



Designing Interface Objects

Presentation Layer Architecture

- ◆ Remember: 3-tier architecture (presentation-boundary, business logic-control, database-entity)

Logical design	The project team may be producing analysis and design models that are independent of the hardware and software environment in which they are to be implemented. For this reason, the entity classes, which provide the functionality of the application, will not include details of how they will be displayed.
Interface independence	Even if display methods could be added to classes in the application, it would not make sense to do so. Object instances of any one class will be used in many different use cases: sometimes their attributes will be displayed on screen, sometimes printed by a printer. There will not necessarily be any standard layout of the attributes that can be built into the class definition, so presentation of the attributes is usually handled by another class.
Reuse	One of the aims is to produce classes that can be reused in different applications. For this to be possible, the classes should not be tied to a particular implementation environment or to a particular way of displaying the attribute values of instances.

Remember:
Logical
(layers) versus
Physical(tier)
architecture

UI Prototyping (1)

- ◆ Prototype: a model that looks and to some extent behaves like the finished product, but is lacking certain features
- ◆ Horizontal versus Vertical prototypes
 - Layering versus partitioning
- ◆ Throwaway prototypes (visual programming environments)
 - Outside in development: blurring the separation!

UI Prototyping (2)

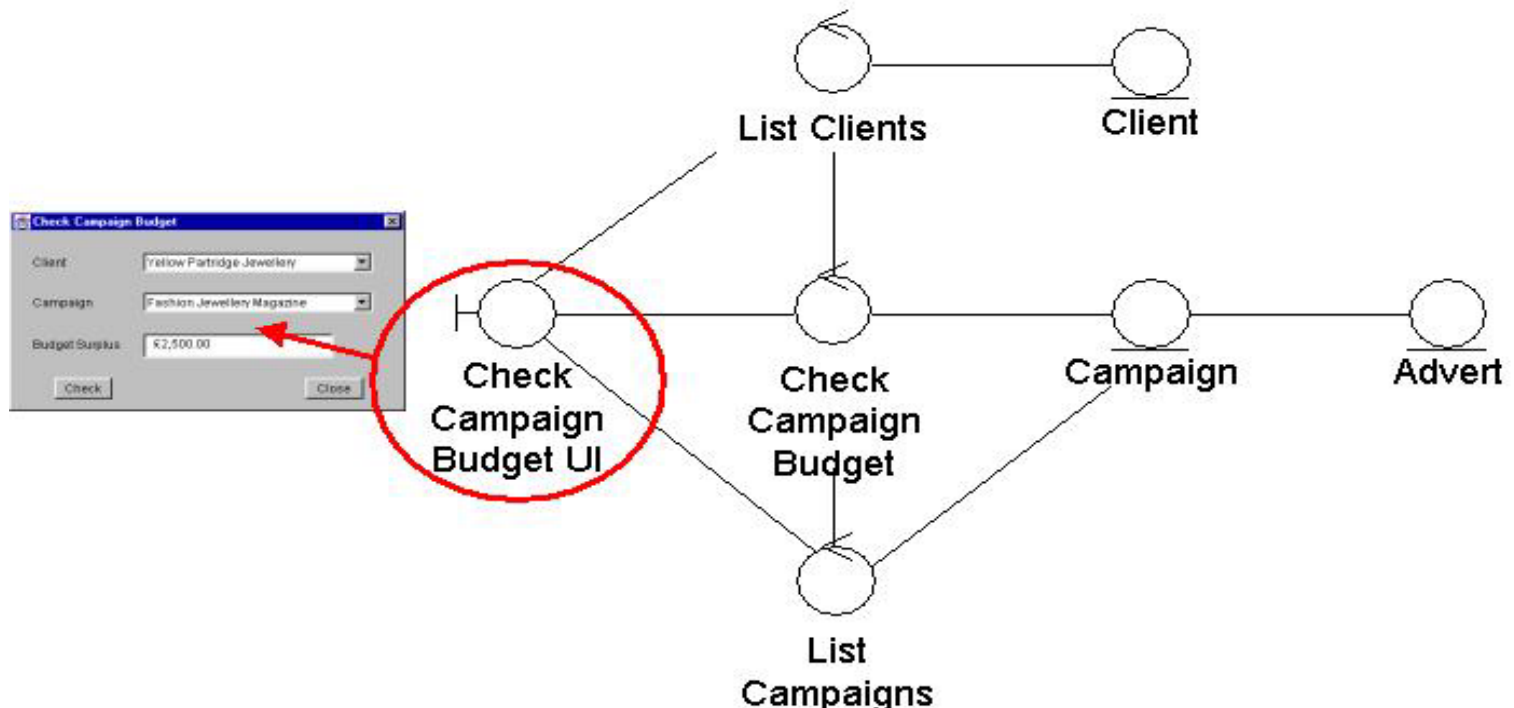
A screenshot of a 'Check Campaign Budget' dialog box. It features a title bar with a close button. The main area contains three input fields: 'Client' with a dropdown menu showing 'Yellow Partridge Jewellery', 'Campaign' with a dropdown menu showing 'Fashion Jewellery Magazine', and 'Budget Surplus' with a text field containing '£2,500.00'. At the bottom, there are two buttons: 'Check' and 'Close'.

A screenshot of a 'Check Campaign Budget' dialog box. It features a title bar with standard window controls. On the left, there is a tree view showing a hierarchy of folders: 'Edgbaston Cars', 'Guelph Industries', 'Harper International', 'Holborn Motors', 'Lynch Property', 'Yellow Partridge', and 'Zeta Systems'. The 'Yellow Partridge' folder is expanded, showing a sub-item 'Fashion Jewellery Magaz'. To the right of the tree view is a 'Budget Surplus' text field containing '£2,500.00'. At the bottom, there are two buttons: 'Check' and 'Close'.

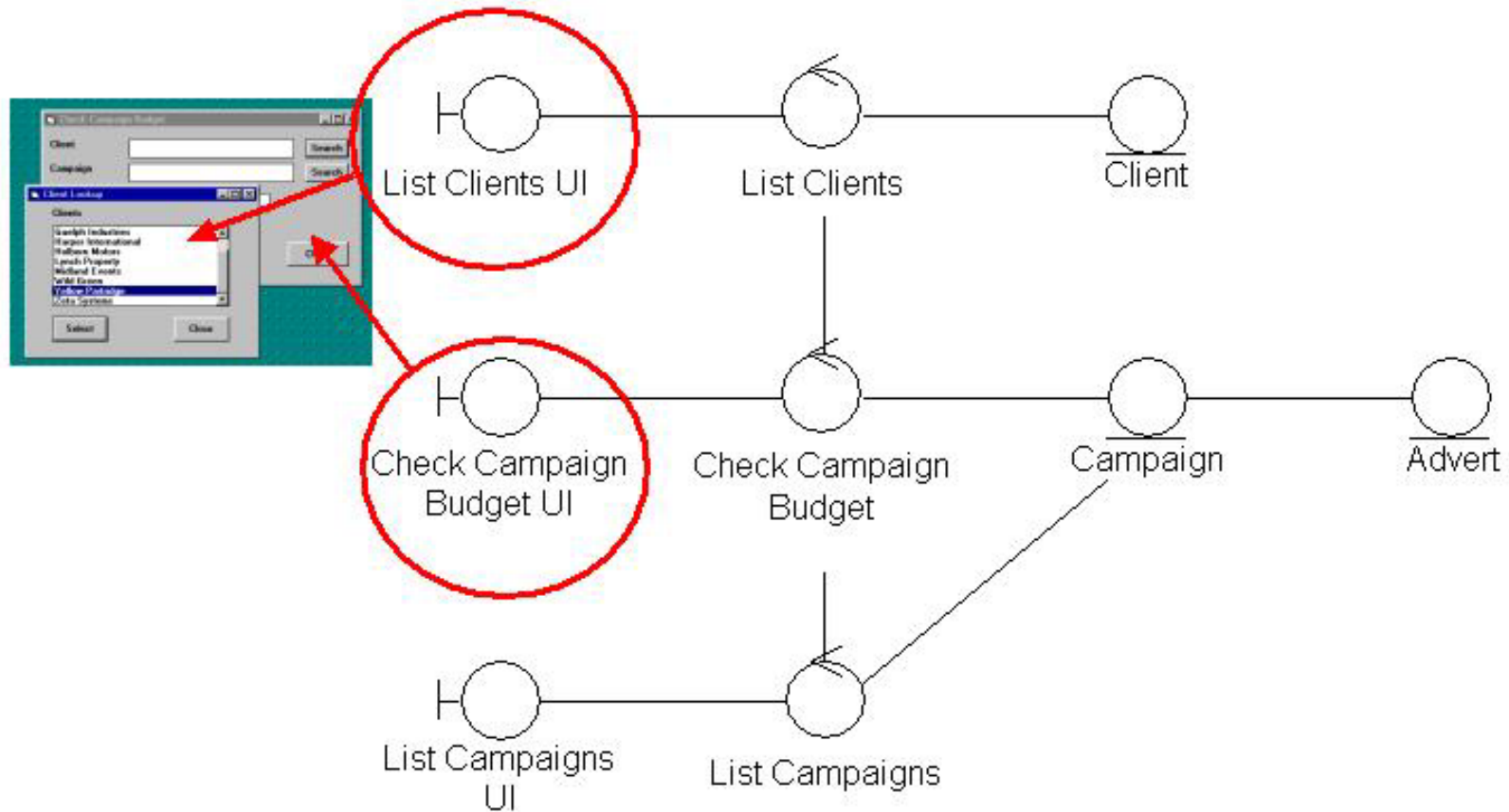
A screenshot of a 'Check Campaign Budget' dialog box with a teal background. It features a title bar with standard window controls. The main area contains two search fields: 'Client' and 'Campaign', each with a 'Search' button. Below the search fields is a 'Close' button. A 'Client Lookup' sub-dialog box is open in front of it, showing a list of clients: 'Guelph Industries', 'Harper International', 'Holborn Motors', 'Lynch Property', 'Midland Events', 'Wild Green', 'Yellow Partridge' (highlighted), and 'Zeta Systems'. The sub-dialog has 'Select' and 'Close' buttons.

