


Develop SAP Business One extensions on the SAP Cloud Platform



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The objective of this hands on is to put in practice how to develop SAP Business One extensions on SAP Cloud Platform.

The exercise will be composed by

- Step 1: Create a Fiori application connecting to SAP Business One Service Layer via SAP API Business Hub
- Step 2: Implement a server side NodeJS application
- Step 3: Deploy the NodeJS application to SAP Cloud Foundry
- Step 4: Consume the server side NodeJS application from the Fiori application

This hands-on exercise will require several steps, please follow them in the proposed order as each step is counting on the precedent steps.

PREREQUISITES

i. Download and Install Development Tools

Download and install git version control on your system from the following link

<https://git-scm.com/downloads>



We will also make use of SAP Cloud Platform Cloud Foundry Environment.

To do so, we need the Cloud Foundry command line interface (CLI)

You can download it and install if the CF CLI for your operating system on.

<https://github.com/cloudfoundry/cli#downloads>

Downloads

Installing using a package manager

Mac OS X and Linux using Homebrew via the cloudfoundry tap:

```
brew install cloudfoundry/tap/cf-cli
```

Debian and Ubuntu based Linux distributions:

```
# ...first add the Cloud Foundry Foundation public key and package repository to your system
wget -q -O - https://packages.cloudfoundry.org/debian/cli.cloudfoundry.org.key | sudo apt-key add -
echo "deb https://packages.cloudfoundry.org/debian stable main" | sudo tee /etc/apt/sources.list.d/cloudfou
# ...then, update your local package index, then finally install the cf CLI
sudo apt-get update
sudo apt-get install cf-cli
```

Enterprise Linux and Fedora systems (RHEL6/CentOS6 and up):

```
# ...first configure the Cloud Foundry Foundation package repository
sudo wget -O /etc/yum.repos.d/cloudfoundry-cli.repo https://packages.cloudfoundry.org/fedora/cloudfoundry-
# ...then, install the cf CLI (which will also download and add the public key to your system)
sudo yum install cf-cli
```

Installers and compressed binaries

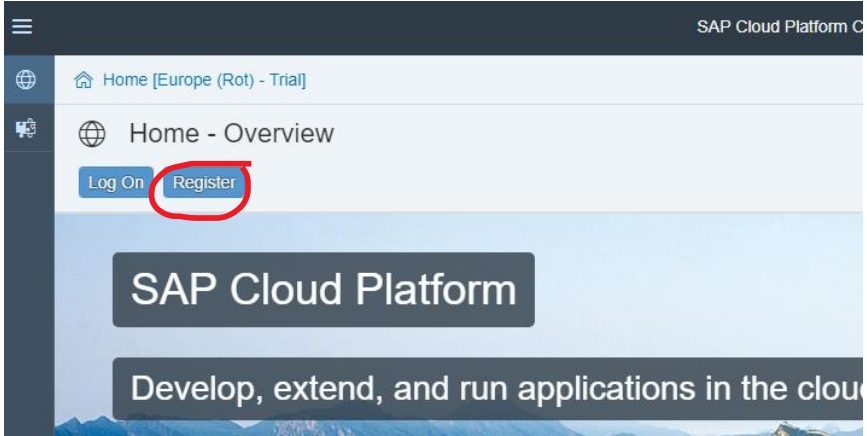
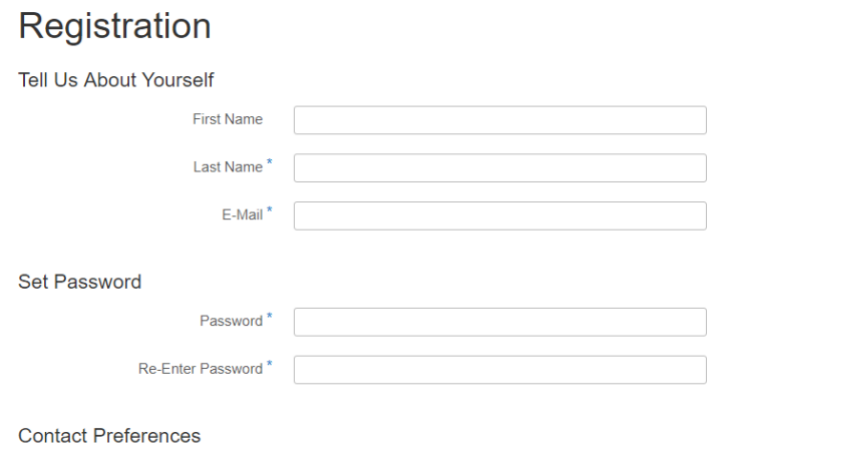
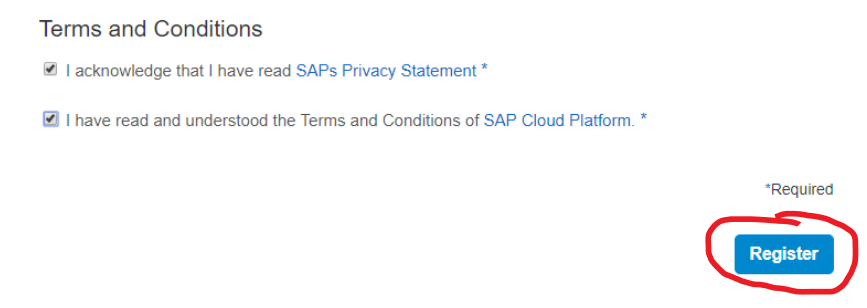
	Mac OS X 64 bit	Windows 64 bit	Linux 64 bit
Installers	pkg	zip	rpm / deb
Binaries	tgz	zip	tgz

ii. Create a SAP Cloud platform trial account

The exercises proposed in this hands on are implemented on top of the SAP Cloud Platform.

If you have already a trial SAP Cloud Platform account, you can skip this step.

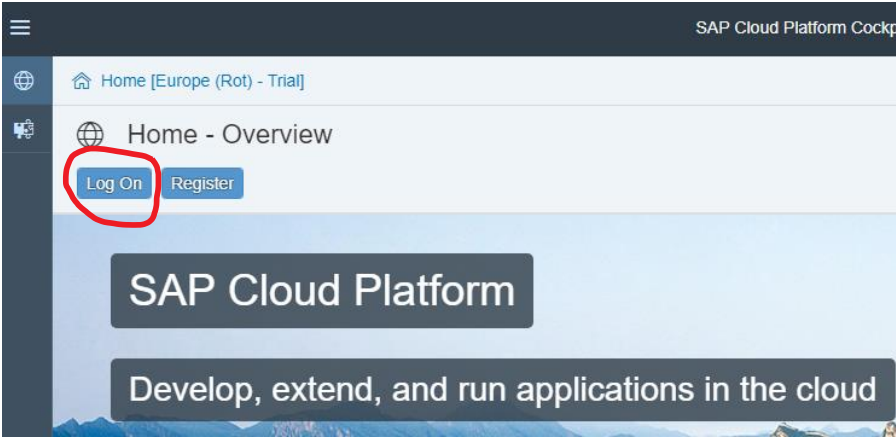
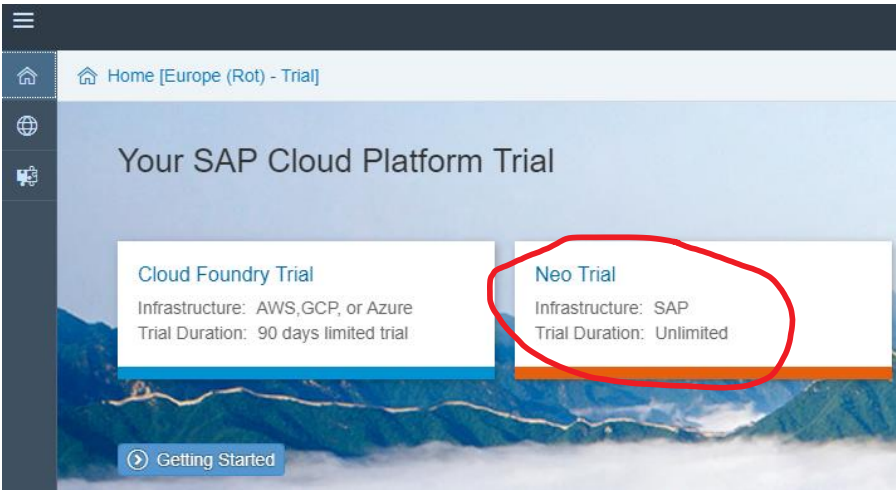
To create a trial SAP Cloud Platform account, go to the following link:

