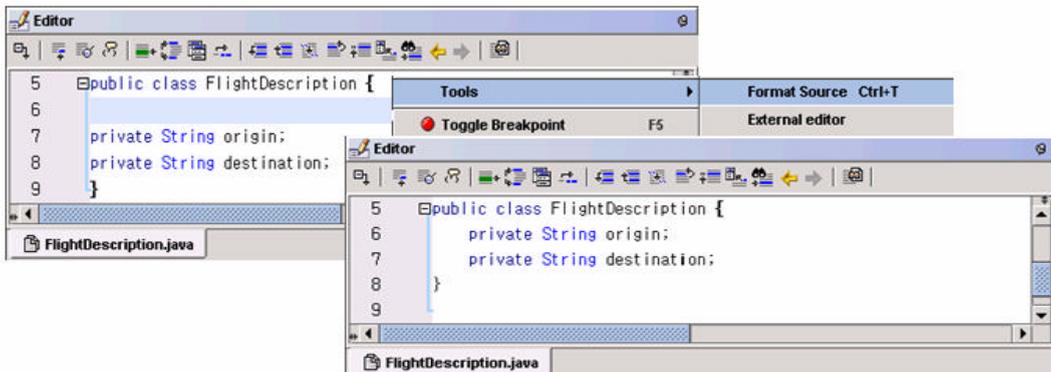
WinVi Editor Windows . (Tools | Options | Default Level Tools
.)

(WinVi) FlightDescription.java origin destination .	FlightDescription -origin:String -destination:String
WinVi Together 가 Together	
Editor Designer .	<p>형 : \Borland\TogetherArchiter i -12%- 00001 001</p>

: origin(String) destination(String) Java

Format Source Editor pane . Editor pane
가 Editor .

FlightDescription.java가



(attribute) 가

가

(class node)

: Designer pane 가 Reservation name(String) 가 .

가

New | Attribute(

Ctrl + A)

int, 가 private attribute,

. (

)

Enter ()

, Together 가 .

```

1  /* Generated by Together */
2
3  package AirlinePD;
4
5  public class Reservation {
6      private String name;
7  }
8

```

Designer pane

가

가 가

Insert

Clone

Copy

Paste

Cut

Paste

Ctrl +

: **Reservation** name

1. (initial value) null
2. "Requirement description" Last name first
3. Author

Javadoc

<p>Inspector (property 가)</p> <p>Inspector Properties (.)</p> <p>Requirements author description</p> <p>Ctrl + Enter</p> <p>Inspector가</p>	<pre> 3 package AirlinePD; 4 5 public class Reservation { 6 /** 7 * @author Kallynn 8 * @description Last name first 9 */ 10 private String name = ""; 11 } 12 </pre>
--	---

- : AirlinePD 가 . Editor가 Designer pane
1. Agent - name (Reservation)
 2. FlightDescription - departureTime, arrivalTime (capacity .)
 3. Flight - date
 4. Ticket -- basePrice

<p>Together</p> <p>Layout Actual Size</p> <p>가 가</p>	
--	--

(operation) 가

가

가

Ctrl + O

makeReservation void Flight 가 .
 1. **name** : **String** .
 2. **tKind** : **int** .

가 UML () Java/C++ ()
 가 .

	():	myMethod(myParameter:int):double
Java/C++	()	double myMethod(int myParameter)

(attribute) 가 private . 가 public .
 Inspector, 가 .

: Designer pane Flight **Agent makeReservation()** .

(operation) Ctrl + (operation)
 Copy , Paste . Designer
 pane Copy .

: **Reservation** 가 .
 ● **String** **name, int tKind** 가
 ● **Boolean** **ticketPurchased()**
 ● **double** **calcPrice()**

Reservation

New | **Constructor** 가 .

New | **Property** New | **Member by Pattern**

가 .

- Attribute Ctrl+A
- Operation Ctrl+O
- Constructor
- Property Ctrl+B
- Member by Pattern...
- Inner Class

Together

ArilinePD

Designer pane

View Management



Reservation

Designer detail level
"Implementation"

Reservation
-name: String=""
+Reservation(name: String, tKind: int)
+ticketPurchased(): Boolean
+calcPrice(): double

View Management

Diagram Options: View Management

Name	Value
Diagram detail level	Implementation
Member format	Default
Referenced classes	Design
	Implementation

Description

This option defines how much information will be displayed for an element in diagrams. The detail level that is used by default depends on the role you selected during installation.

- **Default** - the default detail level for the current role.
 - Business Modeler role - Analysis level
 - Designer and Developer roles - Design level
 - Programmer role - Implementation level
- **Analysis** - names only (no visibility signs).
- **Design** - names and types (visibility signs are shown).
- **Implementation** - names and types, parameters for operations, and initial values of attributes (visibility signs are shown).

: Flight Ticket 가

- **Flight** - numberOfTickets() int
- **Ticket** - Reservation calcPrice()

Together getter setter

property

: FlightDescription capacity property 가

FlightDescription

| Property

Property Together
getter setter

Together
getter

setter JavaBean

JavaBean
getter setter

property
property

Property JavaBean

가

Recognize JavaBeans

Property
getter setter

Property

가

Recognize JavaBeans가

: capacity	50
------------	----

Properties

(initial value)가

property

: Ticket	
Ticket	
Ticket	calcPrice() (method)

Abstract

Property Inspector

. Abstract

Ticket

가

. (UML)

Inspector

. Inspector

. Together

(가

(class node)가)

Javadoc

(Javadoc Description)

: Flight “moment-interval”	(stereo type)
-----------------------------------	---------------

Inspector Properties

가

. Moment-interval

Peter

Coad Java Modeling in Color with UML

Together “moment-interval” Flight “moment-interval” “moment-interval-detail” “role” . “party”, “place”, “thing” . “description”	<table border="1"> <tr> <td><<moment-interval>> Flight</td> </tr> <tr> <td>-date:int</td> </tr> <tr> <td>+makeReservation(name:String,tKind:int +numberOfTickets():int +calcPrice():double</td> </tr> </table>	<<moment-interval>> Flight	-date:int	+makeReservation(name:String,tKind:int +numberOfTickets():int +calcPrice():double
<<moment-interval>> Flight				
-date:int				
+makeReservation(name:String,tKind:int +numberOfTickets():int +calcPrice():double				

Together	Inspector
View	가

- **FlightDescription** : description
- **Reservation** : mi-detail (moment-interval detail)
- **Ticket** : thing
- **Agent** :role

가

(Tip) (Trick)

- 가 (operation) 가 Ctrl + O, (property) 가 Ctrl + B (attribute) 가 Ctrl + A ,
- (, ,)
- Ctrl+
- (attribute) (operation)
- Together
- . Together 가 , 가 가
- Property Inspector
- Together 가 property
New | Property(Ctrl + B) , 가
getter setter 가 ,

Together

5 :

가

- (class association)
- (association)
-
-
-
-
- (Tip) (Trick)

(class association)

AirlinePD . Designer pane

: **Flight** **FlightDescription**

<p>Designer pane (association) (/)</p> <p>() () 가 가 Together</p> <p>Flight FlightDescription</p> <p>Designer pane</p> <p>Editor Flight</p> <p>InkFlightDescription 가 가</p>	<pre> classDiagram class FlightDescription { -capacity:int=50 -origin:String +getCapacity():int +setCapacity(capacity:int):void } class Flight { <<moment-interval>> -date:Date +makeReservation(name:String):void +numberOfTickets():int } FlightDescription --> Flight </pre>
--	--

InkFlightDescription Designer pane **Flight** Together
Ink “ ”

. (**Ink** .)

- 1. **Reservation** **Ticket**
- 2. **Agent** **Flight**

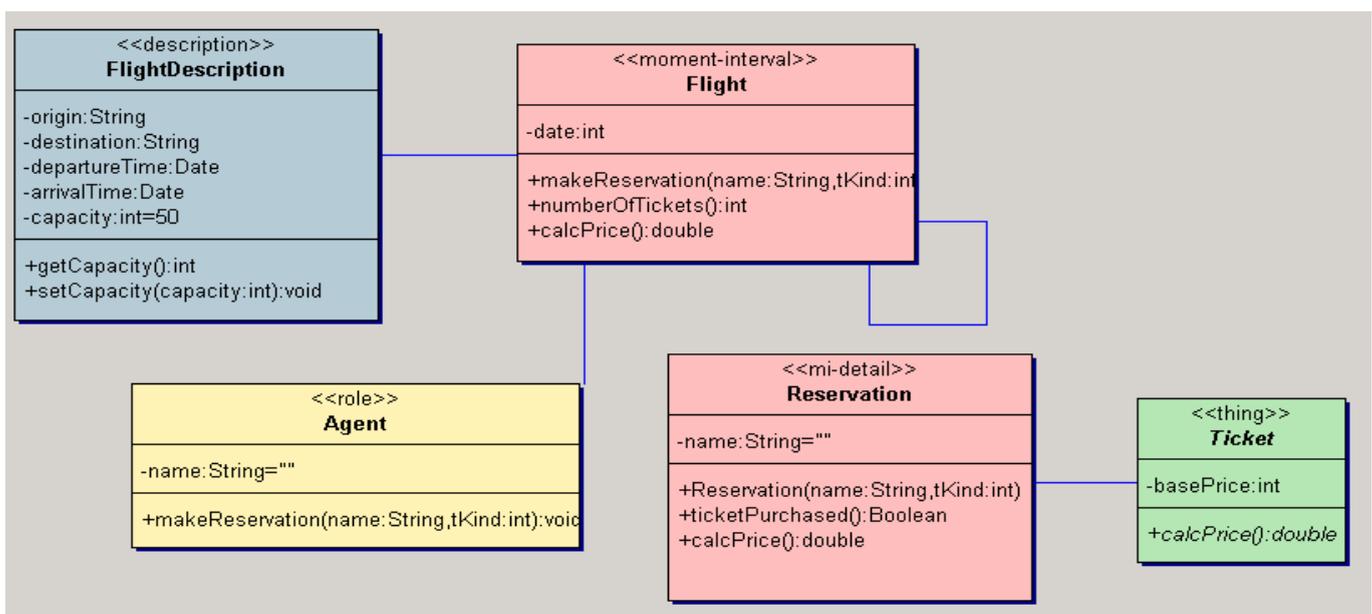
Together

- (Rectilinear) : (segment) (sequence)
- (Direct) : (가 .)

Tools | Options | Diagram Level

가 (self link)

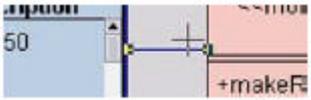
: Direct Flight



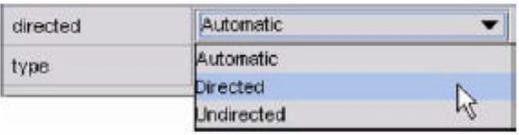
(association)

Inspect가

: Flight	FlightDescription	가
● 0... *	(Flight)	
● 1	(FlightDescription)	

가 가 가	
Inspector	

:	Reservation	Ticket
Agent	Flight	가
		가

Property Inspector	
가	

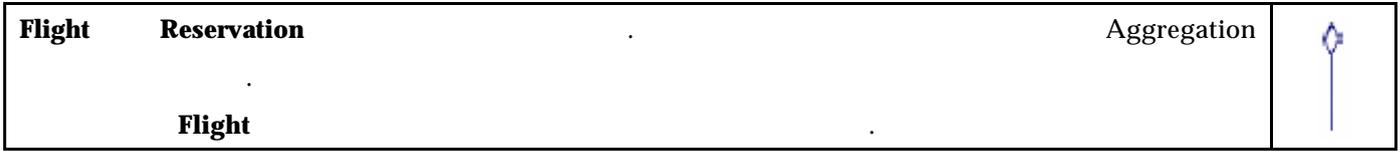
: Flight			
● (supplier role)	“actual”		0...1
● (client role)	“plan”		1

Flight Inspect

Flight

Reservation

Reservation



가

Layout | All (

Ctrl + K)

Together

(+)

가 가

4

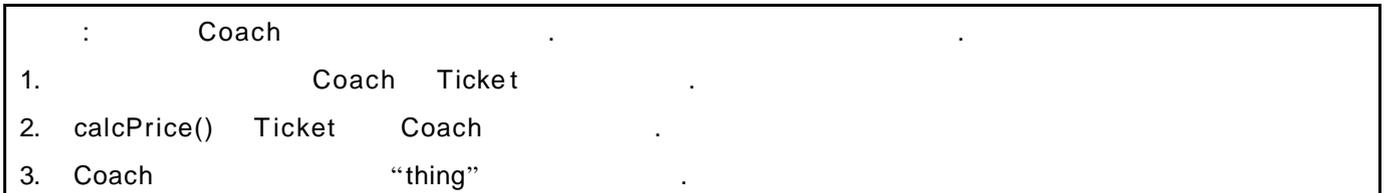


(Generalization)

(abstract class) Ticket

. Agent Reservation

(interface)

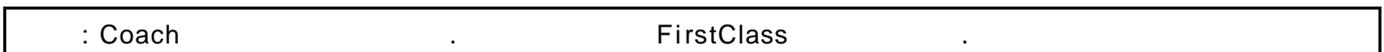


Coach가 Ticket
(operation)

(Generalization)



Together



Copy(Ctrl + C)

Paste(Ctrl + V)

Javadoc



Tools

| Options | Diagram Level

- Diagram
- Diagram | Layout

Agents Reservations

가



. Designer pane



(operation)

. Together

Designer pane	(Generalization) ()
Together implements	<pre> 3 package AirlinePD; 4 5 /** 10 public class Reservation implements INamed { 11 public Reservation(String name, int tKind) { 12 } 13 14 public boolean ticketPurchased() { 15 } </pre>

(operation)

