WEEK 4 UNIT 2
UPDATE AND MANIPULATE DATA

Please perform the exercises below to your app project as shown in the video.

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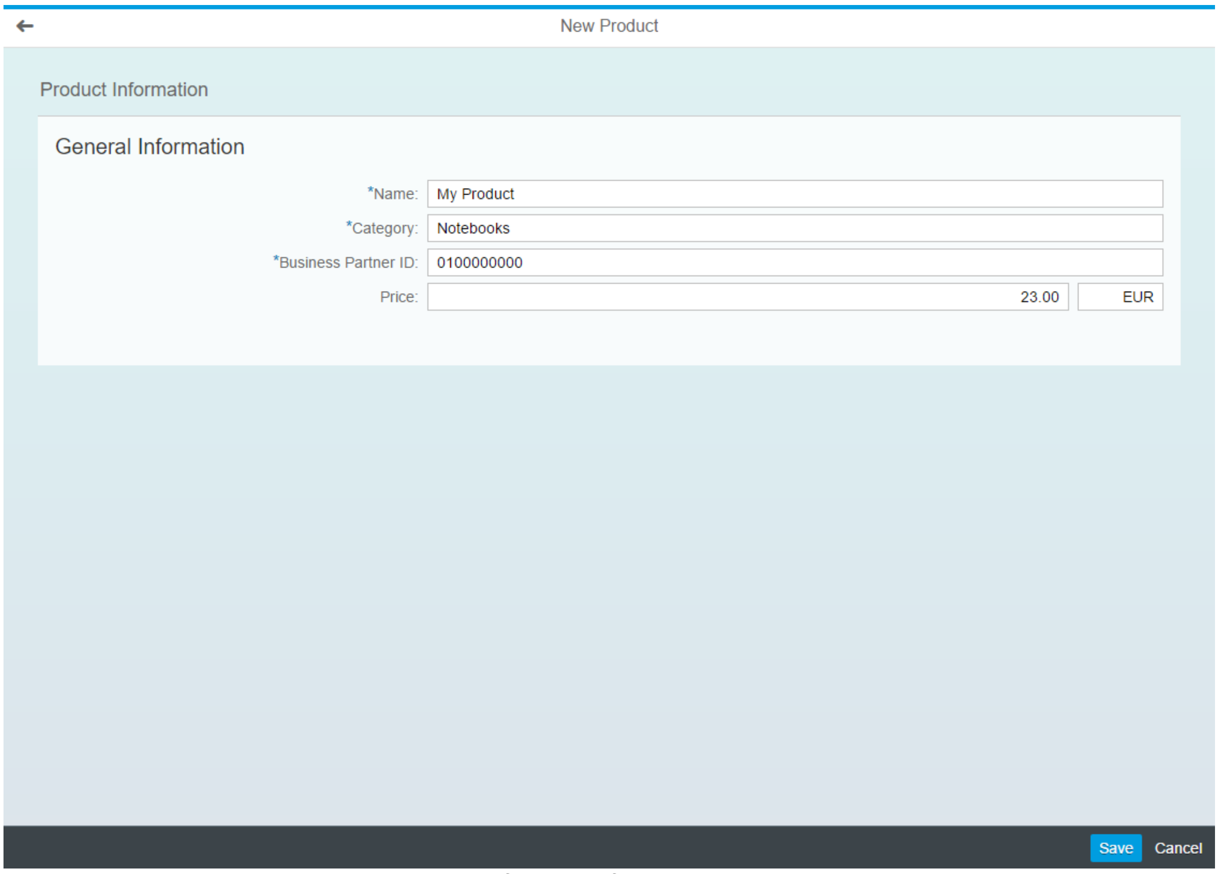
Preview