Remember: style guides

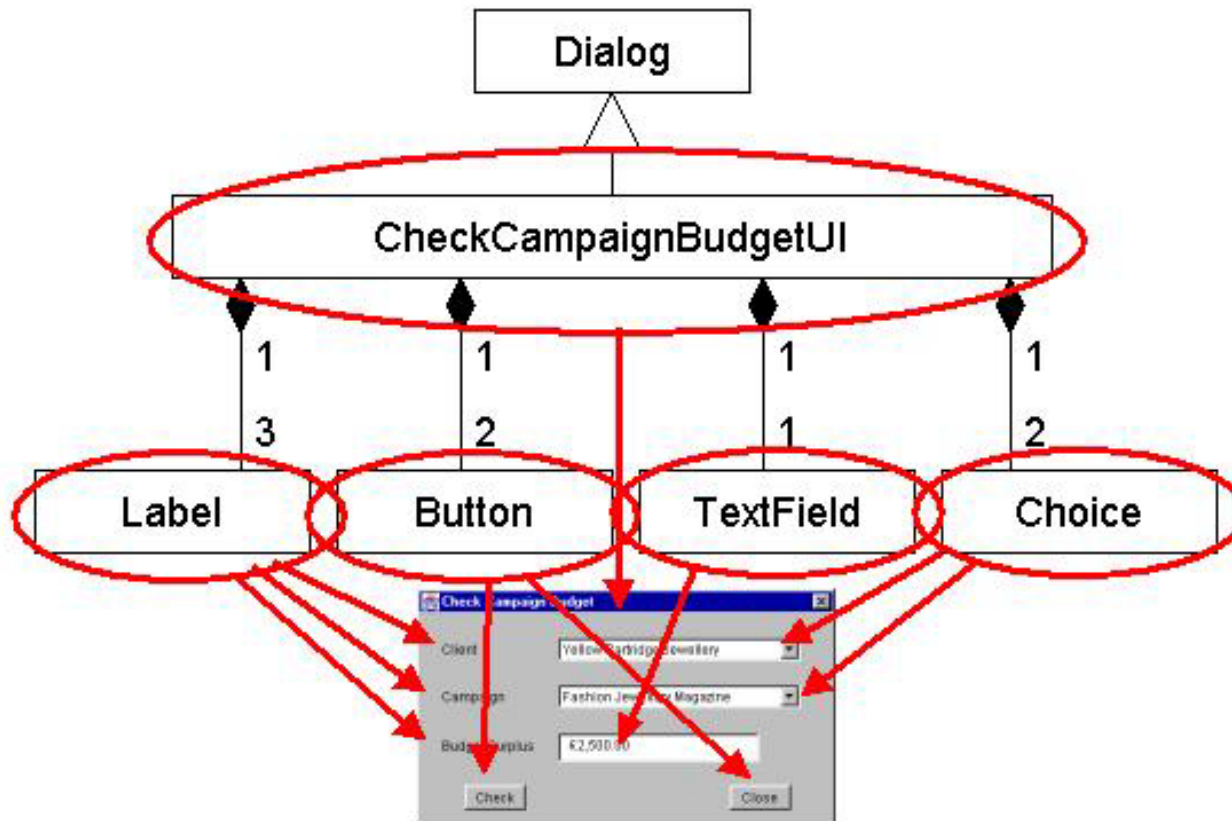
Designing UI Classes (1)



Designing UI Classes (2)



Designing UI Classes (3)

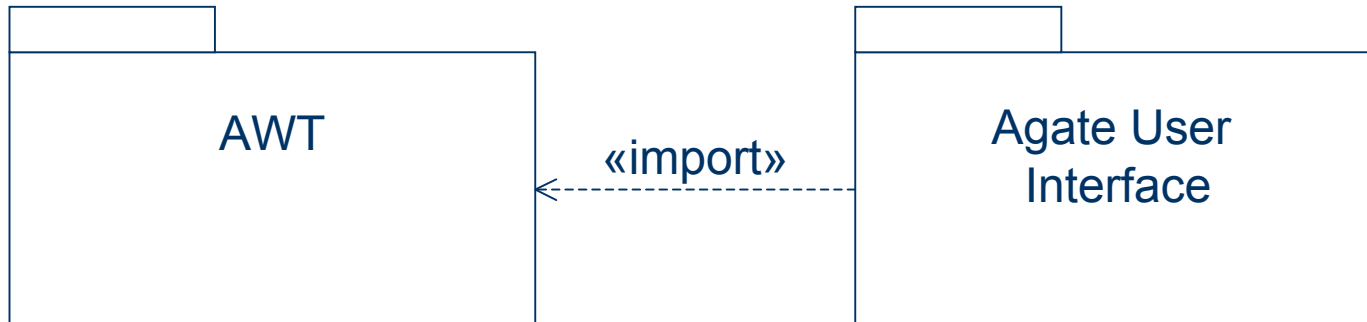


Designing UI Classes (4)

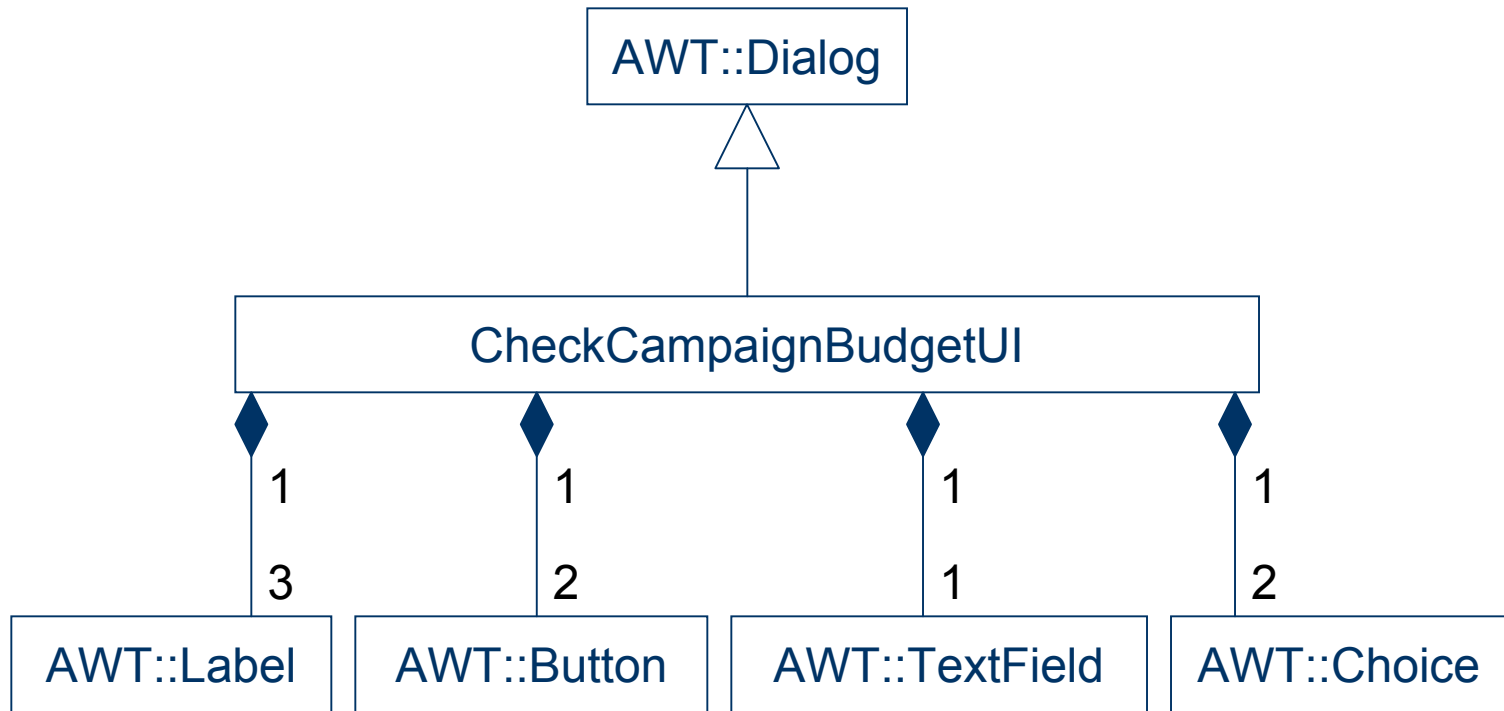


CheckCampaignBudgetUI

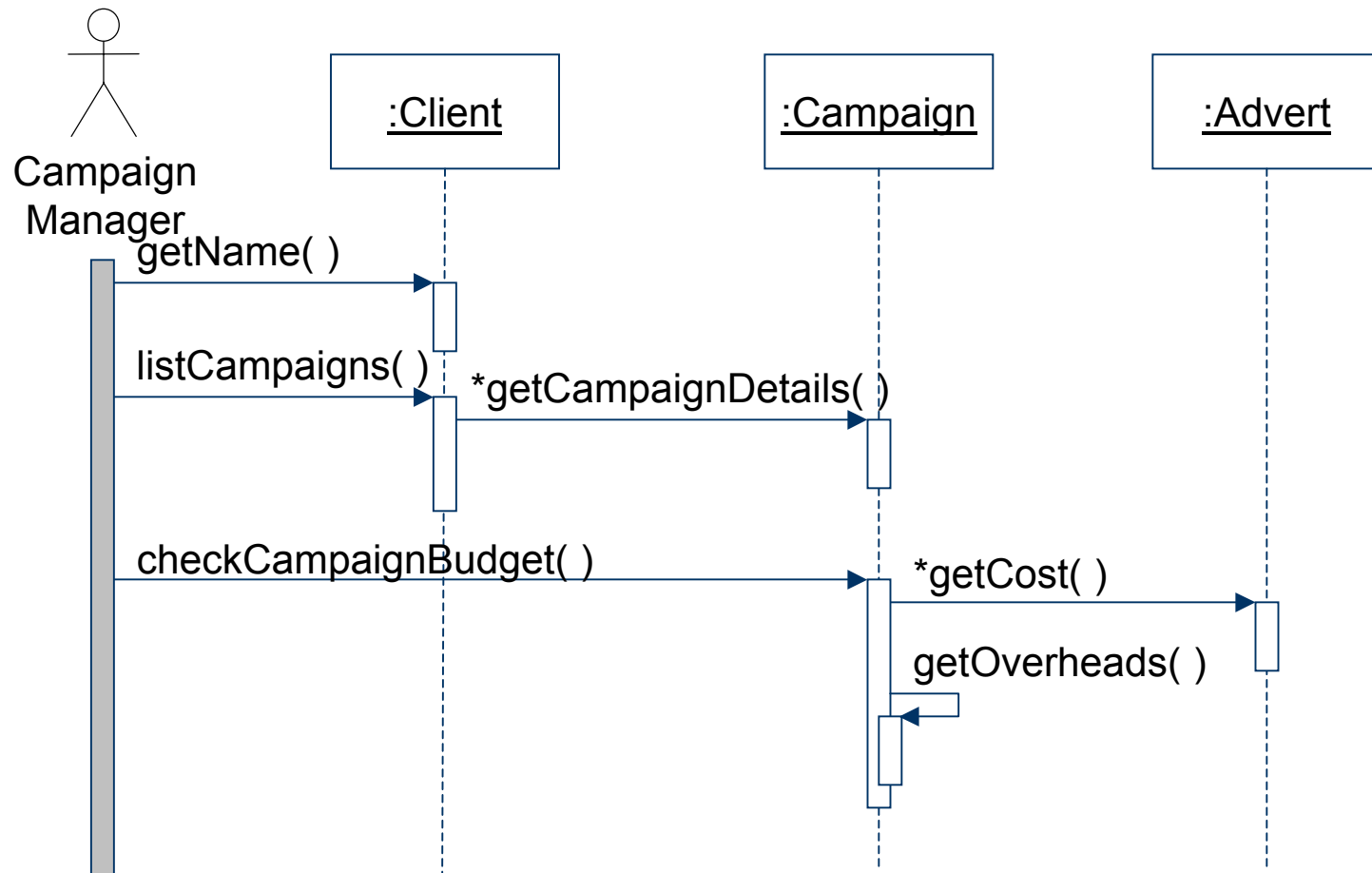
- clientLabel : Label
- campaignLabel : Label
- budgetLabel : Label
- checkButton : Button
- closeButton : Button
- budgetTextField : TextField
- clientChoice : Choice
- campaignChoice : Choice



