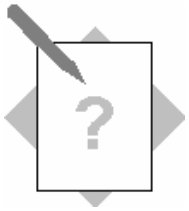
UI Elements
Solution



Chapter: **UI Elements**

Theme: **Dictionary, Table**

At the end of this Exercise, you are able to:

- Define a dictionary structure and reuse it from a Web Dynpro application.
- Define standard table functionality.

4 Developing, Step-by-Step

Note: In this exercise you have to type in some lines of java code. For your convenience, you can cut and paste the code from the corresponding solution project.
But keep in mind: Some of the methods are automatically generated by Web Dynpro .Because of that, the methods names you have to choose can differ from the method names of the solution.

4-1 Define data transport from *StartView* to *TableView*.

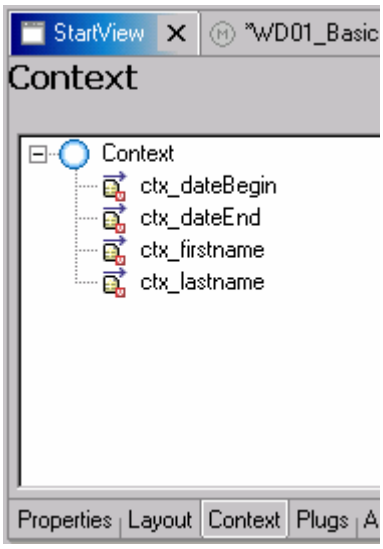
4-1-1 Define view attributes for the context of the view *StartView*.

In the Web Dynpro Explorer:

Expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*.

Select the node *Views* and open the context menu of *StartView*.

Choose *Edit.*



The View Designer for *StartView* appears on the right pane

Choose the *Context* tab

Open the context menu for the root node *Context* and choose the option *New / Value Attribute.*

Define the following value attributes:

Name	Type
ctx_firstname	string
ctx_lastname	string.
ctx_dateBegin	date
ctx_dateEnd	date

4-1-2 Define value attributes for the context of the component controller.

In the Web Dynpro Explorer:

Expand the nodes *WD01_Basics_UI_02/ Web Dynpro / Web Dynpro Components / Exc_UI_02*.

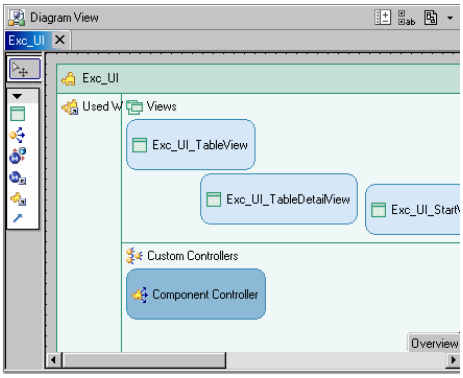
Select the node *Component Controller* and open the context menu.
Choose *Edit.*

The Controller editor appears on the right pane
Choose the tab *Context*
Open the context menu for the root node *Context* and choose the option *New / Value Attribute*.
Add the following value attributes:

Name	Type
cmpCtx_firstname	string
cmpCtx_lastname	string.
cmpCtx_dateBegin	date.
cmpCtx_dateEnd	date

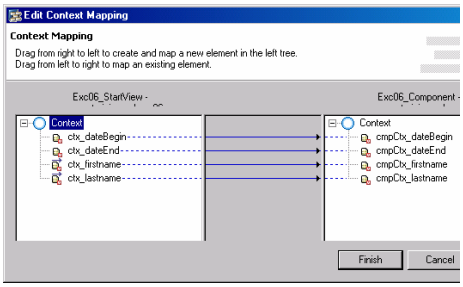
4-1-3 Define the mapping between the context of the view *StartView* and the context of the component controller.

In the context menu of the node *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*, select the entry *Open Data Modeler:*



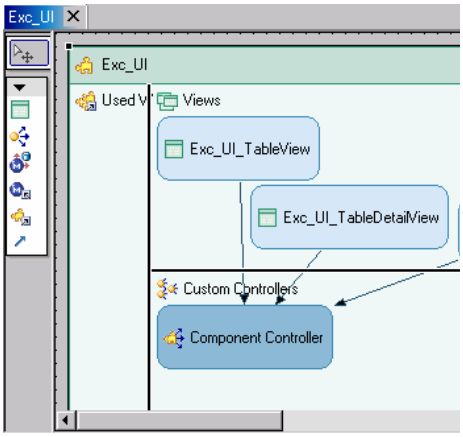
In the left toolbar, choose *Create a data link.* This is then shaded in grey.

Place the cursor on the view *StartView* and left-click. Drag the data link to the *Component Controller* and release the left mouse button.
The dialog box for defining the context mapping appears.



Drag and drop the value node *ctx_firstName*, *ctx_lastname*, *ctx_dateBegin*, and *ctx_dateEnd* of the view context to the corresponding fields of the component controller.

To complete the data link definition, choose *Finish*.



Data Modeler, *Exc_UI_02*:

In the left toolbar, choose *Create a data link.* This is then shaded in grey.

Place the cursor on *TableView* and left-click. Drag the data link to the *Component Controller* and release the left mouse button. The dialog box for defining the context mapping appears.

In this case, however, do not define a mapping between any context elements.

Choose *Finish*.