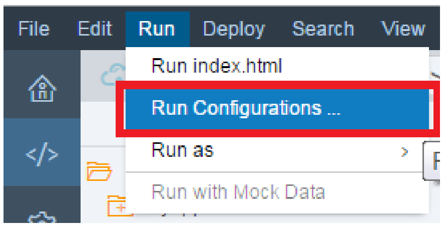
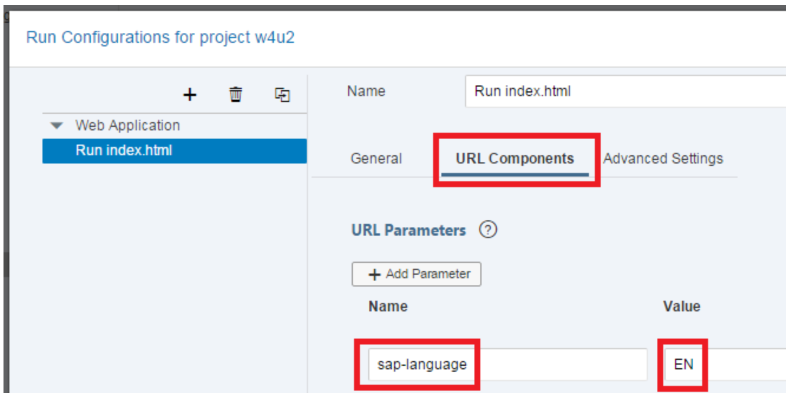


*Name:	My Product
*Category:	Notebooks
*Business Partner ID:	0100000000
Price:	23.00 EUR

Figure 1 - Preview of the app after doing this unit's exercises

1 OVERRIDE LANGUAGE

The OData service used in this exercise has some internal logic that does work in all logon languages. As a workaround we set the logon language to English.

Explanation	Screenshot
1. Open the **Run Configurations**	 File Edit Run Deploy Search View Run index.html Run Configurations ... Run as Run with Mock Data
1. Select the run configuration you are using (e.g. Run App) 2. Switch to tab **URL Components** 3. Enter **sap-language** as name 4. Enter **EN** as value 5. Save the change by pressing **OK**	 Run Configurations for project w4u2 Web Application Run index.html Name: Run index.html General / URL Components / Advanced Settings URL Parameters Add Parameter Name: sap-language Value: EN

2 OPEN THE ADD VIEW

webapp/i18n/i18n.properties

```
…
...
#~~~ Add View ~~~~~~~~~~~~~~~~~~~~~~~~~~

#XTIT: Add view title
addPageTitle=New Product

#XTIT: The titel of the form
formTitle=Product Information

#XTIT: The titel of the form group
formGroupLabel=General Information

#YMSG: The not found text is displayed when there was an error loading the
resource (404 error)
newObjectCreated=The product {0} has been added

…
```

First of all you need a bunch of new i18n properties. Add them after into the **Add View** section.

webapp/manifest.json

```
 …
 "sap.ui5": {
    …
    "models": {
       …
       "": {
          "dataSource": "mainService",
          "settings": {
             "defaultBindingMode": "TwoWay",
             "metadataUrlParams": {
                "sap-documentation": "heading"
             }
          }
       }
    },
 …
```

By default the OData model is configured to use `OneWay` binding. This means data can be displayed but not changed. To enable the view to change model data automatically you set the `defaultBindingMode` to `TwoWay`.

webapp/controller/Add.controller.js

```
    …

    /* =========================================================== */
    /* event handlers                                              */
    /* =========================================================== */

    _onRouteMatched: function() {

        // register for metadata loaded events
        var oModel = this.getModel();
        oModel.metadataLoaded().then(this._onMetadataLoaded.bind(this));
    },

    _onMetadataLoaded: function () {

        // create default properties
        var oProperties = {
            ProductID: "" + parseInt(Math.random() * 1000000000, 10),
            TypeCode: "PR",
            TaxTarifCode: 1,
            CurrencyCode: "EUR",
            MeasureUnit: "EA"
        };

        // create new entry in the model
        this._oContext = this.getModel().createEntry("/ProductSet", {
            properties: oProperties
        });

        // bind the view to the new entry
        this.getView().setBindingContext(this._oContext);
    },

    …
```

You replace the comment from the last unit in the `_onRouteMatched` function with a usage of the `metadataLoaded` promise of the OData model. The `then` function will be executed whenever the metadata has been loaded (This might happen synchronous or asynchronously. Learn more about “promises” in the internet).

