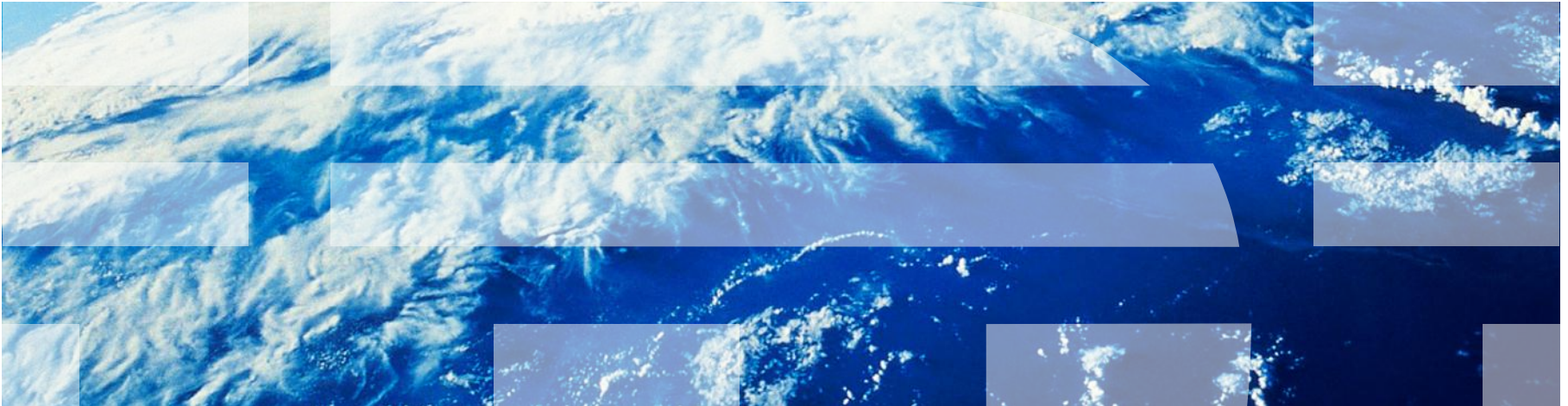


IBM Worklight Foundation V6.2.0 Getting Started

Creating an application with IBM Worklight Application Framework



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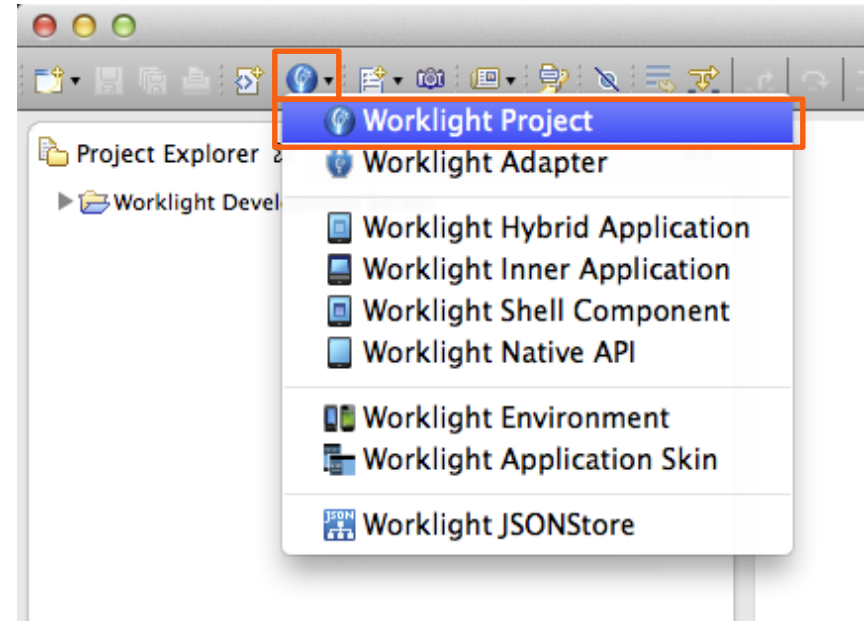
See <http://www.ibm.com/ibm/us/en/>

Agenda

- Creating a project with a hybrid application
- Weather application overview
- Building the **Home** view
- Building the **Weather** view
- Building the **Forecast** view
- Deploying and previewing

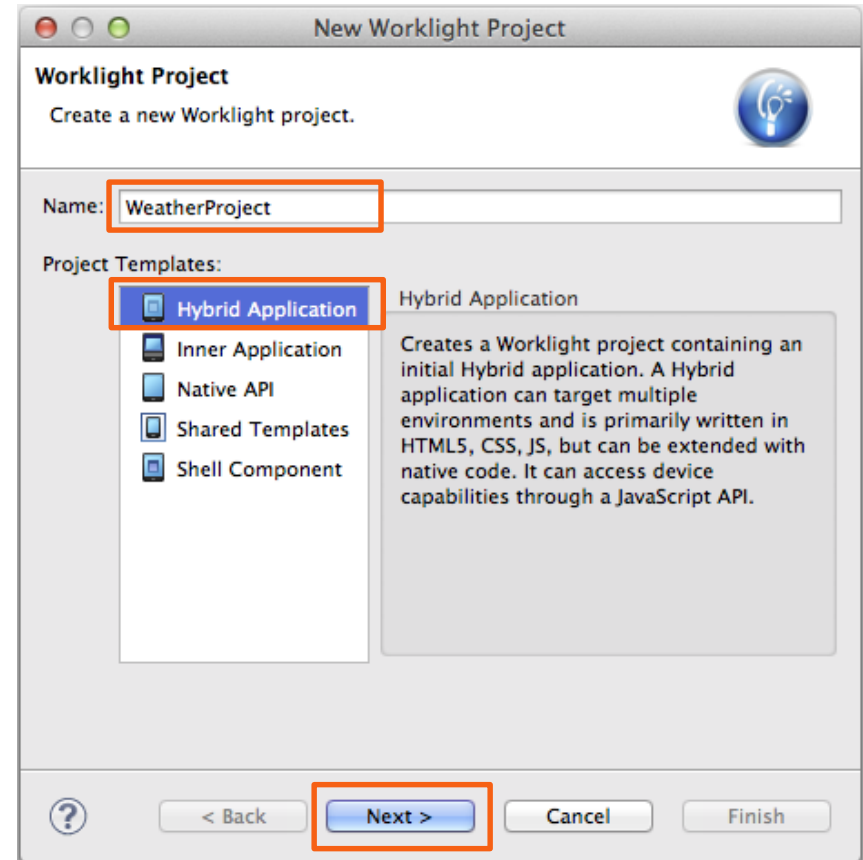
New Worklight Project

- Create an IBM Worklight® project: in the toolbar, click **Create a Worklight Artifact > Worklight Project**
- Other ways to create an IBM Worklight project:
 - Click **File > New > Project > Worklight Project > Next**.
 - Right-click an empty space in the **Project Explorer**, and click **New > Worklight Project**.



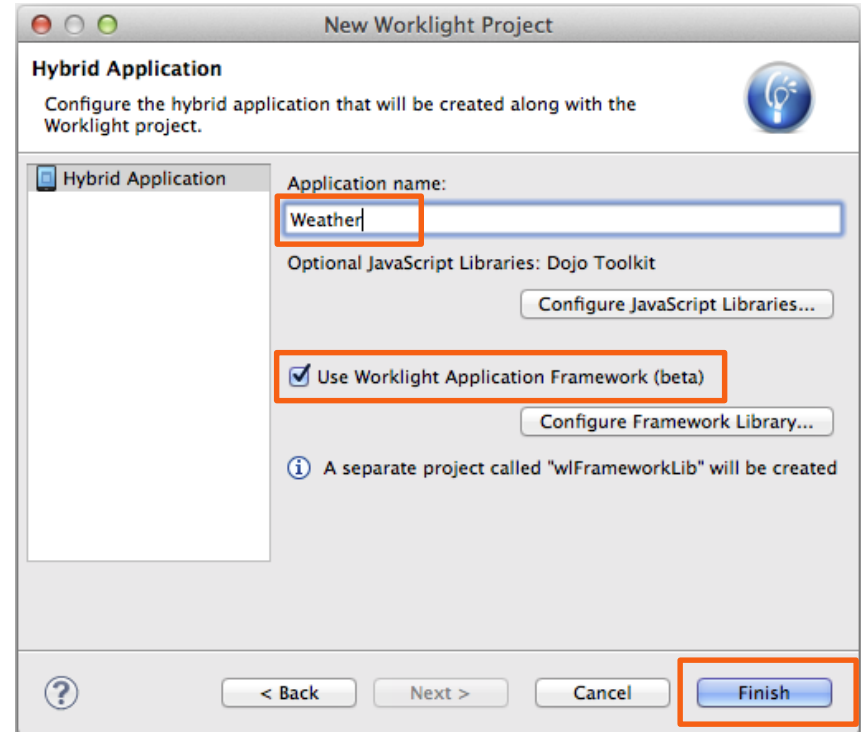
New Worklight Project

- In **Name**, type WeatherProject.
- In **Project Templates**, select Hybrid Application.
- Click **Next**.



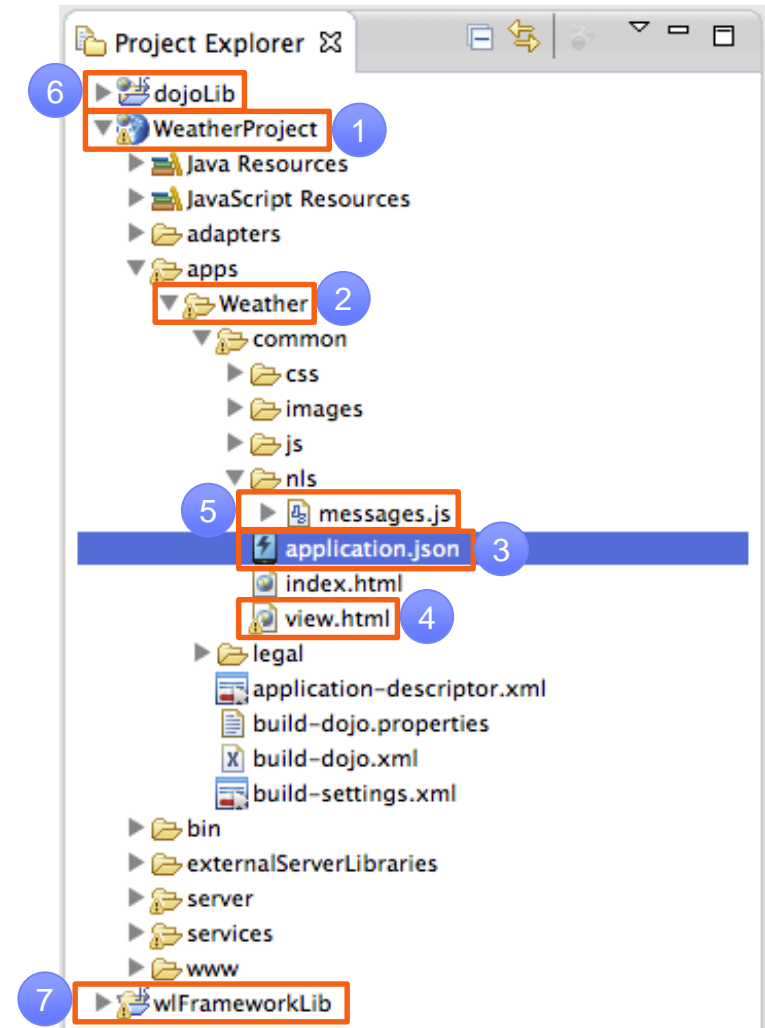
New Hybrid Application

- In **Application name**, type Weather.
- Select **Use Worklight Application Framework (beta)**.
 - **Dojo Toolkit** is selected automatically because IBM Worklight Application Framework is based on Dojo.
- Click **Finish**.
- If the **Open Associated Perspective** dialog box opens, click **No**.