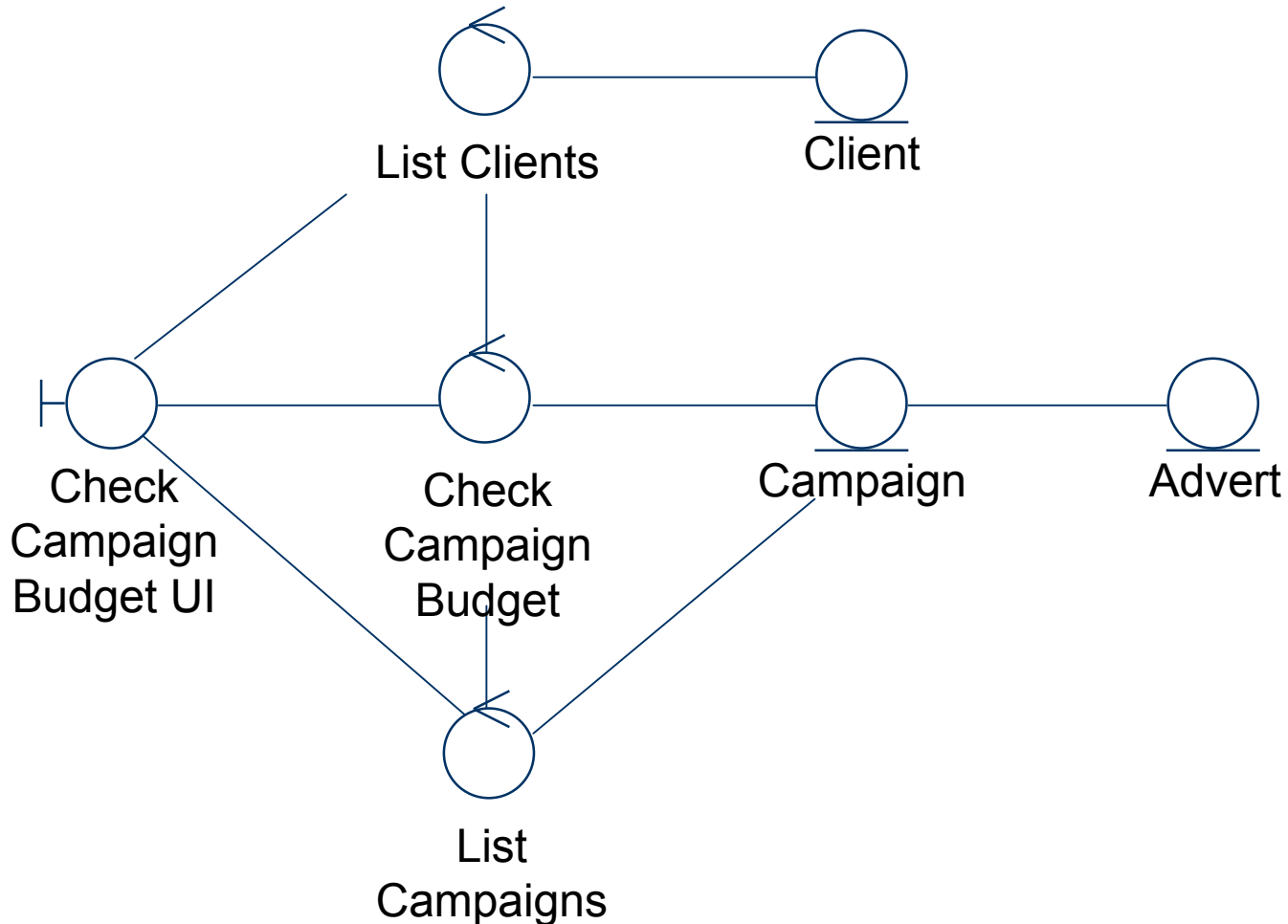
Designing UI Classes (5)



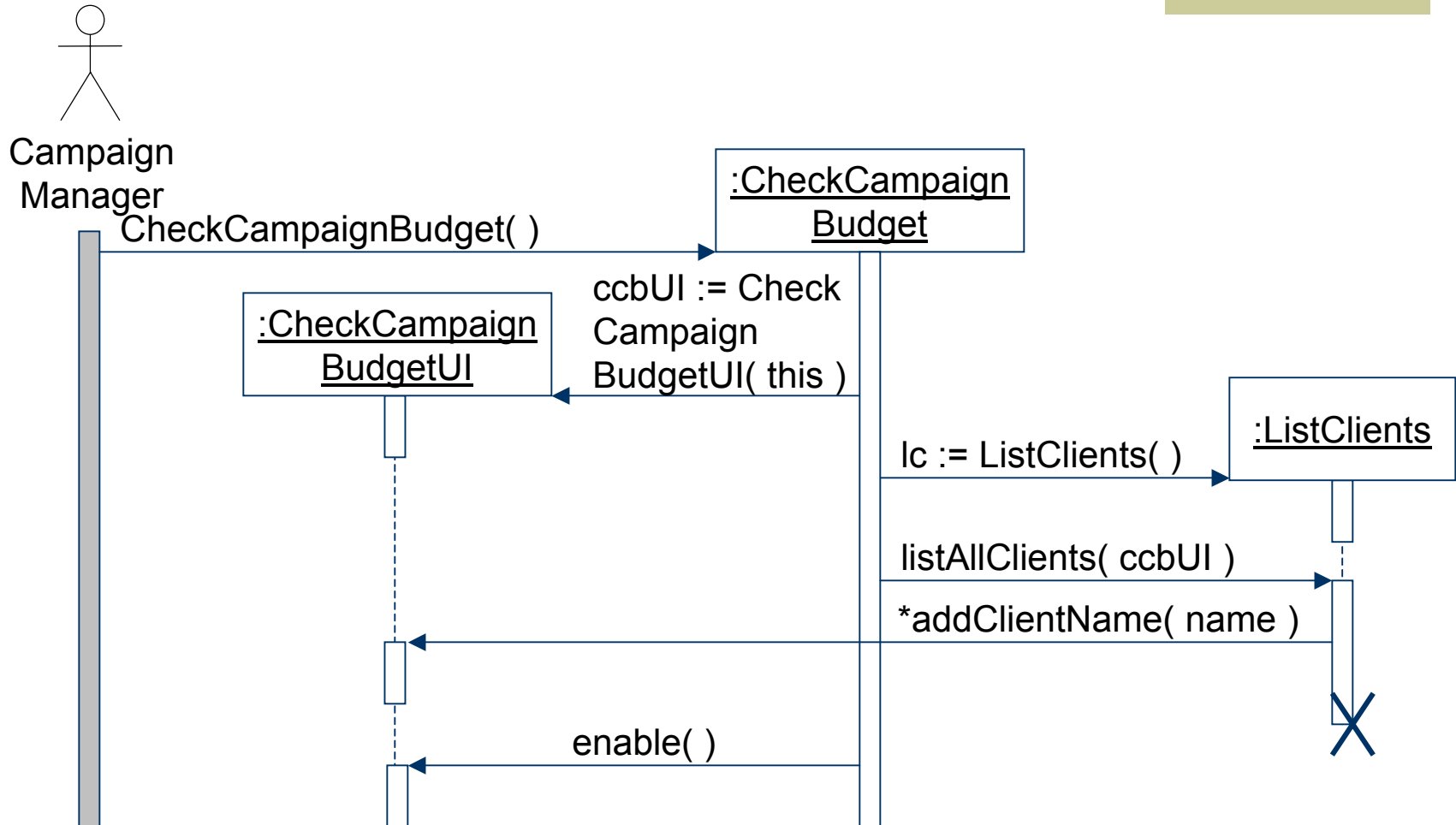
Designing UI Interactions (1)



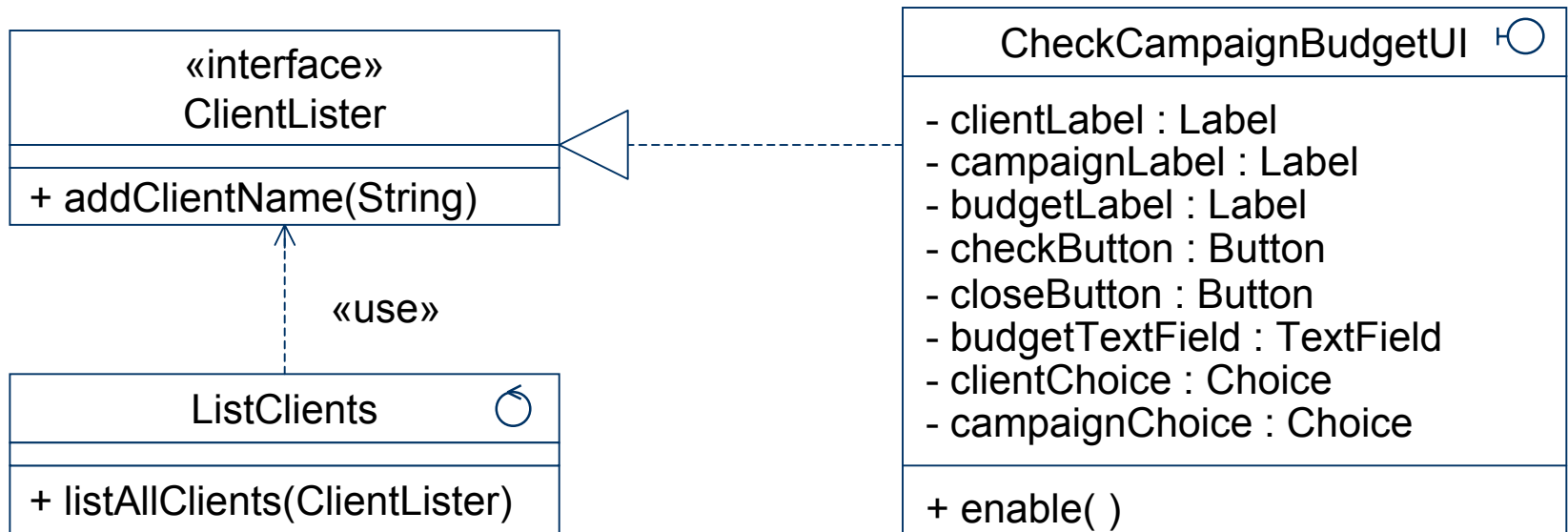
Designing UI Interactions (2)