. Agent Reservation

getName()

가

“ 가 ”

: AirlinePD

Designer pane Note ()

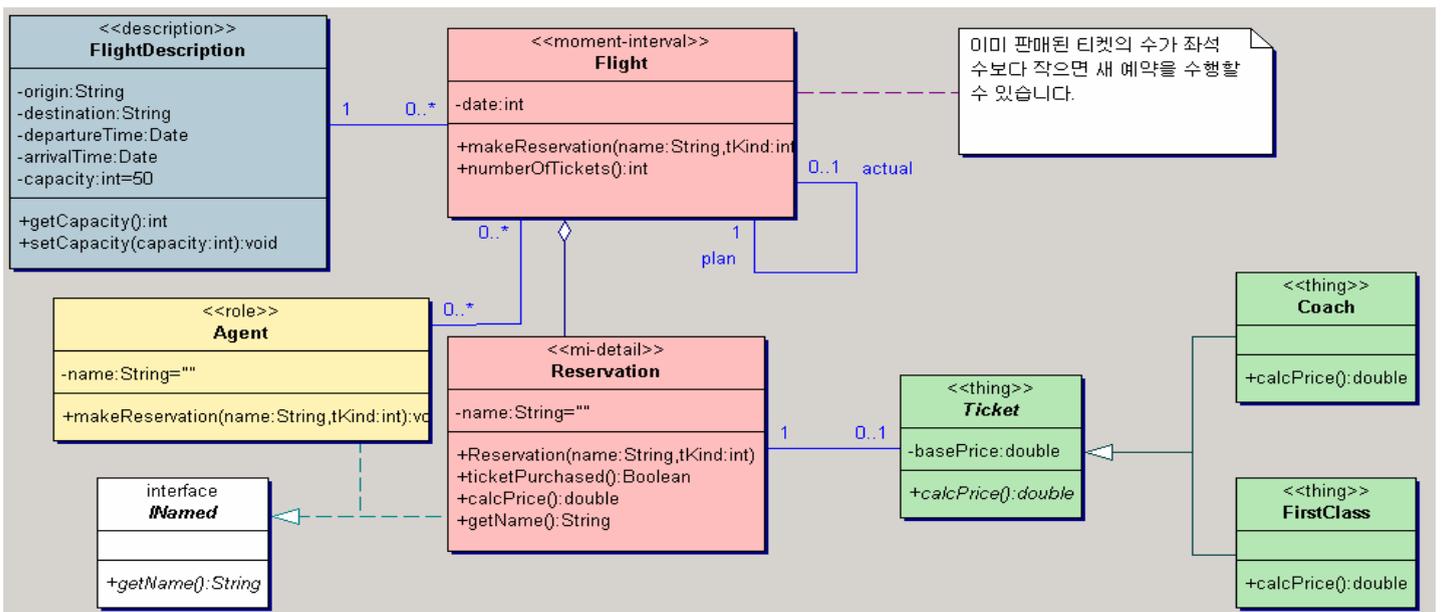
Note () Flight

Inspector Requirements

Name	Value
type	Business Rule
number	Business Rule
description	Feature Business Rule
document	Product Requirement
author	User Need
priority	Medium
difficulty	Medium
testcase	

Press Ctrl+Alt+I to finish editing and close In...

AirlinePD



(Tip) (Trick)

- Designer pane 가 . Layout | All (Ctrl + K) Together
- Undo(Ctrl + Z) Undo가 가 Undo Redo(Ctrl + Y)
- Undo Redo /
- (Direct) (Rectilinear)
- (operation) (method)
- Ink Tools | Options | Default Level
- Diagram | Associations | Show as attributes | All
- “ ”(Directed) Tools | Options | Diagram Level
- Diagram | Association | Draw Directed | All

Together

6 :

. Together (template pattern)

가

GoF

Coad

:

-
-
-
-
-

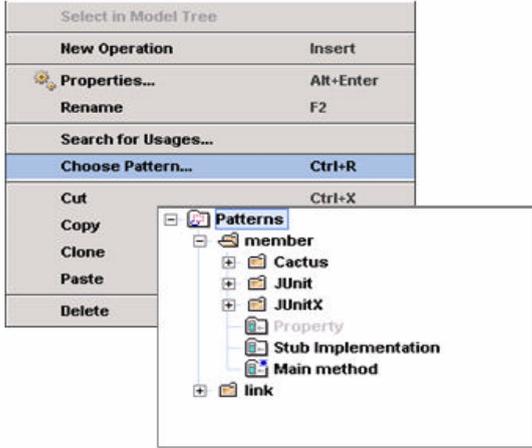
(Tip)

(Trick)

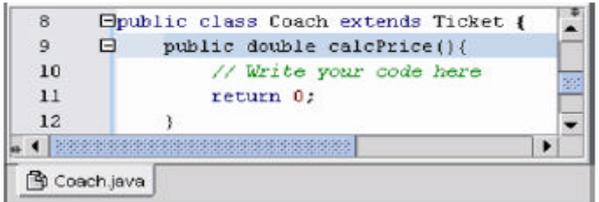
Together Stub Implementation, Property, Main (method) 가 Java
. Stub Implementations void가 (operation) return . Property getter
setter . Main main() .

:	(method)	Stub Implementation	.
Coach	calcPrice()		
Reservation	ticketPurchased()		
Flight	numberOfTickets()		
	FirstClass calcPrice()	calcPrice() Coach	FirstClass .
Reservation	calcPrice()		.

Stub
Pattern (Ctrl + R)
 Together (member) (link pattern)
 Pattern



Editor 가



: Property **Reservation** Agent name . get set

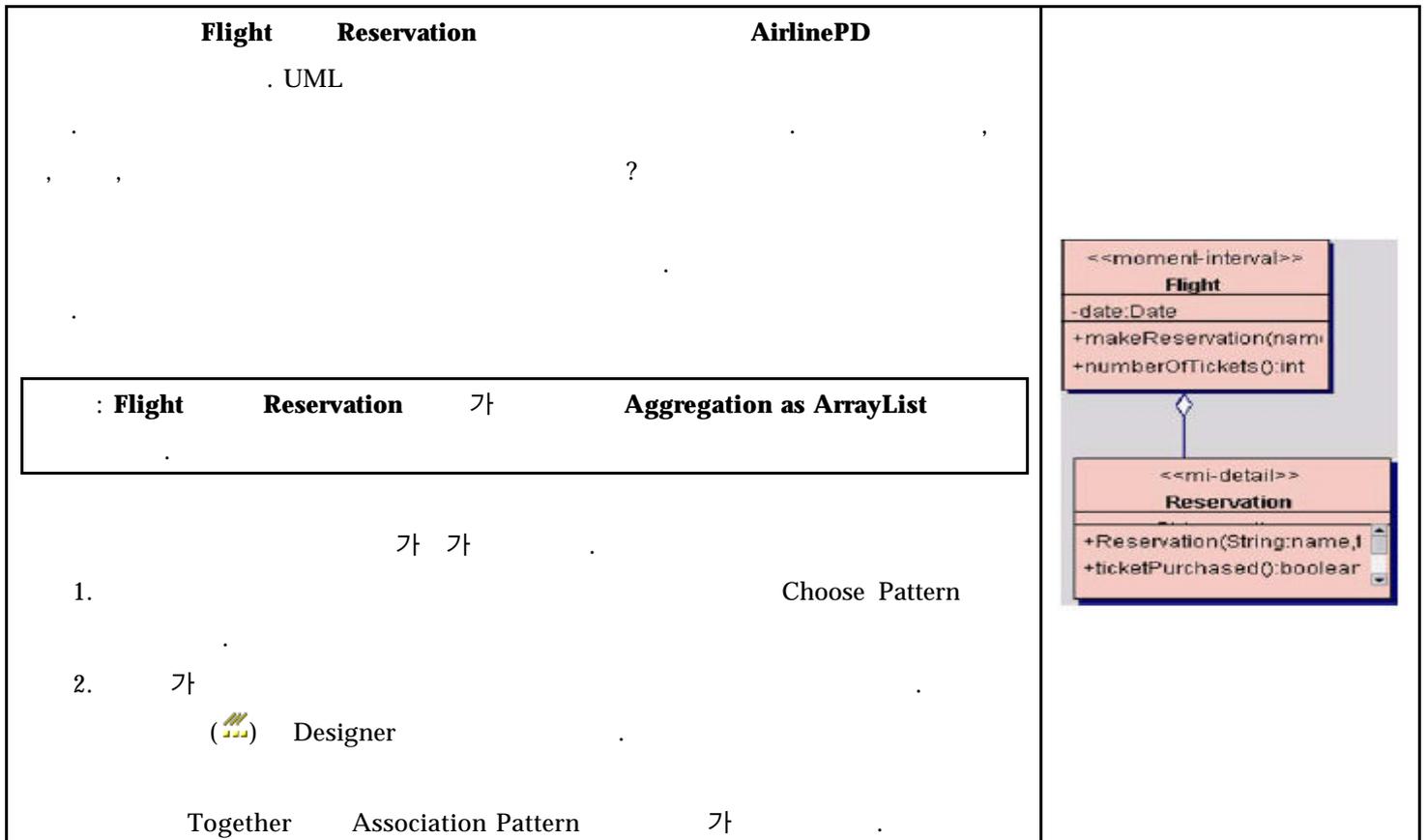
Properties , , property getter, setter Properties Pattern

Name	Value
Name	name
Type	java.lang.String
Get method	<input checked="" type="checkbox"/>
Set method	<input type="checkbox"/>
Attribute	<input checked="" type="checkbox"/>

```

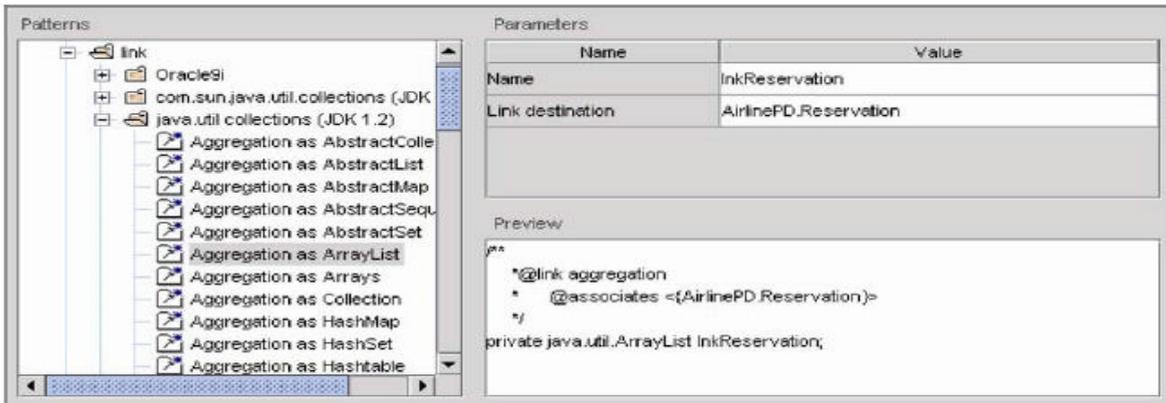
<<mi-detail>>
Reservation
-name: String=""
+Reservation(name: String, tKind: int)
+ticketPurchased(): Boolean
+calcPrice(): double
+getName(): String
  
```

Name Together () . Attribute
 Together property Member by Pattern



Pattern selection pane
 Association as ArrayList

java.util.collections



Association Pattern Together Flight . (ArrayList import)

Main Driver . Driver AirlinePD가 UserInterface User Interface .

: UserInterface Flight 가 (shortcut) .

Explorer pane Model 가

AirlinePD Flight Add as

Shortcut .

UserInterface 가 (#)가 가

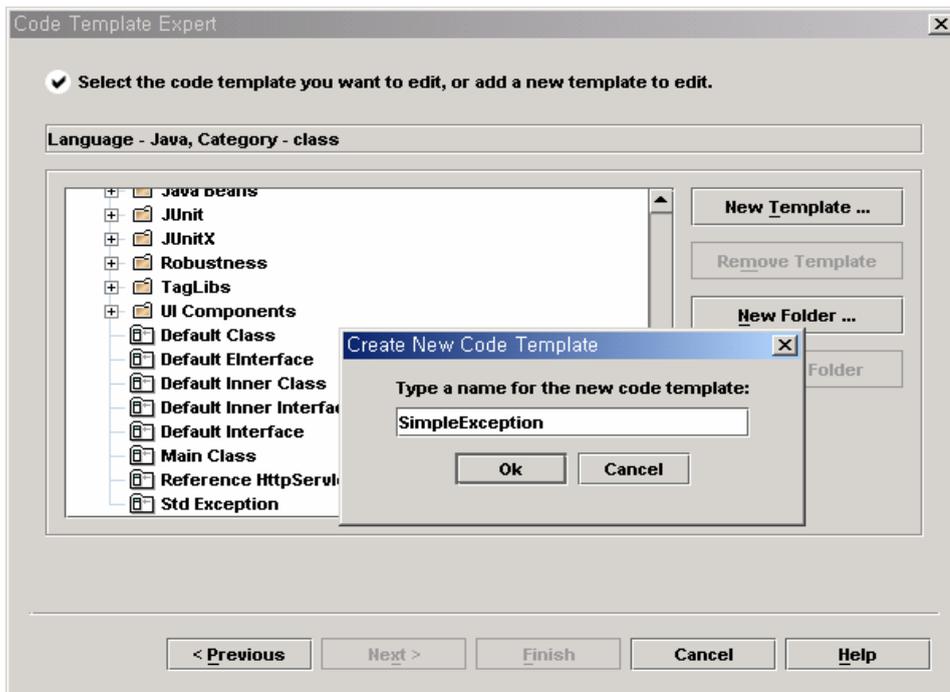
Java Together templates/JAVA/CLASS

1. **%Name%.java** :
2. **FolderName.properties** : property

Together Code Template Expert가
Expert

: Template Expert SimpleException

1. **Tools | Code Template Expert**
2. Code Template Expert Pane 1
Template Language : Java, Template Category : Class
3. Code Template Expert Pane2 **New Template**
4. SimpleException Ok



5.