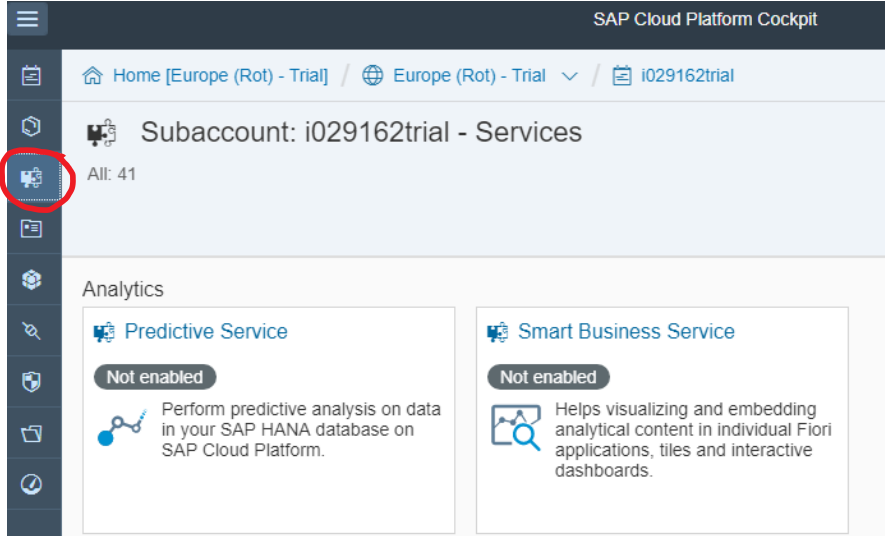
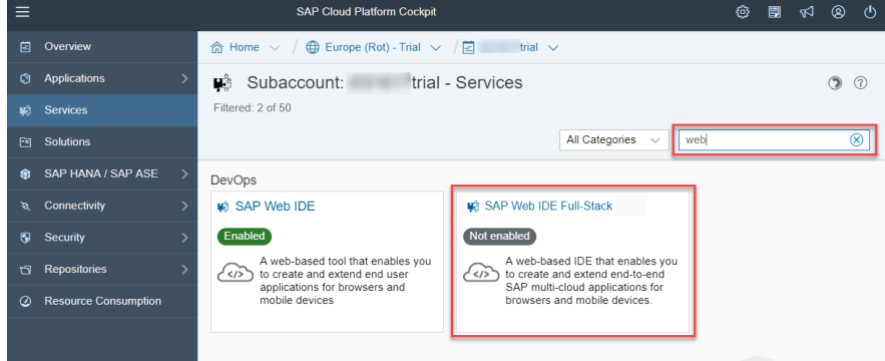
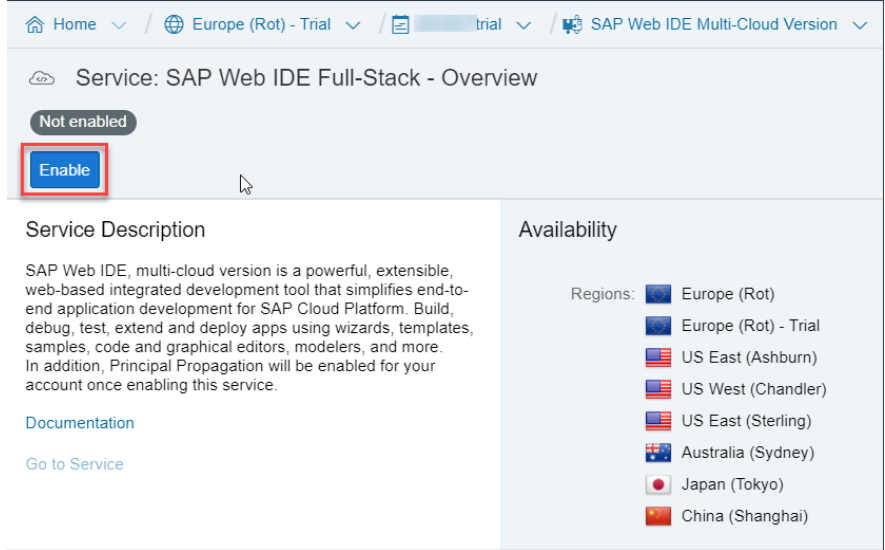
Explanation	Screenshot
<p>To create a trial SAP Cloud Platform account, go to the following link:</p> <p>https://account.hanatrial.ondemand.com</p> <p>Press the Register button</p>	 The screenshot shows the SAP Cloud Platform Home page. At the top, there's a navigation bar with a hamburger menu and the text 'SAP Cloud Platform'. Below that, a breadcrumb trail reads 'Home [Europe (Rot) - Trial]'. The main heading is 'Home - Overview'. There are two buttons: 'Log On' and 'Register', with the 'Register' button circled in red. Below the buttons is a large banner with the text 'SAP Cloud Platform' and 'Develop, extend, and run applications in the cloud'.
<p>Enter all your details</p>	 The screenshot shows the 'Registration' form. It has sections for 'Tell Us About Yourself' (First Name, Last Name, E-Mail), 'Set Password' (Password, Re-Enter Password), and 'Contact Preferences'. The 'Register' button is circled in red.
<p>Accept the terms and conditions by checking both check boxes and press "Register".</p>	 The screenshot shows the 'Terms and Conditions' page. It has two checkboxes: 'I acknowledge that I have read SAPs Privacy Statement' and 'I have read and understood the Terms and Conditions of SAP Cloud Platform'. Both are checked. The 'Register' button is circled in red.

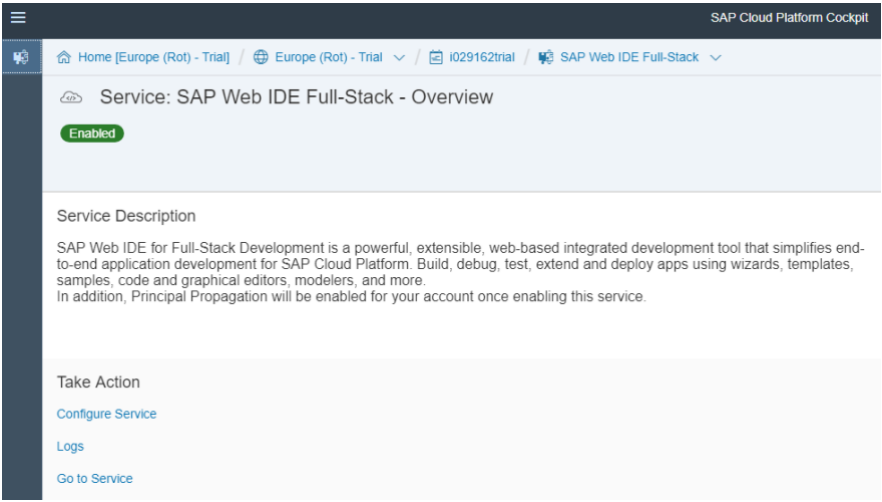
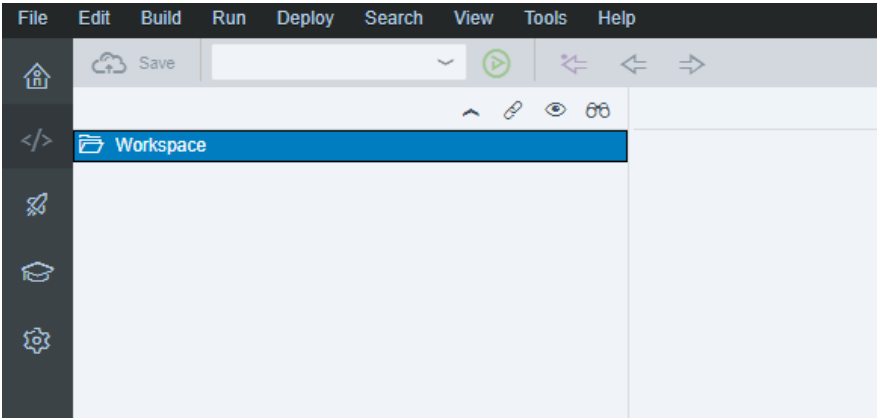
iii. Activate Web IDE Full Stack service

We will use Web IDE Full Stack for the creation and implementation of our application.
Web IDE is offered as a service on the SAP Cloud Platform.

To activate Web IDE Full Stack service please follow the steps here below, if you already have Web IDE Full Stack service active in your account please skip this step.

Explanation	Screenshot
Open your trial SAP Cloud Platform account from the following link: https://account.hanatrial.ondemand.com	
Press the Log On button if you are not automatically logged in	 The screenshot shows the SAP Cloud Platform Cockpit login page. The header includes a hamburger menu, a home icon, and the text 'Home [Europe (Rot) - Trial]'. Below this is a 'Home - Overview' section with a 'Log On' button circled in red and a 'Register' button. The main content area features the 'SAP Cloud Platform' logo and the tagline 'Develop, extend, and run applications in the cloud'.
After login if you are proposed between Cloud Foundry Trial and Neo Trial please choose Neo Trial.	 The screenshot shows the 'Your SAP Cloud Platform Trial' selection page. It features two trial options: 'Cloud Foundry Trial' (Infrastructure: AWS, GCP, or Azure; Trial Duration: 90 days limited trial) and 'Neo Trial' (Infrastructure: SAP; Trial Duration: Unlimited). The 'Neo Trial' option is circled in red. A 'Getting Started' button is visible at the bottom.

Explanation	Screenshot
Select the Services icon on the left side bar.	 <p>The screenshot shows the SAP Cloud Platform Cockpit interface. The left sidebar contains several icons, and the 'Services' icon is highlighted with a red circle. The main area displays the 'Subaccount: i029162trial - Services' page with a list of services, including 'Predictive Service' and 'Smart Business Service', both marked as 'Not enabled'.</p>
Enter Web in the search edit text. Click on the SAP Web IDE Full Stack box.	 <p>The screenshot shows the SAP Cloud Platform Cockpit interface with the search filter 'web' entered in the search bar. The 'SAP Web IDE Full-Stack' service is highlighted with a red box. The service is currently 'Not enabled'.</p>
Click Enable . This may take a few minutes.	 <p>The screenshot shows the 'Service: SAP Web IDE Full-Stack - Overview' page. The 'Not enabled' status is displayed, and the 'Enable' button is highlighted with a red box. The page also includes a 'Service Description' and an 'Availability' section listing regions.</p>

Explanation	Screenshot
<p>Once Enabled select the link Go to Service to open Web IDE Full Stack.</p>	 <p>The screenshot shows the SAP Cloud Platform Cockpit interface. The breadcrumb navigation at the top reads: Home [Europe (Rot) - Trial] / Europe (Rot) - Trial / i029162trial / SAP Web IDE Full-Stack. The main heading is 'Service: SAP Web IDE Full-Stack - Overview', followed by a green 'Enabled' status badge. Below this is a 'Service Description' section stating: 'SAP Web IDE for Full-Stack Development is a powerful, extensible, web-based integrated development tool that simplifies end-to-end application development for SAP Cloud Platform. Build, debug, test, extend and deploy apps using wizards, templates, samples, code and graphical editors, modelers, and more. In addition, Principal Propagation will be enabled for your account once enabling this service.' At the bottom, under the 'Take Action' section, there are three links: 'Configure Service', 'Logs', and 'Go to Service'.</p>
<p>Web IDE opens with an empty Workspace unless you already developed applications with Web IDE in the past.</p>	 <p>The screenshot displays the SAP Web IDE web-based interface. The top menu bar contains 'File', 'Edit', 'Build', 'Run', 'Deploy', 'Search', 'View', 'Tools', and 'Help'. Below the menu is a toolbar with icons for 'Save', a search icon, a play icon, and navigation arrows. The left sidebar features icons for 'Home', 'Code' (represented by </>), 'Run and Debug' (represented by a play icon), 'Test' (represented by a graduation cap icon), and 'Settings' (represented by a gear icon). The main workspace area is titled 'Workspace' and is currently empty.</p>



iv. **SAP API Business Hub**

SAP API Business Hub is the central catalog of all SAP and partner APIs for developers to build sample apps, extensions and open integrations with SAP.

SAP Business One has exposed 3 packages as of today:

- SAP Business One – Sales
- SAP Business One – Business Partners
- SAP Business One - Inventory

Many other packages will follow very soon, stay tuned.