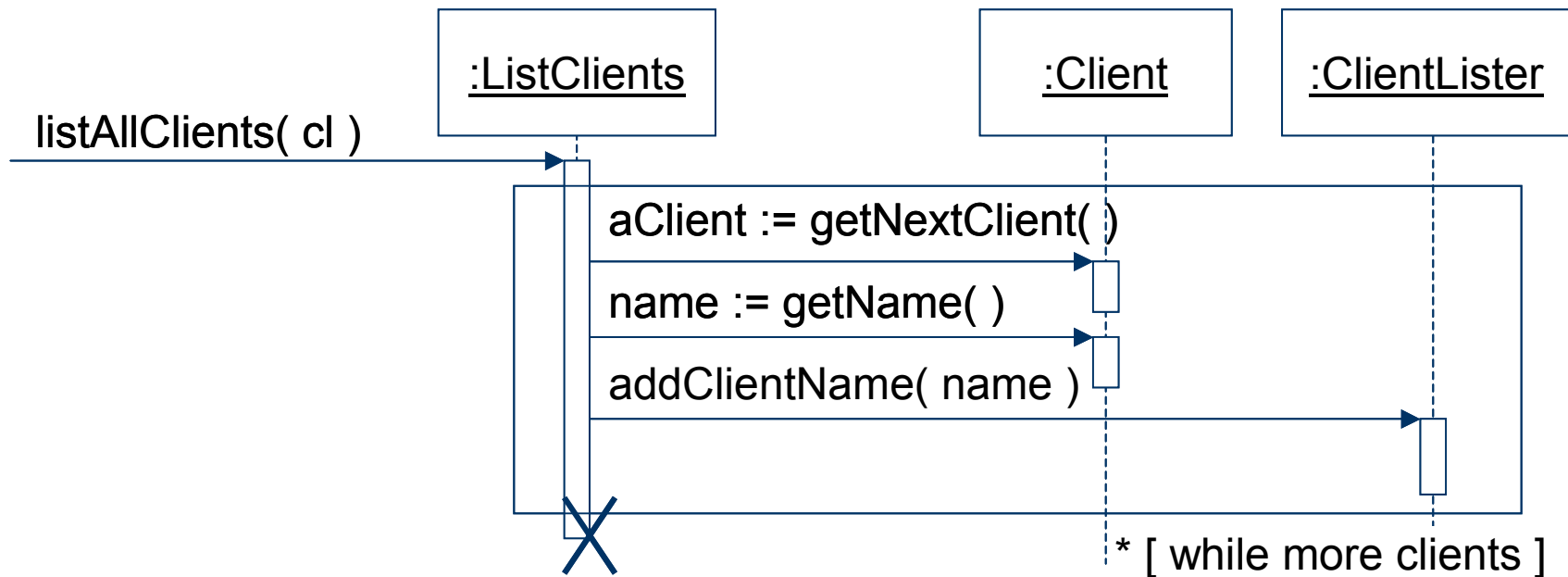
Designing UI Interactions (3)



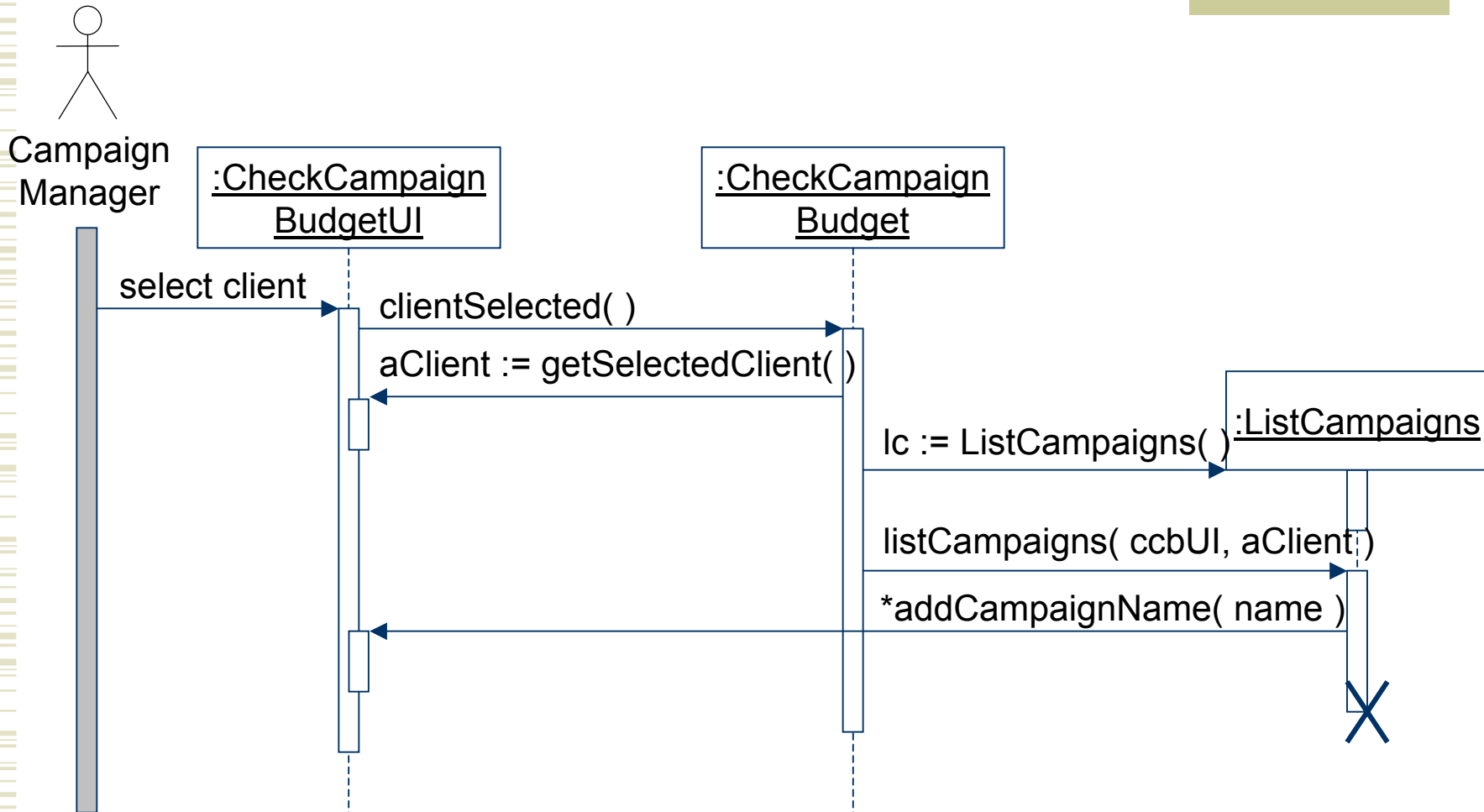
Designing UI Interactions (4)



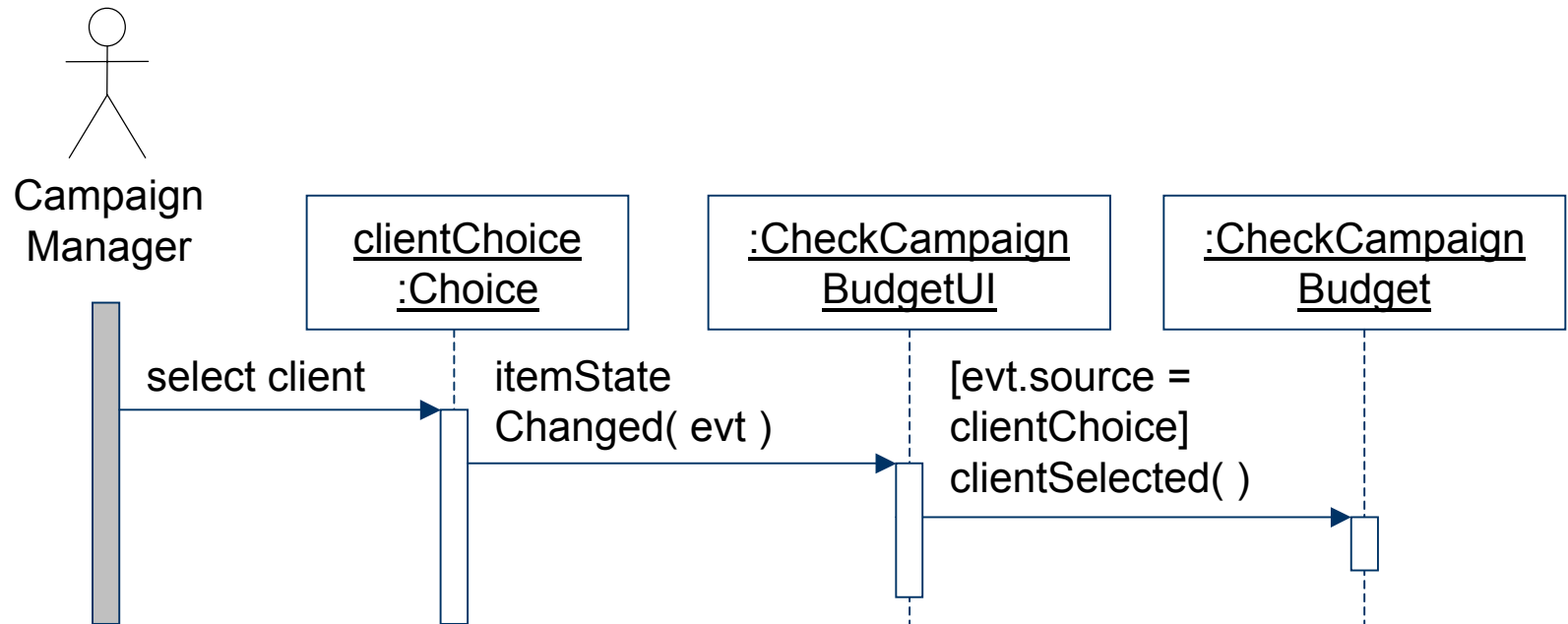
Designing UI Interactions (5)