SimpleException

Next

Pane3

: Exception1

Pane3 (): :

1. Pane 3 : Default name Exception1 .(Exception1 .)

2. Pane3 : Exception Template description . (HTML)

Code Template Expert

Code Template Expert

Set code template properties and edit the template code and its description.

Language - Java, Category - class, Template name - SimpleException

Default name: Exception1

Generate prologue and epilogue:

Hide in choose list:

Paste all created classes to one file:

Template description: <HTML> <H3>SimpleException pattern </H3> </HTML>

Edit template text: Edit Template Code...

< Previous Next > Finish Cancel Help

:

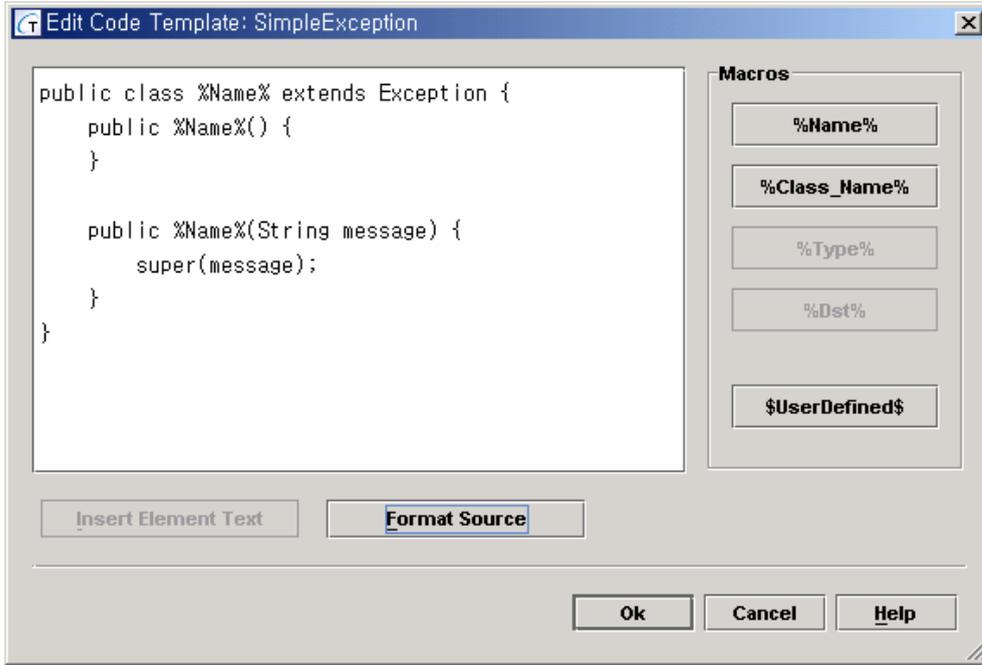
1. Pane3 Edit Template Code

2. %Name% %Name%

3. Format Source

4. 가 Ok

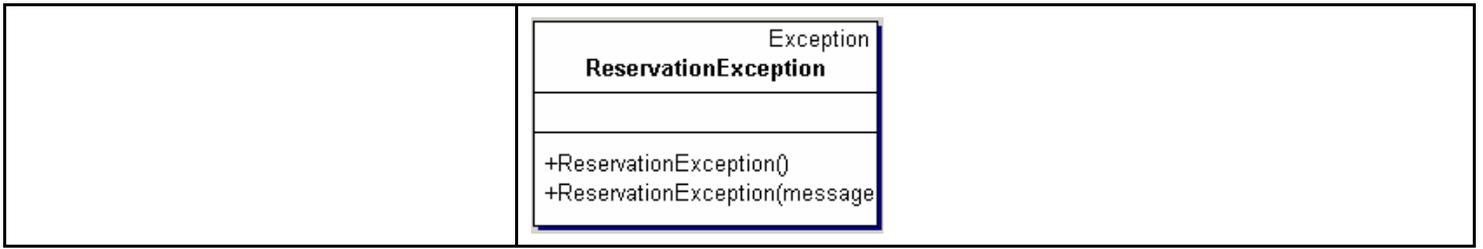
5. Pane Finish



: AirlinePD ReservationException Exception

AirlinePD
 Class by Pattern () SimpleException

<p>Description pane</p> <p>property HTML</p> <p>Name</p> <p>ReservationException</p> <p>Preview Together</p> <p>가</p> <p>ReservationException 가</p>	
--	--



Flight.makeReservation() ReservationException

(Tip)

(Trick)

- ()
 . Together
 . (Designer pane Designer pane
 , .)
- 가 (Shortcut) 가 Delete
 . 가 Delete Together 가
- . Code Template Expert . Expert Pane Class Link
- (Std Exception)

Together

7 :

Together

GoF

Abstract Factory

Together

:



- GoF



- (Tip) (Trick)

GoF “Gang of Four”

Design Patterns, Elements of Reusable Object-Oriented

Software

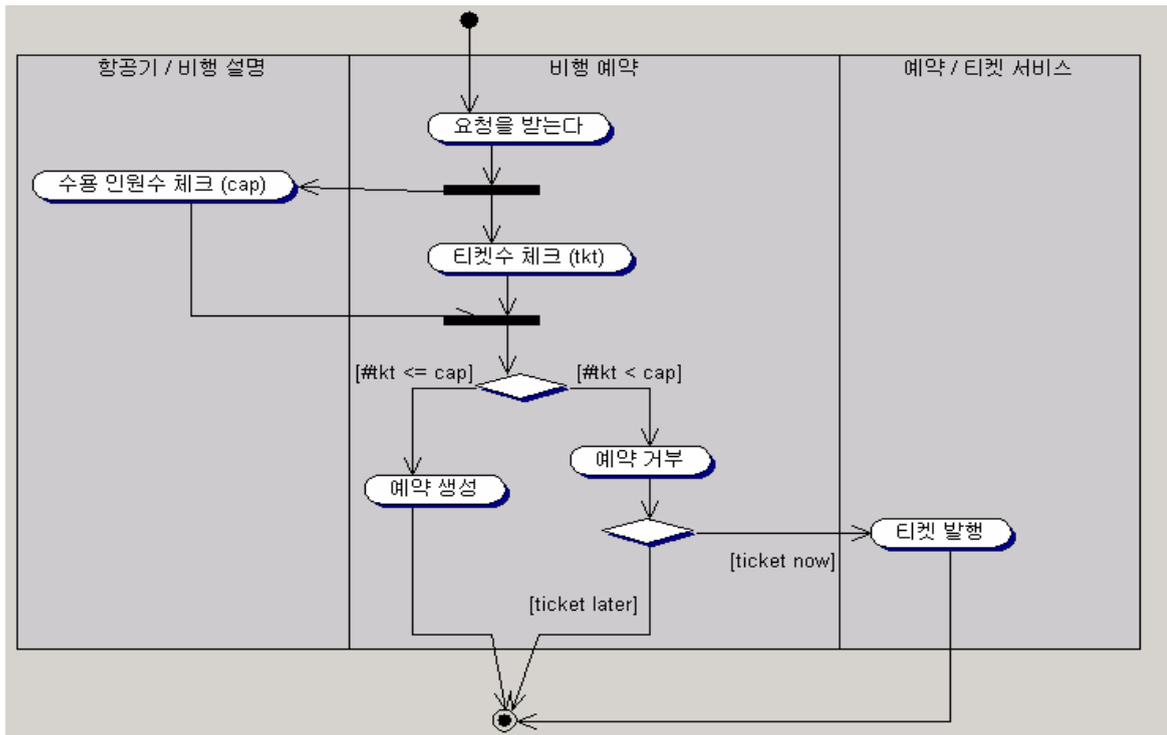
Eric Gamma, Richard Helm, Ralph Johnson, John Vlissides

가

Flight

makeReservation()

가



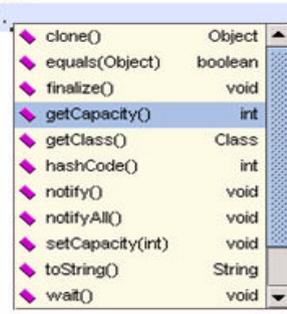
Flight.makeReservation()

```

public void makeReservation (String name, int tKind) throws ReservationException {
    int t = this.numberOfTickets();
    int c = InkFlightDescription.getCapacity();
    //          가
    if (t < c) {
        Reservation r = new Reservation(name, tKind);
        InkReservation.add(r);
    }
    else throw new ReservationException();
}

```

: Flight makeReservation()

<p style="text-align: center;">Together</p> <p style="text-align: center;">(code sense)</p> <p style="text-align: center;">InkFlightDescription</p> <p style="text-align: center;">“ ”</p> <p>Editor FlightDescription</p>	<pre>public void makeReservation(String name, int tKind) throws ReservationExcept int t = this.numberOfTickets(); int c = InkFlightDescription.</pre> 
--	---

Reservation	Stub	name tKind	name
tKind	가		
tKind가 1	Coach	tKind가 2	FirstClass

: **Reservation**

Reservation

```
public Reservation (String name, int tKind) {
    this.name = name;
    //
    InkTicket = null;
    if (tKind == 1)
        InkTicket = new Coach();
    else if (tKind ==2)
        InkTicket = new FirstClass();
}
```

GoF

airline 가

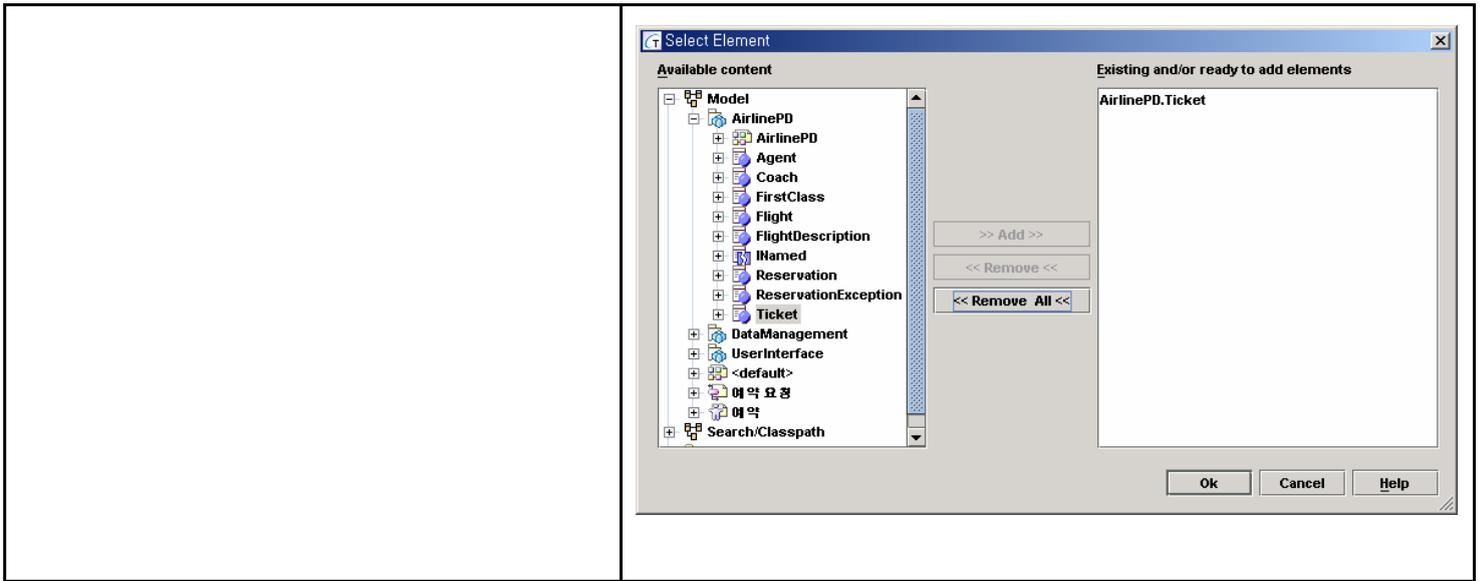
Reservation

Factory Ticket **TicketMaster** GoF abstract

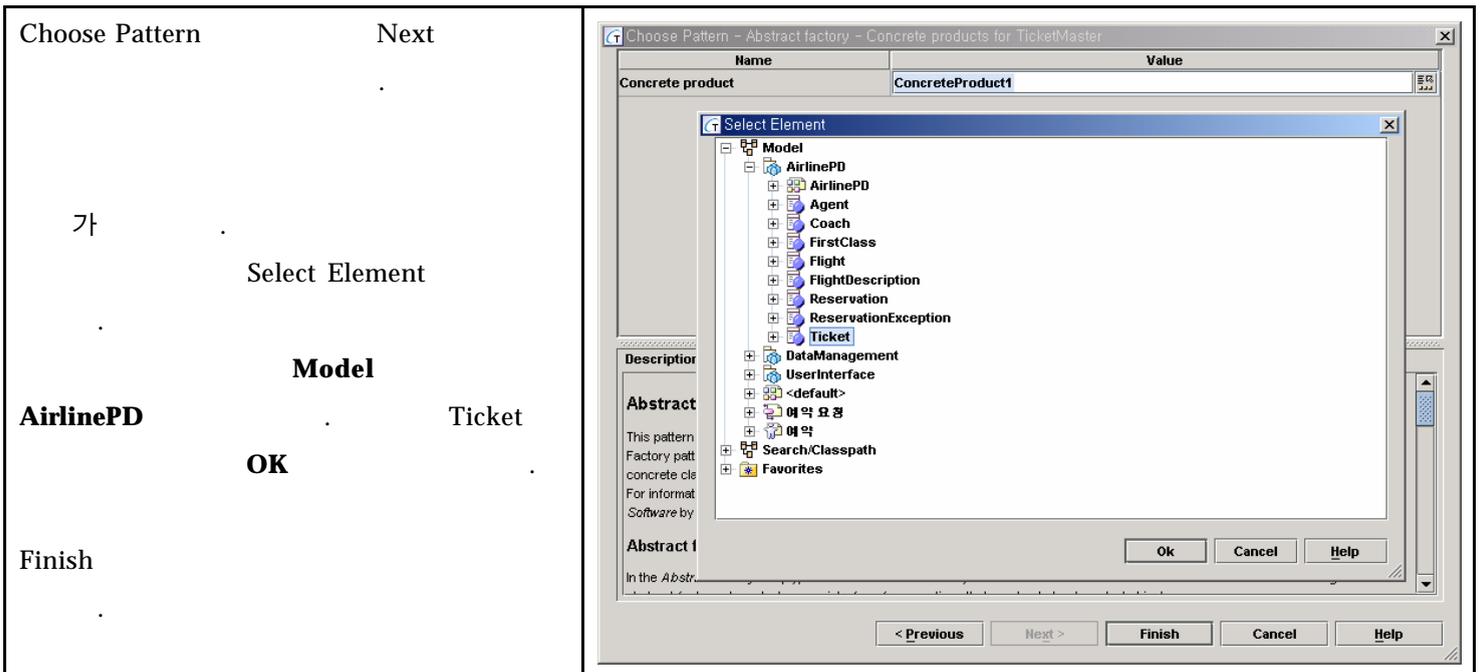
GoF	Abstract factory	Abstract Factory, Concrete Factory, Abstract
Product		
● Abstract Factory	ICreateTickets	
● Abstract Product	ticket	
● Concrete Factory	TicketMaster	