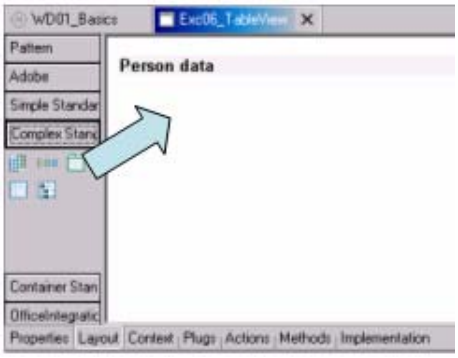
Save the new project data by choosing *Save All Metadata* from the toolbar.

4-2 In the Layout of view *TableView*, define a table UI element. Bind this UI element to the views context.

4-2-1 Define the table UI element.

In the Web Dynpro Explorer:
Expand the nodes W*D01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*.

Select the node *Views*.
Open the context menu of *TableView*.
Choose *Edit.*



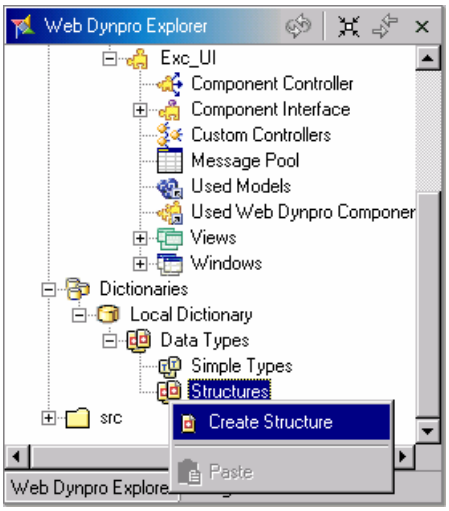
The View Designer for *TableView* appears on the right pane

In the toolbar, choose *Complex Standard* and drag and drop *Table* to the editor pane on the right.

Note: Leave the *dataSource* property of the table blank. You will specify this property later.

Save the new project data by choosing *Save All Metadata* from the toolbar.

4-2-2 Define a Dictionary structure type.



In the Web Dynpro Explorer:

Expand the nodes *WD01_Basics_UI_02 / Dictionaries / Local Dictionary / Data Types*.

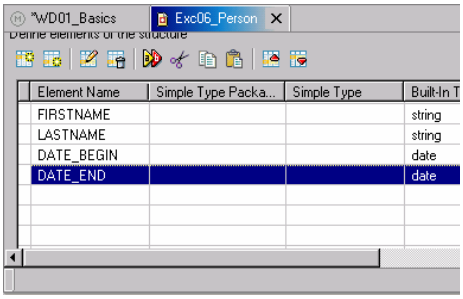
Select the node *Structures* and open the context menu.

Choose *Create Structure*.

In the wizard that appears, enter

Structure name	Person
Structure package	com.sap.training.wd.basics.ui02.structures

Choose *Finish*.



Define the elements of the structure:

Assign the following property values:

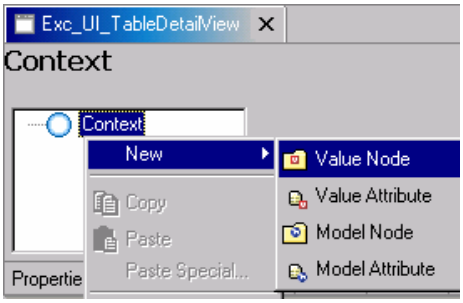
Element Name	Built-in Type	Not null
FIRSTNAME	string	x
LASTNAME	string	x
DATE_BEGIN	date	
DATE_END	date	

Save the new project data by choosing *Save All Metadata* from the toolbar.

4-2-3 Create the context for the view *TableView* with structure binding.

In the Web Dynpro Explorer:
Expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Ex_UI_02.*
Select the node *Views* and open the context menu of the view *TableView*.

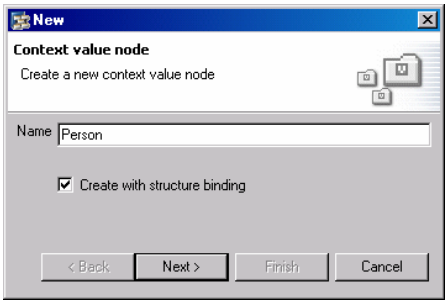
Choose *Edit.*



The View Designer for the view *TableView* appears on the right pane

Choose the tab *Context*.

Open the context menu for the root node *Context* and choose the option *New / Value Node*.

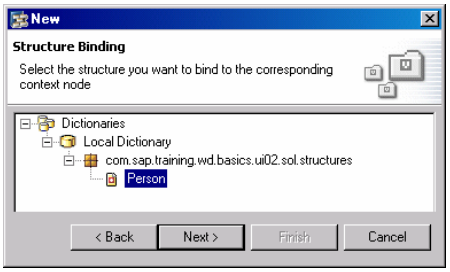


In the wizard, enter

Name	Person

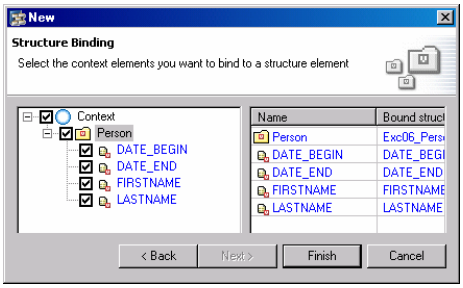
Select "Create with structure binding"

Choose *Next.*



Select the structure com.sap.training.wd.basics.ui02.structures / Person

Choose *Next.*



Select all structure elements.