In the new `_onMetadataLoaded` function, we create the `oProperties` collection - a first set of hard-coded properties for the new object. The product service has 8 mandatory fields and we want to default some of them without prompting for user input. This includes generating a random `ProductID`.

Note: Generation of IDs on client or server
This example generates IDs on the client to keep the code simple. Still, when generating IDs on the client, submitting them to the server might fail because IDs are already used. In productive apps, you will usually rather let the server generate IDs, so that you do not have to deal with ID collisions in the client-side code.

After calling `createEntry`, the OData model contains a new object that (a) contains all properties specified in the metadata and (b) defaults the properties with your `oProperties`. The `createEntry` function only puts the data to the model in the client, but does not yet request creation on the server.

When creating the new entry in the model, we assume it will be successfully submitted to the server later on in most cases. Still, there are two cases when this does not happen: When the user navigates back to the work list, or when he clicks the “Cancel” button. In these cases, we have to make sure the new entry does not remain in the model, but is discarded. Otherwise, when the user really submitted a

new entry after such a case, the OData request would also include such “outdated” entries. To be able to discard the entry, we keep a reference to the binding context returned by `createEntry`.
Last but no least, we bind the view to the **binding context** pointing to the new object in the model.

webapp/view/Add.view.xml

```
<mvc:View
 controllerName="opensap.manageproducts.controller.Add"
 xmlns:mvc="sap.ui.core.mvc"
 xmlns:semantic="sap.m.semantic"
 xmlns:smartfield="sap.ui.comp.smartfield"
 xmlns:smartform="sap.ui.comp.smartform"
 xmlns="sap.m">
 <semantic:FullscreenPage
   id="page"
   title="{i18n>addPageTitle}"
   showNavButton="true"
   navButtonPress="onNavBack">
   <semantic:content>
     <smartform:SmartForm
       id="form"
       editable="true"
       title="{i18n>formTitle}"
       class="sapUiResponsiveMargin">
       <smartform:Group
         id="formGroup"
         label="{i18n>formGroupLabel}">
         <smartform:GroupElement>
           <smartfield:SmartField
             id="nameField"
             value="{Name}"/>
         </smartform:GroupElement>
         <smartform:GroupElement>
           <smartfield:SmartField
             id="categoryField"
             value="{Category}"/>
         </smartform:GroupElement>
         <smartform:GroupElement>
           <smartfield:SmartField
             id="supplierIDField"
             value="{SupplierID}"/>
         </smartform:GroupElement>
         <smartform:GroupElement>
           <smartfield:SmartField
             id="priceField"
             value="{Price}"/>
         </smartform:GroupElement>
       </smartform:Group>
     </smartform:SmartForm>
   </semantic:content>
 </semantic:FullscreenPage>
</mvc:View>
```

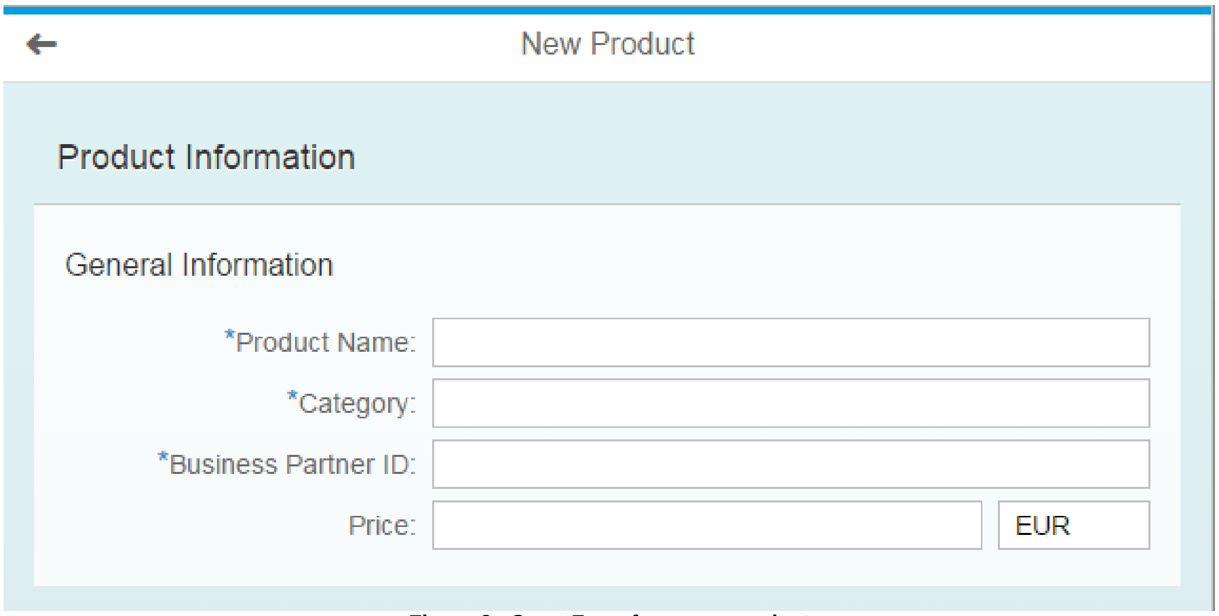
You add two new XML namespaces for the smart controls.