What Was Created in the Workspace?

- Worklight project **WeatherProject** (1).
 - Hybrid application **Weather** (2).
 - **application.json** file: the application model (3).
 - **view.html** file: the application UI (4).
 - **messages.js** file: the application UI labels (5).
- **dojoLib** project: Dojo Toolkit library (6).
- **wlFrameworkLib** project: IBM Worklight Application Framework library (7).



The IBM Worklight Application Framework Editor

- When you create a new hybrid application that uses IBM Worklight Application Framework, the editor of IBM Worklight Application Framework opens.
- Use this editor to edit the `application.json` and the `view.html` files of your app.
- If you close the editor, double-click the `application.json` file to open it again.
- The editor has three tabs (see the next slide):
 - **Application** is used to specify the general configurations of your app.
 - **Data Objects** is used to define the data objects of your app, and how the data maps to the back-end services.
 - **Views** is used to define your app views (screens) and the transitions between them.

The IBM Worklight Application Framework Editor

application.json

Worklight Application Framework editor Preview Edit HTML

Getting started with Worklight Application Framework

SELECT SERVICES
Services, like SOAP or SAP, provide a gateway to your backend data.

CREATE A DATA OBJECT
Data Objects communicate with services to retrieve or send data and keep that data for your application.

CREATE A VIEW
Views display your data to the user and invoke actions on the Data Objects.

[CREATE A DATA OBJECT](#) [CREATE A VIEW](#)

▸ Theme ▸ Authentication

▸ Application Level Events

▸ Notifications

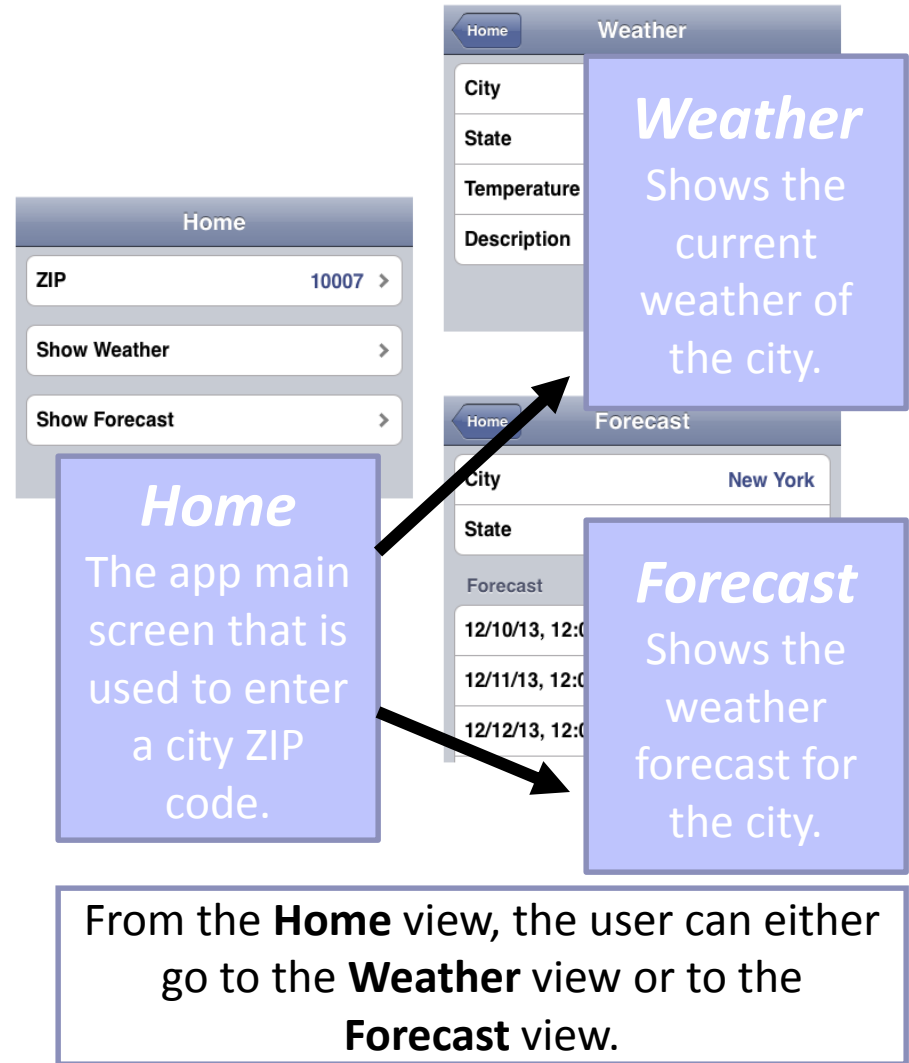
Application | Data Objects | Views

Agenda

- Creating a project with a hybrid application
- **Weather application overview**
- Building the **Home** view
- Building the **Weather** view
- Building the **Forecast** view
- Deploying and previewing

Weather Application Overview

- You build a `Weather` app.
- The app has three views (screens), as shown on the right.
- The **Home** view does not access any back-end service. This view is used to enter the ZIP code of a city.
- The **Weather** and **Forecast** views pull the data for the requested ZIP code from back-end services.
- The app uses a public weather Web Service:
http://wiki.cdyne.com/index.php/C_DYNE_Weather

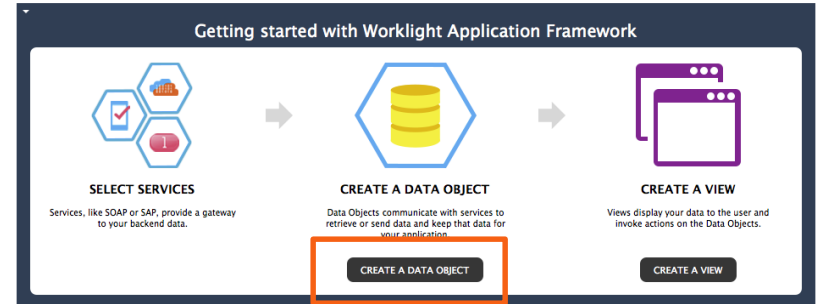


Agenda

- Creating a project with a hybrid application
- Weather application overview
- Building the **Home** view
- Building the **Weather** view
- Building the **Forecast** view
- Deploying and previewing

Data Object of the Home View

- Create a data model and a view.
 - You can create the view first, or you can create the data model first. In this tutorial, you create the data model first.
- In the section **Getting started with Worklight Application Framework** of the **Application** tab, click **CREATE A DATA OBJECT**.
- In **Data object name**, type Home.
- Select **Do not import attributes** and click **Finish**.



The screenshot shows the 'Create a Data Object' dialog box. The title bar reads 'Create a Data Object'. The main heading is 'Data Object' with a sub-heading 'Create a new Data Object'. A data object icon is visible in the top right corner.

The 'Data object name:' field contains the text 'Home'.

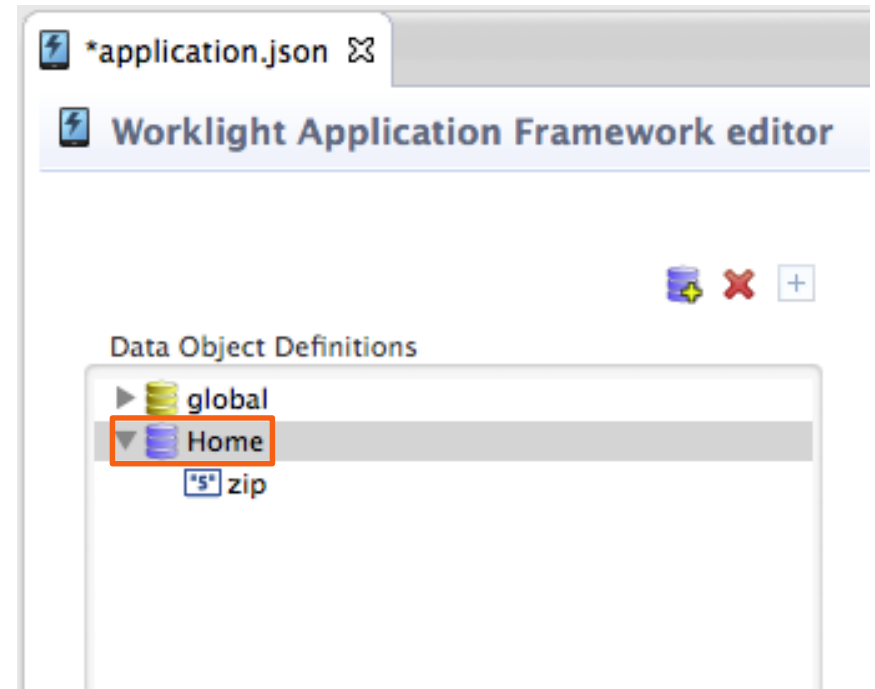
There are two radio button options for attribute import:

- Import attributes from a service: This option is currently unselected. Below it is a list containing '<New Service>'.
- Do not import attributes: This option is currently selected.

At the bottom of the dialog, there are several buttons: a help icon (?), 'Help', '< Back', 'Next >', 'Cancel', and 'Finish'.