Designer pane Class by Pattern () Designer pane
 Pane 가 . 11 GoF GoF
 Abstract Factory

<p>ICreateTickets TicketMaster</p> <p>Ticket</p> <p>Abstract product</p> <p>()</p>	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Abstract factory</td> <td>ICreateTickets</td> </tr> <tr> <td>Abstract product</td> <td>AirlinePD.Ticket</td> </tr> <tr> <td>Concrete factory</td> <td>TicketMaster</td> </tr> </tbody> </table> <p>Copy documentation <input checked="" type="checkbox"/></p> <p>Create pattern links <input checked="" type="checkbox"/></p>	Name	Value	Abstract factory	ICreateTickets	Abstract product	AirlinePD.Ticket	Concrete factory	TicketMaster
Name	Value								
Abstract factory	ICreateTickets								
Abstract product	AirlinePD.Ticket								
Concrete factory	TicketMaster								



: Product Ticket .

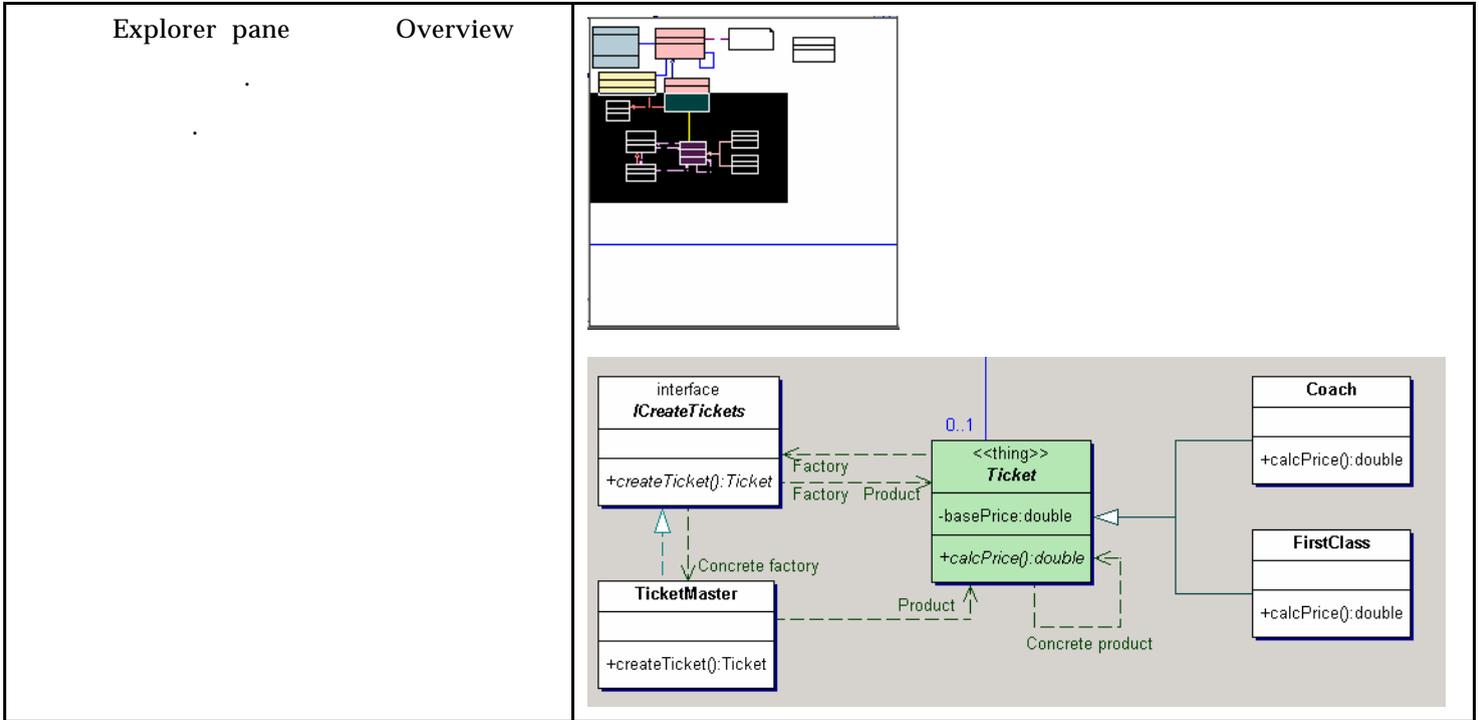


(TicketMaster , ICreateTickets 가

: **AirlinePD** .

Designer pane

Layout | All(Ctrl + K) .



가

TicketMaster

Ticket

Reservation

가

: int **IcreateTickets** (operation) . **TicketMaster**

1. **IcreateTickets** (operation)

createTicket(tKind:int):Ticket

2. Ctrl **IcreateTickets** **TicketMaster** (operation)

TicketMaster **createTicket()**

가

: Ticket Reservation TicketMaster

Editor pane

가

Ticket

Ticket t(inkTicket)

```
public Ticket createTicket (int tKind) {  
    Ticket t = null;  
    if (tKind == 1)  
        t = new Coach();  
    else if (tKind == 2)  
        t = new FirstClass();  
    return t;  
}
```

1 2

.()

: TicketMaster

Ticket

Reservation

Reservation

```
public Reservation (String name, int tKind) {  
    this.name = name;  
    TicketMaster tm = new TicketMaster();  
    InkTicket = tm.createTicket(tKind);  
}
```

: (compile)

Make build Project () Message
pane Builder Message
pane

가

Editor pane

 Make Project	Shift+F7
 Rebuild Project	Ctrl+Shift+F7

(Tip)

(Trick)

•

GoF

Composite

가

- Designer pane

가

- **Ctrl**

Together (operation)

- Designer pane

Editor

(method)

Designer

. Designer pane

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: 2005 3 4

Together

8 :

Together

-
- (operation)
- (method)

:

-
- /
-
-
-
-
- (Tip) (Trick)

AirlinePD
domain

problem

: AirlinePD

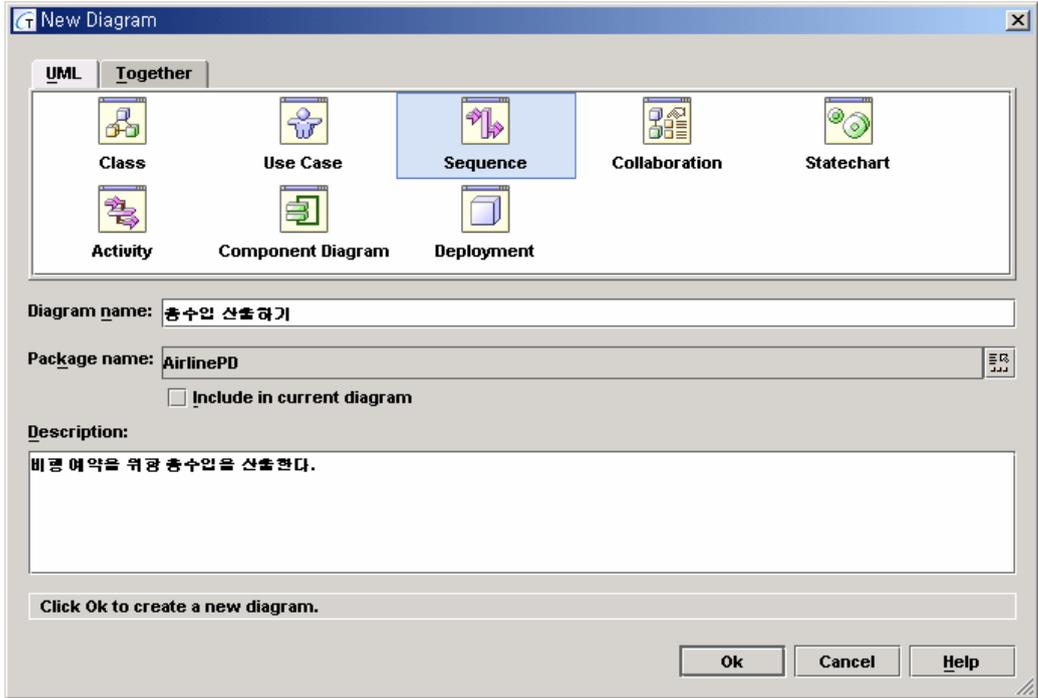
FindRevenue

New Diagram

Designer () 가

New Diagram



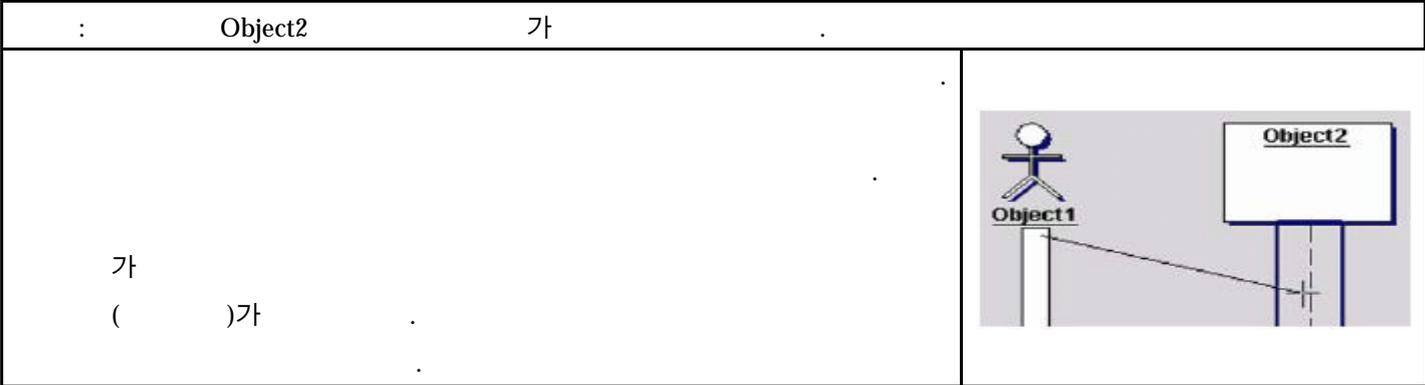


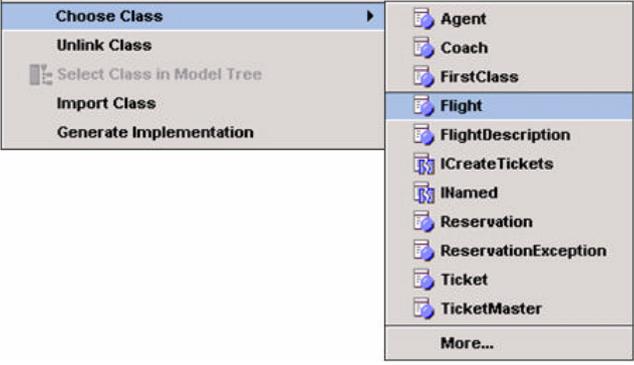
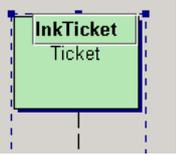
() 가

	(Object)	
	(Self Message)	
		()

: 가

Together

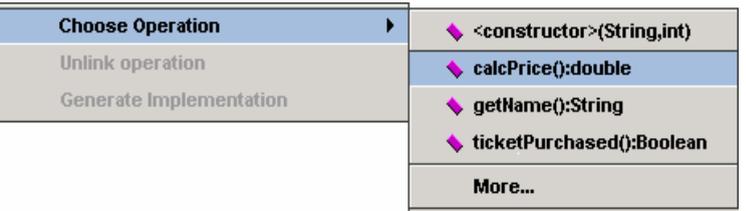


<p>Object2</p> <p>Choose Class</p> <p>가 . (More)</p> <p>가</p>	
<p>in-place</p>	

New	Class
Add to Favorites	Interface

Together

: Flight Reservation 가 calcPrice()

<p>Choose Operation</p> <p>가</p>	
---	--

: Inspector **Flight** 가

ticketRevenue():double (operation)

Property(Property Inspector)

Inspector (operation) Together

가 Rename

Question

Operation ticketRevenue():double not found in class Flight.
Create new operation ticketRevenue():double
or
Rename operation
operation1():void to
ticketRevenue():double ?