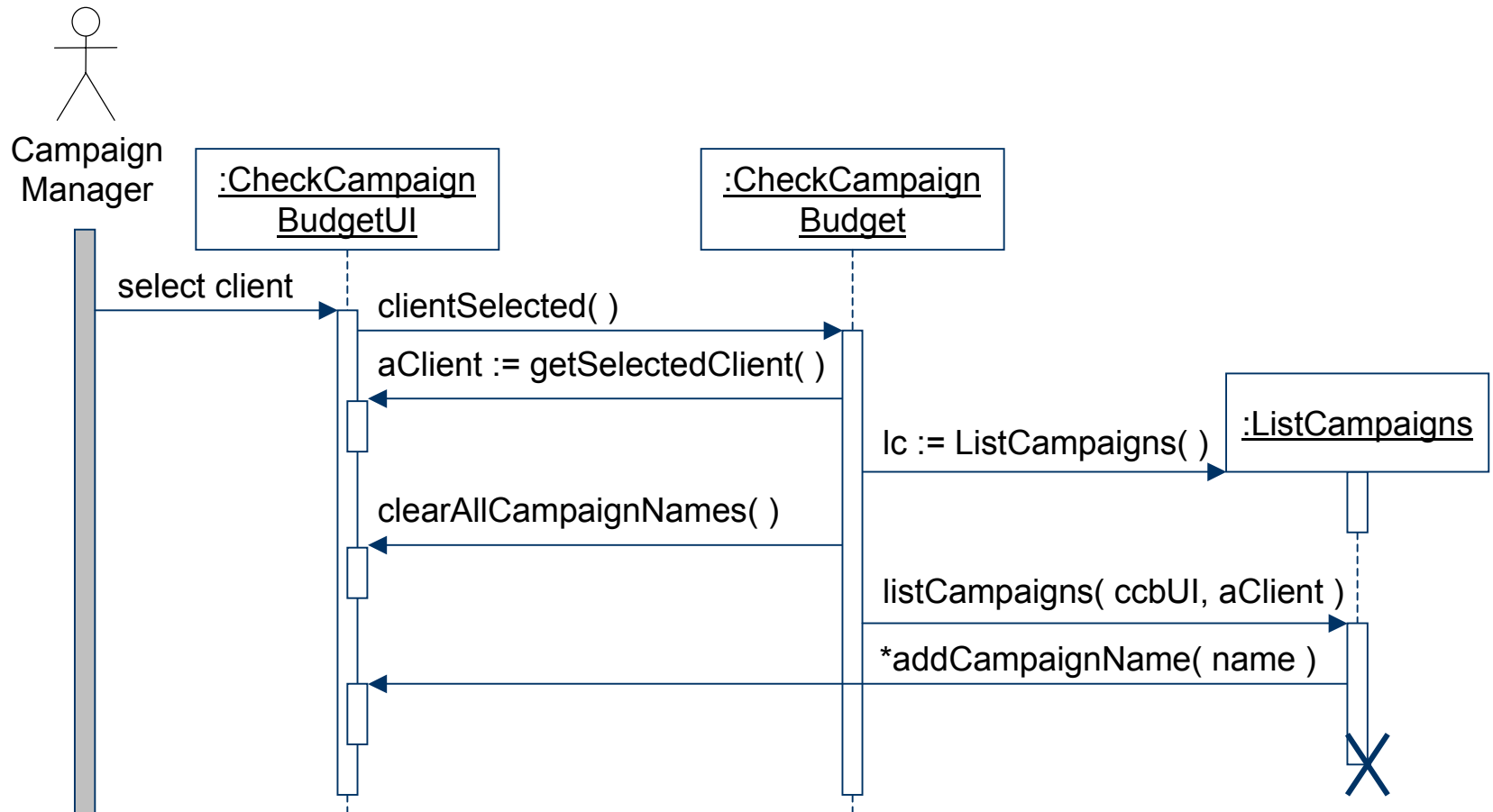
Designing UI Interactions (6)



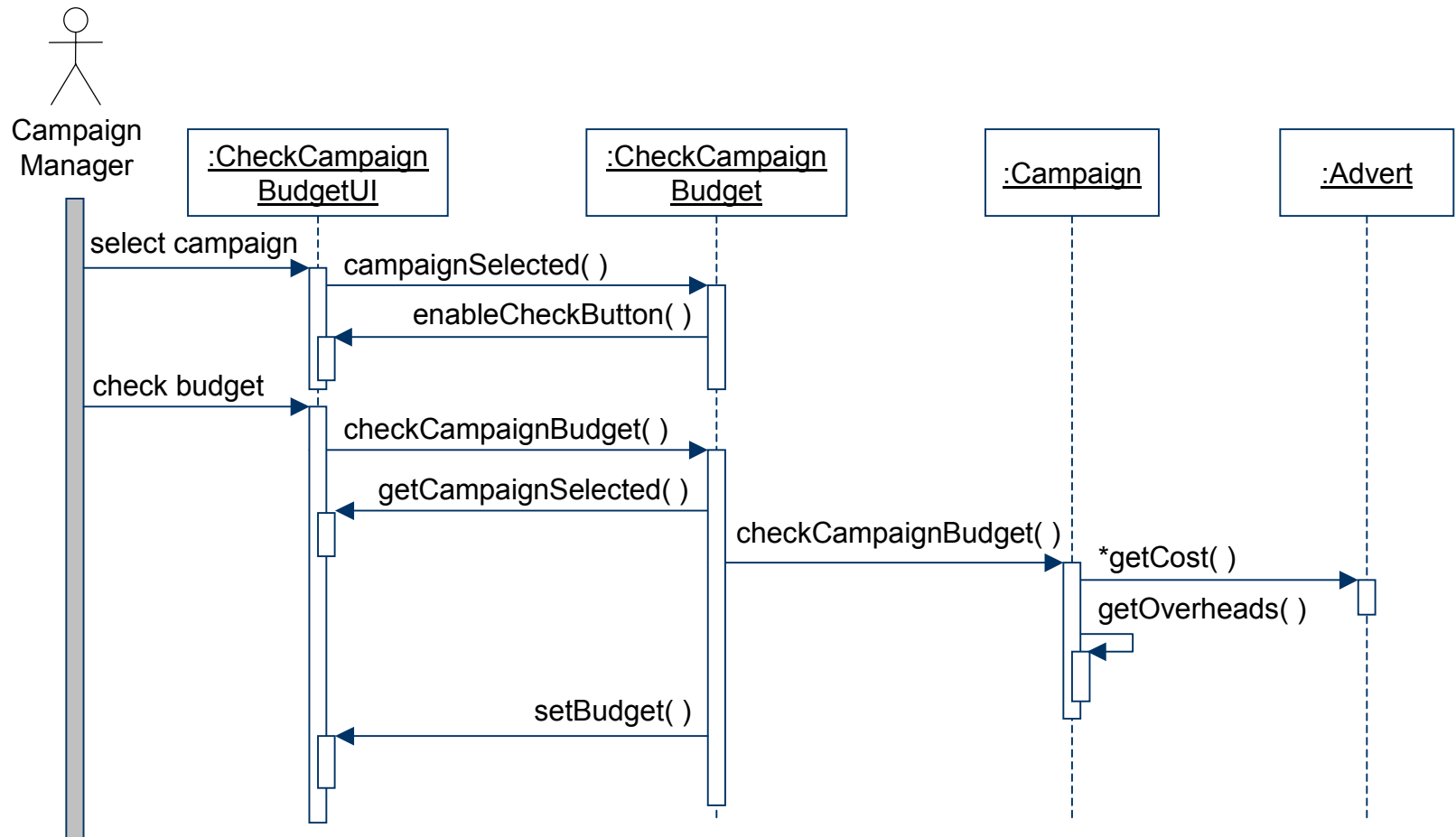
Designing UI Interactions (7)



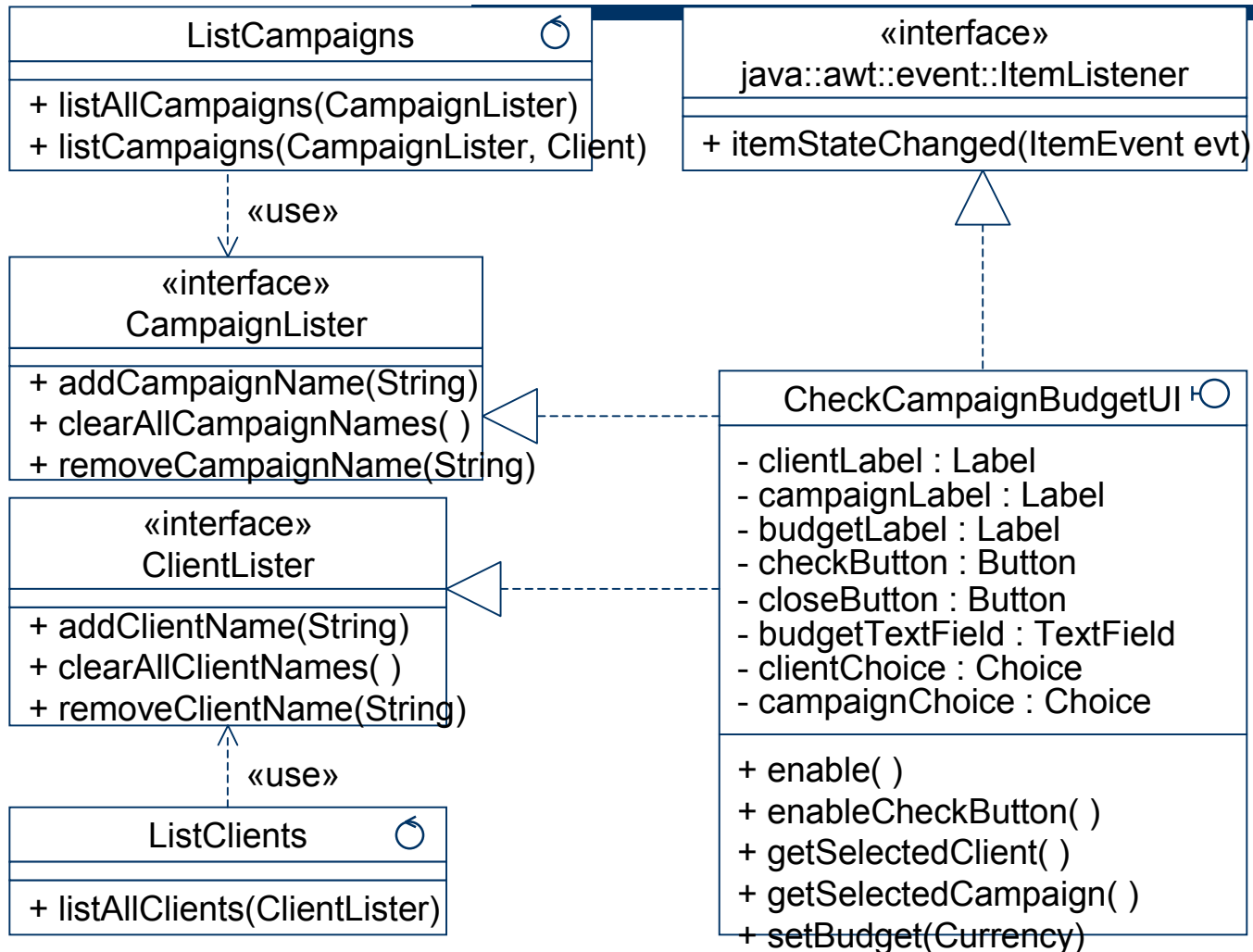
Designing UI Interactions (8)