Choose *Finish.*

Save the new project data by choosing *Save All Metadata* from the toolbar.

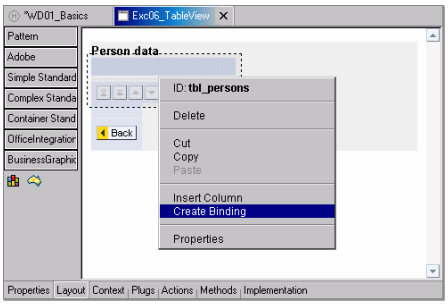
4-2-4 Define the table binding between the table UI element and the context.

In the Web Dynpro Explorer:

Expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*.

Select the Views node and open the context menu of *TableView*.

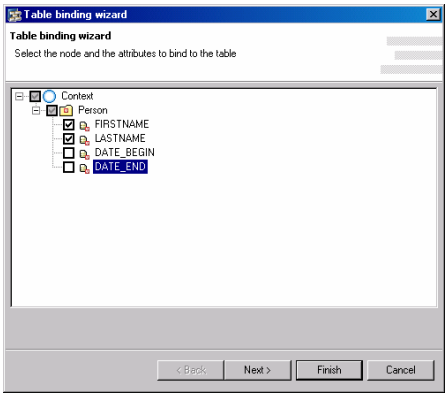
Choose Edit.



The View Designer for the view *TableView* appears on the right pane

Choose the *Layout* tab and then choose the table UI element.

Open the context menu and choose *Create Binding.*

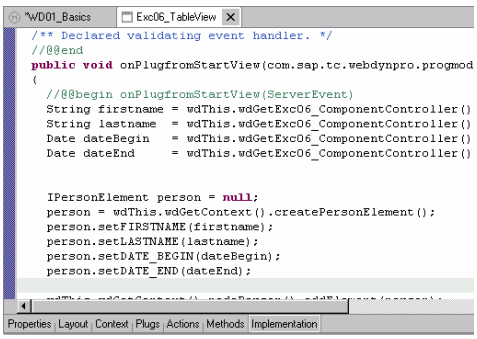


In the wizard that appears, select *firstname* and *lastname* from the node *Person*.

Choose *Finish.*

Save the new project data by choosing *Save All Metadata* from the toolbar.

4-2-5 Add the values of the input fields of *StartView* to the table of *TableView*.



Open the View Designer for the view *TableView* again.

Choose the Implementation tab.

Add the following lines to the event handler method *onPlugFromStartView()*:

Note: Some of the following methods were generated by Web Dynpro after you've specified the context value nodes and values. Because of that, the methods names you have to choose can differ from the following names:

```
public void onPlugfromStartView(    )
{
  //@@begin onPlugfromStartView(ServerEvent)

  String firstname =
    wdThis.wdGetExc_UIController().wdGetContext().
    currentContextElement().getCmpCtx_firstname();
  String lastname  =
    wdThis.wdGetExc_UIController().wdGetContext().
    currentContextElement().getCmpCtx_lastname();
  Date date_begin  =
    wdThis.wdGetExc_UIController().wdGetContext().
    currentContextElement().getCmpCtx_dateBegin();
  Date date_end    =
    wdThis.wdGetExc_UIController().wdGetContext().
    currentContextElement().getCmpCtx_dateEnd();

  IPersonElement person =
    wdThis.wdGetContext().createPersonElement();

  person.setFIRSTNAME(firstname);
  person.setLASTNAME(lastname);
  person.setDATE_BEGIN(date_begin);
  person.setDATE_END(date_end);

  wdThis.wdGetContext().nodePerson().addElement(person);
  //@@end
}
```

This method is called, after the user has made some changes to the input fields in the view *StartView* and after the user has pressed the button *Show names*.
The Web Dynpro automatically stores the values of the input fields to the component context. Before the view *TableView* is shown, the Method *onPlugFromStartView* is called. Here you'll create local variables for the persons data, get the values from the component context and create a new person attribute in the view context. Because the view context is bound to the table as data source, the data is then shown in the table.

Save the new project data by choosing *Save All Metadata* from the toolbar.

4-5 Create a Web Dynpro application

In the Web Dynpro Explorer, expand the node *WD01_Basics_UI_02*.
Expand the node *Web Dynpro* and open the context menu for *Applications*.

To open the wizard, choose *Create Application*.

In the wizard, enter:

Name	WD01_Basics_UI_02
Package	com.sap.training.wd.basics.ui02

Accept the other suggested values and choose *Next*.
Select *Use existing component* and choose *Next*.

Select

Web Dynpro Component	Exc_UI_02
Interface View	Exc_UI_02_WindowInterfaceView
Startup Plug	Default

and choose *Finish.*

Successful result:
The generated Web Dynpro application object completes your project structure. You can now deploy your project and start your Web Dynpro application. *WD01_Basics_UI_02* enables you to address the Web application as a whole, when you launch this complete application in the next step.

5 Building, Deploying, and Running, Step-by-Step

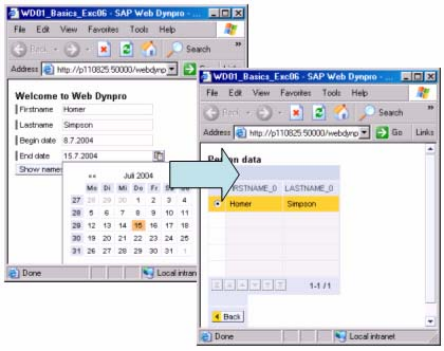
Deploy and run the Web Dynpro application.