Rename Create Cancel

(method) , Together

Rename, Create, Cance 가

Inspector: (message link)

Requirements		Operation	
Link	View	Description	HTMLdoc
Name	Value		
client	Object1		
supplier	Object2		
operation	ticketRevenue():double		
label			
sequence number	1		
creation	<input type="checkbox"/>		
destruction	<input type="checkbox"/>		
arguments			
return			
return arrow	<input type="checkbox"/>		
condition			
iteration			
constraint			

Press Ctrl+Alt+I to finish editing and close Inspector

Together
Level

Tools | Options | Diagram

Diagram Options

Name	Value
Show classname below objectname	<input checked="" type="checkbox"/>
Show message numbers	<input checked="" type="checkbox"/>
Show message description	<input type="checkbox"/>
Create return arrows	<input type="checkbox"/>

Description

These options specify how to display Sequence diagrams.

Levels >>

Ok Cancel Apply Help

. Show message numbers

Reservation

“ 가 0 . ”



Designer () (operation)

ticketPurchased()

Property Inspector

Property Inspector Link “return”

Together

Together

boolean hasTicket = this.ticketPurchased();

Inspector: (message link)

HTML doc		Requirements	Operation
Link	View	Description	
Name	Value		
client	Object3		
supplier	Object3		
operation	ticketPurchased():Boolean		
label			
sequence number	1.1.1		
creation	<input type="checkbox"/>		
destruction	<input type="checkbox"/>		
arguments			
return	hasTicket		
return arrow	<input type="checkbox"/>		

```

: Reservation
1. if 가
   if hasTicket
2. else if 가
  
```


Return property	(operation)	Property
Inspector		

Inspector: (message link)

HTMLdoc	Requirements	Operation
Link	View	Description
Name	Value	
client	Object3	
supplier	InkTicket	
operation	calcPrice():double	
label		
sequence number	1.1.2.1	
creation	<input type="checkbox"/>	
destruction	<input type="checkbox"/>	
arguments		
return	cost	
return arrow	<input type="checkbox"/>	

Press Ctrl+Alt+I to finish editing and close Inspector

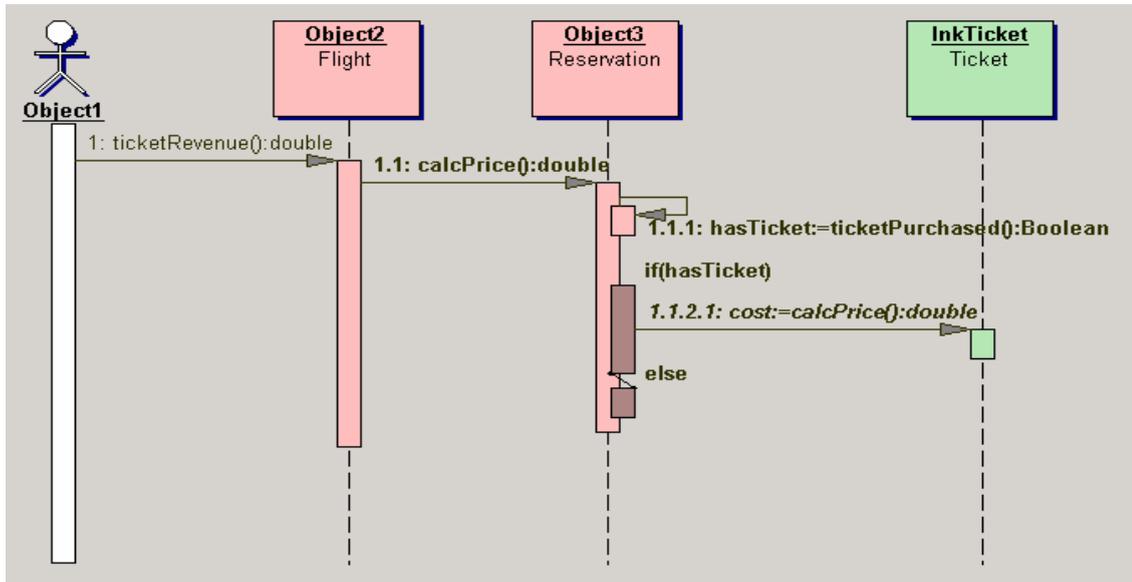
Together (method) 가 Reservation calcPrice() return

: Reservation calcPrice()

Reservation calcPrice()	<p>Show as Sequence</p> <p>Show as Collaboration</p> <p>Generate Implementation</p>
-------------------------	--

가 Together

Generate Implementation



Reservation.calcPrice()

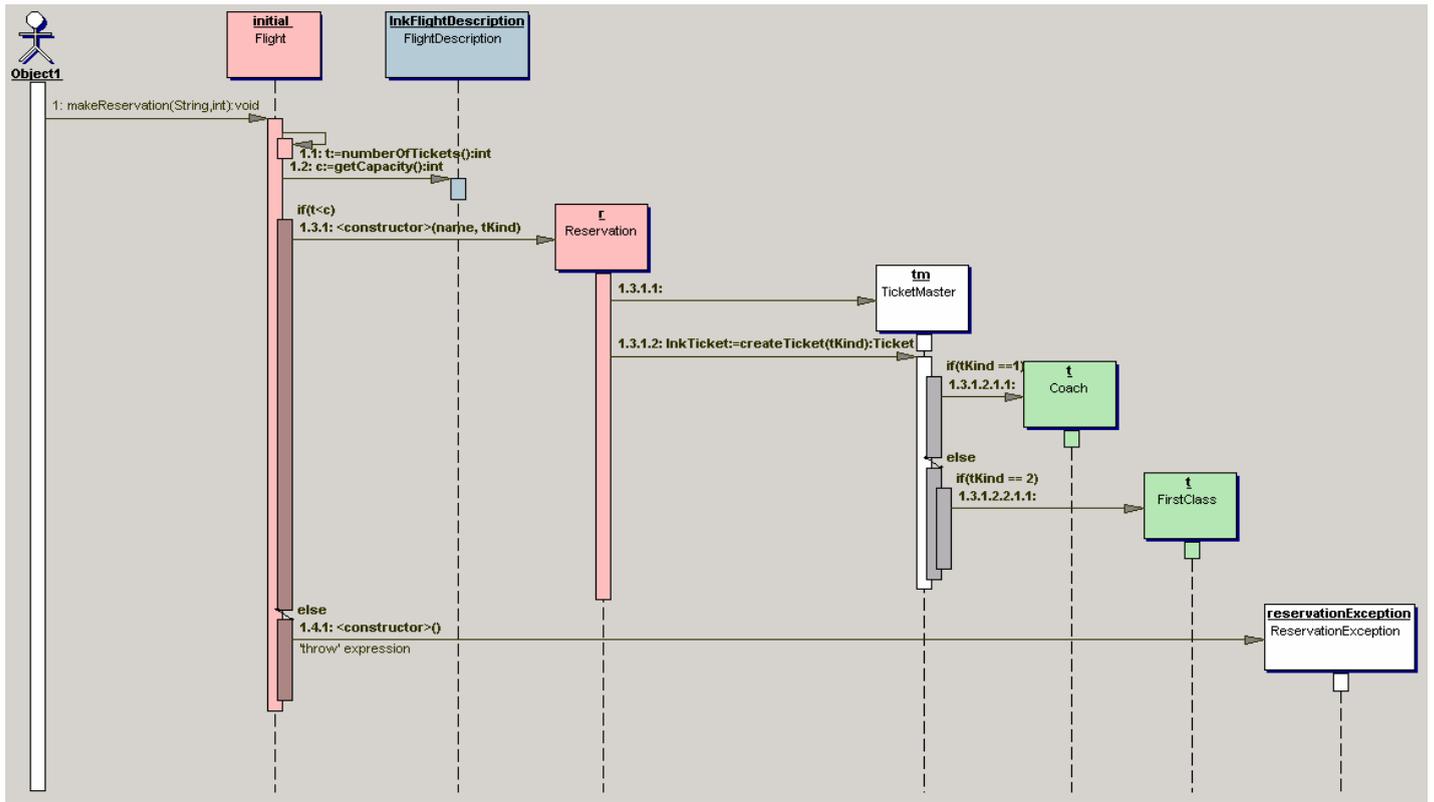
```

public double calcPrice() {
    // #1.1.1 this:AirlinePD.Reservation
    boolean hasTicket = this.ticketPurchased();
    if (hasTicket) {
        // #1.1.2.1 InkTicket:AirlinePD.Ticket
        double cost = InkTicket.calcPrice();
    }
    else { }
}
  
```

return

1. if return return cost;
2. else return return 0;

: Reservation.calcPrice() Flight.ticketRevenue()



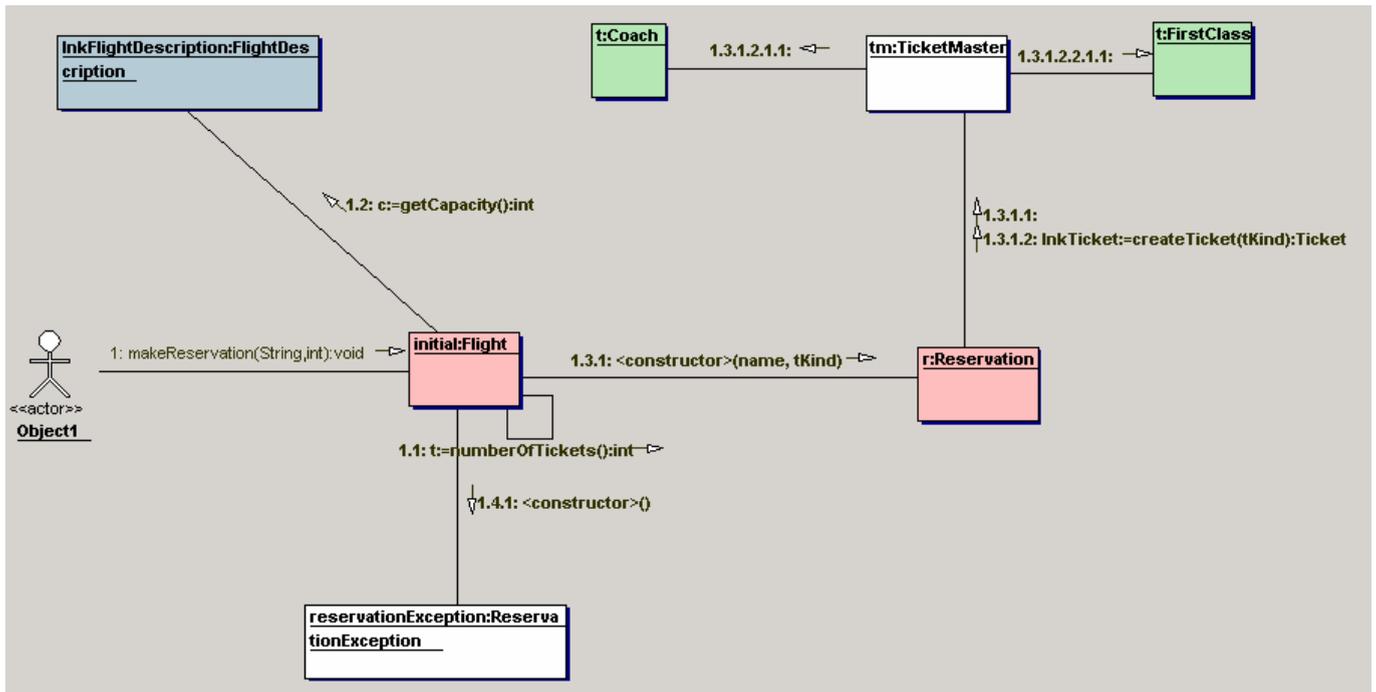
: Fligh.makeReservation(1) (Collaboration diagram)

(Collaboration Diagram)

(Together

.)