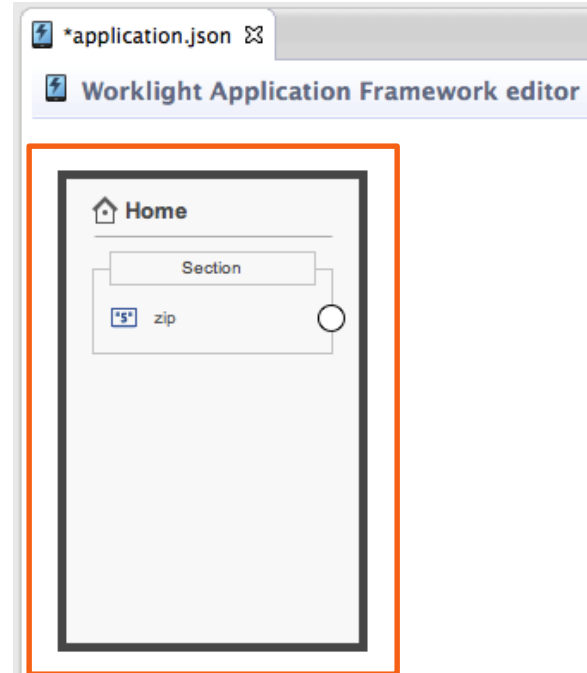
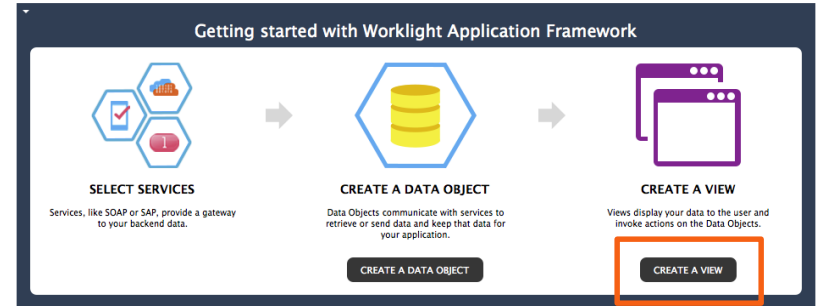
Adding a Data Attribute

- Create a data attribute to store the ZIP code that the user of the app will enter.
- Right-click the **Home** data object, and select **New**. The “Add New field” window opens.
- In **Name**, type: `zip`
- In **Data type**, select **String**, and click **Finish**.



Creating the Home View

- In the section **Getting started with Worklight Application Framework** of the **Application** tab, click **CREATE A VIEW**.
- In **Name** and **Heading**, type `Home`.
 - **Note:** **Name** is used to identify the view in the editor, **Heading** is displayed in the application UI.
- In **The view deals with the following data object** select **Home**, and click **Next**.
- In the column **Editable** of the table, select the check box to make the **zip** view element editable and click **Finish**.
- The **Views** tab opens and displays the created **Home** view.

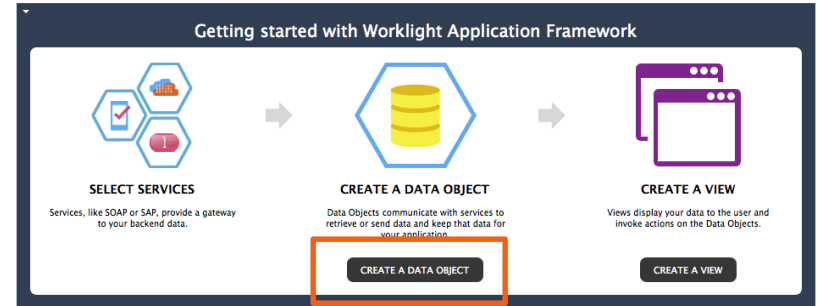


Agenda

- Creating a project with a hybrid application
- Weather application overview
- Building the **Home** view
- Building the **Weather** view
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Creating the Weather Data Object

- Create the **Weather** data object based on an existing web service.
- Switch back to the **Application** tab.
- In the section **Getting started with Worklight Application Framework**, click **CREATE A DATA OBJECT**.
- In **Data object name**, type `Weather`.
- Select **Import attributes from service**, `<New Service>`, and click **Next**.

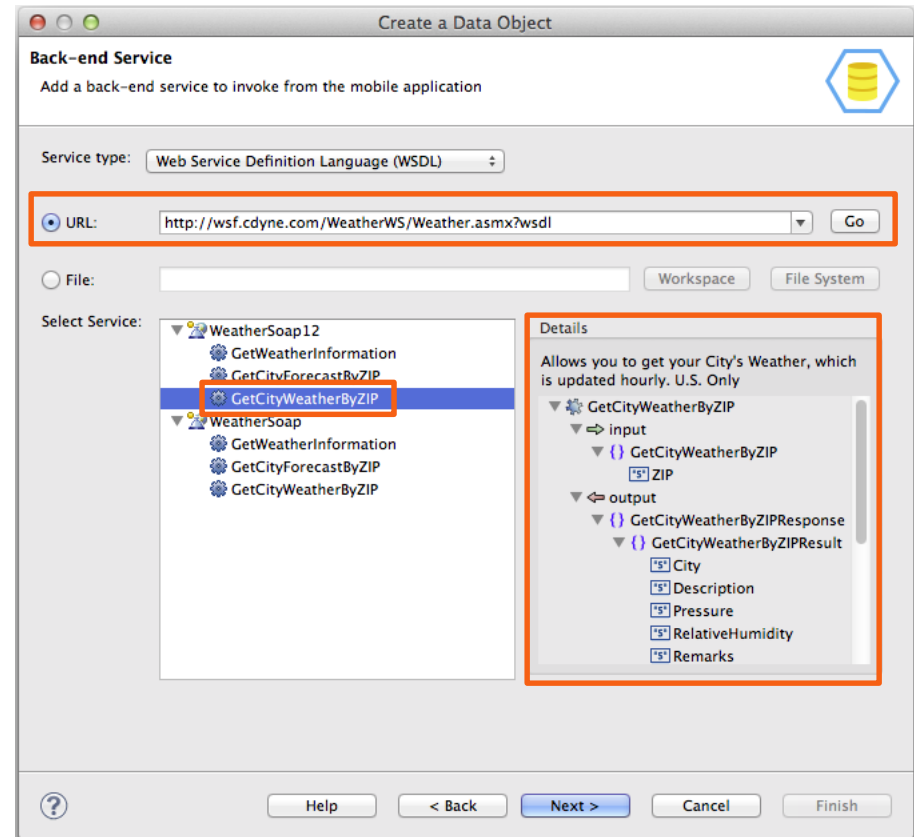


The screenshot shows the 'Create a Data Object' dialog box with the following details:

- Title Bar:** Create a Data Object
- Section Header:** Data Object
- Sub-header:** Create a new Data Object
- Data object name:** Weather
- Options:**
 - Import attributes from a service
 - Do not import attributes
- Service Selection:** A list containing `<New Service>`.
- Buttons:** Help, < Back, Next >, Cancel, Finish.

Service Discovery

- In the **Service type** list, select **Web Service Definition Language (WSDL)**.
- Copy the following URL, and paste it into the **URL** field:
`http://wsf.cdyne.com/WeatherWS/Weather.asmx?wsdl`
 Click **Go**.
- In **Select Service** (lower left), expand **WeatherSoap12**, and select **GetCityWeatherByZIP**.
- Browse the **Details** section (lower right) to find out more about the service.
- Click **Next**.



Data Attributes

- Define the data attributes to create, based on the service inputs and outputs.
- Select **City**, **Description**, **State**, and **Temperature** under **output** (as shown on the right).
- Click **Next**.

Create a Data Object

Data Fields

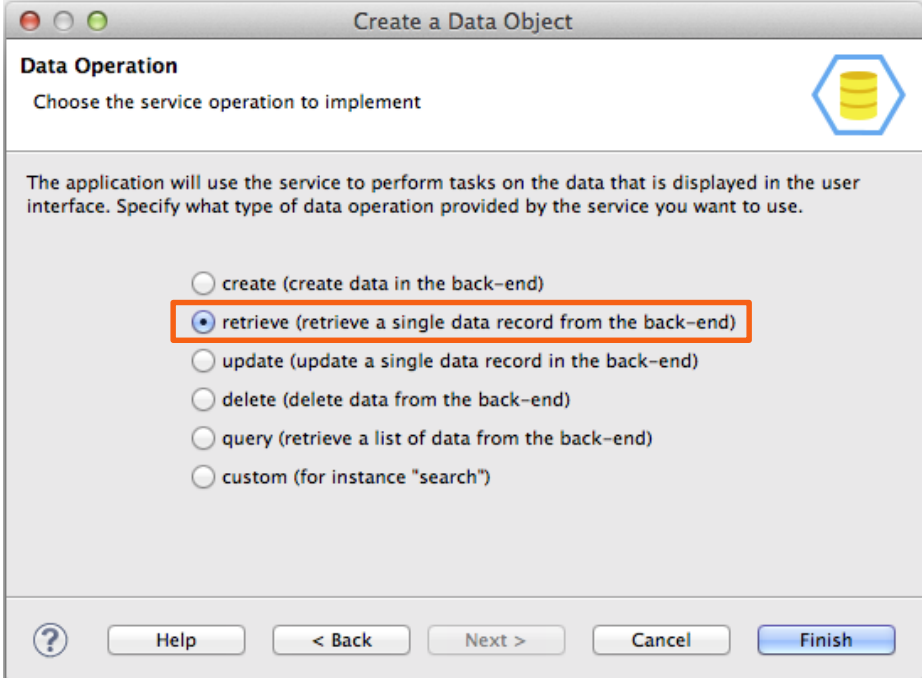
Select the service inputs and outputs to import. For each input and output, choose the data type to create, and the format for type conversion.

Service	Data Type	Format
GetCityWeatherByZIP		
input		
GetCityWeatherByZIP		
ZIP		
output		
GetCityWeatherByZIPResponse		
GetCityWeatherByZIPResult		
City	String	
Description	String	
Pressure		
RelativeHumidity		
Remarks		
ResponseText		
State	String	
Success		
Temperature	String	
Visibility		
WeatherID		
WeatherStationCity		
Wind		
WindChill		

Buttons: Select all, Clear all, Help, < Back, Next >, Cancel, Finish

Data Operation

- In addition to attributes, data objects have operations. The application uses operations to interact with back-end services via adapters. Operations define the mappings between the data attributes and the service inputs and outputs.
- Select **retrieve (retrieve a single data record from the back-end)**.
- Click **Finish**.