You extend the view with a `SmartForm` that allows the user to enter those product properties that have not been defaulted on creating the entry.

The `SmartForm` contains one group that holds the smart fields. For each `SmartField` you only have to specify the binding to the model properties. Other information – like the field label – is read automatically by the `SmartField` from the OData metadata.

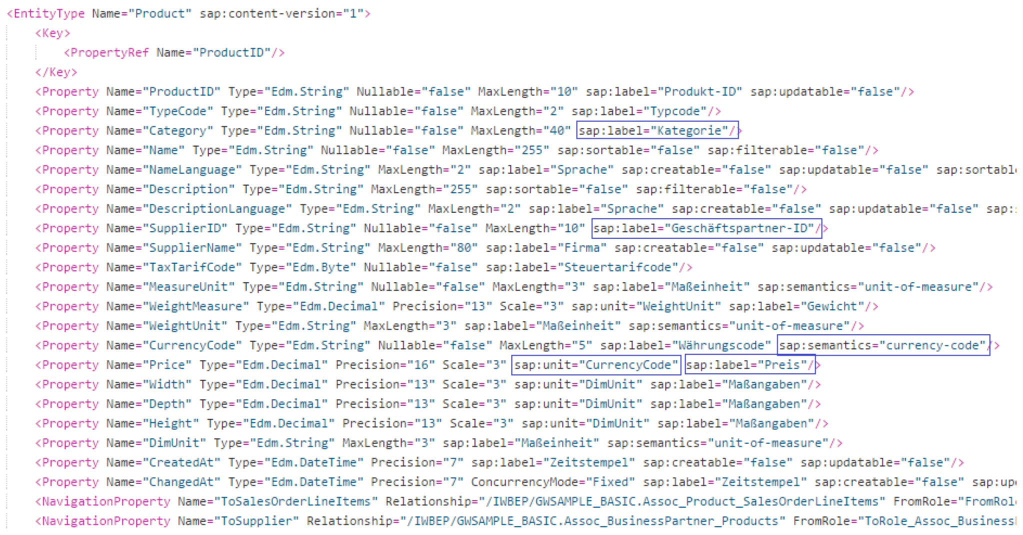
Run the App

Observe that, next to the **price**, an additional input field for the **currency code** is displayed.