	<input type="checkbox"/> Show as Sequence <input checked="" type="checkbox"/> Show as Collaboration <input type="checkbox"/> Generate Implementation
	<input checked="" type="checkbox"/> Show as Sequence <input type="checkbox"/> Show as Collaboration <input type="checkbox"/> Generate Implementation



Together () 가

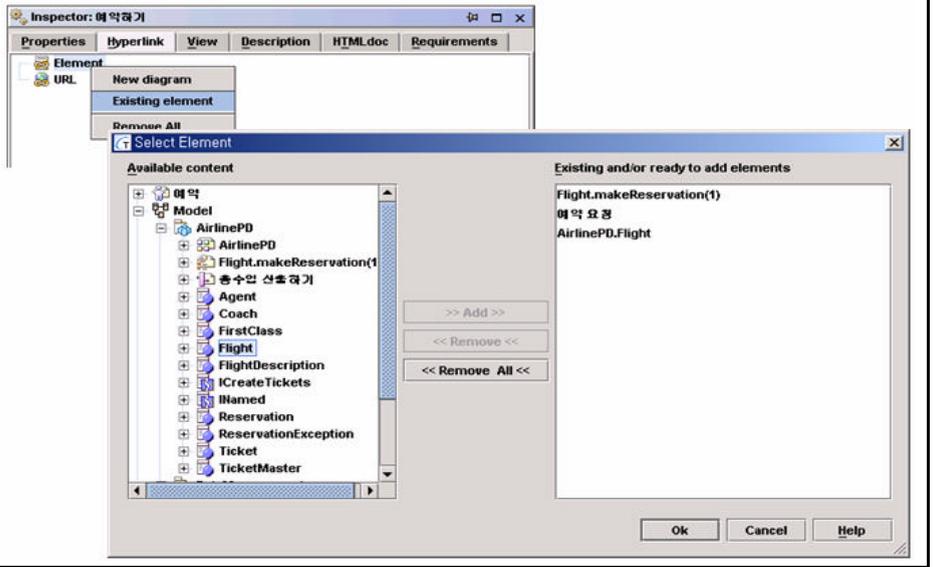
(operation) Together
 . AirlinePD Flight . makeReservation Flight
 Flight.makeReservation(1)

Property Inspector 가

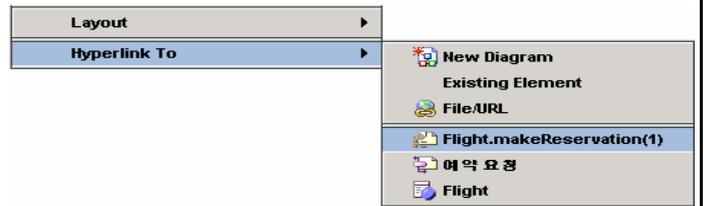
- | | |
|----|--------------------------------|
| : | 가 |
| 1. | / Flight.makeReservation(1) |
| 2. | Request Reservation |
| 3. | AirlinePD Flight |
| 4. | AirlinePD Agent |

Inspector Hyperlink
Element

가
Select Element 가



: makeReservation(1)



(Tip) (Trick)

- Together Together 가
- Property Inspector
Hyperlink To
- Together
- in-place
- void가 Inspector

Together

9 :

Together

HTML, RTF, PDF

(project entity)

가

Together

:

- HTML
- RTF
- (Tip) (Trick)

HTML

Together

Javadoc

property

Javadoc

: airline

HTML

HTML

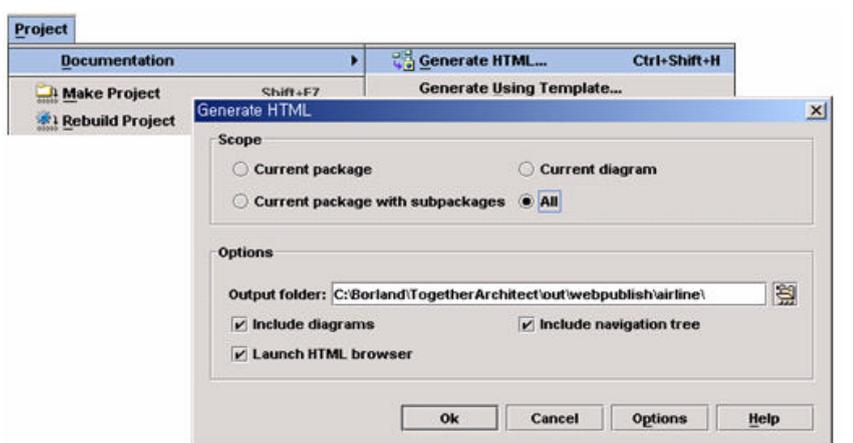
Project | Documentation

Scope All

Options

(,), HTML

(,), 가



The screenshot displays a web browser window showing an UML class diagram for an airline system. The diagram includes the following classes and relationships:

- FlightDescription** (class): Attributes include origin, destination, departureTime, arrivalTime, and capacity. Methods include getCapacity() and setCapacity().
- Flight** (class): Attributes include date. Methods include makeReservation(), numberOfTickets(), and ticketRevenue().
- Agent** (role): Attribute includes name.
- Reservation** (class): A detail class for Flight.

Relationships shown in the diagram:

- FlightDescription (1) is associated with Flight (0..*).
- Agent (0..*) is associated with Flight (0..*).
- Flight (0..*) has a composition relationship with Reservation (0..*).
- Flight (1) has a relationship with Reservation (1) labeled 'plan'.
- Flight (0..1) has a relationship with Reservation (0..1) labeled 'actual'.

The project overview at the bottom shows a tree view of the project structure, including classes like Flight, Agent, Reservation, Ticket, and FirstClass. The detailed view shows the **Class FirstClass** extending **AirlinePD.Ticket**.

Together

HTML

가

. Project

. Overview

가

RTF

Together

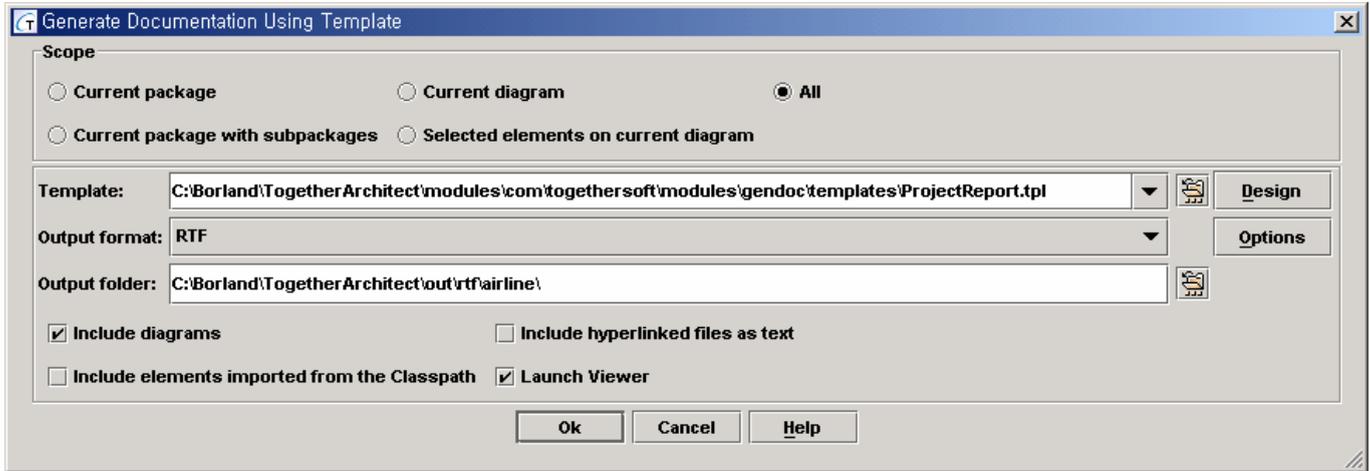
, HTML, PDF, RTF

: **airline**

RTF

Together RTF

Project | Documentation | Generate using Template



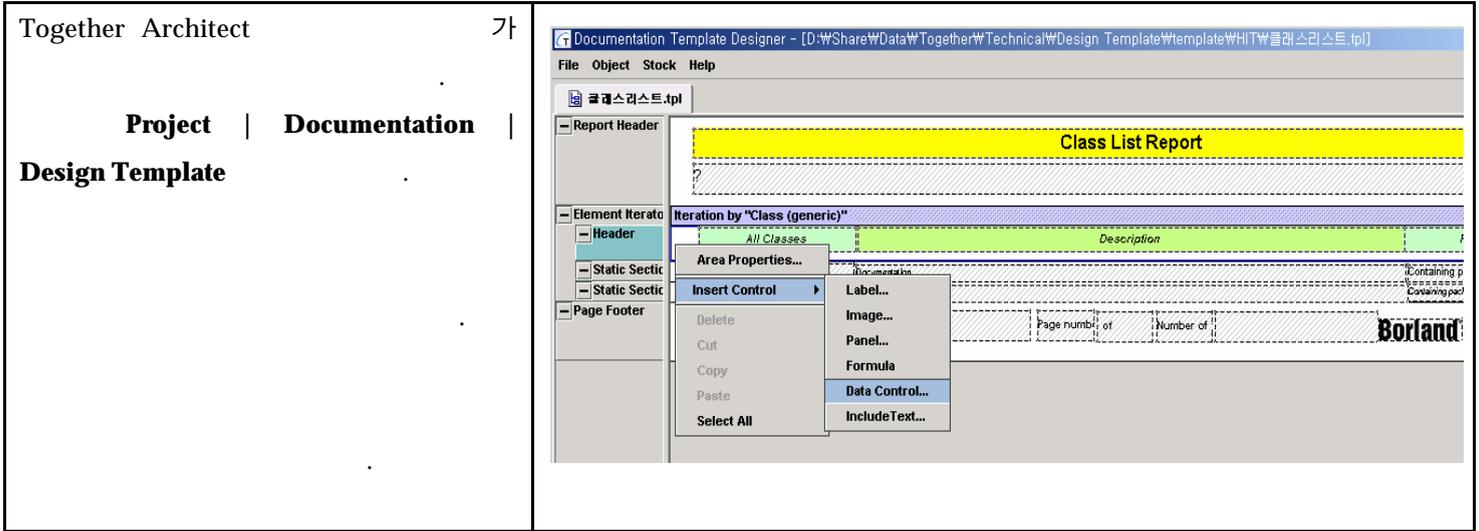
Page 1 of 27

airline Project Report

Thu Mar 03 20:45:50 KST 2005

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Activity 예약 생성	5
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: Together Architect가 airline PDF

File | Print Documentation PDF 가

(Tip) **(Trick)**

- Together Property Inspector
 - , Together “pick folder” (📁)
 - HTML . RTF
 - . Diagram (page break)
 - . Diagram **Show page borders**
 - **Layout All for Printing** Together
- 가

Together

10 : Audit Metric

Together , Metric .
Audit Metric . Audit ,
가 . Metric .

Together Java(), C++, VB.NET()eh .
airline . 가 Together CashSales

:

- Audit
- Audit
- Metric
- (Tip) (Trick)

Audit

Quality Assurance / 가 가 Together **Tools**
| **Activate/Deactivate Features** . Quality Assurance .

airline .

: airline	Audit .
-----------	---------

Quality Assurance **Tools | Audits** Audit . (
가 Audit
Quality Assurance | Audits .)

Together Audit 가 .

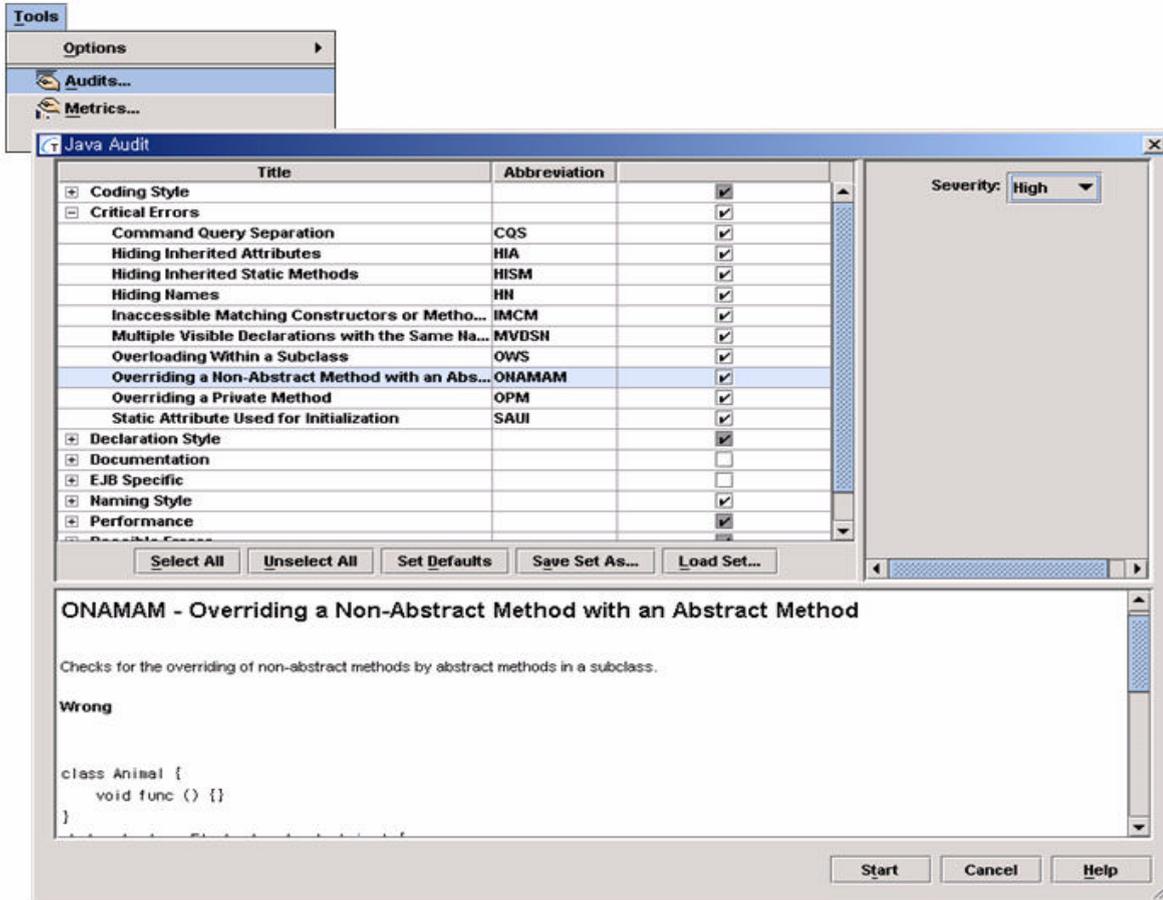
Airline project audits
Audit

Select All

. (Load Set

Java Sun

)