In the Web Dynpro Explorer:

Expand the node *WD01_Basics_UI_02 / Web Dynpro / Applications.*
Open the context menu for *ExcUI_02*.

To deploy and run the application, choose *Deploy new Archive and Run*.

Successful result:



The Developer Studio launches the Web browser and chooses the active view *StartView*.

You can insert some values in the input fields and choose the button *Show Names*.

First, these values are stored in the value attributes of the context of view *StartView*, which is mapped to the component controllers context.
The values are then copied programmatically to the elements of the value node *Person*, which is defined in the context of view *TableView*. This context is visualized by the table UI element, which is bound to the context.

6 Optional: Additional table features, Step-by-Step

6-1 Show Details of a selected table row in a separate view.

6-1-1 Define the data transport from the view *TableView* to the view *TableDetailView*.

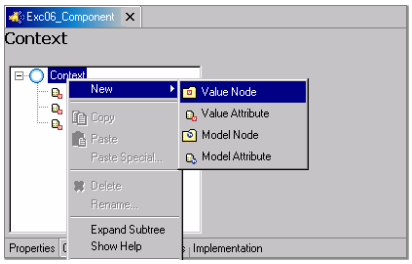
To transport the person detail data between the two views, it is necessary to define the person structure in the component context and map this structure to the two view contexts.

6-1-1-1 Define the component context value node *Person* for the component controller.

In the Web Dynpro Explorer:

Expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*.

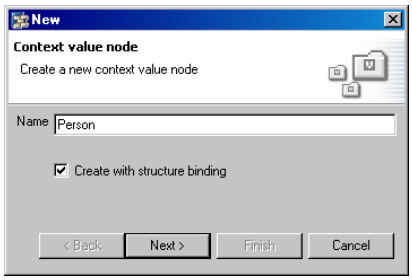
Open the context menu for the Component Controller node and choose Edit.



The Controller editor appears on the right pane

Choose the *Context* tab

Open the context menu for the root node *Context* and choose the option *New / Value Node*

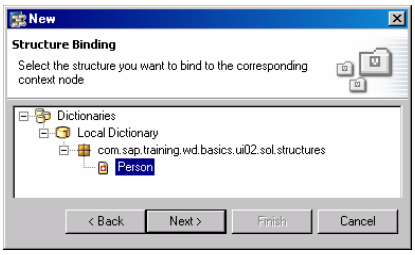


In the wizard, enter

Name	Person

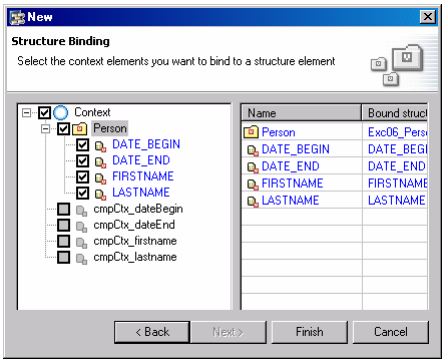
Select “Create with structure binding”

Choose *Next*.



Select the structure *com.sap.training.wd.basics.ui02.structures/ Person*

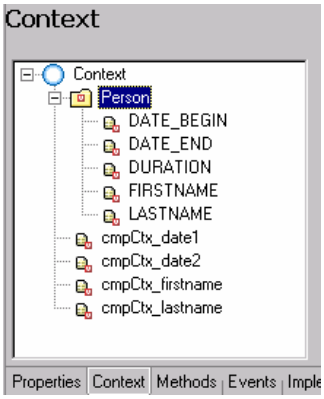
Choose *Next*.



Select the node P*erson*.

Choose *Finish*.

Successful result:



The component context includes the value node P*erson* and the value attributes *cmpCtx_dateBegin*, *cmpCtx_dtaeEnd*, *cmpCtx_firstName* and *cmpCtx_lastName*

Save the new project data by choosing *Save All Metadata* from the toolbar.

6-1-1-2 Define value node *Person* for the context of the view *TableDetailView.*

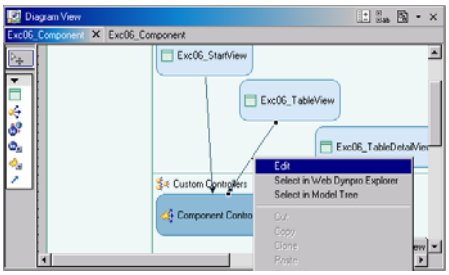
You find a description of the necessary steps in exercise 4-2-3.

6-1-1-4 Define the context mapping between the view context of *TableView* and the component context.

This mapping has already been created in exercise 4-1-3.

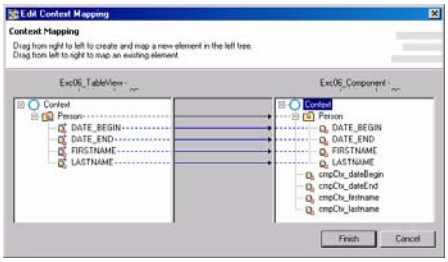
In this exercise you have to update the data link.

In the context menu of the node *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*, select the entry *Open Data Modeler:*



Choose the data link between *TableView* and the component context.