Create a Data Object

Data Operation
Choose the service operation to implement

The application will use the service to perform tasks on the data that is displayed in the user interface. Specify what type of data operation provided by the service you want to use.

create (create data in the back-end)

retrieve (retrieve a single data record from the back-end)

update (update a single data record in the back-end)

delete (delete data from the back-end)

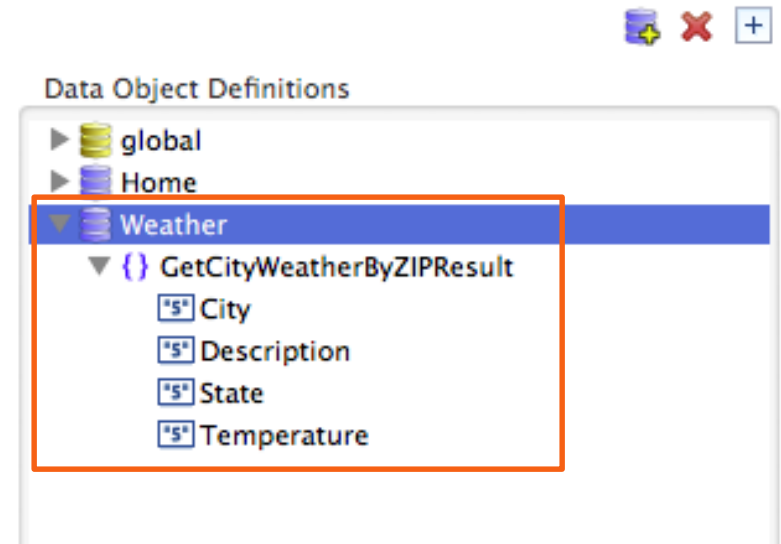
query (retrieve a list of data from the back-end)

custom (for instance "search")

Help < Back Next > Cancel Finish

Created Data Object

- The editor switches to the **Data Objects** tab.
- Based on your selections, the **Weather** data object was created.
- It replicates the structure of the **GetCityWeatherByZIP** service.



Created Operation

- According to your selection, a **retrieve** operation is associated with the **Weather** data object.
- The service outputs that you selected previously are mapped to the data attributes.
- The service requires **ZIP** as input. Create a global variable and map it to the service input: drag **ZIP** from the **Service** (right) side to **global** on the **Data** (left) side.
- You will later assign the ZIP code entered by the user to this global variable.

Operations used for views to get things done:

Operation	Service
retrieve	GetCityWeatherByZIP
update	click to select service
delete	click to select service
create	click to select service
query	click to select service
double-click to add	

Operation Details

Click and drag data object items onto service elements to create a connection.

Data

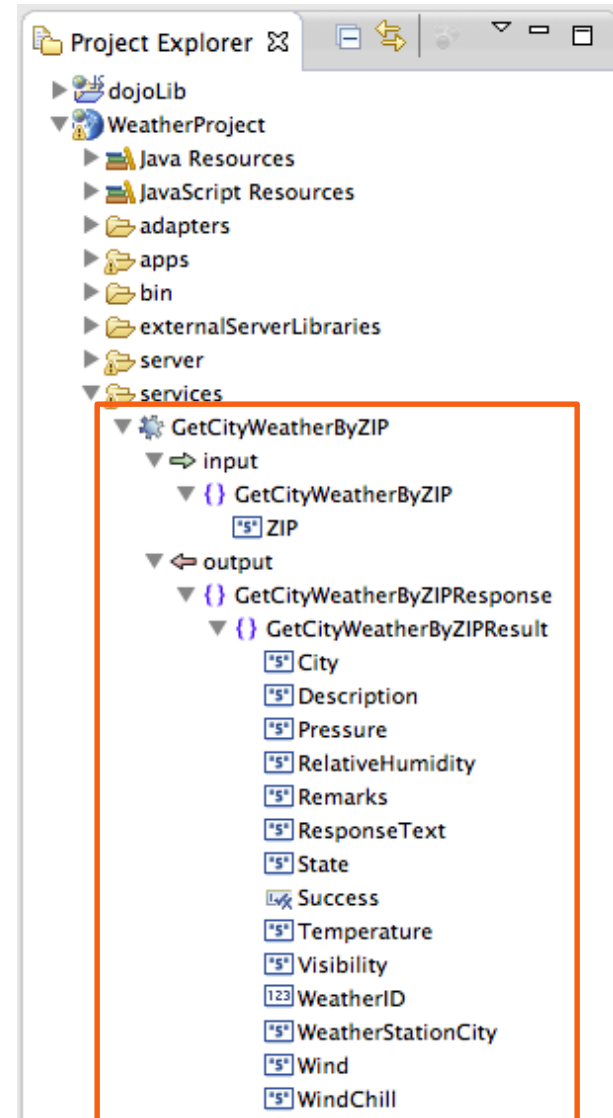
- global
 - DATE
 - USER_ID
 - USER_NAME
 - ZIP
- Weather
 - GetCityWeatherByZIPResult
 - City
 - Description
 - State
 - Temperature

Service

- GetCityWeatherByZIP
 - input
 - ZIP
 - output
 - GetCityWeatherByZIPResponse
 - City
 - Description
 - Pressure
 - RelativeHumidity
 - Remarks
 - ResponseText
 - State
 - Success
 - Temperature
 - Visibility
 - WeatherID
 - WeatherStationCity
 - Wind
 - WindChill

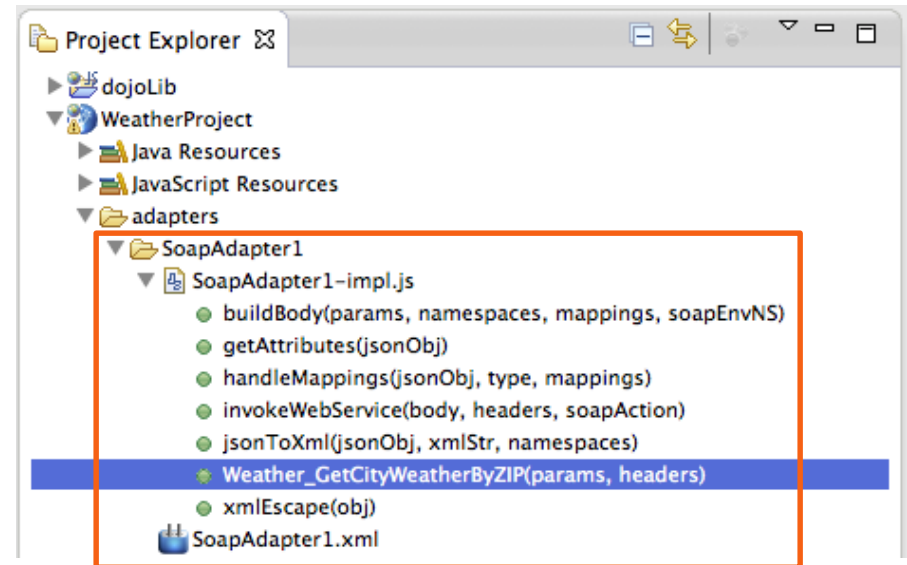
Discovered Service

- The discovered services are in the **services** folder of the Worklight project.
- Expand the **services** folder to see the **GetCityWeatherByZIP** service.



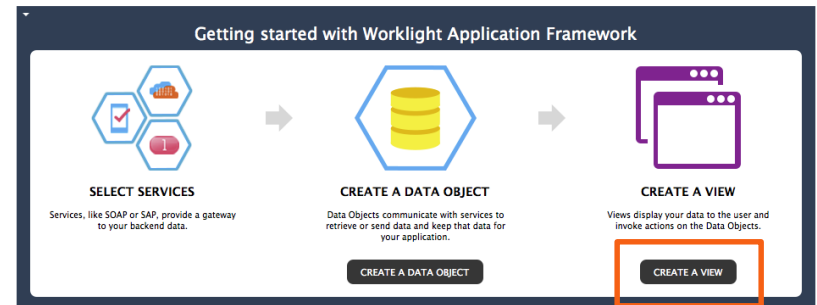
Generated Adapter

- To invoke the back-end service, an adapter was automatically generated for your application.
- The new adapter is in the **adapters** folder. The name of the adapter is **SoapAdapter1**.
- This adapter is used whenever the application needs to access back-end services.
- In this particular case, you set up the **Weather** view to call the data object **retrieve** operation when the view opens. The operation invokes the **Weather_GetCityWeatherByZIP** procedure of this adapter.



Creating the Weather View

- You discovered a service and created a data object based on its outputs.
- Now, create a view by using this data object as a template.
- Go back to the **Application** tab and click **CREATE A VIEW**.



Creating the Weather View

- In **Name** and **Heading**, type: Weather.
- In **The view deals with the following data object**, select **Weather**.
- The view will represent this data object. The view elements will be created based on the attributes of this data object.
- Select **retrieve** from the **Operation** list, and click **Next**. This operation will be called when the view opens.

Add View

View
Create a new View

Name:
Weather

Heading:
Weather

The view deals with the following data object:

-- No Data Object --

- Home
- Weather**

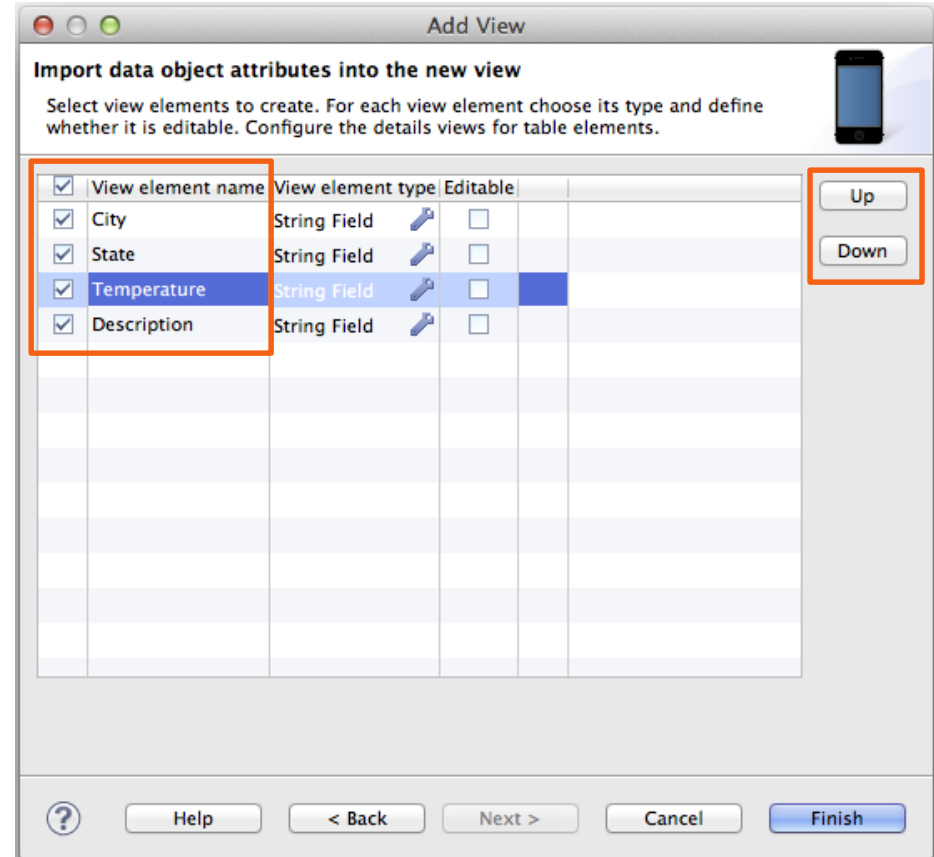
When the view is shown, invoke an operation on the selected data object to obtain the data to display:

Operation: retrieve

Help < Back Next > Cancel **Finish**

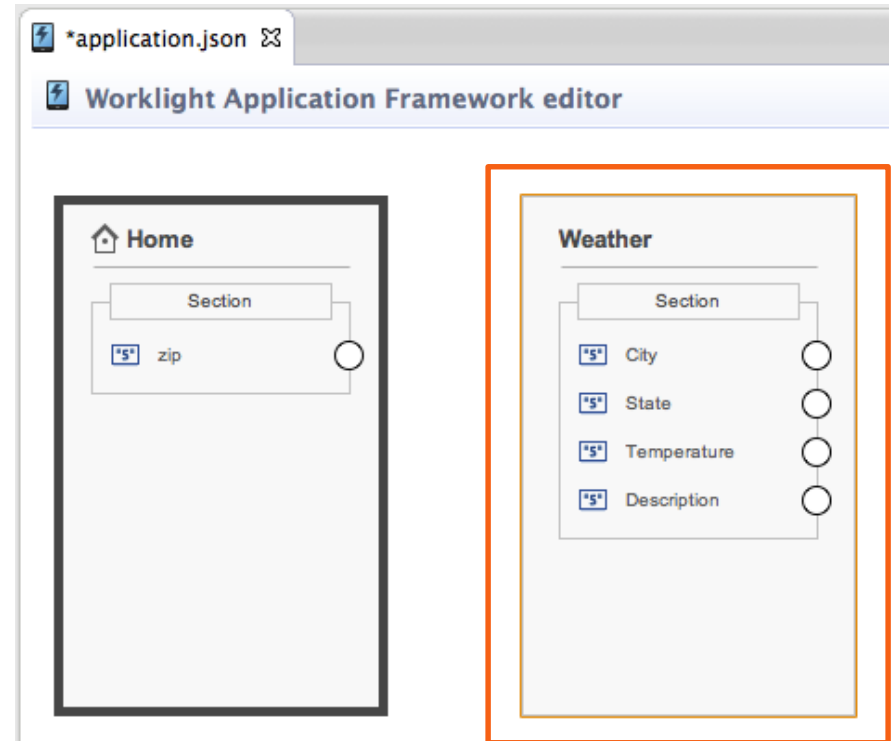
Configuring the View Elements

- You create the view elements that are listed in the table.
- In the first column, you can clear check boxes for elements that you do not want to create. For this view, create all elements.
- Reorder the elements as follows by clicking **Up** or **Down**: **City, State, Temperature, Description**.
- Click **Finish**.



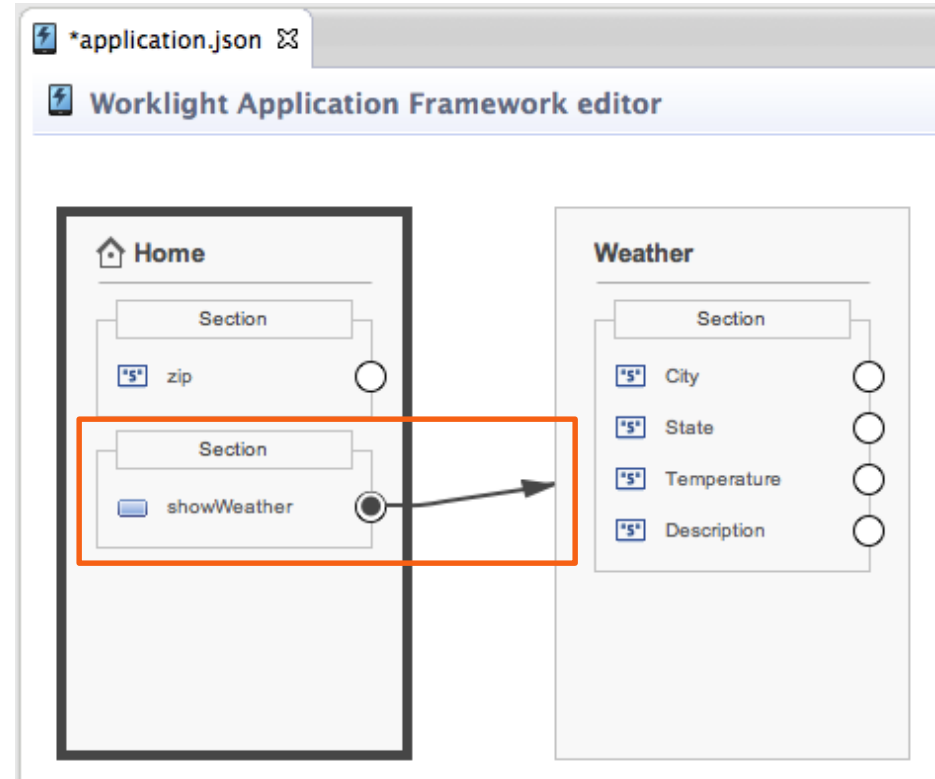
Created View

- The **Views** tab opens and displays the created **Weather** view.
- The view has a section that contains the elements that you selected.



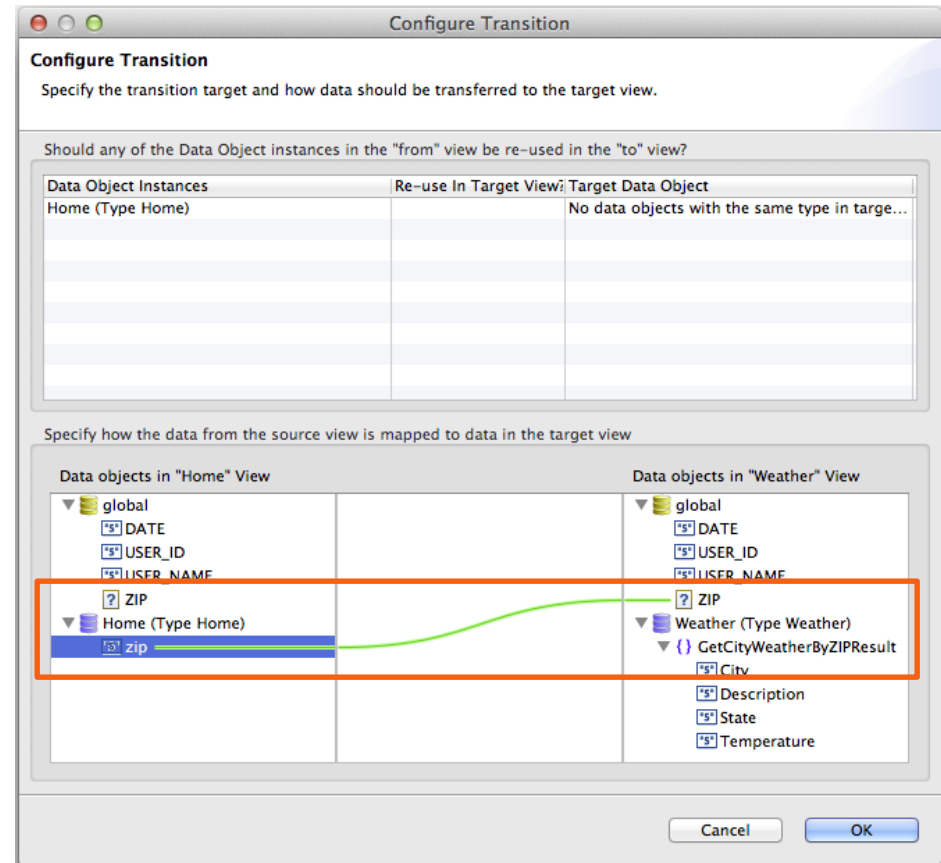
Creating a Transition from the Home View to the Weather View

- First, create a button that triggers the transition.
- Drag **Section** from the **Palette** on the right to the **Home** view. Leave **Name** and **Label** empty and click **OK**.
- Drag **Action** from the **Palette** to the new **Section**.
- In **Name**, type `showWeather`, in **Label**, type `Show Weather` and click **Finish**.
- Create a transition from the new **showWeather** button, by dragging the circle in front of it to the **Weather** view.



Configuring the Transition

- Double-click the transition to configure it. The **Configure Transition** wizard opens.
- At the bottom of the window, you can see the section **Specify how the data from the source view is mapped to data in the target view**.
- Map (drag) the **zip** attribute of the source view data object (on the left) to the global variable **ZIP** (on the right) that was created earlier.
- When the transition happens, the value of the **zip** attribute is assigned to the global variable **ZIP**.
- Click **OK** to close the window.



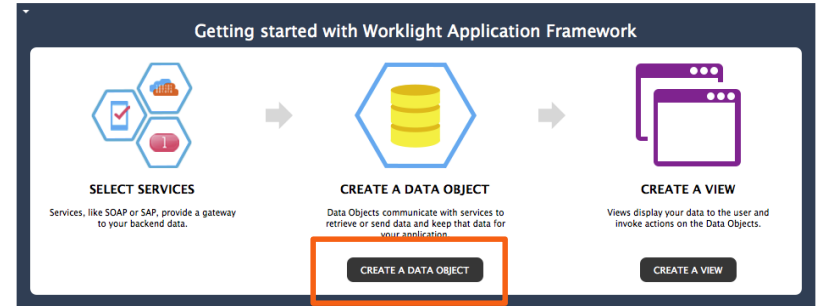
Agenda

- Creating a project with a hybrid application
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Creating the Forecast Data Object

Create the **Forecast** data object based on an existing web service:

- Switch back to the **Application** tab.
- In the section **Getting started with Worklight Application Framework**, click **CREATE A DATA OBJECT**.
- In **Data object name**, type **Forecast**.
- Select **Import attributes from a service**, **<New Service>**, and click **Next**.