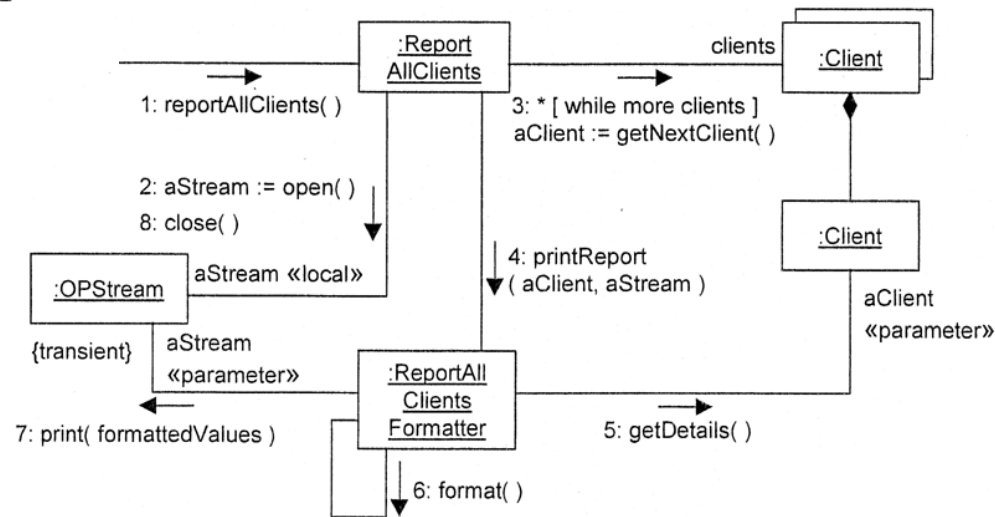
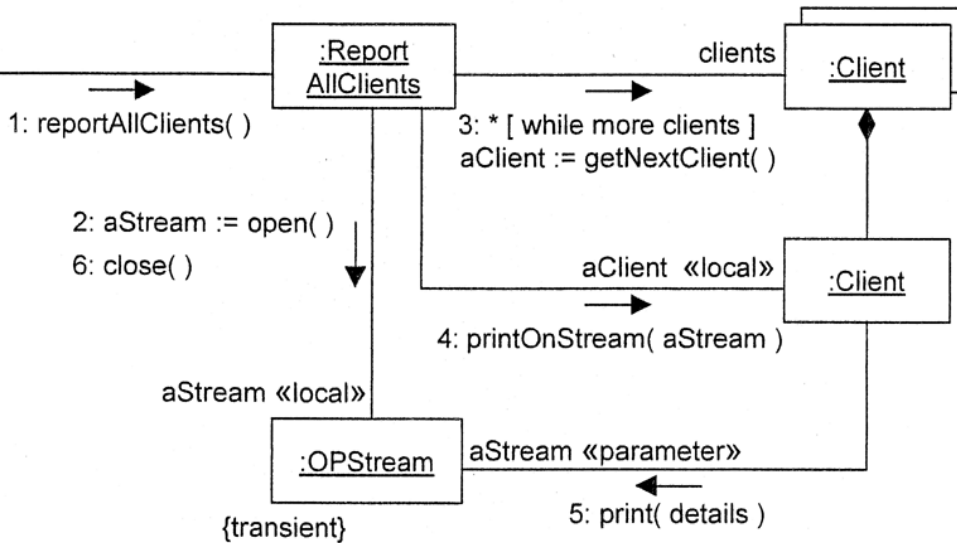
Designing UI Interactions (9)



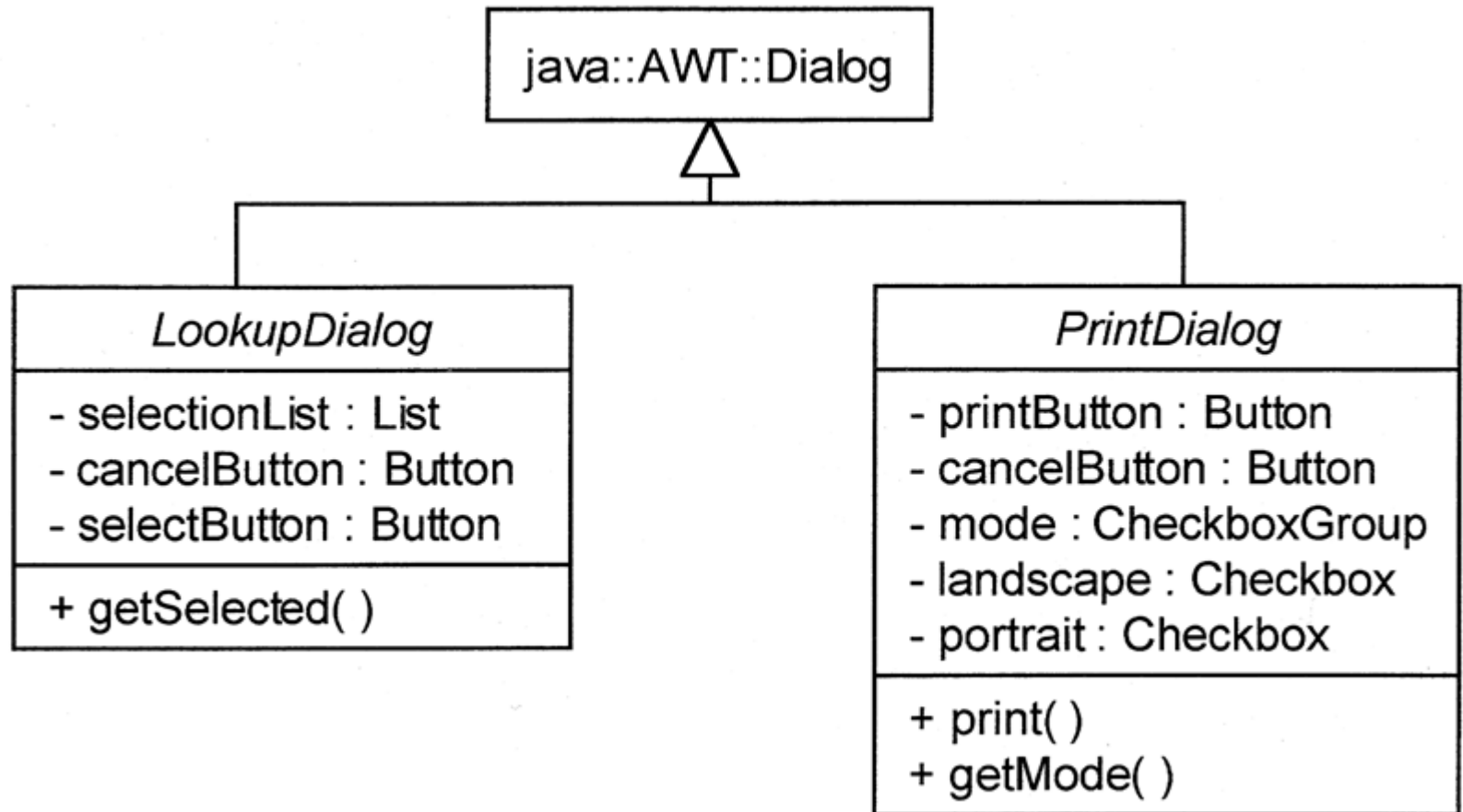
Designing UI Interactions (10)



Designing UI Interactions (11)



Class Diagram Revision



UI Modelling with Statecharts (1)



The screenshot shows a dialog box titled "Check Campaign Budget" with a close button (X) in the top right corner. It contains three input fields: "Client" with a dropdown menu showing "Yellow Partridge Jewellery", "Campaign" with a dropdown menu showing "Fashion Jewellery Magazine", and "Budget Surplus" with a text box containing "£2,500.00". At the bottom, there are two buttons: "Check" and "Close".

- ◆ Bottom-up approach
 - Modelling components as statecharts
 - Assemble the statecharts into a complete model
- ◆ Top-down approach
 - Successive introduction of nested states
- ◆ Error prevention is preferable to error detection and correction!

UI Modelling with Statecharts (2)

◆ Five tasks

- Describe the high-level requirements and main user tasks
- Describe the user interface behaviour
- Define user interface rules
- Draw the statechart (and successively refine it)
- Prepare an event action table

UI Modelling with Statecharts (3)

- ◆ Describe the high-level requirements and main user tasks
 - The requirement here is that the users must be able to check whether the budget for an advertising campaign has been exceeded or not. This is calculated by summing the cost of all the adverts in a campaign, adding a percentage for overheads and subtracting the result from the planned budget. A negative value indicates that the budget has been overspent. This information is used by a campaign manager.

UI Modelling with Statecharts (4)

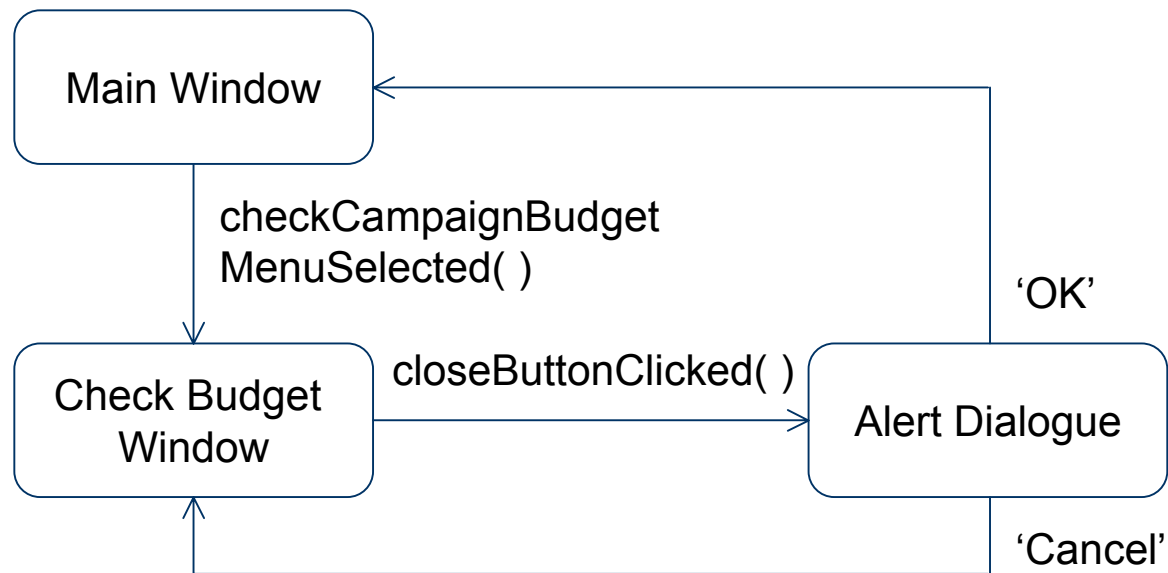
- ◆ Describe the user interface behaviour
 - The **client dropdown** displays a list of clients. When a client is selected, their campaigns will be displayed in the campaign dropdown.
 - The **campaign dropdown** displays a list of campaigns belonging to the client selected in the client dropdown. When a campaign is selected the check button is enabled.
 - The **budget textfield** displays the result of the calculation to check the budget.
 - The **check button** causes the calculation of the budget balance to take place.
 - The **close button** closes the window and exits the use case.