From the context menu choose *Edit*.

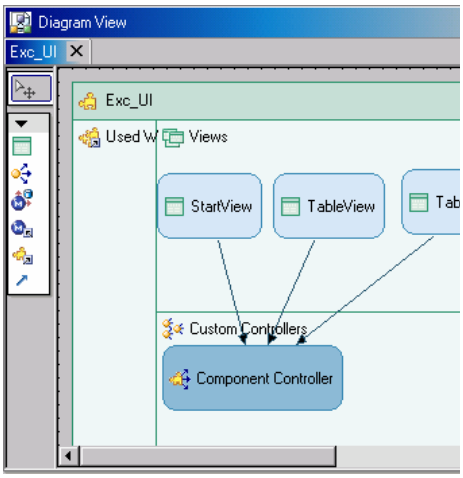


Drag and drop the value node *Person* of the view context to the corresponding node *Person* of the component controller and map the corresponding fields

To complete the data link definition, choose *Finish*.

Save the new project data by choosing *Save All Metadata* from the toolbar.

6-1-1-5 Define the context mapping between the context of the view *TableDetailView* and the context of the component controller.



Data Modeler, *Exc_UI_02*:

In the left toolbar, choose *Create a data link*. This is then shaded in grey.

Place the cursor on the view *TableDetailView* and left-click. Drag the data link to the *Component Controller* and release the left mouse button. The dialog box for defining the context mapping appears.

Drag and drop the context value node *person* of the view *TableDetailView* to the corresponding context node *person* of the component controller.

To complete the data link definition, choose *Finish*.

Save the new project data by choosing *Save All Metadata* from the toolbar.

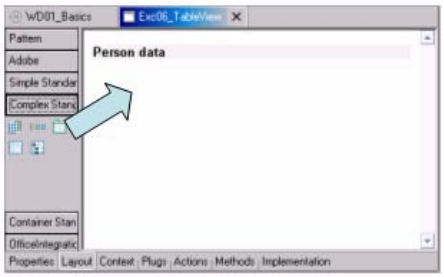
6-1-2 Add input fields for all context elements to the detail view *TableDetailView*. Apply the template *Form* to define input fields and labels.

In the Web Dynpro Explorer:

Expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*.

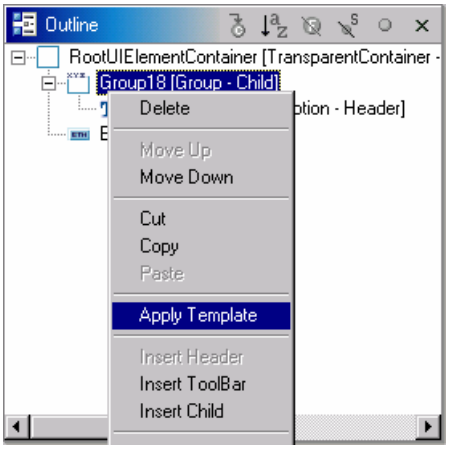
Select the node *Views* and open the context menu of view *TableDetailView*.

Choose *Edit*.



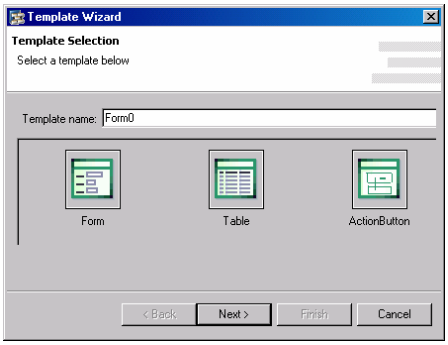
The View Designer for *TableDetailView* appears on the right pane

Choose the Layout tab.



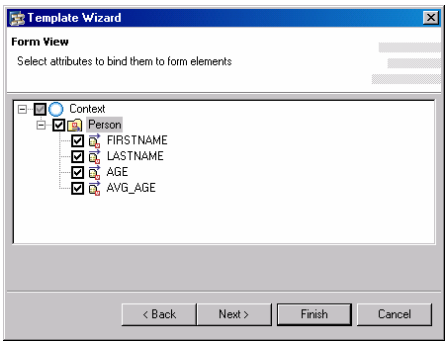
The Outline view appears in the lower left side of the SAP NetWeaver Developer Studio.

Choose the predefined *Group* node and choose *Apply Template* from the context menu.



In the wizard that appears, choose *Form*.

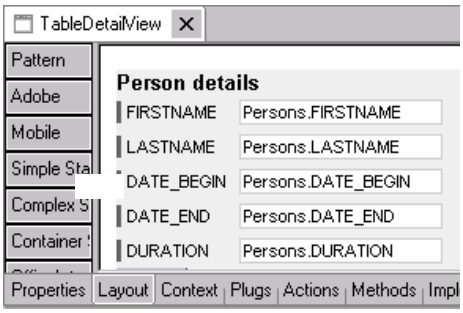
Choose *Next*.



In the next screen select all attributes from the structure *Person*.

Choose *Finish*.