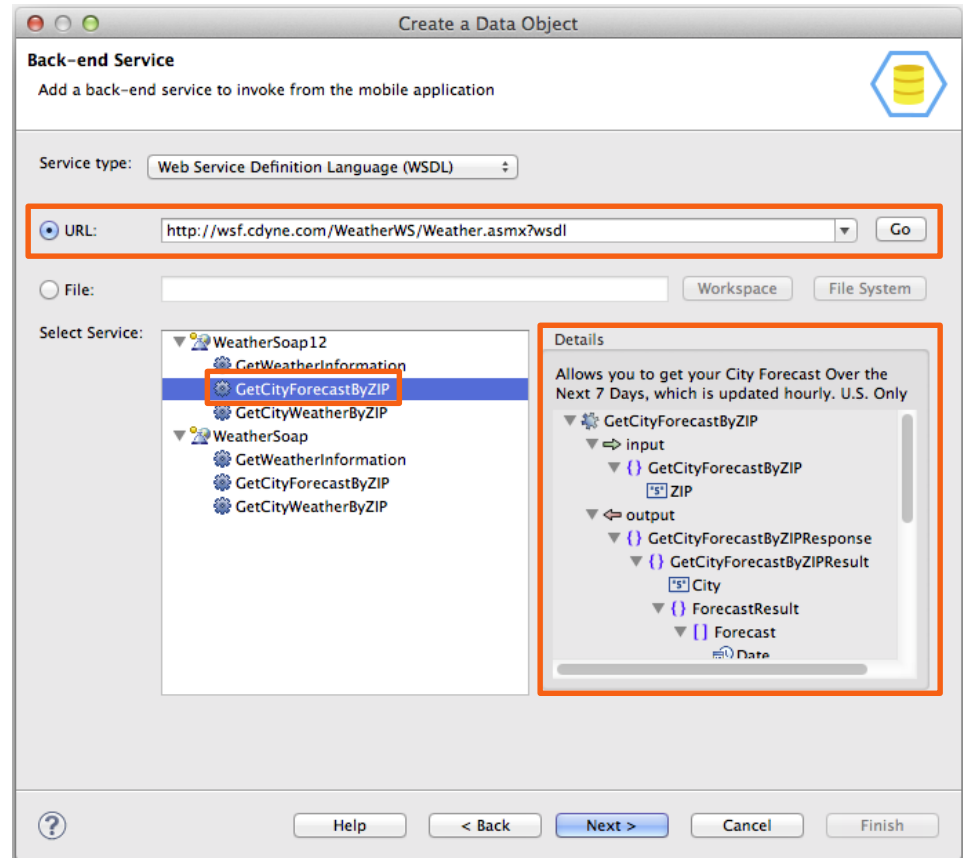


The screenshot shows the "Create a Data Object" dialog box with the following details:

- Data Object**: Create a new Data Object
- Data object name:** Forecast
- Import attributes from a service** (selected):
 - <New Service>
 - GetCityWeatherByZIP
- Do not import attributes** (unselected)
- Buttons:** Help, < Back, Next >, Cancel, Finish

Service Discovery

- In **Service type**, select **Web Service Definition Language (WSDL)**.
- Select the URL you used previously in the **URL** list, and click **Go**.
- In the **Select Service** section (lower left), expand **WeatherSoap12**, and select **GetCityForecastByZIP**.
- Browse the **Details** section (lower right) to find out more about the service.
- Click **Next**.



Data Attributes

- Define the data attributes to create, based on the service inputs and outputs.
- Select **City**, **Date**, **Description**, **DaytimeHigh**, **MorningLow**, and **State** under **output** (as shown on the right).
- Click **Next**.

Create a Data Object

Data Fields

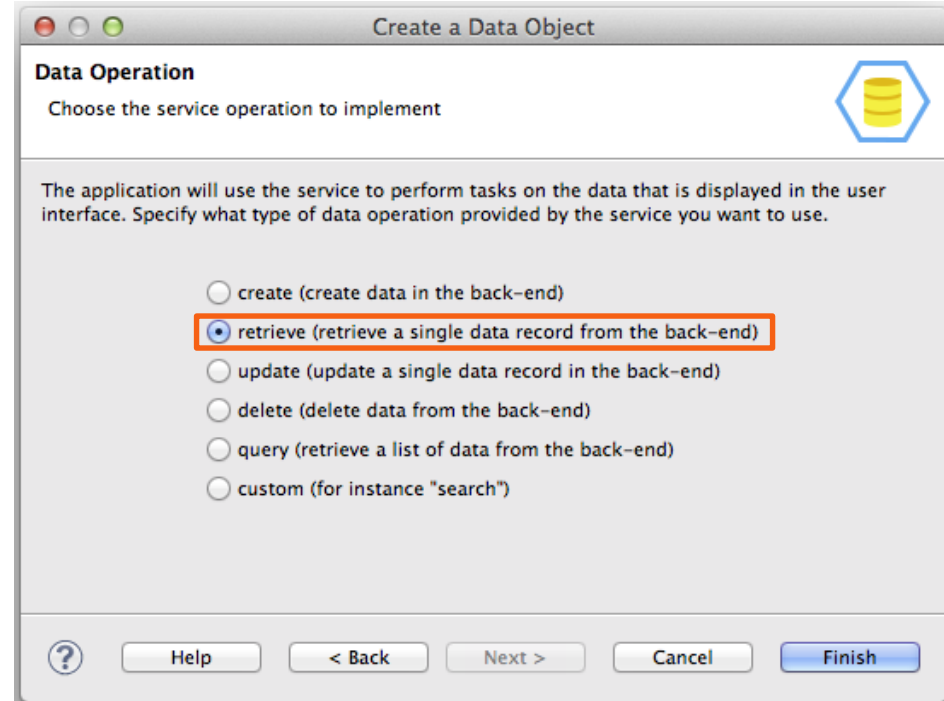
Select the service inputs and outputs to import. For each input and output, choose the data type to create, and the format for type conversion.

Service	Data Type	Format
GetCityForecastByZIP		
input		
GetCityForecastByZIP		
ZIP		
output		
GetCityForecastByZIPResponse		
GetCityForecastByZIPResult		
City	String	
ForecastResult		
Forecast		
Date	Timestamp	
Description	String	
ProbabilityOfPrecip...		
Daytime		
Nighttime		
Temperatures		
DaytimeHigh	String	
MorningLow	String	
WeatherID		
ResponseText		
State	String	
Success		
WeatherStationCity		

Buttons: Select all, Clear all, Help, < Back, Next >, Cancel, Finish

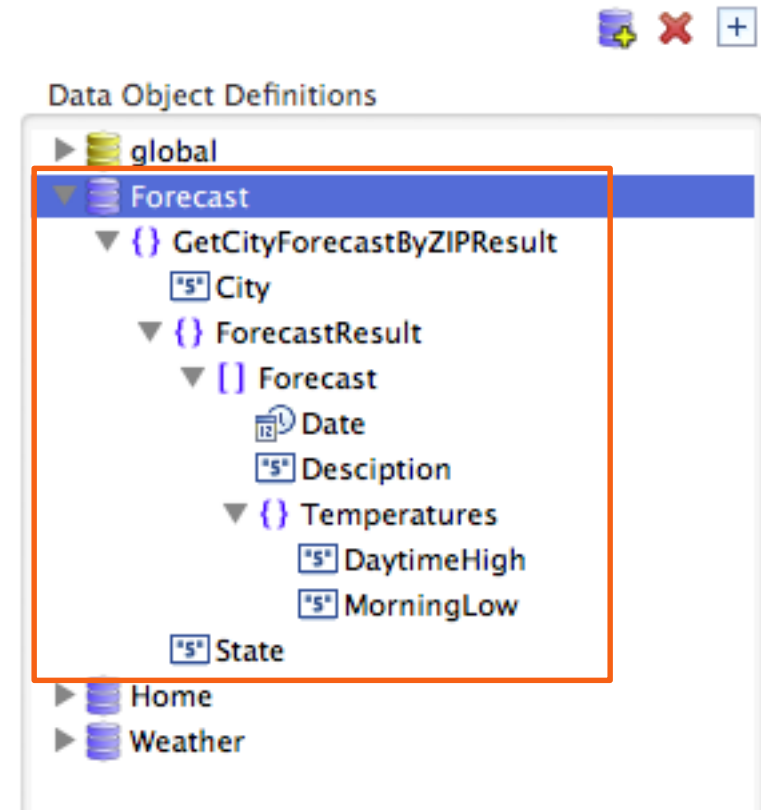
Data Operation

- Select the data operation that is used to invoke the service.
- Select **retrieve (retrieve a single data record from the back-end)**.
- Click **Finish**.



Created Data Object

- The editor switches to the **Data Objects** tab.
- Based on your selections, the **Forecast** data object was created.
- It replicates the structure of the **GetCityForecastByZIP** service.



Created Operation

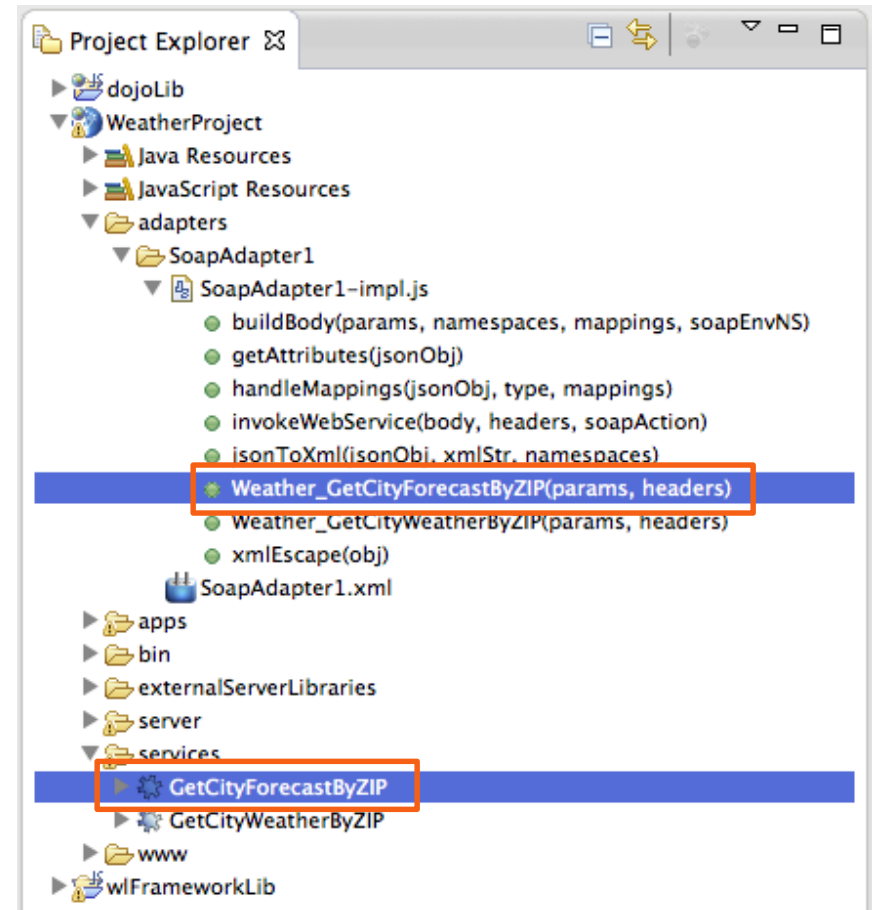
- According to your selection, a **retrieve** operation is associated with the **Forecast** data object.
- The service outputs that you selected previously are mapped to the data attributes.
- The service requires **ZIP** as an input. Drag **ZIP** from the **Service** (right) side to **ZIP** on the **Data** (left) side, to map the global variable to the service input.

The screenshot displays the 'Operations' and 'Events' tabs in the IBM Business Process Manager interface. The 'Operations' table lists various actions for the 'GetCityForecastByZIP' service. Below this, the 'Operation Details' section shows a visual mapping between data objects and service elements. A red box highlights the 'ZIP' attribute in the 'Data' pane being dragged to the 'ZIP' input of the 'GetCityForecastByZIP' service in the 'Service' pane. Green lines indicate the mapping of other data attributes to service outputs.