*Product Name:	
*Category:	
*Business Partner ID:	
Price:	EUR

Figure 2 - SmartForm for a new product



```
<EntityType Name="Product" sap:content-version="1">
    <Key>
        <PropertyRef Name="ProductID"/>
    </Key>
    <Property Name="ProductID" Type="Edm.String" Nullable="false" MaxLength="10" sap:label="Produkt-ID" sap:updatable="false"/>
    <Property Name="TypeCode" Type="Edm.String" Nullable="false" MaxLength="2" sap:label="Typcode"/>
    <Property Name="Category" Type="Edm.String" Nullable="false" MaxLength="40" sap:label="Kategorie"/>
    <Property Name="Name" Type="Edm.String" Nullable="false" MaxLength="255" sap:sortable="false" sap:filterable="false"/>
    <Property Name="NameLanguage" Type="Edm.String" MaxLength="2" sap:label="Sprache" sap:creatable="false" sap:updatable="false" sap:sortabl
    <Property Name="Description" Type="Edm.String" MaxLength="255" sap:sortable="false" sap:filterable="false"/>
    <Property Name="DescriptionLanguage" Type="Edm.String" MaxLength="2" sap:label="Sprache" sap:creatable="false" sap:updatable="false" sap:
    <Property Name="SupplierID" Type="Edm.String" Nullable="false" MaxLength="10" sap:label="Geschäftspartner-ID"/>
    <Property Name="SupplierName" Type="Edm.String" MaxLength="80" sap:label="Firma" sap:creatable="false" sap:updatable="false"/>
    <Property Name="TaxTarifCode" Type="Edm.Byte" Nullable="false" sap:label="Steuertarifcode"/>
    <Property Name="MeasureUnit" Type="Edm.String" Nullable="false" MaxLength="3" sap:label="Maßeinheit" sap:semantics="unit-of-measure"/>
    <Property Name="WeightMeasure" Type="Edm.Decimal" Precision="13" Scale="3" sap:unit="WeightUnit" sap:label="Gewicht"/>
    <Property Name="WeightUnit" Type="Edm.String" MaxLength="3" sap:label="Maßeinheit" sap:semantics="unit-of-measure"/>
    <Property Name="CurrencyCode" Type="Edm.String" Nullable="false" MaxLength="5" sap:label="Währungscode" sap:semantics="currency-code"/>
    <Property Name="Price" Type="Edm.Decimal" Precision="16" Scale="3" sap:unit="CurrencyCode" sap:label="Preis"/>
    <Property Name="Width" Type="Edm.Decimal" Precision="13" Scale="3" sap:unit="DimUnit" sap:label="Maßangaben"/>
    <Property Name="Depth" Type="Edm.Decimal" Precision="13" Scale="3" sap:unit="DimUnit" sap:label="Maßangaben"/>
    <Property Name="Height" Type="Edm.Decimal" Precision="13" Scale="3" sap:unit="DimUnit" sap:label="Maßangaben"/>
    <Property Name="DimUnit" Type="Edm.String" MaxLength="3" sap:label="Maßeinheit" sap:semantics="unit-of-measure"/>
    <Property Name="CreatedAt" Type="Edm.DateTime" Precision="7" sap:label="Zeitstempel" sap:creatable="false" sap:updatable="false"/>
    <Property Name="ChangedAt" Type="Edm.DateTime" Precision="7" ConcurrencyMode="Fixed" sap:label="Zeitstempel" sap:creatable="false" sap:up
    <NavigationProperty Name="ToSalesOrderLineItems" Relationship="/IWBEP/GWSAMPLE_BASIC.Assoc_Product_SalesOrderLineItems" FromRole="FromRol
    <NavigationProperty Name="ToSupplier" Relationship="/IWBEP/GWSAMPLE_BASIC.Assoc_BusinessPartner_Products" FromRole="ToRole_Assoc_Business
```

Figure 3 - Product entity in the service metadata

The app contains a local copy of the metadata describing our backend service interface in file `webapp/localService/metadata.xml`. Open it and search for the `Product` entity.

Observe that the `sap:label` annotation is set for the `Name`, `Category`, `SupplierID` and `Price`. You also see that the `sap:unit` annotation `CurrencyCode` is set for the price. The product property `CurrencyCode` has the `sap:semantics` annotation also set to `CurrencyCode`.