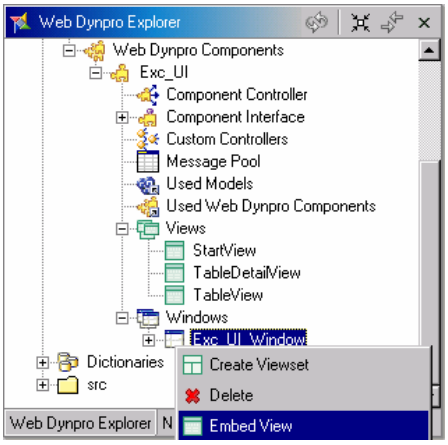
Successful result:



The wizard creates all necessary labels and input fields for the view *TableDetailView*. The data binding between the input fields and the context attributes is also defined automatically.

Save the new project data by choosing *Save All Metadata* from the toolbar.

6-1-3 Define the navigation between the views *TableView* and *TableDetailView*.



In the Web Dynpro Explorer:

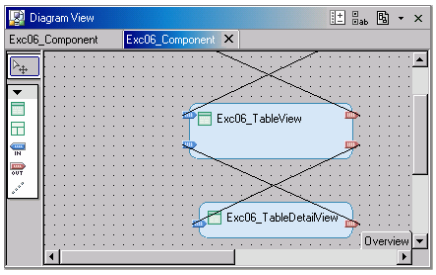
Expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*.

Select the node *Windows*. Open the context menu of *Exc_UI_02* and choose *Embed View*.

In the wizard that appears, choose *Embed existing view*.

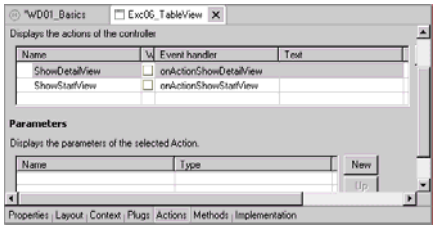
Choose *TableDetailView*

Choose *Finish*



Define the following navigation links:

From	to
Outbound plug	Inbound plug
toDetailView	*fromTableView*
toTableView	*fromDetailView*



In *TableView*

Choose the Action tab.
Define a new Action *ShowTableView* (fires plug *toDetailView*).

Choose the Layout tab.
Add a button to the button group.

Choose the following properties:

Text	Details
Event	onActionShowDetails

Save the new project data by choosing *Save All Metadata* from the toolbar.

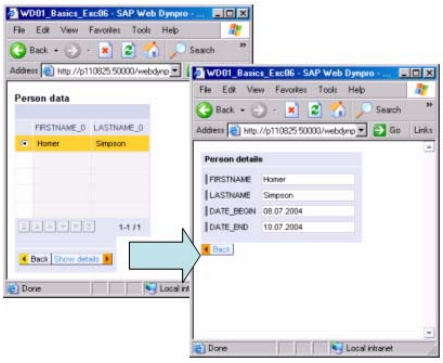
6-1-4 Create the Web Dynpro application *WD01_Basics_UI_02*.

Take a look at exercise 4-5.

6-1-5 Build, deploy and run the application.

Take a look at exercise 5-1.

Successful result:



As a result of this exercise, you added an additional view *TableDetailView* to the component. When you select a table row and choose the Details button, the *TableDetailView* appears and shows all details of the selected person.

6-2 Delete a selected table row.

6-2-1 Define a toolbar for the table in the view *TableView*. Add a toolbarButton to the toolbar.

In the Web Dynpro Explorer:

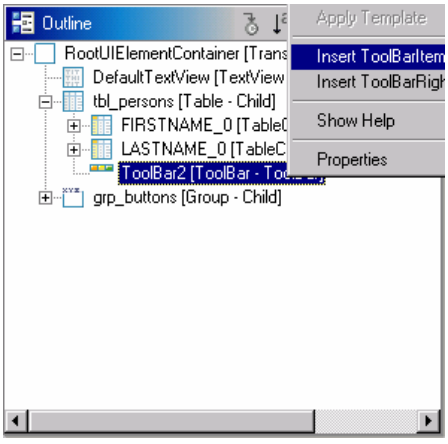
Expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Exc_UI_02*.

Select the node *Views* and open the context menu of *TableView*.

Choose *Edit.*

The View Designer for *TableView* appears on the right pane

Choose the Layout tab.



The Outline view appears in the lower left side of the SAP NetWeaver Developer Studio.

Select the node *table*. Open the context menu and choose *Insert Toolbar.*

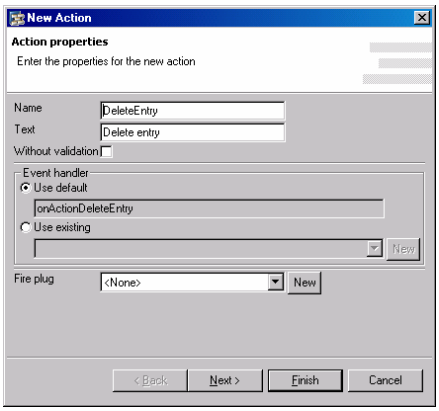
Select the new *Toolbar* node. Open the context menu and choose *Insert Toolbaritem.*

Choose type *ToolbarButton*.

Choose *Finish*.

Save the new project data by choosing *Save All Metadata* from the toolbar.

6-2-2 Define an action for the toolbar button und bind the toolbarButton to this action.

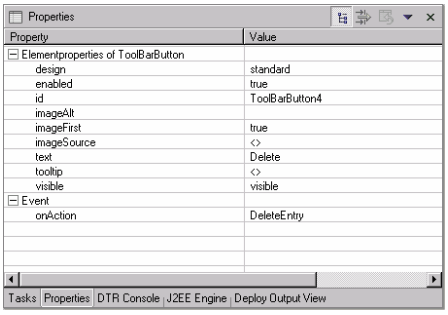


Choose the tab *Actions* for the view *TableView*.