Please go to the following link for more details:

<https://api.sap.com>

STEP 1: CREATE A SAP FIORI APP CONNECTING TO SAP BUSINESS ONE SERVICE LAYER VIA SAP API BUSINESS HUB

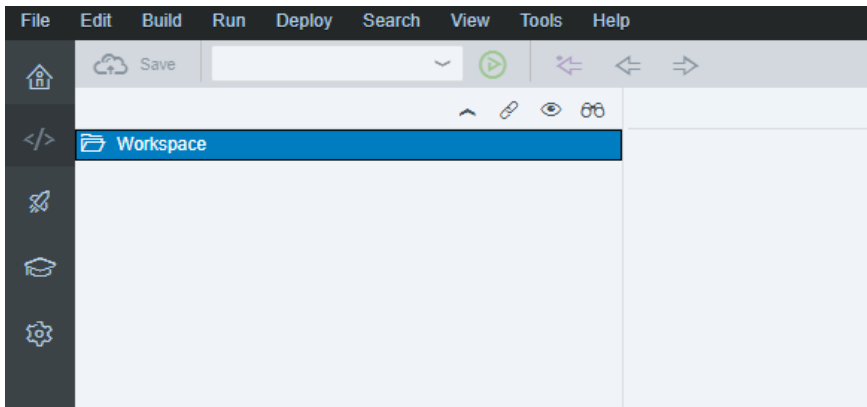
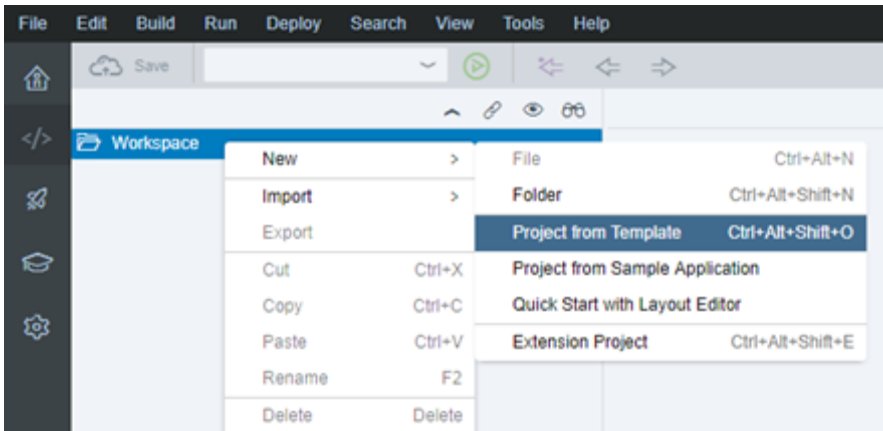
The objective of this first exercise is to develop a SAP Fiori app using the **SAP UI5** template.

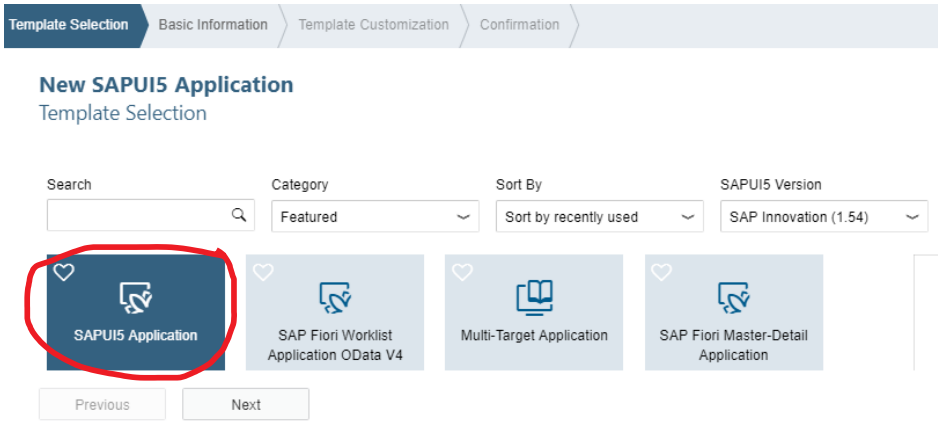
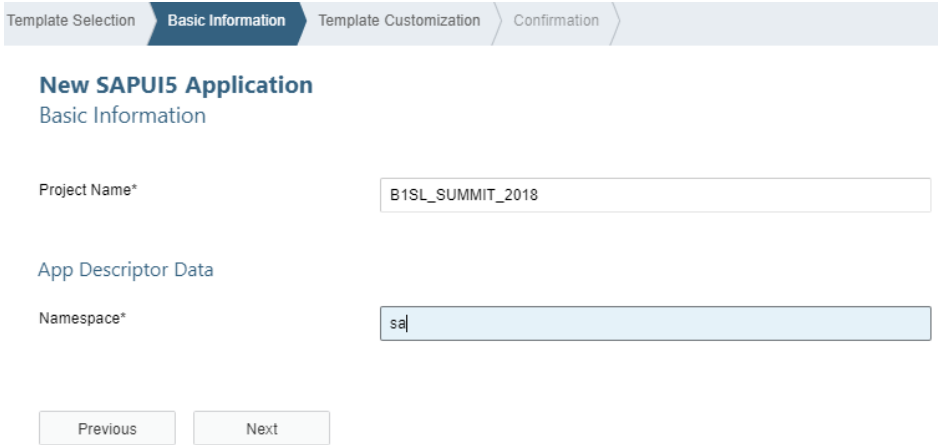
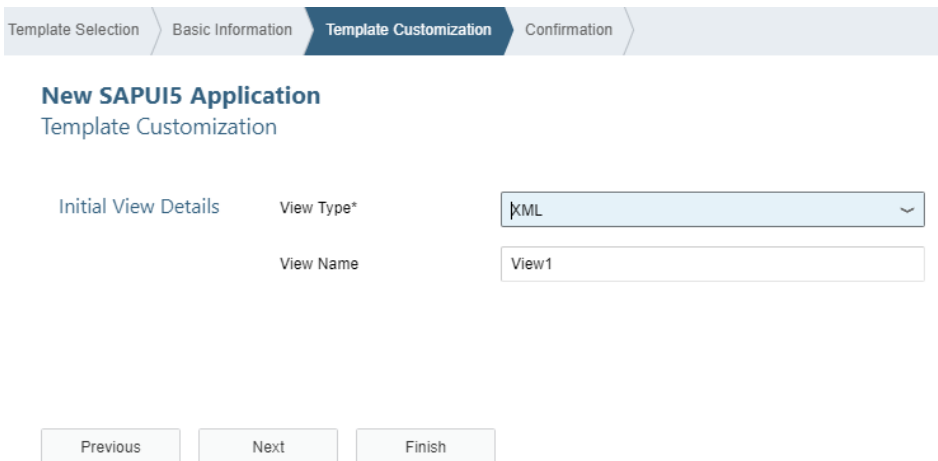
Service Layer provides OData v4 support since SAP Business One 9.3 PL04 version for SAP HANA.

In this exercise, we will use the Service Layer APIs exposed via the SAP API Business Hub, please refer to the prerequisites section SAP API Business Hub for more details.

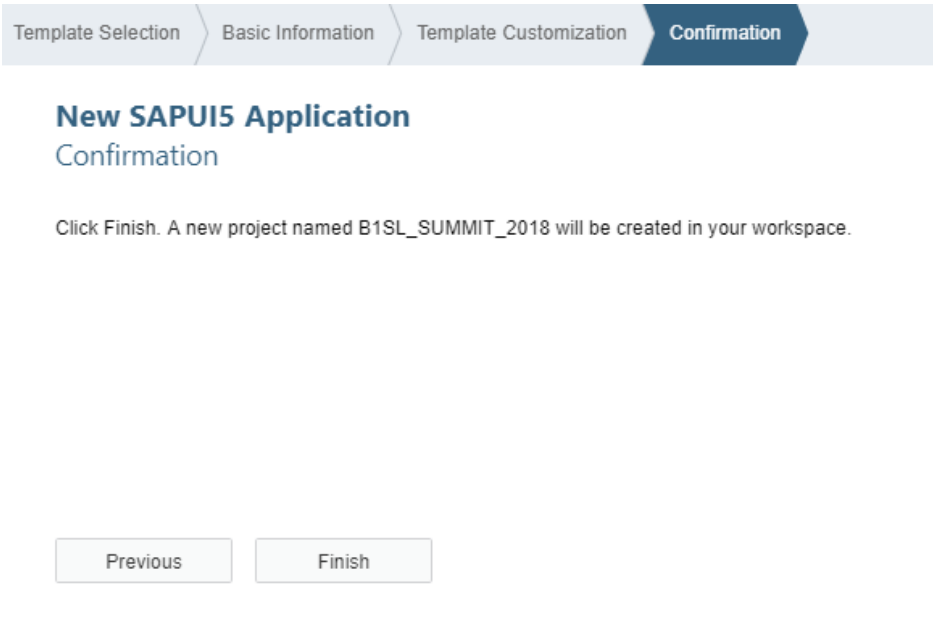
Web IDE supports OData v4 on some templates like SAP Fiori Worklist Application OData v4 and SAPUI5. More templates will support OData v4 gradually. In this exercise, we will use the SAPUI5 template.