3 ENTER AND SAVE DATA

webapp/view/Add.view.xml

```
 …
 <semantic:FullscreenPage
    id="page"
    title="{i18n>addPageTitle}"
    showNavButton="true"
    navButtonPress="onNavBack">
    <semantic:content>
       …
    </semantic:content>
    <semantic:saveAction>
       <semantic:SaveAction id="save" press="onSave"/>
    </semantic:saveAction>
    <semantic:cancelAction>
       <semantic:CancelAction id="cancel" press="onCancel"/>
    </semantic:cancelAction>
 </semantic:FullscreenPage>
</mvc:View>
```

You add two additional actions to the semantic page for **Save** and **Cancel**.

webapp/controller/Add.controller.js

```
    …

    _onMetadataLoaded: function () {

       …
    },

    /**
     * Event handler for the cancel action
     * @public
     */
    onCancel: function() {
       this.onNavBack();
    },

    /**
     * Event handler for the save action
     * @public
     */
    onSave: function() {
       this.getModel().submitChanges();
    },

    …

    onNavBack: function() {
       // discard new product from model.
       this.getModel().deleteCreatedEntry(this._oContext);

       var oHistory = History.getInstance(),
          sPreviousHash = oHistory.getPreviousHash();

    …
```

You implement the event handler for the **Cancel** action by simply calling the existing event handler to navigate back.

You implement the event handler for the **Save** action by calling the `submitChanges` function of the OData model. The OData model will then send HTTP requests for all changed data to the server.

For the case that the new entry is not submitted to the server, you discard it in the `onNavBack` event handler by calling `deleteCreatedEntry` on the OData model and passing the binding context that you remember from `onMetadataLoaded`.

webapp/controller/Add.controller.js

```
sap.ui.define([
 "opensap/manageproducts/controller/BaseController",
 "sap/ui/core/routing/History",
 "sap/m/MessageToast"
], function(BaseController, History, MessageToast) {
 "use strict";

    …

    _onMetadataLoaded: function () {

       // create default properties
       var oProperties = {
          ProductID: "" + parseInt(Math.random() * 1000000000, 10),
          TypeCode: "PR",
          TaxTarifCode: 1,
          CurrencyCode: "EUR",
          MeasureUnit: "EA"
       };

       // create new entry in the model
       var oContext = this.getModel().createEntry("/ProductSet", {
          properties: oProperties,
          success: this._onCreateSuccess.bind(this)
       });

       // bind the view to the new entry
       this.getView().setBindingContext(this._oContext);
    },

    _onCreateSuccess: function (oProduct) {

       // navigate to the new product's object view
       var sId = oProduct.ProductID;
       this.getRouter().navTo("object", {
          objectId : sId
       }, true);

       // unbind the view to not show this object again
       this.getView().unbindObject();

       // show success messge
       var sMessage = this.getResourceBundle().getText("newObjectCreated",
[oProduct.Name]);
       MessageToast.show(sMessage, {
          closeOnBrowserNavigation : false
       });
    },
    …
```

You register a callback `onCreateSuccess` for the successful creation of the product on the server. You do this in the code where you call `createEntry` on the model.

In this callback, you get the complete product object as parameter `oProduct`. You access the router and trigger the navigation to the `object` route with the product ID as parameter `objectId`. You unbind the view to not show this object again.

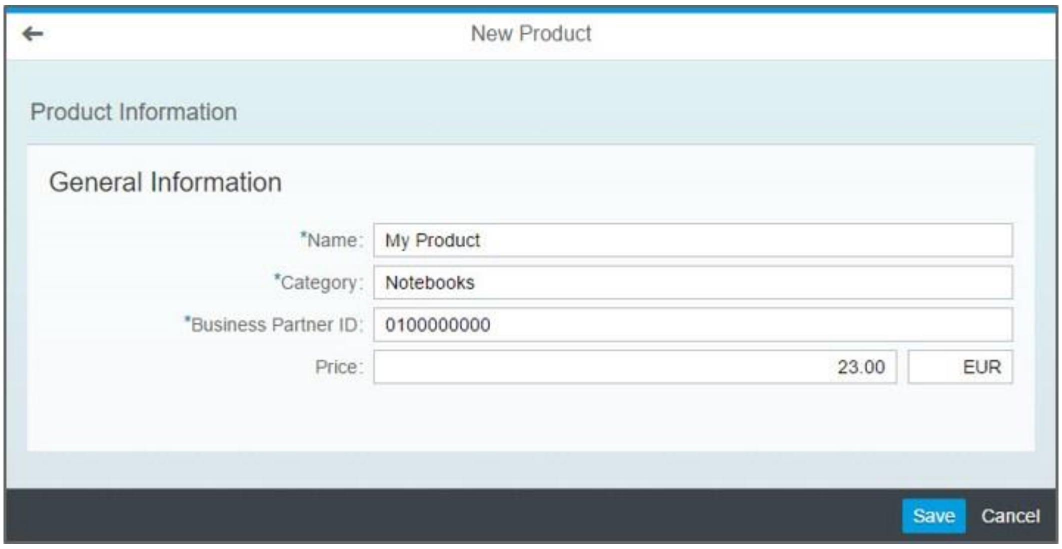
You finally show a `MessageToast` that indicates the successful creation of the product to the user. The additional parameter `closeOnBrowserNavigation` prevents the routing to the close the message toast automatically on navigation, so that the user can actually see it.