Define a new Action

Name:	DeleteEntry
Text	Delete entry
Event Handler:	Default
Fire Plug:	<none>

Choose *Finish.*



Choose the tab *Layout* of the view *TableView*.

Update the properties of the toolbar button:

text	<> At runtime this will be replaced by the text *Delete entry* that you have defined when you created the *DeleteEntry* action.
onAction	*DeleteEntry*

Save the new project data by choosing *Save All Metadata* from the toolbar.

6-2-3 Implement the event handler for deleting a person entry..

Choose the *Implementaion* tab of *TableView*
Insert the following code in method *onActionDeleteEntry(…)*

```
public void onActionDeleteEntry(…){
  //@@begin onActionDeleteEntry(ServerEvent)
  int n = wdContext.nodePerson().size();
  int leadSelected = wdContext.nodePerson().getLeadSelection();
  // loop backwards to avoid index troubles
  for (int i = n - 1; i >= 0; --i)  {
    if (wdContext.nodePerson().isMultiSelected(i)
        || leadSelected == i){
      wdContext.nodePerson().removeElement(
        wdContext.nodePerson().getElementAt(i));
    } //if
  } //for
  //@@end
}
```

Save the new project data by choosing *Save All Metadata* from the toolbar.

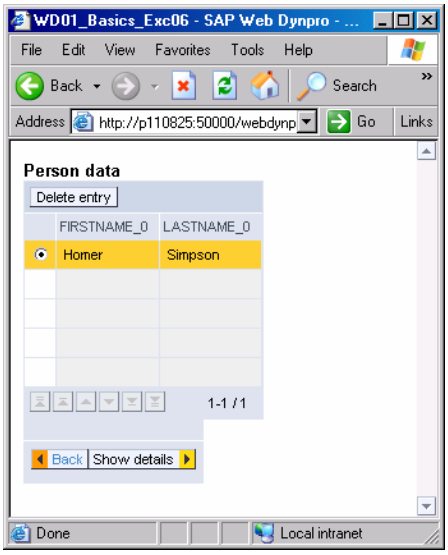
6-2-5 Create the Web Dynpro application *WD01_Basics_UI_02*.

Take a look at exercise 4-5.

6-2-6 Build, deploy and run the application.

Take a look at exercise 5-1.

Successful result:



As a result of this exercise, you added a *Delete* button to the table toolbar.

After having selected a table row and chosen the *Delete* button, the table row will be deleted.

6-3 Calculated attributes

6-3-1 Update the structure *Person* in the local dictionary. Add an additional attribute *DURATION* (type long).

In the Web Dynpro Explorer, expand the nodes *WD01_Basics_UI_02 / Dictionary / Local Dictionary / Data Types / Structures.*

Select the node *Person*, open the context menu and choose *Edit.*
The Structure editor appears on the right pane
Add the additional field *DURATION* of type *long*.

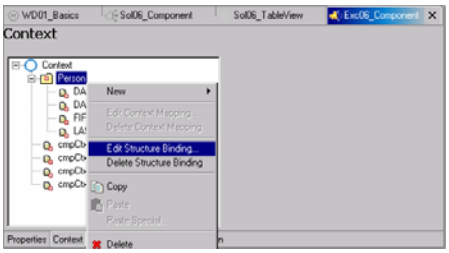
Save the new project data by choosing *Save All Metadata* from the toolbar.

6-3-2 Update the component context.

6-3-2-1 Add the attribute *DURATION* to the context value node *Person*

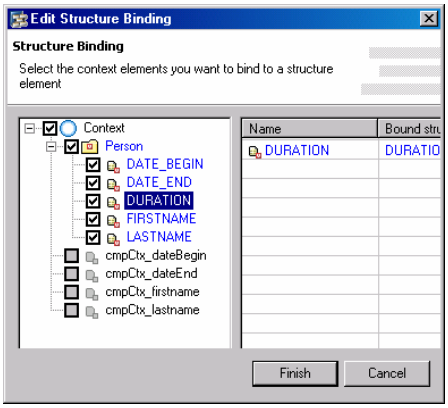
In the Web Dynpro Explorer, expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components*.

Select the node *Exc_UI_02*, open the context menu and choose *Edit.*



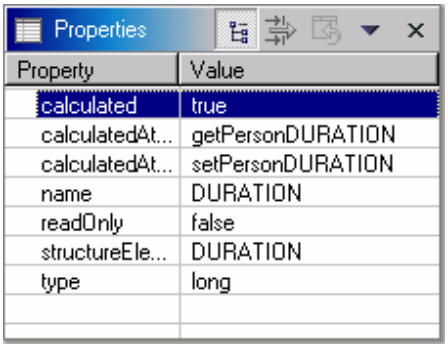
In the context editor that appears, choose the tab *Context*.

Choose the node *Person*, open the context menu and choose *Edit Structure Binding*.



In the wizard that appears choose DURATION and choose *Finish*

6-3-2-2 Set the property *calculated* of this attribute *true*



In the context editor choose the *DURATION* entry and change its property *calculated* to *true*,

Save the new project data by choosing *Save All Metadata* from the toolbar.

6-3-2-3 Implement the generated method *getPersonDURATION(…)*.