i. Create a SAPUI5 Application

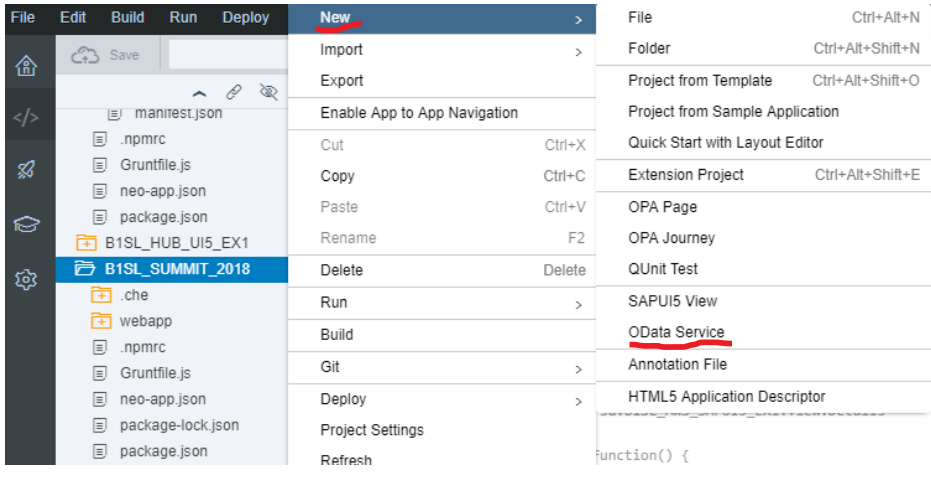
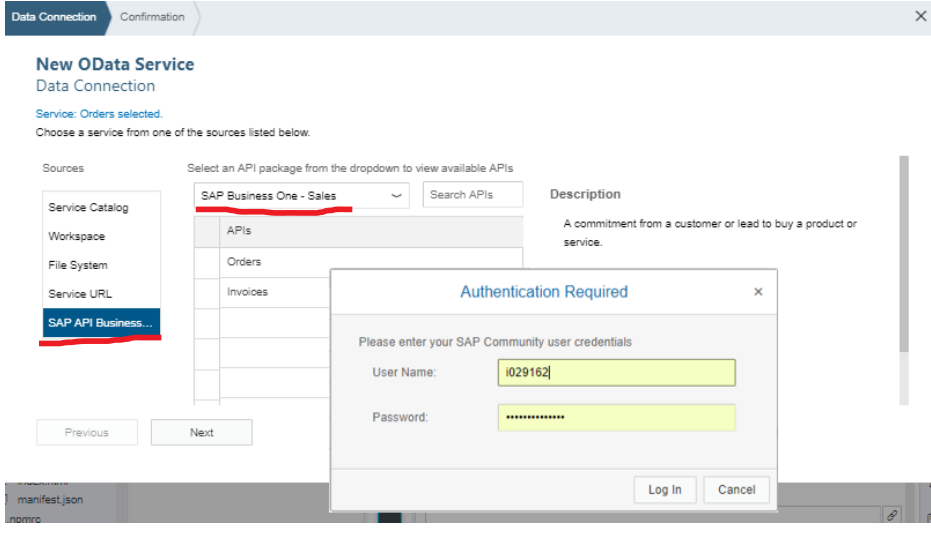
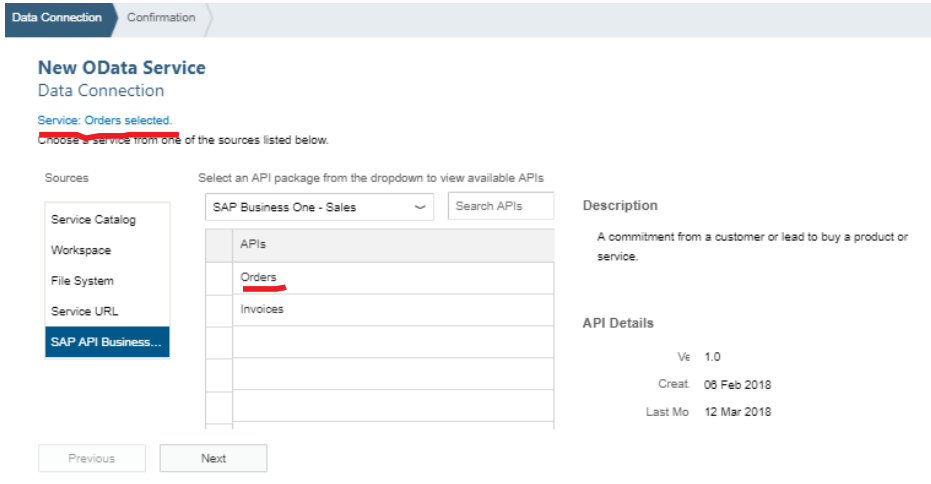
Explanation	Screenshot
Open SAP Web IDE Full Stack. Check the prerequisites sections “Create a SAP Cloud platform trial account” and “Activate Web IDE Full Stack service” if you don’t know how to open WebIDE Full Stack.	 The screenshot shows the SAP Web IDE Full Stack interface. The top menu bar includes File, Edit, Build, Run, Deploy, Search, View, Tools, and Help. Below the menu is a toolbar with icons for Save, Run, and other actions. The main workspace area is currently empty, with a 'Workspace' tab selected in the left-hand pane.
Right click on your Workspace and select New -> Project from Template .	 The screenshot shows the SAP Web IDE Full Stack interface with the context menu open for the 'Workspace' tab. The menu options are: New (with a submenu), Import (with a submenu), Export, Cut (Ctrl+X), Copy (Ctrl+C), Paste (Ctrl+V), Rename (F2), and Delete. The 'New' submenu is expanded, showing options: File (Ctrl+Alt+N), Folder (Ctrl+Alt+Shift+N), Project from Template (Ctrl+Alt+Shift+O), Project from Sample Application, Quick Start with Layout Editor, and Extension Project (Ctrl+Alt+Shift+E). The 'Project from Template' option is highlighted.

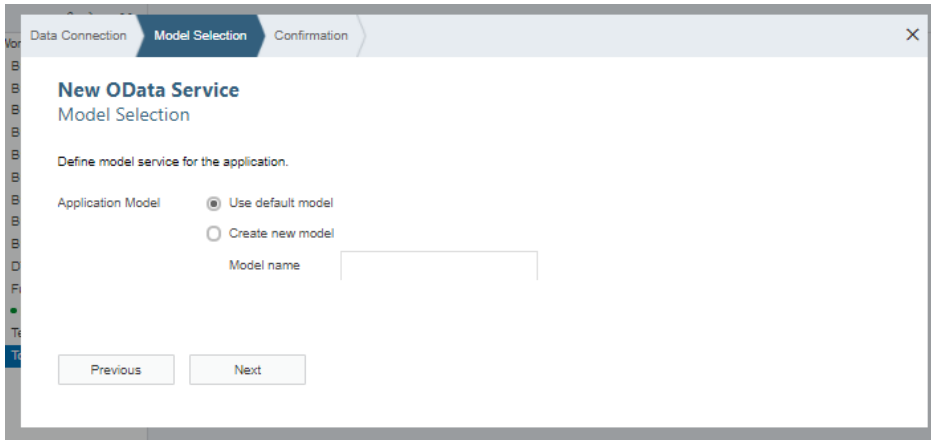
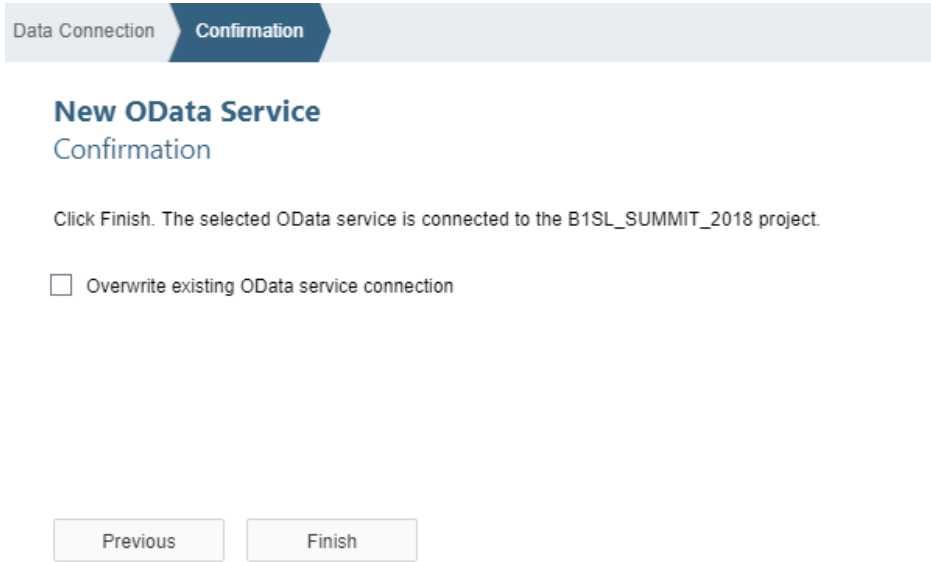
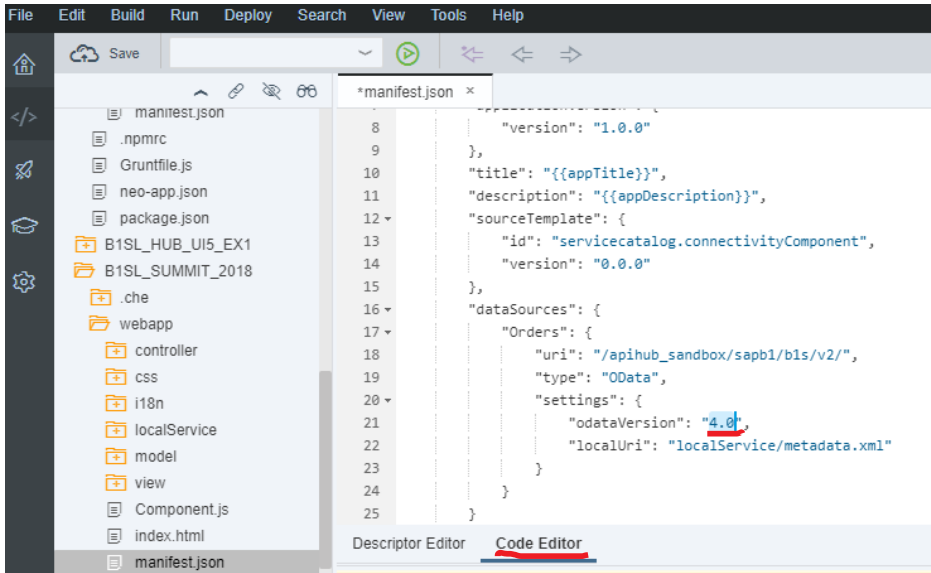
Explanation	Screenshot
<p>Select the SAPUI5 Application template.</p> <p>Press Next.</p> <p>If you don't see this template, change the Category to All categories.</p>	 <p>The screenshot shows the 'New SAPUI5 Application' wizard in the 'Template Selection' step. The breadcrumb navigation at the top indicates the steps: Template Selection, Basic Information, Template Customization, and Confirmation. Below the title, there are filters for Search, Category (set to 'Featured'), Sort By (set to 'Sort by recently used'), and SAPUI5 Version (set to 'SAP Innovation (1.54)'). Four application templates are displayed as cards: 'SAPUI5 Application' (highlighted with a red circle), 'SAP Fiori Worklist Application OData V4', 'Multi-Target Application', and 'SAP Fiori Master-Detail Application'. At the bottom are 'Previous' and 'Next' buttons.</p>
<p>Enter a Project Name.</p> <p>Enter a Namespace.</p> <p>Press Next.</p>	 <p>The screenshot shows the 'New SAPUI5 Application' wizard in the 'Basic Information' step. The breadcrumb navigation at the top indicates the steps: Template Selection, Basic Information, Template Customization, and Confirmation. Below the title, there are two input fields: 'Project Name*' with the value 'B1SL_SUMMIT_2018' and 'App Descriptor Data' with the value 'sa'. At the bottom are 'Previous' and 'Next' buttons.</p>
<p>Keep the Initial View Details with the default values.</p> <p>Press Next.</p>	 <p>The screenshot shows the 'New SAPUI5 Application' wizard in the 'Template Customization' step. The breadcrumb navigation at the top indicates the steps: Template Selection, Basic Information, Template Customization, and Confirmation. Below the title, there are two input fields: 'Initial View Details' with 'View Type*' set to 'KML' and 'View Name' set to 'View1'. At the bottom are 'Previous', 'Next', and 'Finish' buttons.</p>