Operation	Service
retrieve	GetCityForecastByZIP
update	click to select service
delete	click to select service
create	click to select service
query	click to select service
double-click to add	

Discovered Service and Generated Adapter Procedure

- The discovered **GetCityForecastByZIP** service is placed in the **services** folder of the Worklight project.
- To invoke the back-end service, a new procedure is generated in **SoapAdapter1**.



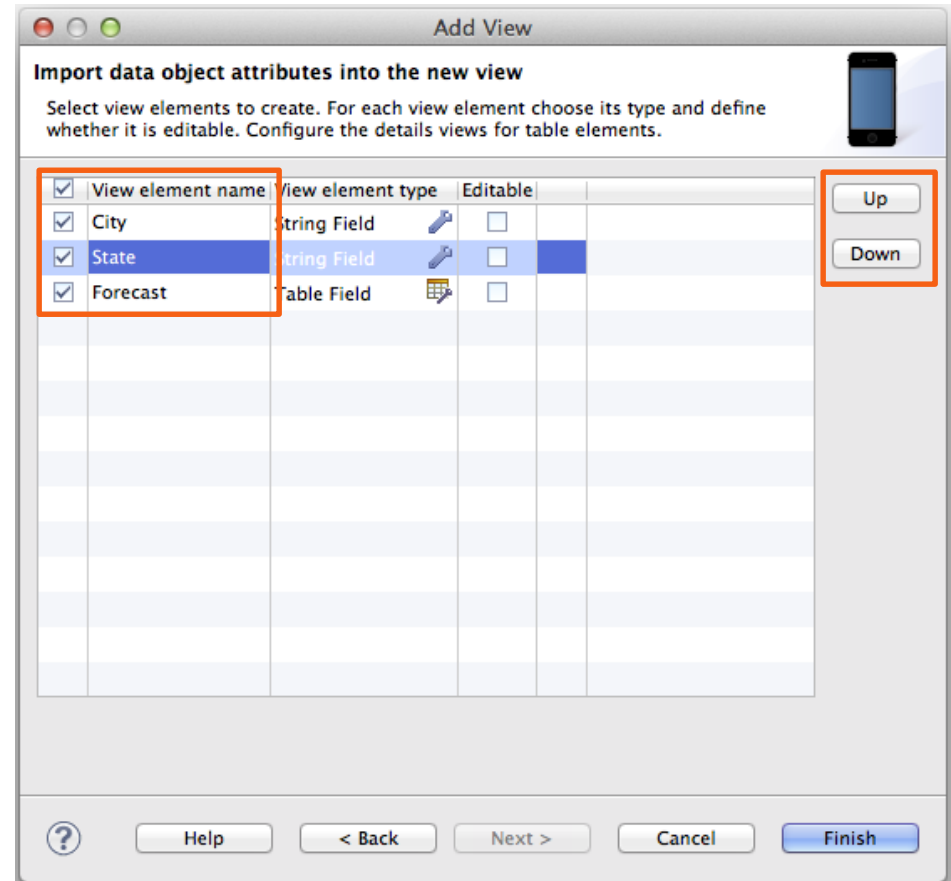
Creating the Forecast View

- Go back to the **Application** tab and click **CREATE A VIEW**.
- In **Name** and **Heading**, type Forecast.
- In **The view deals with the following data object**, select **Forecast**.
- Select **retrieve** in the **Operation** list, and click **Next**.

The screenshot shows the 'Add View' dialog box. The 'Name' and 'Heading' fields are both set to 'Forecast'. The 'The view deals with the following data object:' section shows a list of data objects: '-- No Data Object --', 'Forecast', 'Home', and 'Weather'. The 'Forecast' object is selected. The 'When the view is shown, invoke an operation on the selected data object to obtain the data to display:' section shows a dropdown menu with 'retrieve' selected. The 'Finish' button is highlighted in blue.

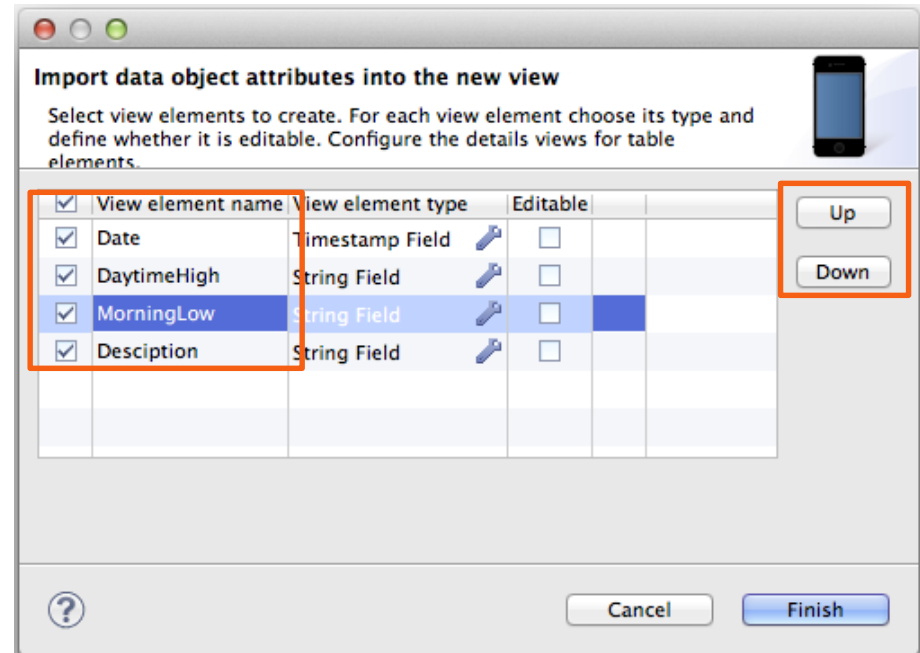
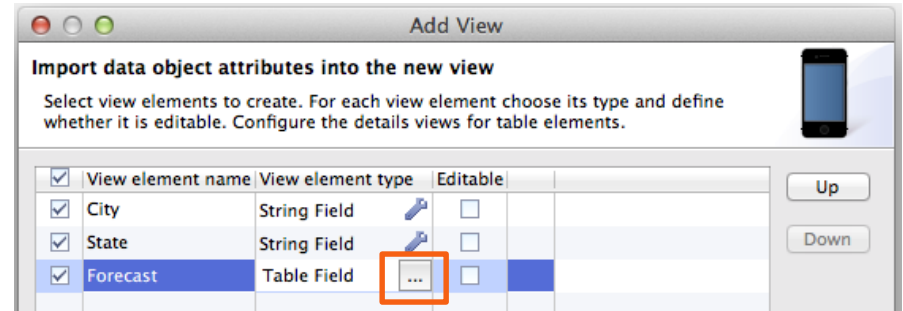
Configuring the View Elements

- Reorder the elements as follows by clicking **Up** or **Down**: **City**, **State**, **Forecast**.



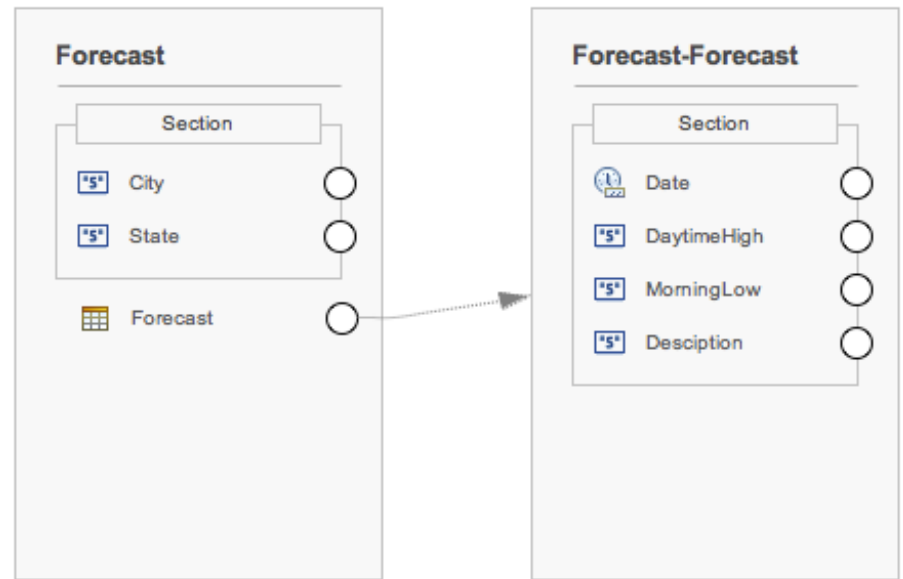
Configuring the Table Element

- Click the **Forecast** row, and click the “...” button in the **View element type** column.
- Reorder the elements as follows by clicking **Up** or **Down**: **Date**, **DaytimeHigh**, **MorningLow**, **Description**.
- Click **Finish** to close the window.
- Click **Finish** to close the **Add View** wizard.



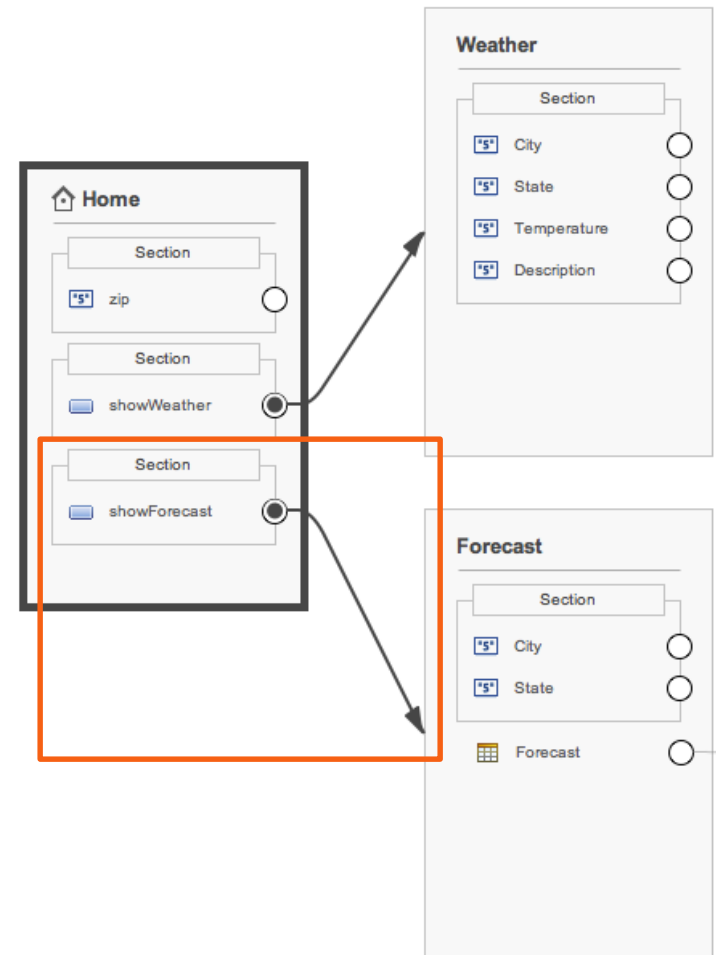
Created Views

- The **Views** tab opens and displays the created views.
- The **Forecast** view shows **City**, **State**, and the **Forecast** table.
- The **Forecast** table has four attributes. On a small device, the table can show only two columns.
- To show all four attributes, another view was created – **Forecast-Forecast** (the concatenation of the name of the first view and the field name of its table).
- This **Forecast-Forecast** view opens when you tap the row of the table in the running application.