In the context editor choose the *IMPLEMENTATION* tab and navigate to the method *getPersonDURATION(…)*:

```
package com.sap.training.wd.basics.ui02;
//@@begin imports
import java.sql.Date;
import java.util.Calendar;
import java.util.GregorianCalendar;
//@@end

. . .

public long getPersonDURATION(…)
{
  //@@begin
  Date dateBegin = element.getDATE_BEGIN();
  Date dateEnd   = element.getDATE_END();


  Calendar calBegin = new GregorianCalendar();
  calBegin.setTime(dateBegin);
  long dt1 = calBegin.getTimeInMillis();

  Calendar calEnd = new GregorianCalendar();
  calEnd.setTime(dateEnd);
  long dt2 = calEnd.getTimeInMillis();

  long days = (dt2 - dt1) / 86400000;

  return ++days;
  //@@end
}
```

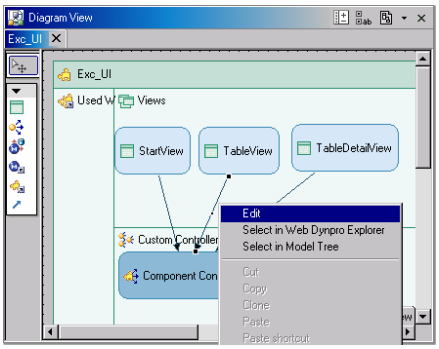
Save the new project data by choosing *Save All Metadata* from the toolbar.

6-3-3 Update the context of view *TableView*. Add the additional attribute *DURATION* from context *Person* and map it to the component context.

Note: The context of the view *TableView* has already been mapped to the context of the component controller (that is bound to the dictionary structure *Person*). Thus, you can not directly update the context of the view *TableView* using the tab *Context* of the view editor.

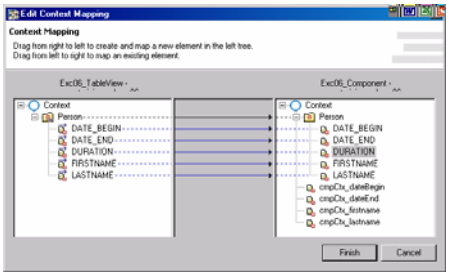
In the Web Dynpro Explorer, expand the nodes *WD01_Basics_UI_02 / Web Dynpro /Web Dynpro Components.*

Open the context of *Exc_UI_02* and choose *Open Data Modeler.*



Choose the data link between *TableView* and the component context.

From the context menu choose *Edit*.



In the right pane of the wizard that appears (component context) choose DURATION and drag and drop it to the Person entry on the left pane (view context)

This will create a new attribute in the view context and map it to the component context.

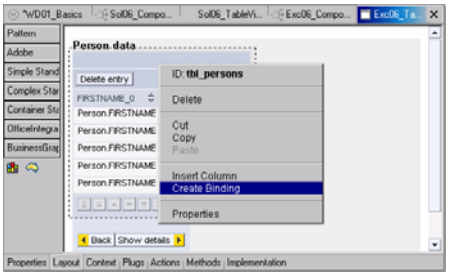
Choose *Finish*

Save the new project data by choosing *Save All Metadata* from the toolbar.

6-3-4 Update the table UI element in the View *TableView*. Add the additional attributes *DATE_BEGIN*, *DATE_END*, and *DURATION* from structure *Person*.

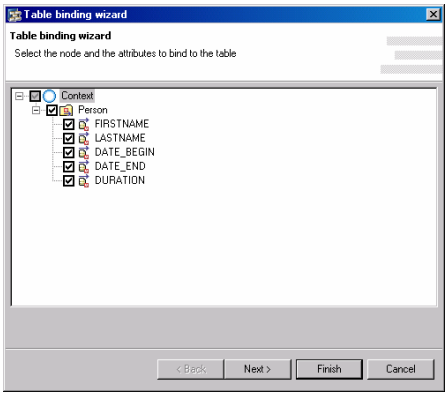
In the Web Dynpro Explorer, expand the nodes *WD01_Basics_UI_02 / Web Dynpro / Web Dynpro Components / Views*.

Choose *TableView*, open the context menu and choose *Edit*.



In the view editor that appears, choose the tab *Layout*.

Choose the table UI element, open the context menu and choose *Create Binding*.



In the wizard that appears, choose *DATE_BEGIN*, *DATE_END*, and *DURATION*.

Choose *Finish*.

Save the new project data by choosing *Save All Metadata* from the toolbar.

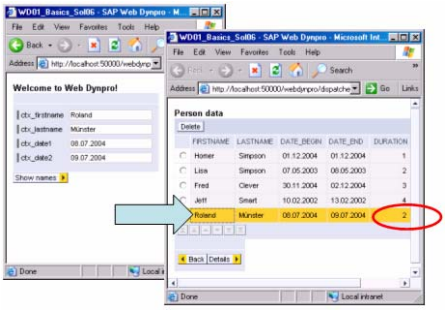
6-3-5 Create the Web Dynpro application *WD01_Basics_UI_02*.

Take a look at exercise 4-5.

6-3-6 Build, deploy and run the application.

Take a look at exercise 5-1.

Successful result:



As a result of this exercise, you have added three additional columns (*Duration* , *Date_Begin* and *Date_End*) to the table UI element.

There is no input field for the duration, but the duration is calculated as the difference between the start date and the end date automatically.