Java Audit 가

Audit

. Java Audit

Low, Medium, High

Audit

Java Audit

Audit

가

Airline

Audit

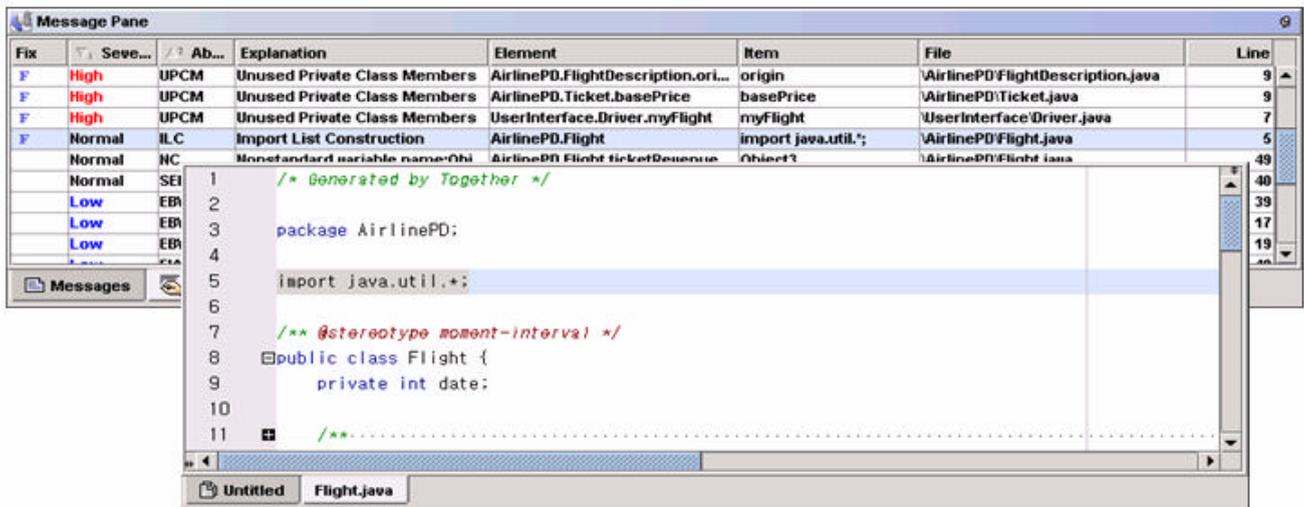
Together Message pane

-
-
-

가

Editor pane

가



Audit import 가

Audit

Together Audit Audits 가 Audit 가 F

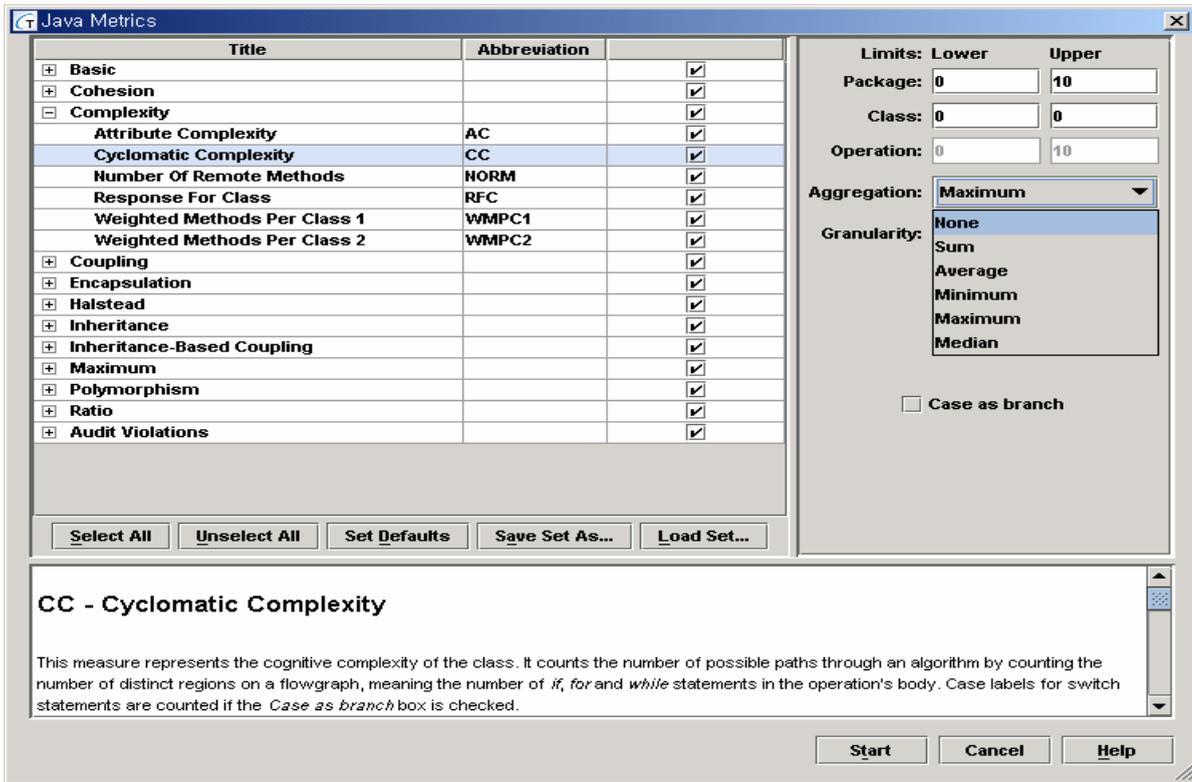
Audits 가

: 가 Audit

Audit 가 Audit Correct Audit

Audit 가 Editor 가 Audit Audit

Metric 가



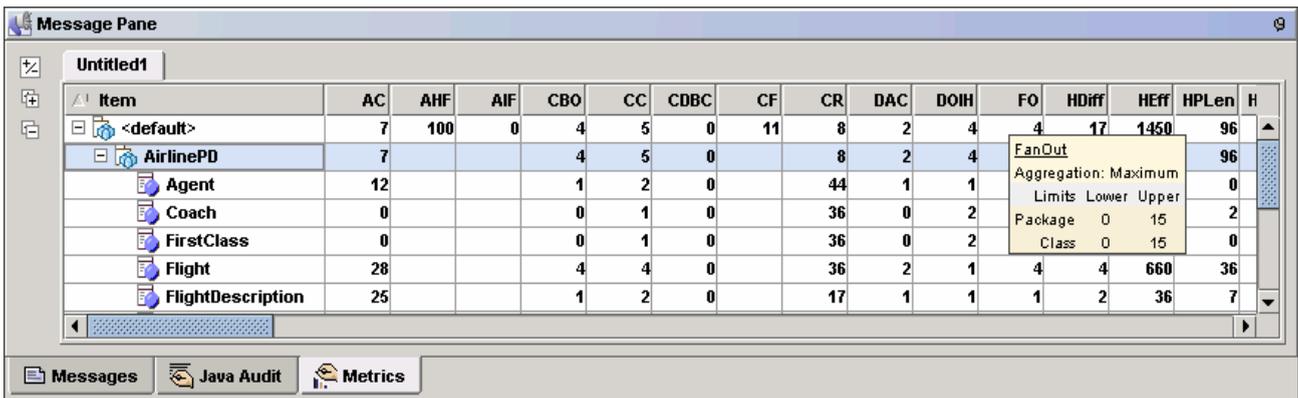
Message pane

가

Metric

Audit

가 가



: Fan Out

. Airline

Fan Out Metric

Metric 가

Show Description

Description Description Bar

Graph

: airline Metric

- CBO - (Coupling Between Objects) - (= 4)
- NOC - (Number of Classes) - (= 30, 30)

Metric AirlinePD Kiviat

Metric Metrics 가 가

Metric Message pane Metrics

Kiviat

(NOC)

(CBO, CC, FO)

Metric

Bar graph, Distribution

graph, Kiviat graph

Kiviat ()

Metric

Metric	AirlinePD	
Kiviat graph	. Together	
Metric	.	

(Tip)

(Trick)

- Audit Metric
- Metric
- Kiviat Metric

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: 2005 3 4

Together

11 : Java

Together Editor Message pane Java
 airline CashSales

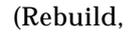
Windows Together Java2™ SDK 1.4.2 Javac.exe
 Java2 SDK

- (Compile)
-
-
-
- (Tip) (Trick)

(compile)

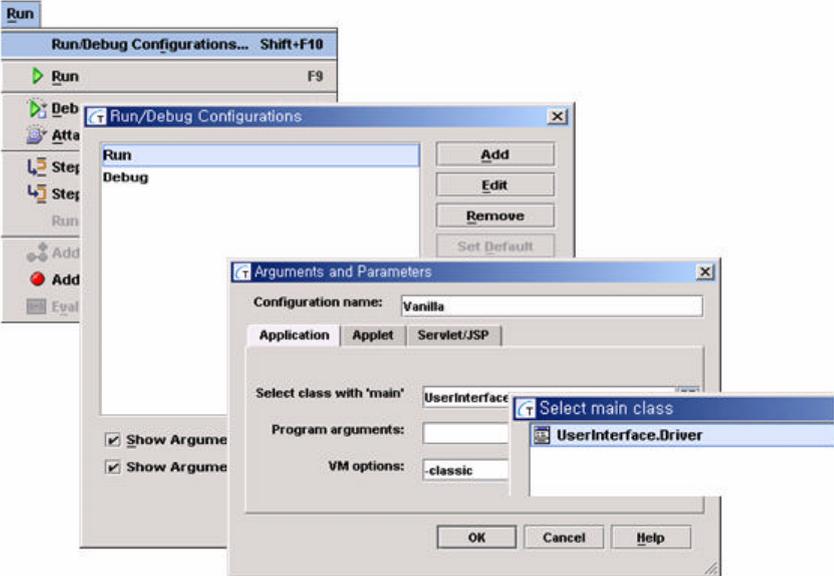
Airline Driver output 가 (Driver
UserInterface .)

```
Driver.main()
System.out.println(" Goodbye Airline Project.");
```

 <p>Project</p> <p>Together Java Make</p>	<p>(Make, )</p> <p>(Rebuild, )</p>	<p>Message Pane</p> <pre>*** Make started. Compilation args: -source 1.4 -classpath C:\Borland\TogetherArchitect\myprojects\airline\src:C:\Borland\Togethe *** Output directory: C:\Borland\TogetherArchitect\out\classes\airline *** Make completed</pre> <p>Messages Builder</p>
Together	Message pane	

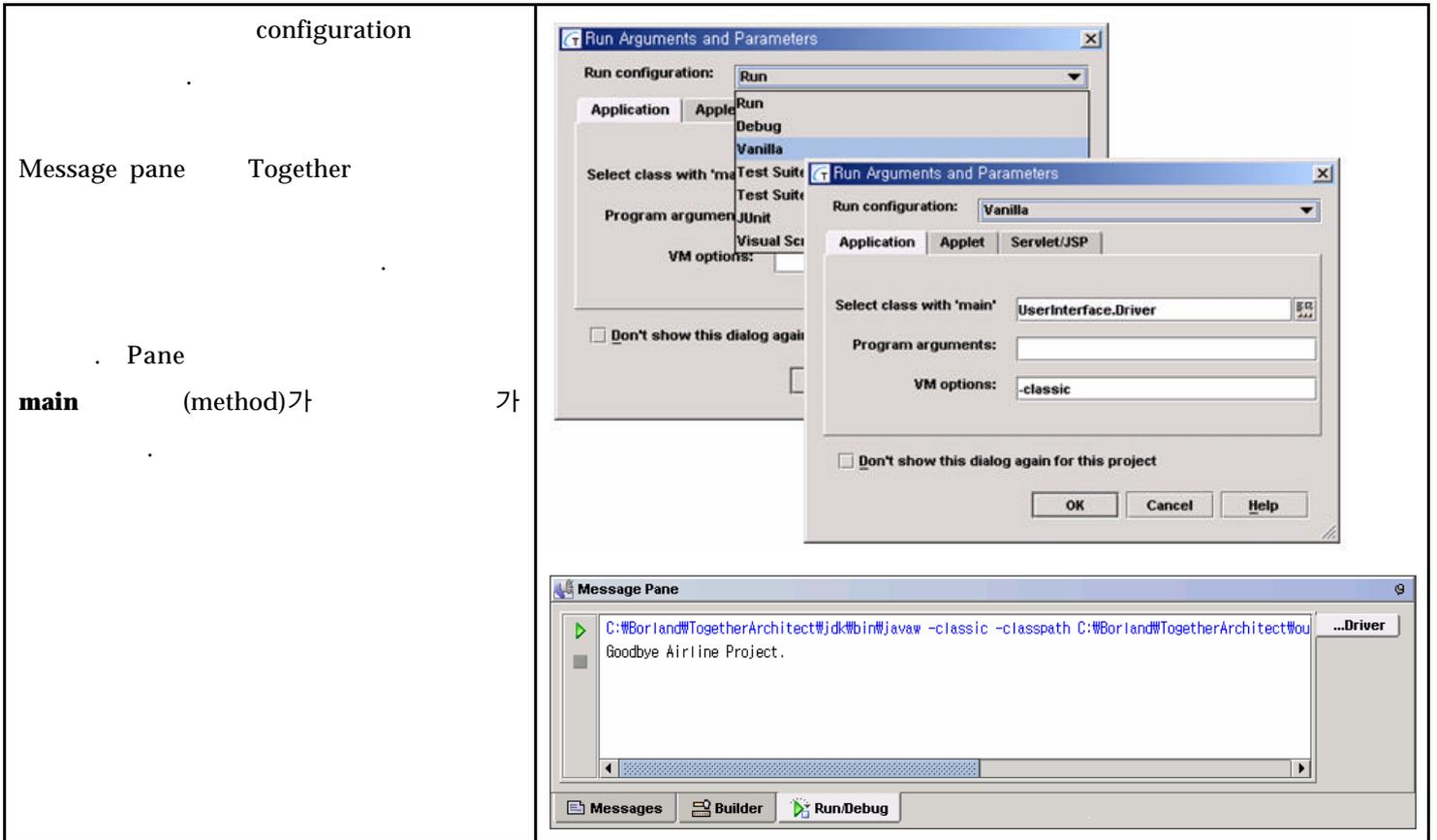


: -classis VM "vanilla" configuration

<ol style="list-style-type: none"> 1. Run Run/Debug Configurations configuration -classic 2. Run/Debug Configurations Add configuration 3. configuration (Vanilla) 4. Select class with 'main' () 5. <code>UserInterface.Driver</code> 6. Ok 	
---	---