Explanation	Screenshot
<p>Press Finish to confirm the creation of the SAPUI5 template.</p>	

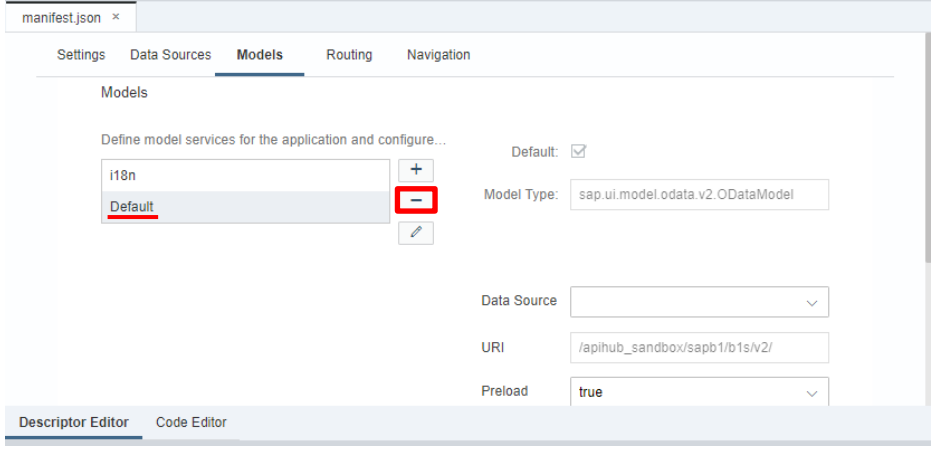
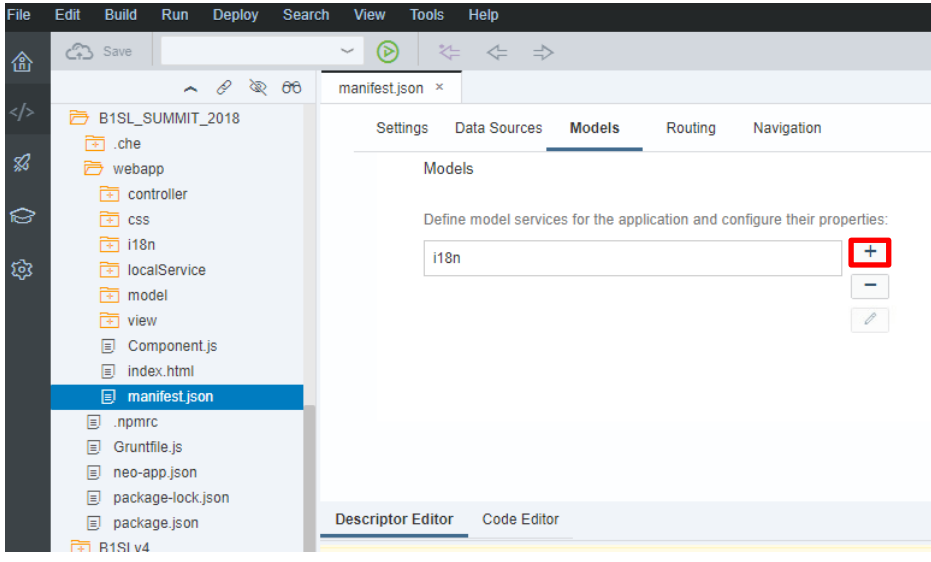
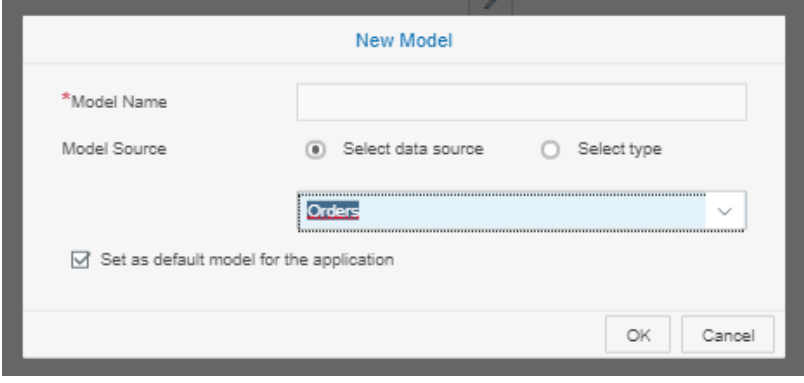
ii. Add a Data Source to the SAPUI5 Application

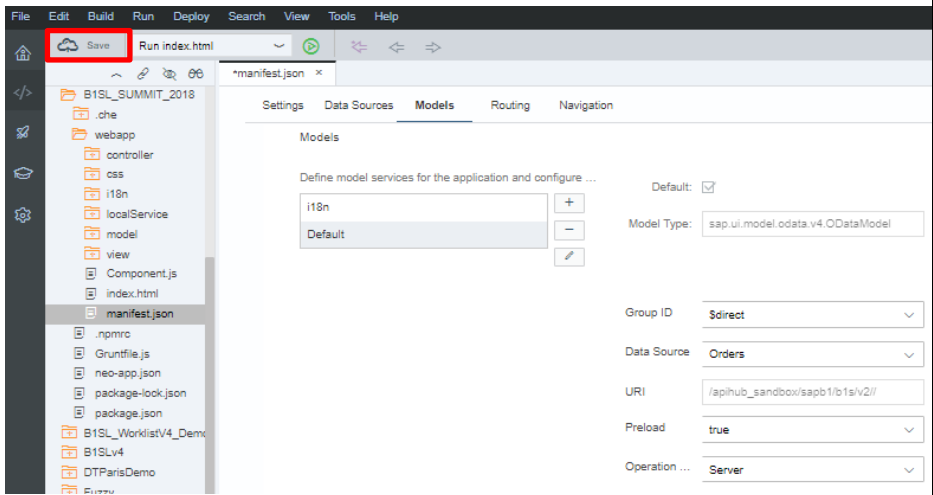
Explanation	Screenshot
<p>In Web IDE select your project and right click to get the menus.</p> <p>Select New -> OData Service.</p>	
<p>Select SAP API Business Hub in the Sources (left side of the screen).</p> <p>Select the “SAP Business One – Sales” API package from the dropdown control.</p> <p>You might be prompted to enter your SAP Community User Name and Password. Enter your credentials and press Log In.</p>	
<p>From the available APIs presented select Orders and make sure the “Service: Orders selected” blue message is shown at the top of the Data Connection tab.</p> <p>Press Next.</p>	

Explanation	Screenshot
<p>In the Model Selection step keep the radio button “Use default model” to create a default model associated to our OData Service.</p> <p>Press Next.</p>	
<p>Press Finish.</p>	
<p>Open the file “webapp/manifest.json” inside your application and select the Code Editor.</p> <p>Search for the element “dataSources”/“Orders” and change the “odataVersion” value inside “settings” to “4.0”.</p>	

iii. Create a Model

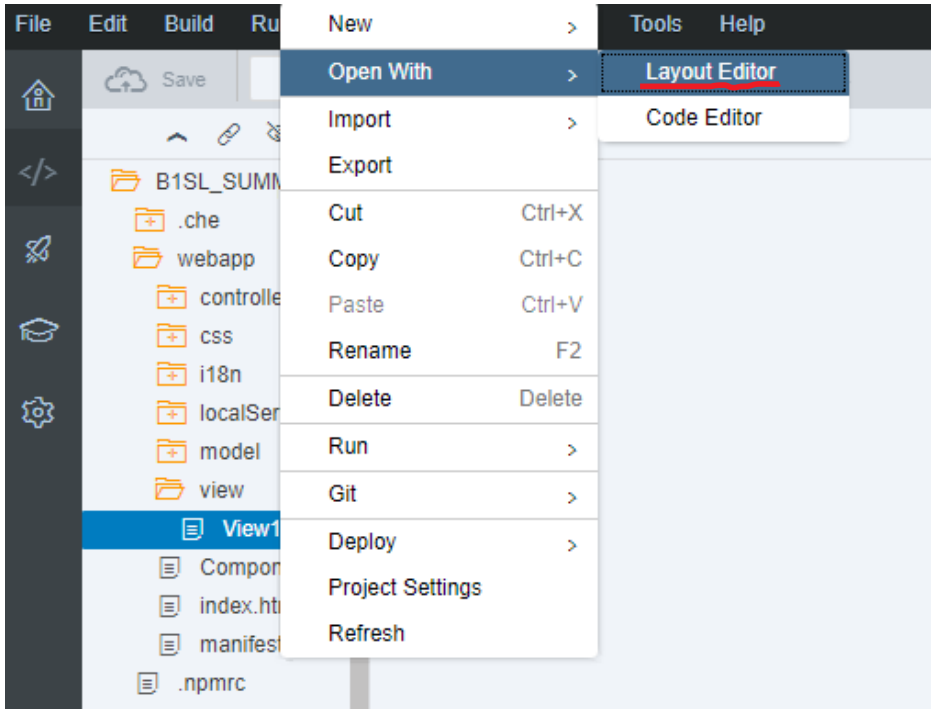

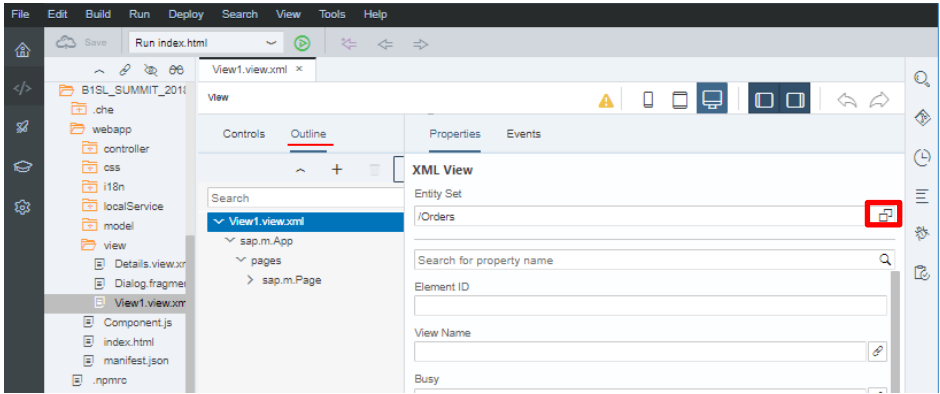
The generated model by the OData service wizard was generated for OData version 2.0. As our SAP Business One APIs are OData version 4.0 the easiest is to remove the autogenerated Model and create a new one after we changed the OData service OData version to 4.0.