UI Modelling with Statecharts (5)

◆ Define user interface rules

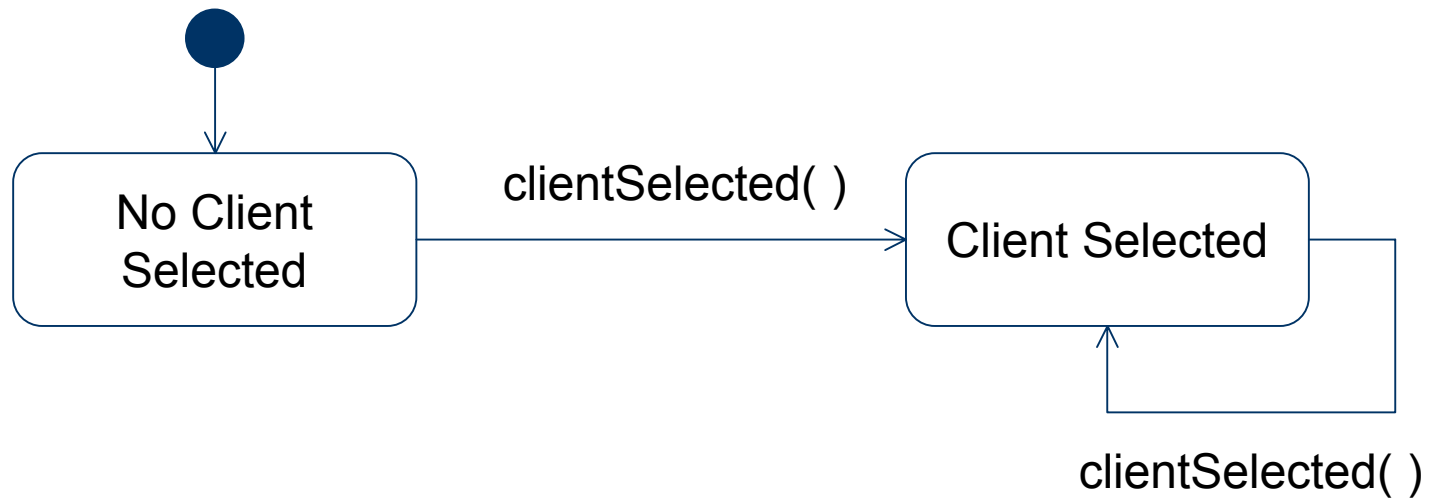
- The client dropdown has constant behaviour. Whenever a client is selected, a list of campaigns is loaded into the campaign dropdown
- The budget textfield is initially empty. It is cleared whenever a new client is selected or a new campaign is selected. It is not editable
- The close button may be pressed at any time to close the window
- The campaign dropdown is initially disabled. No campaign can be selected until a client has been selected. Once it has been loaded with a list of campaigns it is enabled
- The check button is initially disabled. It is enabled when a campaign is selected. It is disabled whenever a new client is selected
- The window is entered from the main window when the **Check Campaign Budget** menu item is selected
- When the close button is clicked, an alert dialogue is displayed. This asks ‘Close window? Are you sure?’ and displays two buttons labelled ‘OK’ and ‘Cancel’. If ‘OK’ is clicked the window is exited; if ‘Cancel’ is clicked then it carries on in the state it was in before the close button was clicked

UI Modelling with Statecharts (6)



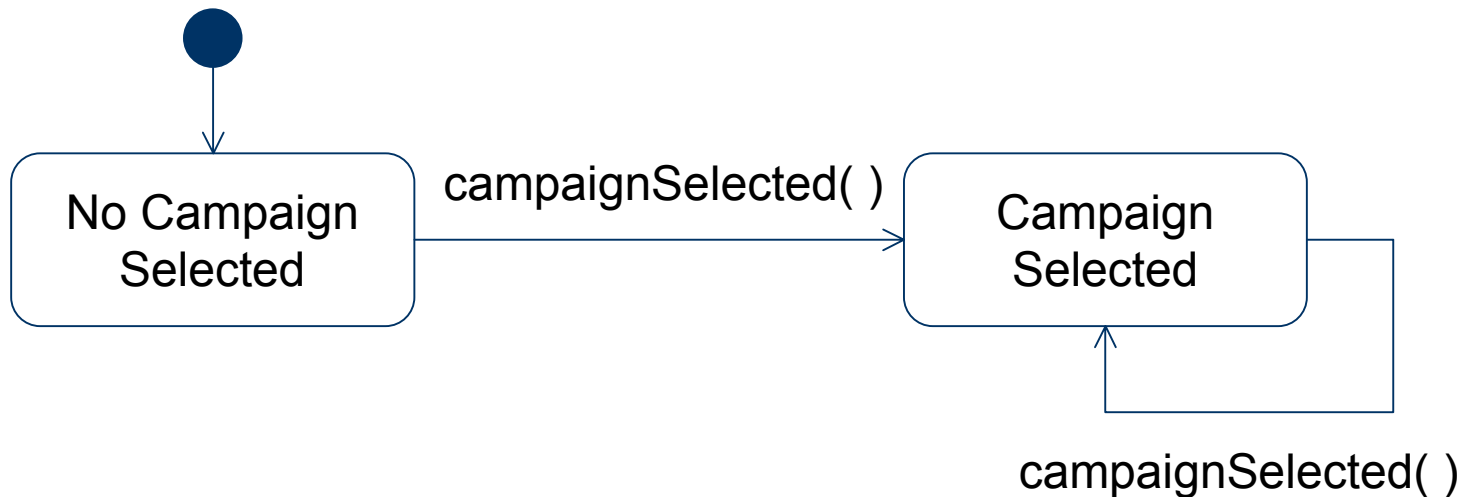
UI Modelling with Statecharts (7)

Nested within the `Check Budget Window` state



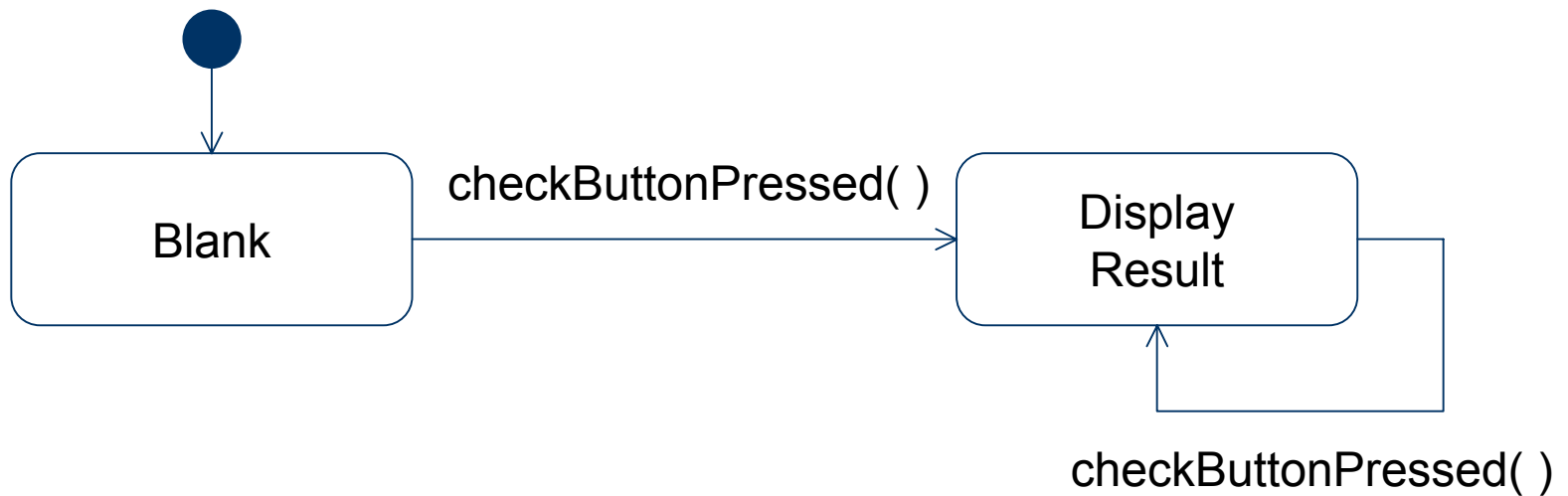
UI Modelling with Statecharts (8)