: configuration airline

configuration  Together configuration

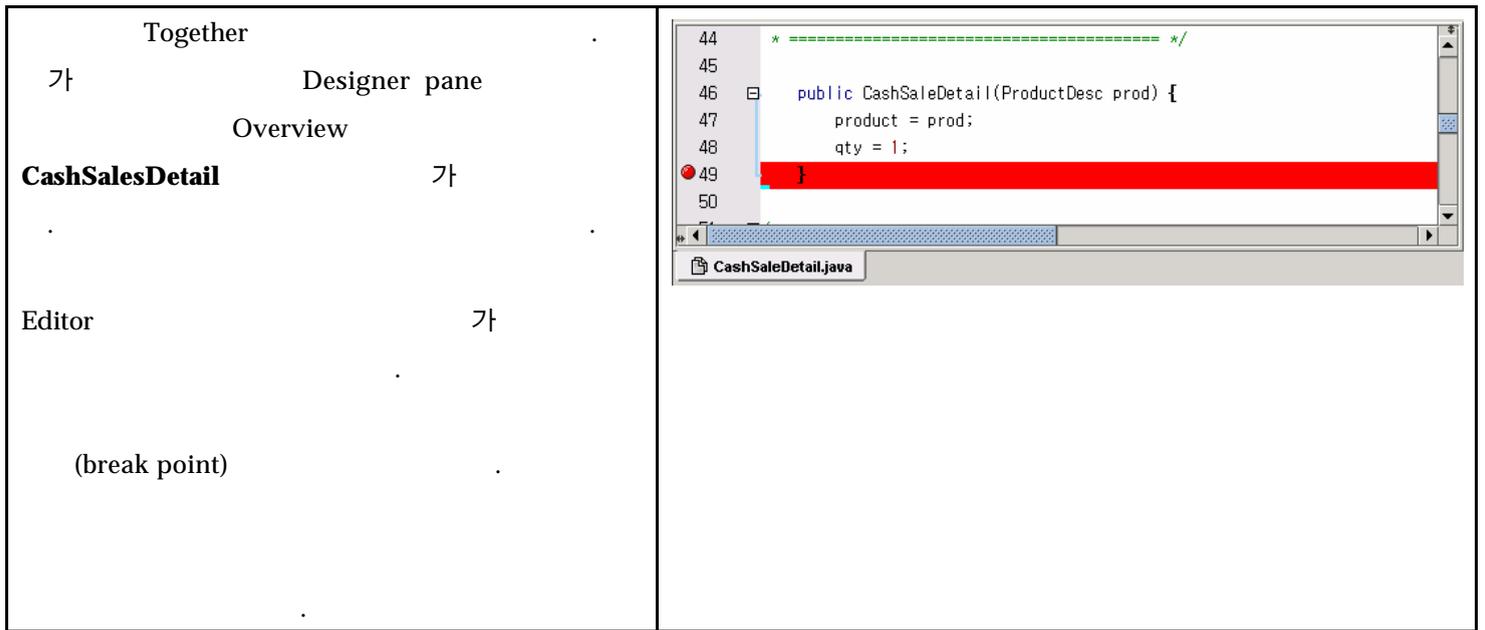


configuration
 Message pane Together
 Pane
main (method)가 가

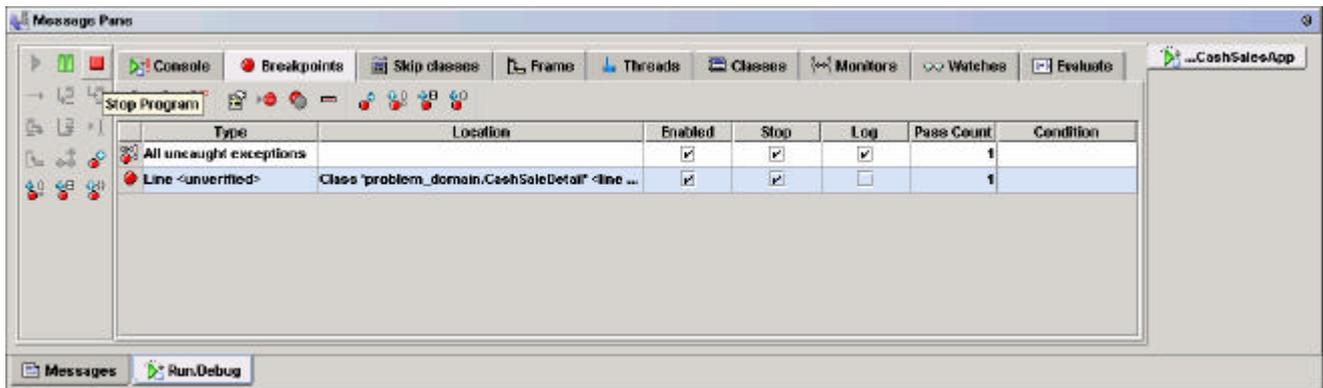
: **CashSales** . **problem_domain**

Explorer pane Directory 가 **CashSaels.tpr**
 Sample | java | CashSales | CashSales.tpr
 Together

: **problem_domain** **CashSaleDetail** (break
 point)



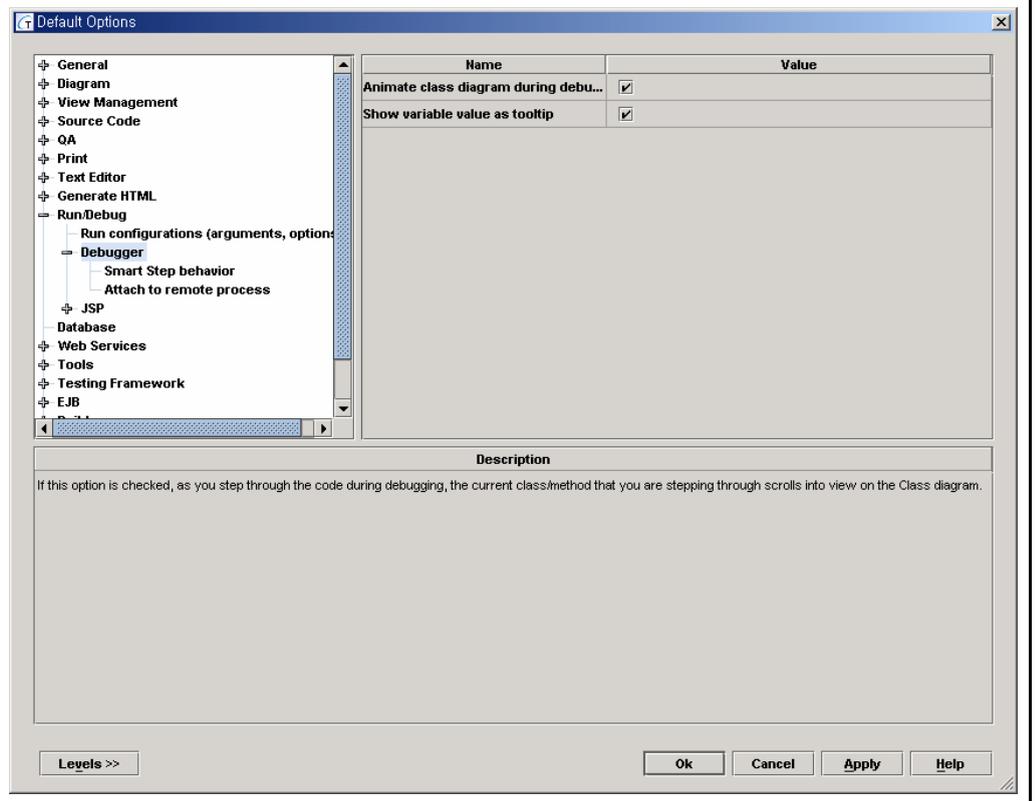
Message pane Debugger 가 . (View |
Message pane Tabs | Run/Debug .)



: 가 .

Project Default Options
 가 Run/Debug
 Animate class diagram during
 debugging

Together

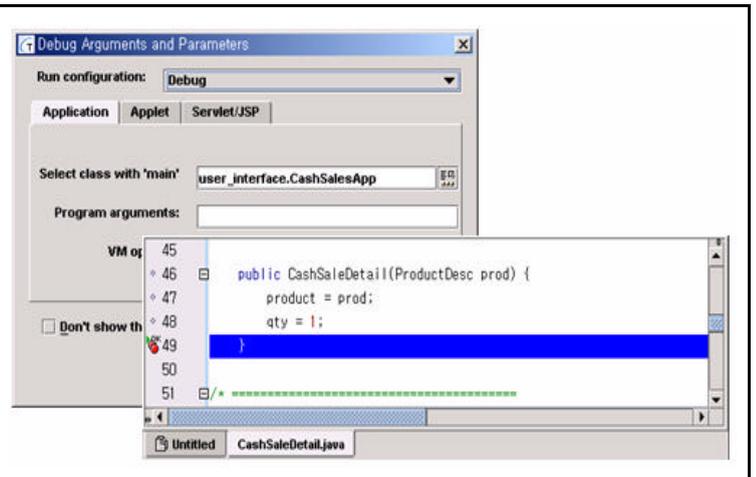


: Debug run configuration
 (break point)

CashSales

. Editor

Run in Debugger ()
 가
 CashSales Debug run
 configuration . **Ok**
 가 “Scan”
 Editor



:

CashSaleDetail.qty

Debugger

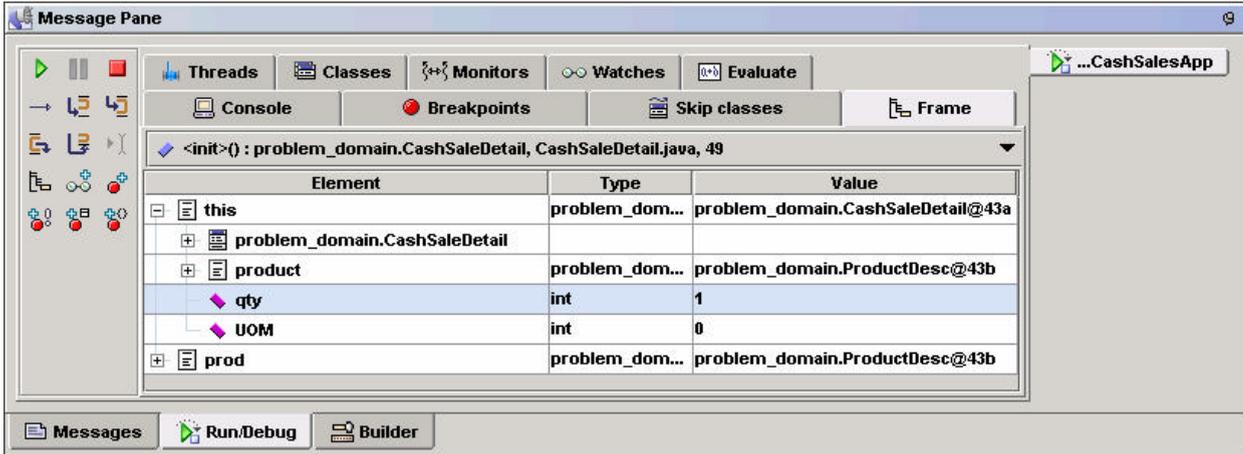
가

Debugger

. Debugger pane

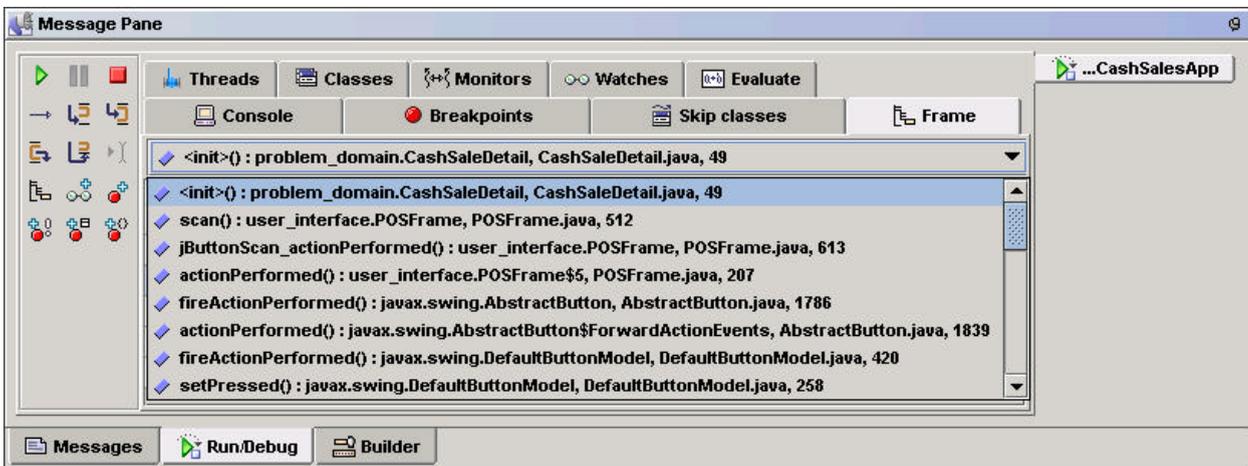
frame

CashSaleDetail.qty



Frame

(method)



Editor

가



Project | Rebuild Project

Make

- Debugger

. Debugger

(breakpoint)

Remove breakpoint

Delete

- (method)

Smart Step

“Step into” ()

가

. (Debugger

가

가

“Skip

classes”

Java

가

“Skip classes”

가

가

.)

- C++

Together

Together

configuration

C++

가