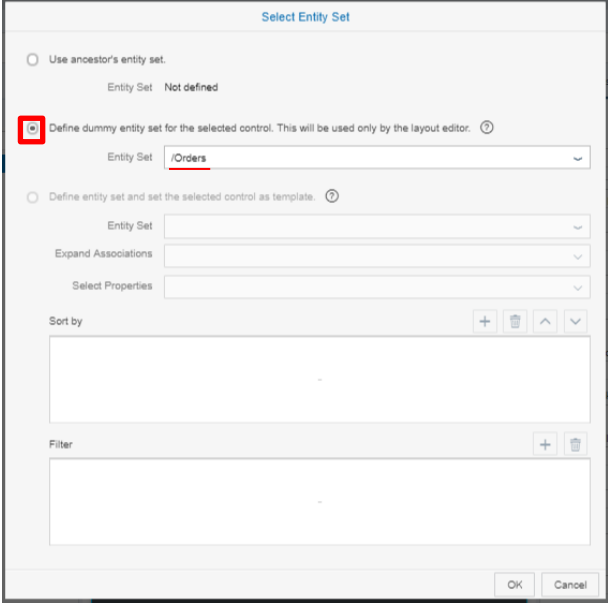
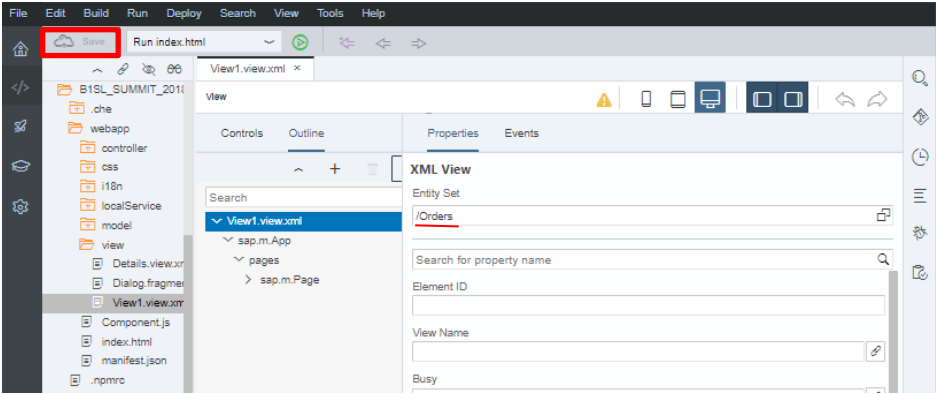
Explanation	Screenshot
<p>Open the manifest.json file, select Descriptor Editor (bottom of the screen) and Models tab.</p> <p>Select the Default model and press the - button to delete it.</p>	
<p>Press the + button to add a new Default model.</p>	
<p>Check the box “Set as default model for the application”.</p> <p>There is no need to enter a Model Name as we checked the default model option.</p> <p>Select Orders as the Model Source.</p> <p>Press OK.</p>	

Explanation	Screenshot
<p>A new Default model will be shown in the Models tab pointing to the API Hub URI for OData v4 Data Source.</p> <p>Press Save button to your changes.</p>	 <p>The screenshot shows the SAP Fiori Launchpad configuration interface. The 'Models' tab is selected, displaying a list of model services. A new 'Default' model has been added to the list. The configuration details for the 'Default' model are shown on the right:</p> <ul style="list-style-type: none"> Model Type: sap.ui.model.odata.v4.ODataModel Group ID: \$direct Data Source: Orders URI: /apihub_sandbox/sapb1/b1s/v2/ Preload: true Operation: Server <p>The 'Save' button in the top left corner of the interface is highlighted with a red box.</p>

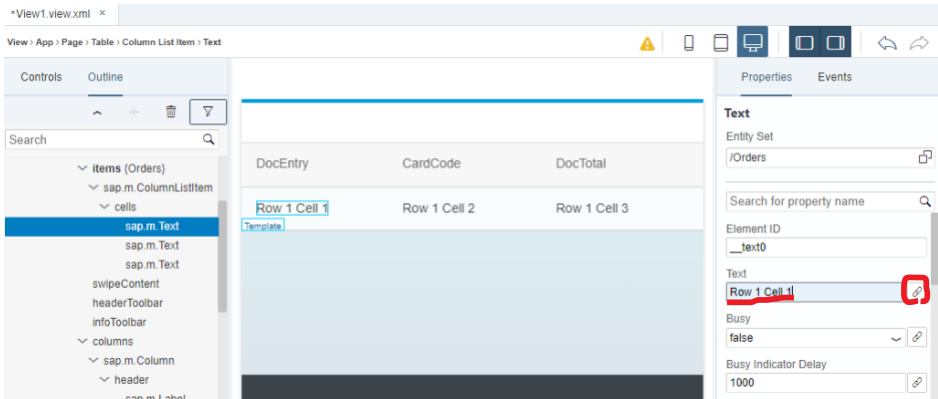
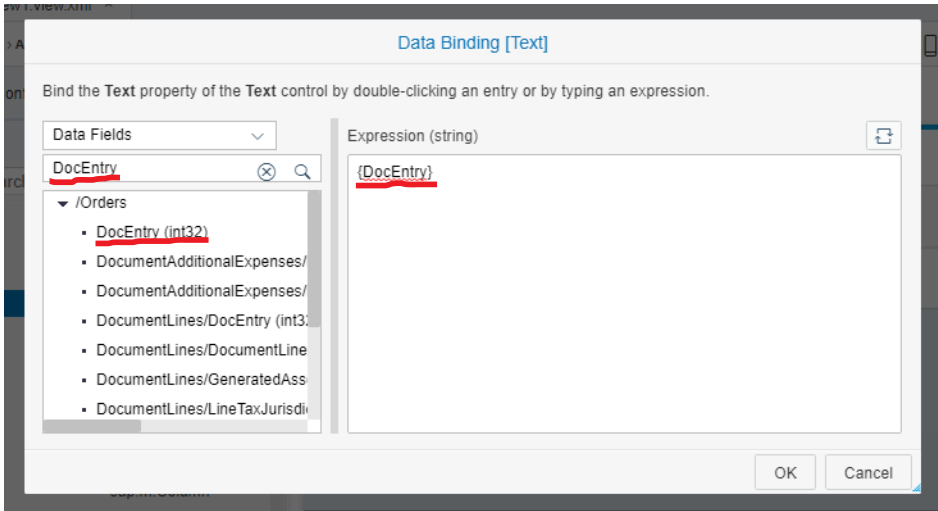

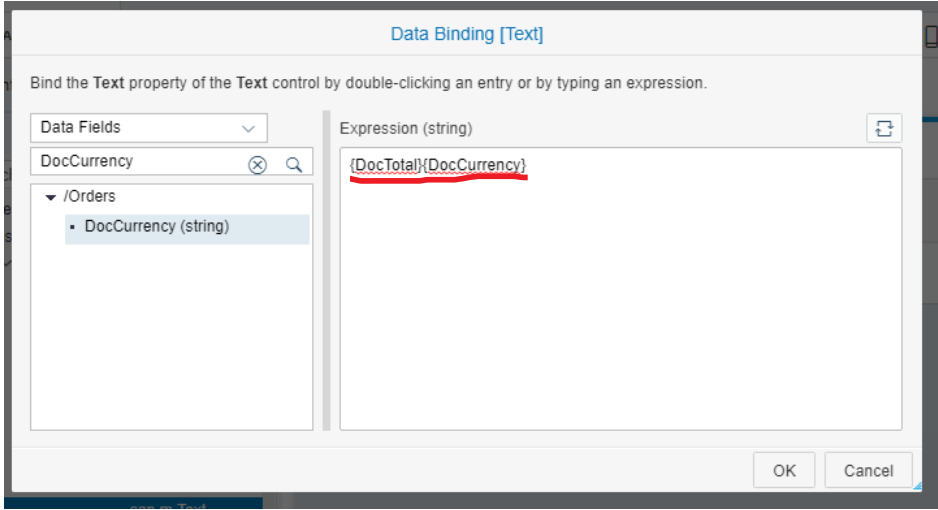
iv. Add controls to the View1 view.

Add a sap.m.Table control

Explanation	Screenshot
<p>Open the view folder.</p> <p>Open the View1.view.xml file with the Layout Editor.</p>	 <p>The screenshot shows the SAP Studio File Explorer with the 'View1' folder selected. The 'Open With' context menu is open, and 'Layout Editor' is highlighted. The 'Tools' menu is also visible, showing 'Layout Editor' and 'Code Editor'.</p>
<p>Select the Outline tab.</p> <p>Select View.view.xml.</p> <p>Click on the  button to select the Entity Set associated to our view.</p>	 <p>The screenshot shows the SAP Studio Outline tab with the 'View1.view.xml' file selected. The 'Entity Set' icon is highlighted. The 'XML View' panel is also visible, showing the 'Entity Set' and 'Properties' tabs.</p>

Explanation	Screenshot
<p>Check the second option Define dummy entity set... and choose the /Orders Entity Set.</p> <p>Press OK.</p>	
<p>Once back to the Layout Editor the /Orders entity should be shown.</p> <p>Press Save button.</p>	

Explanation	Screenshot
<p>Expand sap.m.Page.</p> <p>Right click on content and select Add.</p>	
<p>Enter table to filter the controls shown in the list.</p> <p>Click on the Table control so it will be added to our view.</p>	
<p>On the table created edit each sap.m.Table -> columns -> sap.m.Column -> header -> sap.m.Label Text Property:</p> <ul style="list-style-type: none"> - Change Header 1 by DocEntry. - Change Header 2 by CardCode. - Change Header 3 by DocTotal. 	