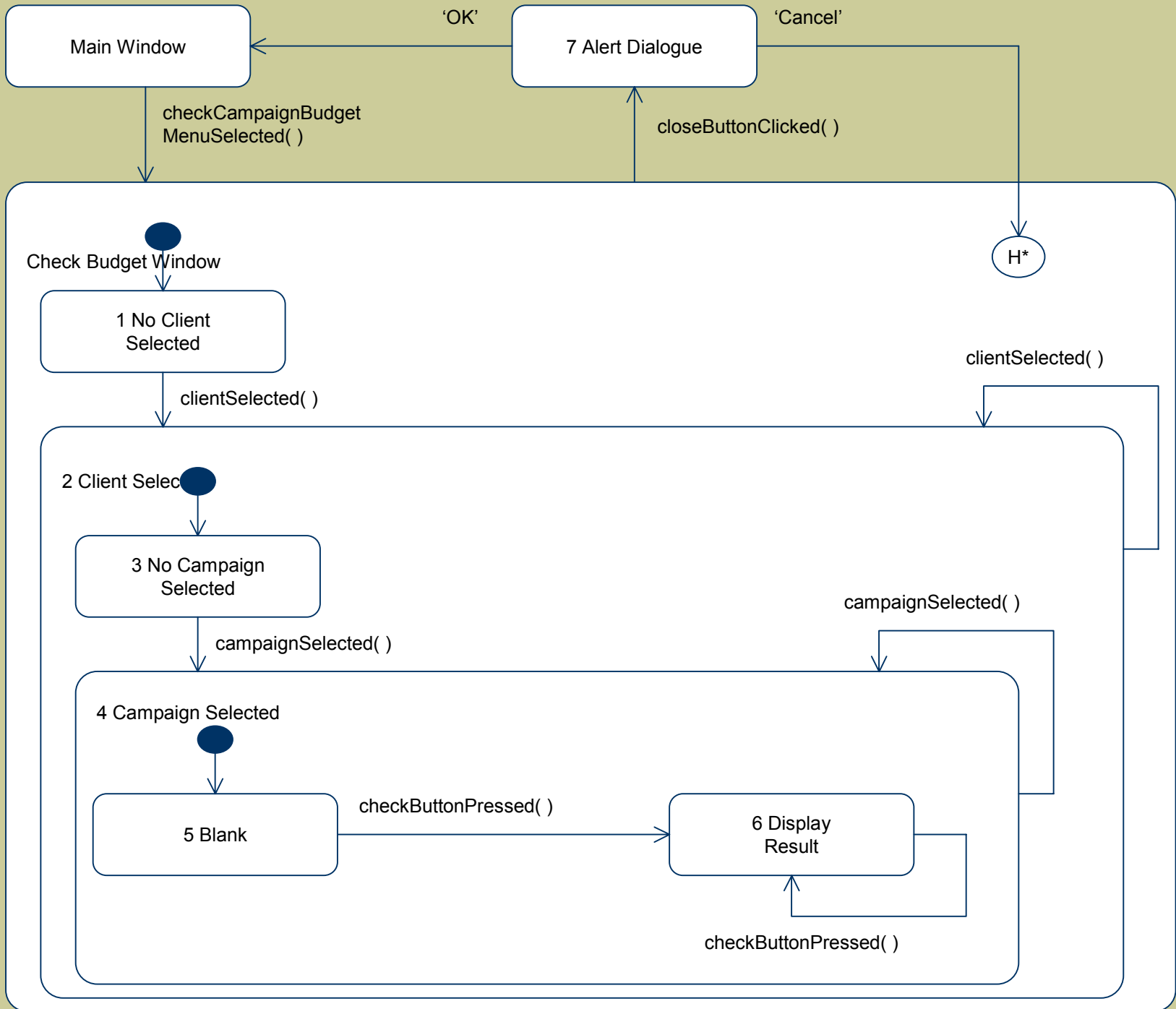
Nested within the `Client Selected` state

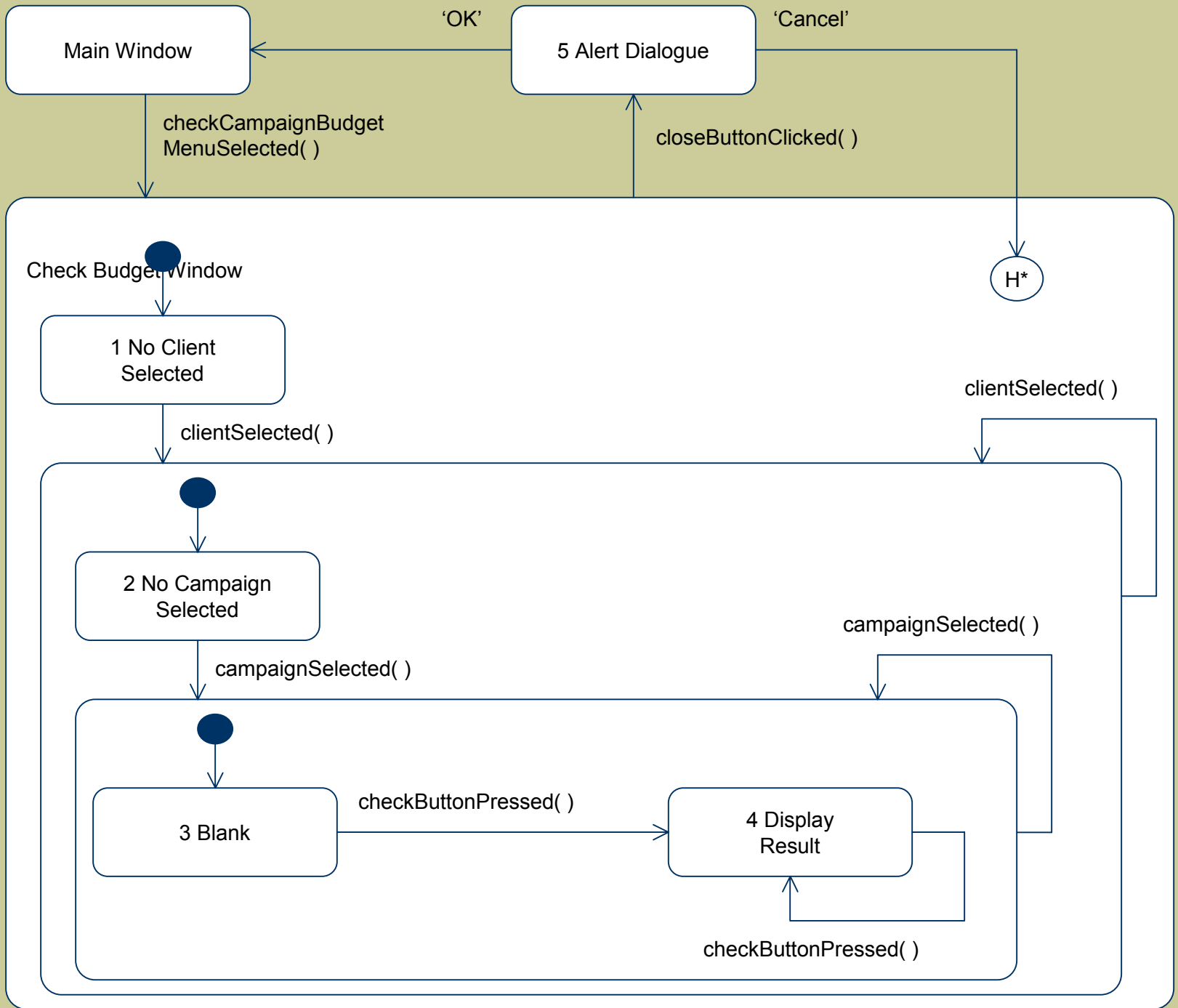


UI Modelling with Statecharts (9)

Nested within the Campaign Selected state



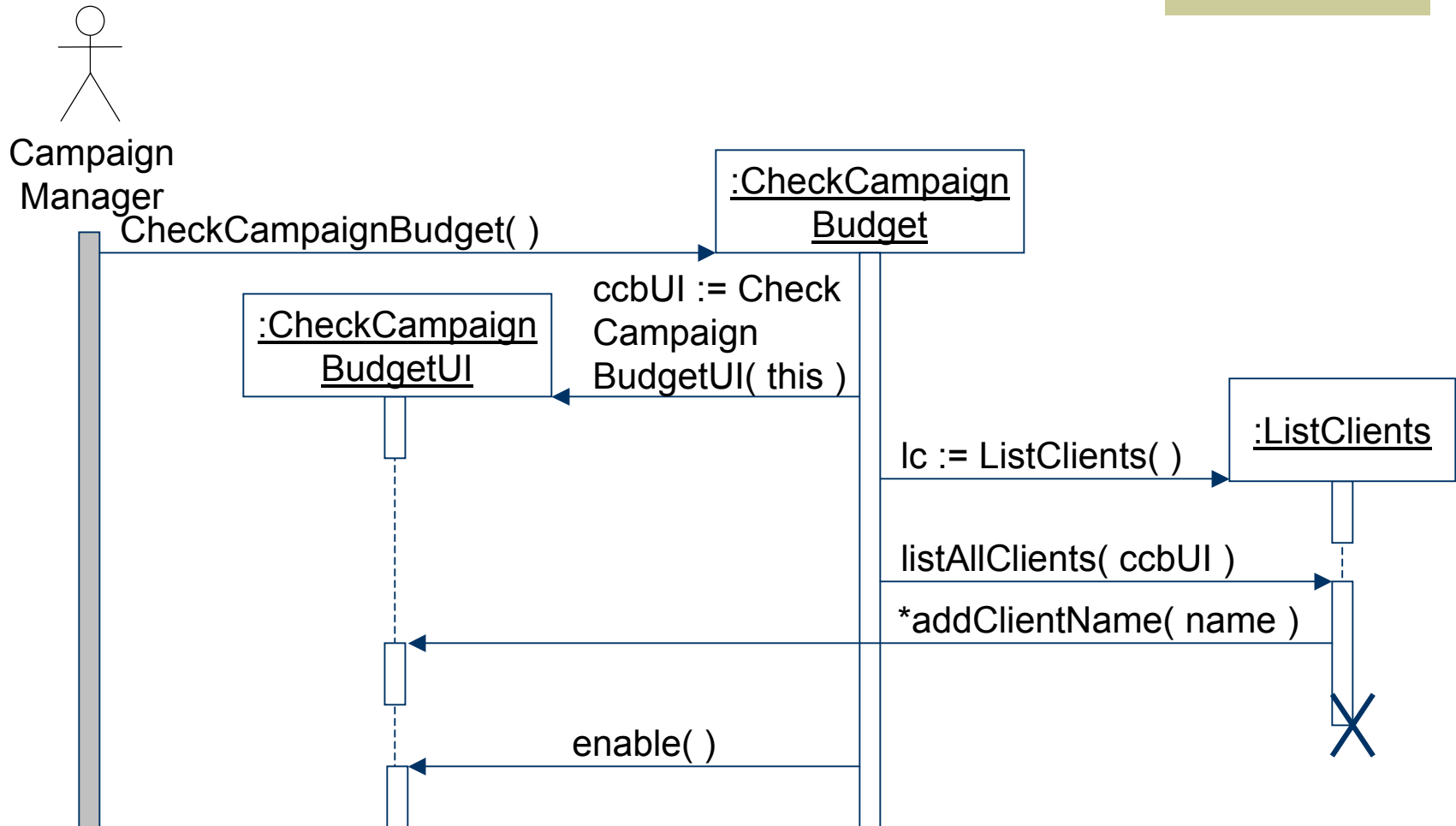




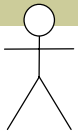
UI Modelling with Statecharts (12)

Current State	Event	Action	Next State
–	Check Campaign Budget menu item selected.	Display CheckCampaignBudgetUI. Load client dropdown. Disable campaign dropdown. Disable check button. Enable window.	1
1	Client selected.	Clear campaign dropdown. Load campaign dropdown. Enable campaign dropdown.	2
2, 3, 4	Client selected.	Clear campaign dropdown. Load campaign dropdown. Clear budget textfield. Disable check button.	2
2	Campaign selected.	Clear budget textfield. Enable check button.	3
3	Check button pressed.	Calculate budget. Display result.	4
3, 4	Campaign selected.	Clear budget textfield.	3
4	Check button pressed.	Calculate budget. Display result.	4
1, 2, 3, 4	Close button clicked.	Display alert dialogue.	5
5	OK button clicked.	Close alert dialogue. Close window.	–
5	Cancel button clicked.	Close alert dialogue.	H*

Revising the Interaction and Class Diagrams (1)



Revising the Interaction and Class Diagrams (2)



Campaign
Manager