Run the App, Enter Data and Save

When calling the app, navigate to the add page and enter the following values to create a new product:

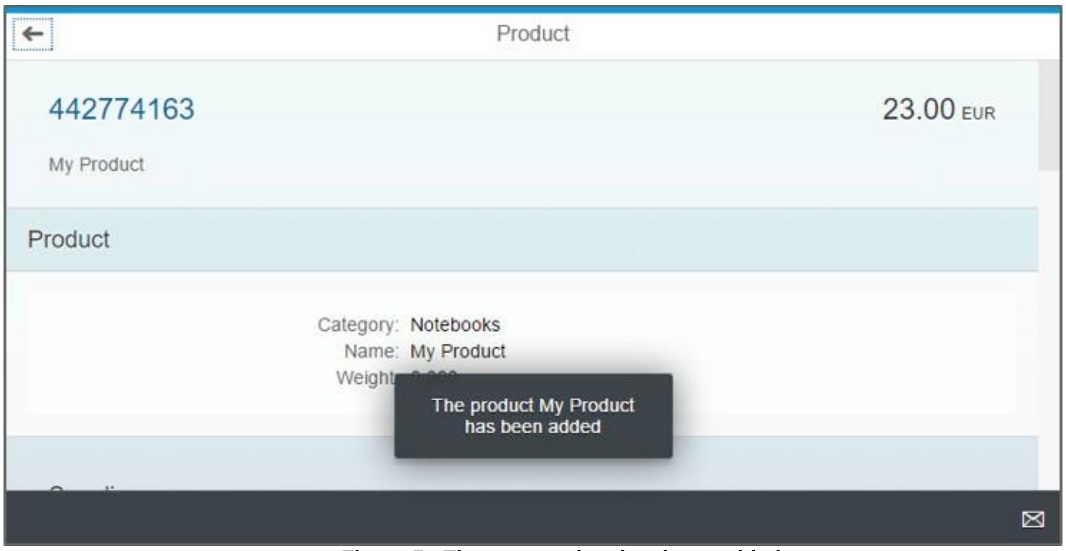
- A **name** of your choice.
- **Notebooks** as **category**.
- **0100000000** as **business partner ID**.(0, 1, 8 zeros)
- A **price** of your choice.

Press **Save** and make sure that the new product has been created.



*Name:	My Product
*Category:	Notebooks
*Business Partner ID:	0100000000
Price:	23.00 EUR