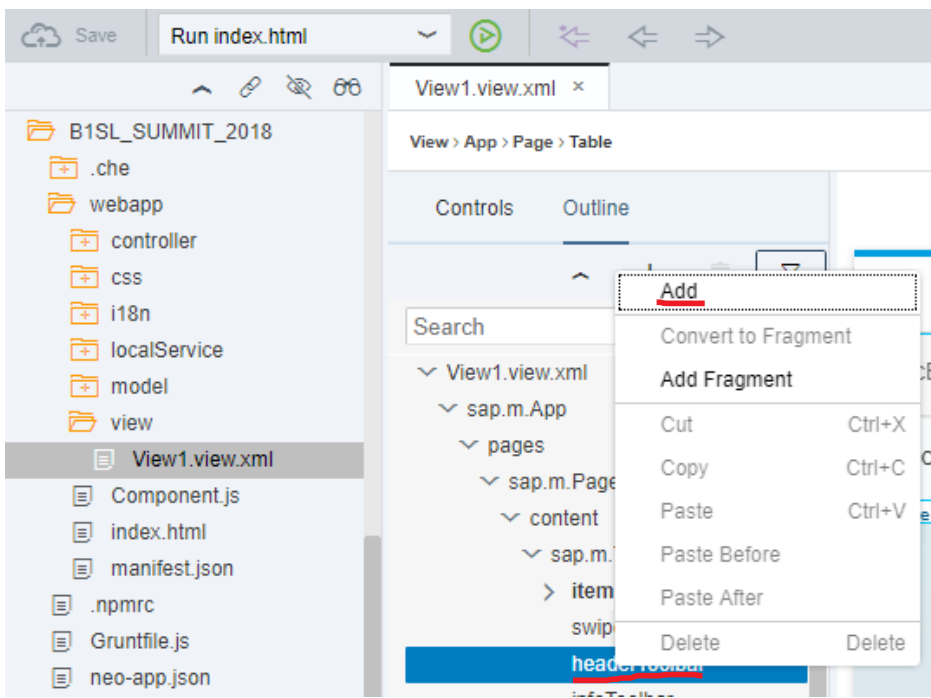
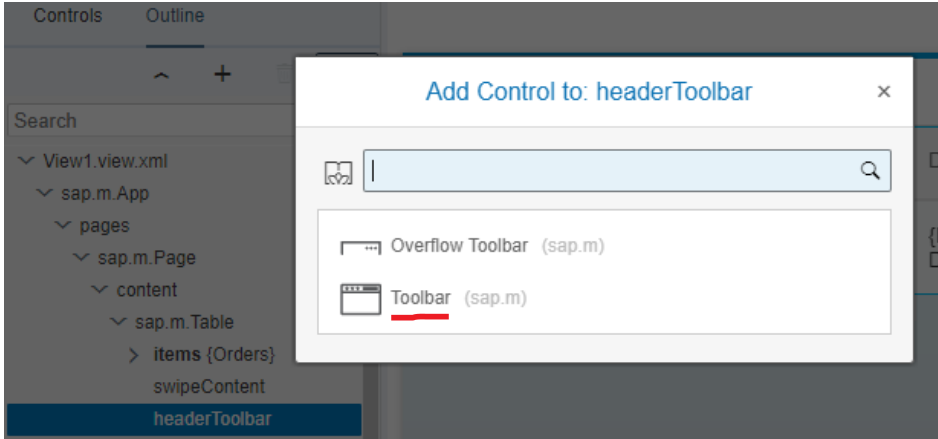
Explanation	Screenshot
<p>Select each one of the items -> sap.m.ColumnListItem -> cells -> sap.m.Text cell to bind them to their corresponding Orders properties.</p> <p>On the Text property click the Binding button on the right side of the Text property.</p>	
<p>Delete the default Expression string.</p> <p>In the Search for data field enter the name of the Orders property DocEntry.</p> <p>Double click on the field name so it will be copied to the Expression string between curly brackets.</p> <p>Repeat this step for CardCode column.</p>	
<p>For the DocTotal column we will add 2 properties:</p> <ul style="list-style-type: none"> - DocTotal - DocCurrency <p>We will then search and add first the DocTotal and afterwards search and add the DocCurrency.</p> <p>Press Save button  on the View1.view.xml file.</p>	

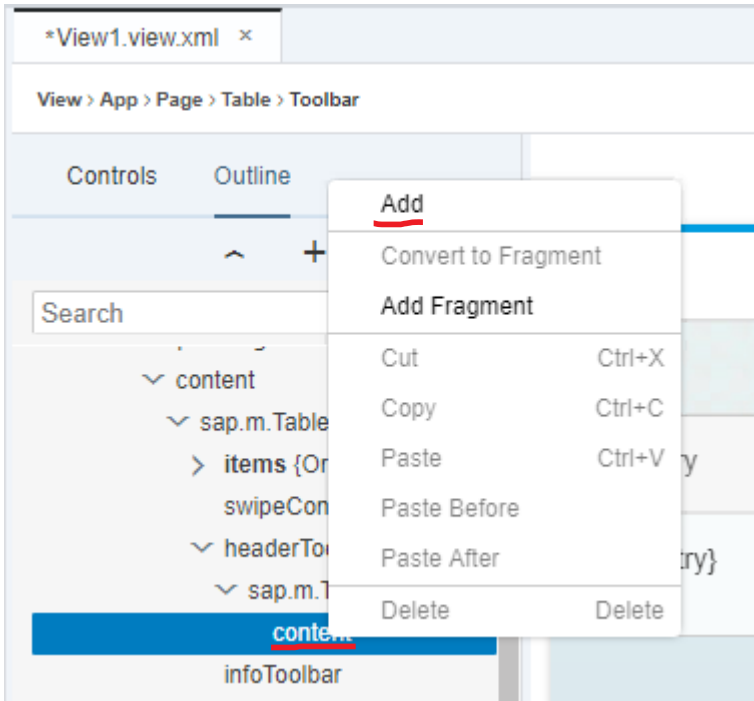
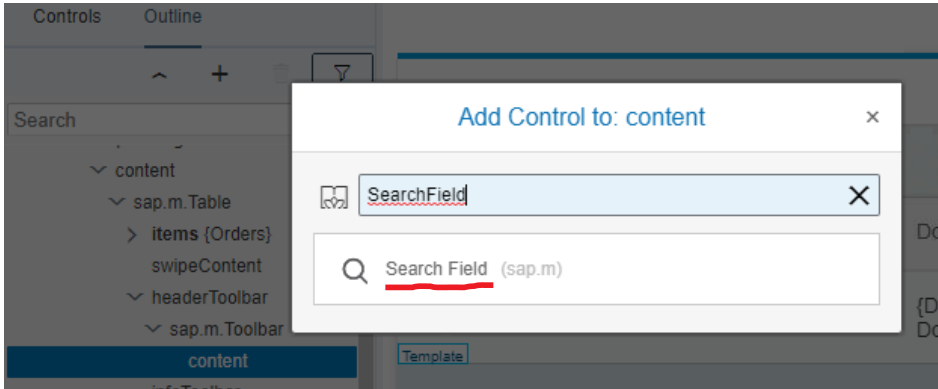

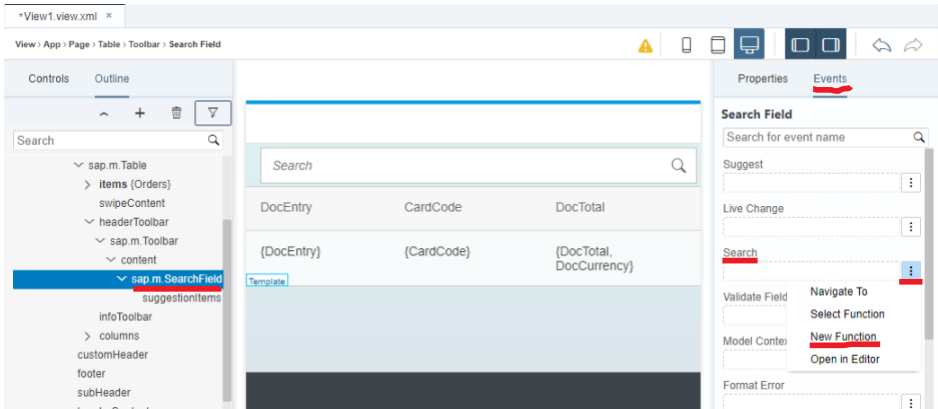
Explanation	Screenshot
<p>Your View1.view.xml layout should look like this at this point.</p>	

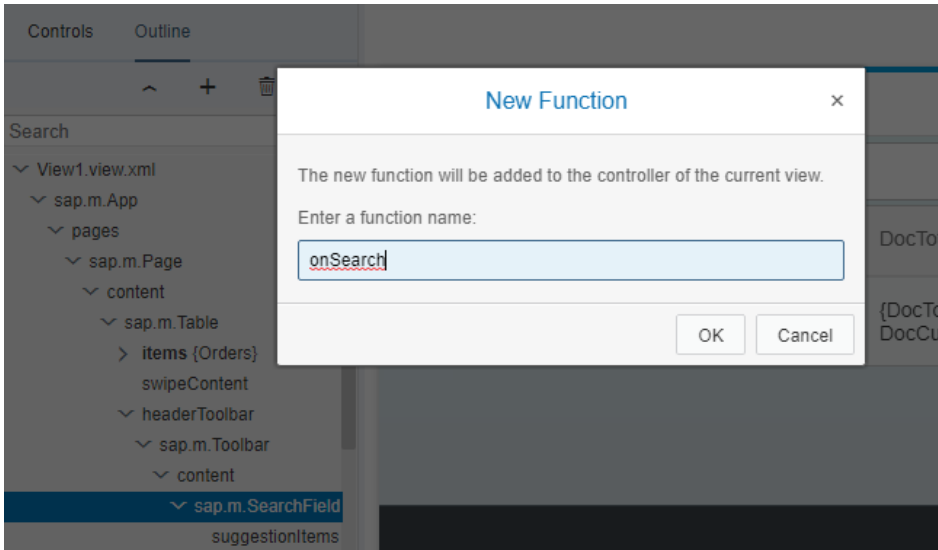
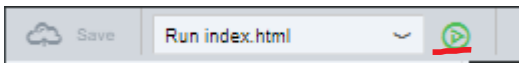
<p>Click on the green arrow to run your application.</p>	
--	--

<p>A new tab opens showing your application.</p> <p>You can see the Table is automatically filled with the list of Orders available in the API Business Hub sandbox running SAP Business One.</p>	<table><tr><th>DocEntry</th><th>CardCode</th><th>DocTotal</th></tr><tr><td>2</td><td>C30000</td><td>2,976.88\$</td></tr><tr><td>3</td><td>C40000</td><td>12,535\$</td></tr><tr><td>4</td><td>C23900</td><td>7,473\$</td></tr><tr><td>5</td><td>C42000</td><td>18,391\$</td></tr><tr><td>6</td><td>C30000</td><td>8,795.31\$</td></tr><tr><td>7</td><td>C40000</td><td>10,573\$</td></tr></table>	DocEntry	CardCode	DocTotal	2	C30000	2,976.88\$	3	C40000	12,535\$	4	C23900	7,473\$	5	C42000	18,391\$	6	C30000	8,795.31\$	7	C40000	10,573\$
DocEntry	CardCode	DocTotal																				
2	C30000	2,976.88\$																				
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4	C23900	7,473\$																				
5	C42000	18,391\$																				
6	C30000	8,795.31\$																				
7	C40000	10,573\$																				