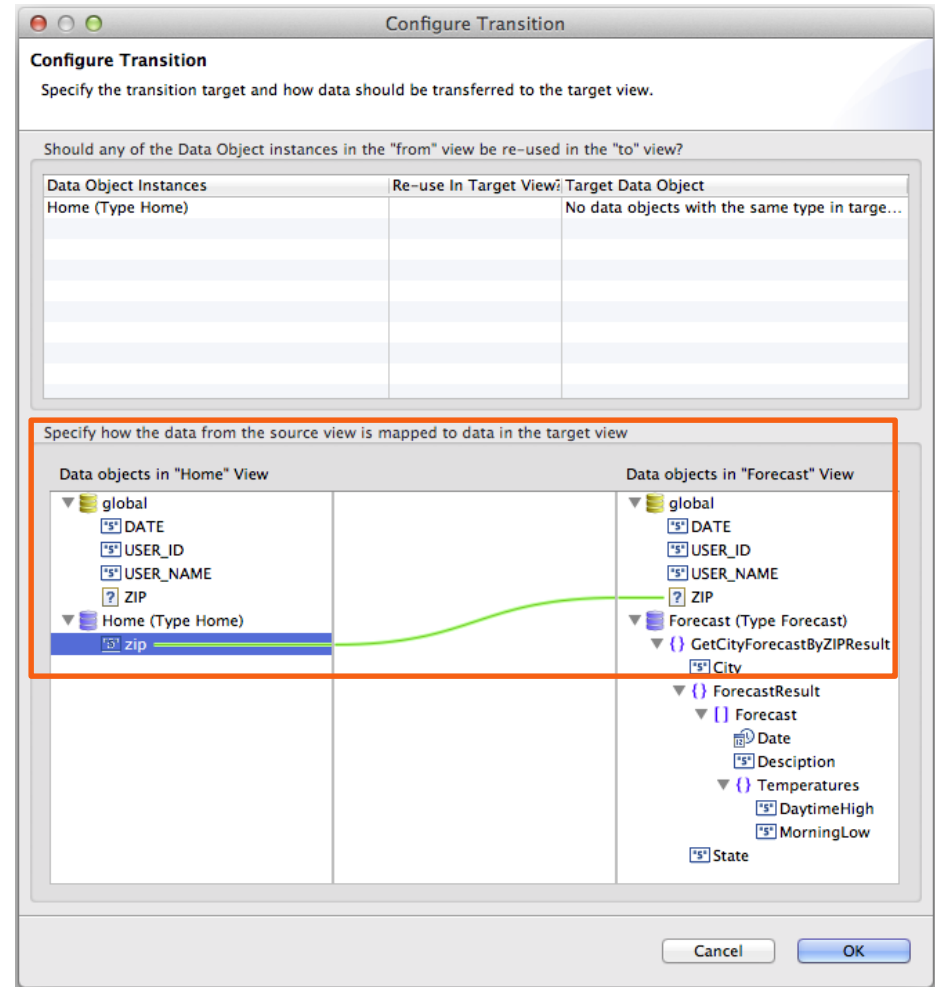
Creating a Transition from Home View to Forecast View

- First, create a button that triggers the transition.
- Drag **Section** from the **Palette** on the right to the **Home** view. Leave **Name** and **Label** empty and click **OK**.
- Drag **Action** from the **Palette** to the new **Section**.
- In **Name**, type `showForecast`, in **Label**, type `Show Forecast` and click **Finish**.
- Create a transition from the new **showForecast** button, by dragging the circle in front of it to the **Forecast** view.



Configuring the Transition

- Double-click the created transition to configure it. The **Configure Transition** wizard opens.
- At the bottom of the window, you can see the **Specify how the data from the source view is mapped to data in the target view** section.
- Map (drag) the **zip** attribute of the data object in the source view (on the left) to the global variable **ZIP** (on the right).
- When you run the application, the value of the **zip** attribute is assigned to the global variable **ZIP**.
- Click **OK** to close the window.

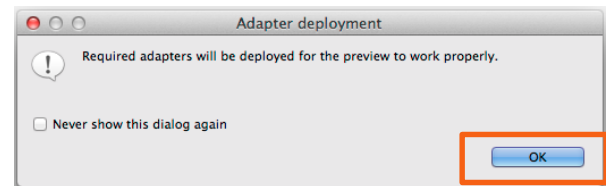
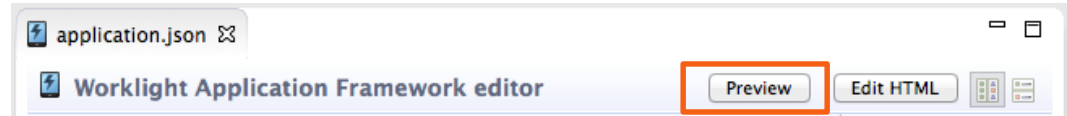


Agenda

- Creating a project with a hybrid application
- Weather application overview
- Building the **Home** view
- Building the **Weather** view
- Building the **Forecast** view
- **Deploying and previewing**

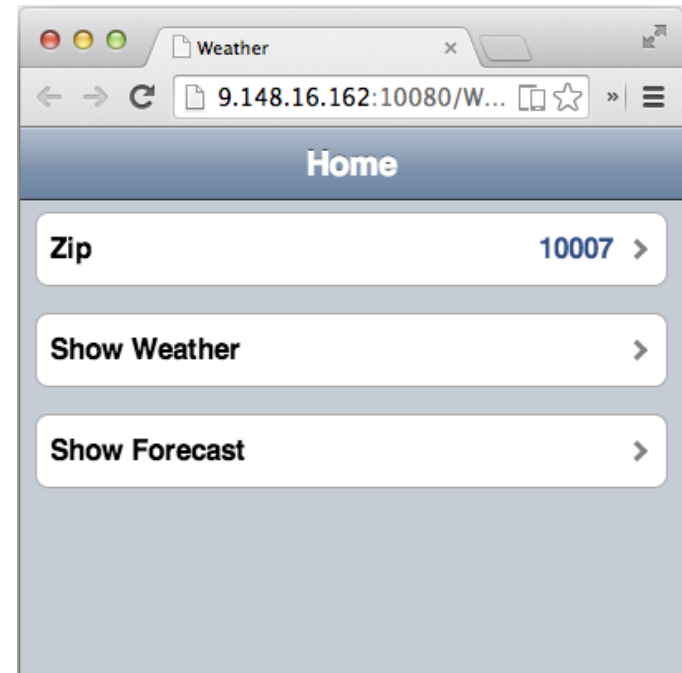
Deploying and Previewing

- Your application is ready.
- Save the file (Ctrl-S).
- Click **Preview** in the upper-right corner of the editor.
- The following actions are then triggered:
 - The Worklight server starts.
 - The app is deployed.
 - The adapter is deployed (a message opens to inform you about it; click **OK** to close it).
 - The app opens in a browser.



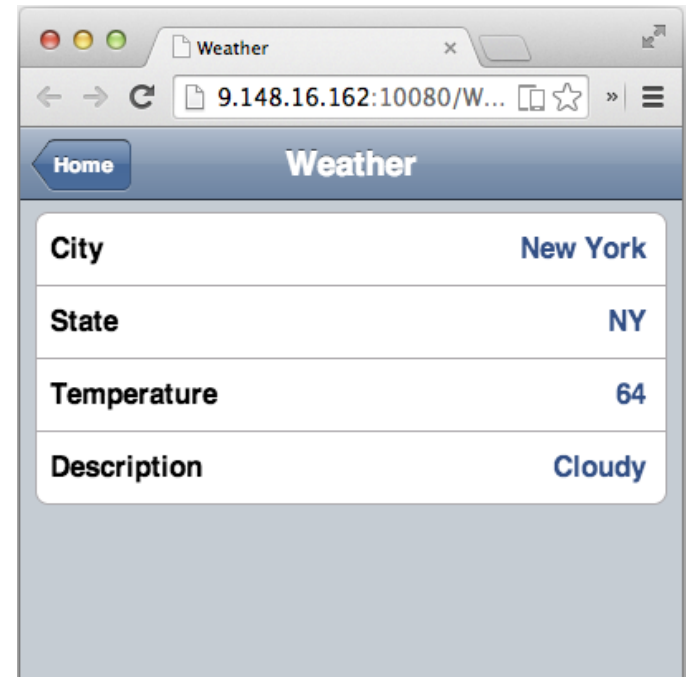
Previewing the Application

- The first view (**Home**) of the application opens.
- Click **ZIP** to type the ZIP code.
- A view that contains a data entry field opens.
- Type, for example, 10007.
- Click **Home** in the application header to get back to the **Home** view.



Previewing the Application

- Click **Show Weather**.
- The second view (**Weather**) of the application opens.
- The data that is shown on this view is the result of the back-end service invocation.
- Click **Home** in the application header to get back to the **Home** view.



Previewing the Application

- Click **Show Forecast**.
- The third view (**Forecast**) of the application opens.
- The data that is shown on this view is the result of the back-end service invocation.
- To see more details about a specific date, click the corresponding row in the **Forecast** table.
- Click **Home** in the application header to get back to the **Home** view.



Wrap-up

- You created a simple hybrid mobile application.
- The application interacts with a public Web Service to get the data.
- The adapter that invokes the Web Service was automatically generated for your application.
- By using IBM Worklight Application Framework, you created the application data representation and the views without writing any code.
- Notes:
 - To run the application on a device, you must create an IBM Worklight environment for each platform. For more information about specific devices, see the modules *Previewing your application on <platform_name>* under category 2, *Hello Worklight*, of the tutorials and samples.
 - If you import the sample project that is provided with this tutorial, make sure that you have **dojoLib** and **wlFrameworkLib** in your Eclipse workspace. These projects are created automatically when you create a hybrid application that uses IBM Worklight Application Framework.

For more information

- For more information about IBM Worklight Application Framework, see the *see the user documentation at*:
 - http://ibm.biz/knowctr#SSZH4A_6.2.0/com.ibm.worklight.dev.doc/dev/c_creating_hybrid_app_af.html

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