Figure 4 – Addition of a new product



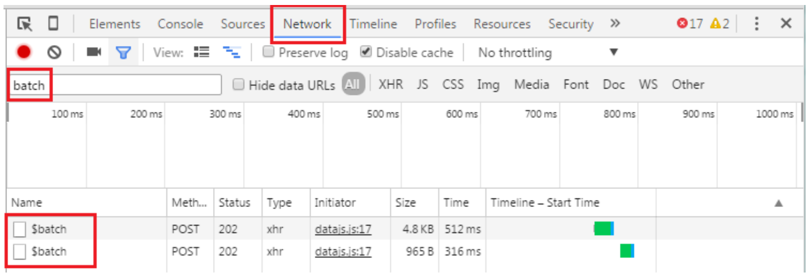
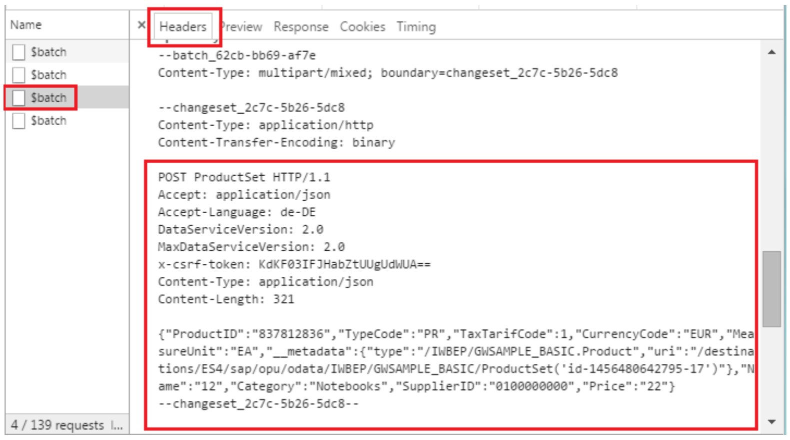
Category: Notebooks
Name: My Product
Weight:

The product My Product has been added

Figure 5 - The new product has been added

4 NETWORK TRACE

When troubleshooting issues, it is helpful to check the **network trace** of Chrome to understand which HTTP requests have been sent by the OData model and analyze the error information in the responses.

Explanation	Screenshot
2. Open the app in Chrome and press **F12** to open the developer tools. 3. Switch to the **Network** tab. 4. Search for **batch.** 5. Now the request list only shows the requests send by the OData model.	
6. Find the request that triggered the product creation on the server. When batch processing is enabled for the OData model, this is the $batch request that contains the **POST** request in the **Headers.**	

Name	Meth...	Status	Type	Initiator	Size	Time	Timeline – Start Time
$batch	POST	202	xhr	datajs.js:17	4.8 KB	512 ms	
$batch	POST	202	xhr	datajs.js:17	965 B	316 ms	

```
--batch_62cb-bb69-af7e
Content-Type: multipart/mixed; boundary=changeset_2c7c-5b26-5dc8

--changeset_2c7c-5b26-5dc8
Content-Type: application/http
Content-Transfer-Encoding: binary

POST ProductSet HTTP/1.1
Accept: application/json
Accept-Language: de-DE
DataServiceVersion: 2.0
MaxDataServiceVersion: 2.0
x-csrf-token: KdKF03IFJHabZtUUgUdWUA==
Content-Type: application/json
Content-Length: 321

{"ProductID":"837812836","TypeCode":"PR","TaxTarifCode":1,"CurrencyCode":"EUR","Mea
sureUnit":"EA","__metadata":{"type":"/IWBEP/GWSAMPLE_BASIC.Product","uri":"/destina
tions/ES4/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/ProductSet('id-1456480642795-17')"},"N
ame":"12","Category":"Notebooks","SupplierID":"0100000000","Price":"22"}
--changeset_2c7c-5b26-5dc8--
```

5 BEYOND THIS SESSION

This unit only shows the first steps in setting up the complete update scenario. The following requirements have been omitted:

- **Busy Indication**: The **Add** view needs to be set busy while the server is processing the request. You find sample code for this in the **Worklist** and **Object** view of the generated app by searching for “busy”.
- **Error Handling**: The generic `ErrorHandler` generated with the application will show a generic error dialog., You might want to display more specific error messages. Also the busy indication needs to be reset on errors.
- **Input Validation**: The data needs to be validated and the resulting messages displayed to the user. SAPUI5 offers support for this with the Message Handling
- **Value Help**: The user needs assistance when entering the data. Smart fields provide reuse functionality for this. Learn More…
- **Data Loss Confirmation**: If the user tries to leave the screen without saving entered data, he should be prompted to confirm the loss of data. You can use method `hasPendingChanges` of the OData model to check this.

Related Information

Message Handling
Smart Controls Tutorial