Add a Search Field control to the sap.m.Table

Explanation	Screenshot
<p>Open the View.view.xml file with the Layout Editor.</p> <p>Go to the Outline tab and select sap.m.Table -> headerToolbar.</p> <p>Right click to get the context menus and select Add.</p>	
<p>Click on the Toolbar proposed control.</p>	

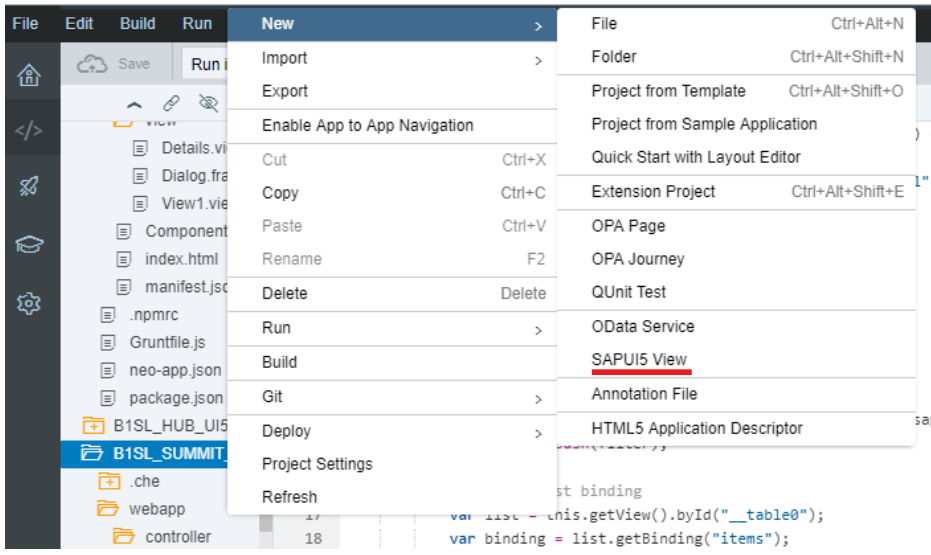
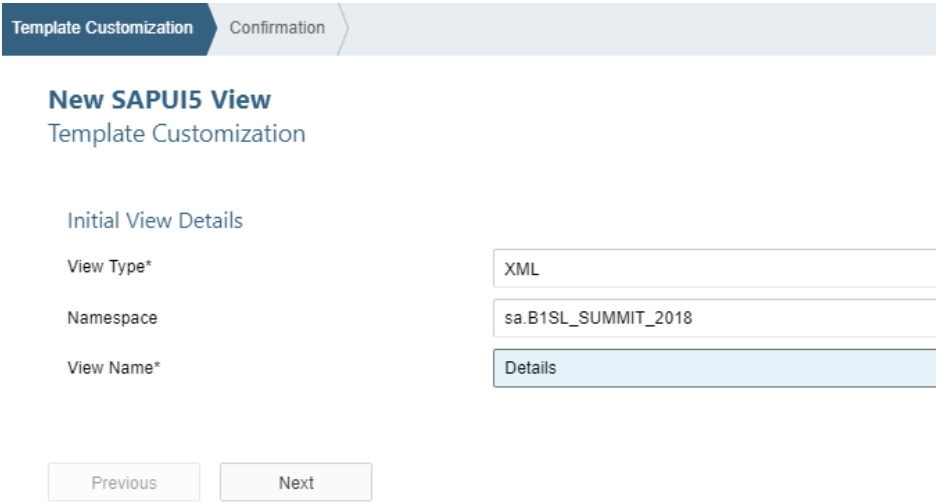
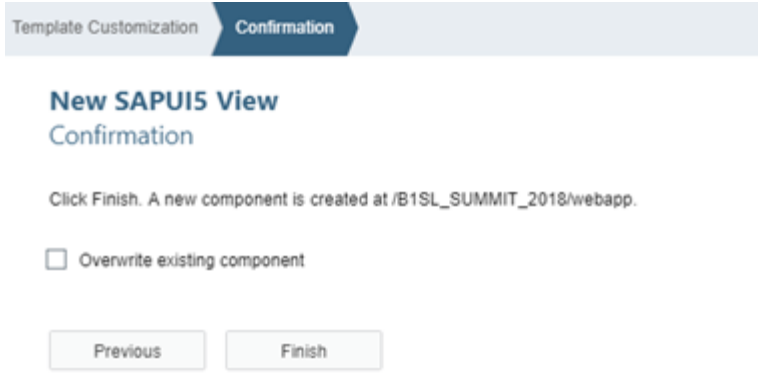
Explanation	Screenshot
<p>Go to the created sap.m.Toolbar -> content element and right click to select the Add menu.</p>	 <p>The screenshot shows the SAP UI5 IDE interface. The breadcrumb navigation at the top reads 'View > App > Page > Table > Toolbar'. The 'Outline' tab is active, showing a tree structure of the UI components. The 'content' element of the 'sap.m.Toolbar' is selected. A right-click context menu is open, with the 'Add' option highlighted at the top. Other options include 'Convert to Fragment', 'Add Fragment', 'Cut', 'Copy', 'Paste', 'Paste Before', 'Paste After', and 'Delete'.</p>
<p>Enter SearchField to filter the controls.</p> <p>Click on the Search Field proposed control.</p>	 <p>The screenshot shows the 'Add Control to: content' dialog box. The search input field contains 'SearchField', and the results list below shows 'Search Field (sap.m)' as the only match. The 'content' element is still selected in the background Outline.</p>
<p>Select the sap.m.SearchField control in the Outline tab.</p> <p>Select the Events tab in the right side of the screen.</p> <p>On the Search event click on the  button and select New Function option.</p>	 <p>The screenshot shows the SAP UI5 IDE with the 'Search Field' control selected in the Outline. The 'Events' tab is active in the Properties panel on the right. The 'Search' event is selected, and the 'New Function' option is highlighted in the 'Navigate To' section.</p>

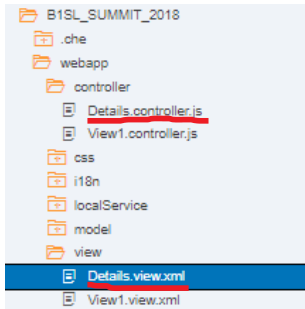
Explanation	Screenshot
<p>Enter onSearch as function name that will be called when the Search button will be pressed.</p> <p>Press OK.</p> <p>Press Save.</p> <p>A new function with that name will be created in the View.Controller.js.</p>	
<p>Open the View1.controller.js file.</p> <p>Copy the code from https://github.com/B1SA/B1_SCP_HandsOn/blob/master/snippets/View1.controller.js#L10 into your onSearch method so it looks like here.</p> <p>This code filters the Orders with DocEntry greater or equal than the value entered in the SearchField.</p> <p>Press Save.</p>	The file explorer on the left shows the project structure, with 'View1.controller.js' selected.
<p>Run your application.</p>	

Explanation	Screenshot																								
Check that the SearchField filters the table with Orders having a DocEntry higher than the entered value.	<div><div>Title</div><div><div>1200</div><div><div>ⓧ</div><div>🔍</div></div></div><table><tr><th>DocEntry</th><th>CardCode</th><th>DocTotal</th></tr><tr><td>1,200</td><td>1103914</td><td>5,000\$</td></tr><tr><td>1,201</td><td>1103914</td><td>5,000\$</td></tr><tr><td>1,202</td><td>1103914</td><td>5,000\$</td></tr><tr><td>1,203</td><td>1103914</td><td>5,000\$</td></tr><tr><td>1,204</td><td>1103914</td><td>5,000\$</td></tr><tr><td>1,205</td><td>1103914</td><td>5,000\$</td></tr><tr><td>1,207</td><td>C20000</td><td>1,915.7\$</td></tr></table></div>	DocEntry	CardCode	DocTotal	1,200	1103914	5,000\$	1,201	1103914	5,000\$	1,202	1103914	5,000\$	1,203	1103914	5,000\$	1,204	1103914	5,000\$	1,205	1103914	5,000\$	1,207	C20000	1,915.7\$
DocEntry	CardCode	DocTotal																							
1,200	1103914	5,000\$																							
1,201	1103914	5,000\$																							
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1,205	1103914	5,000\$																							
1,207	C20000	1,915.7\$																							

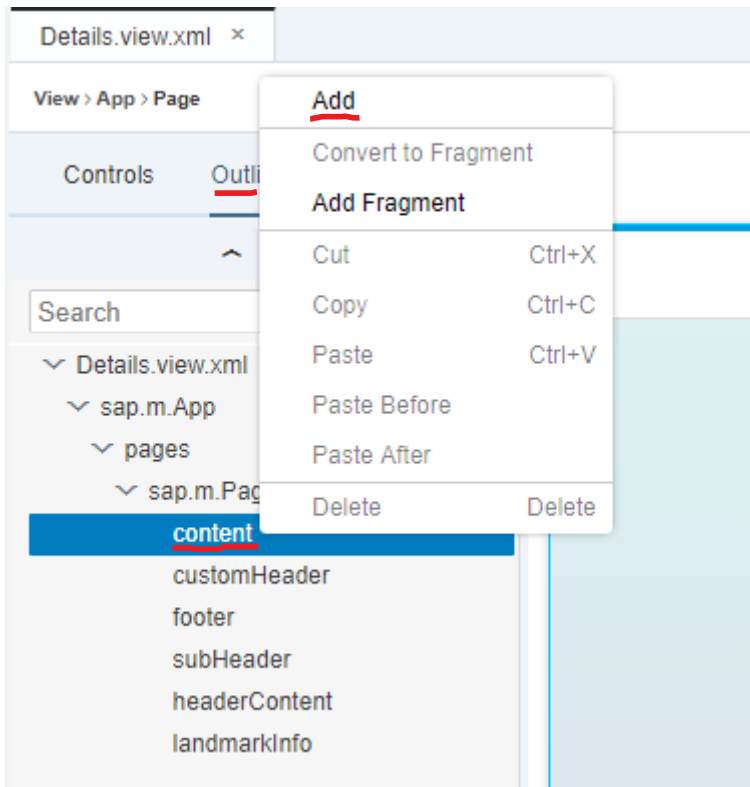
v. Add a second view called Details

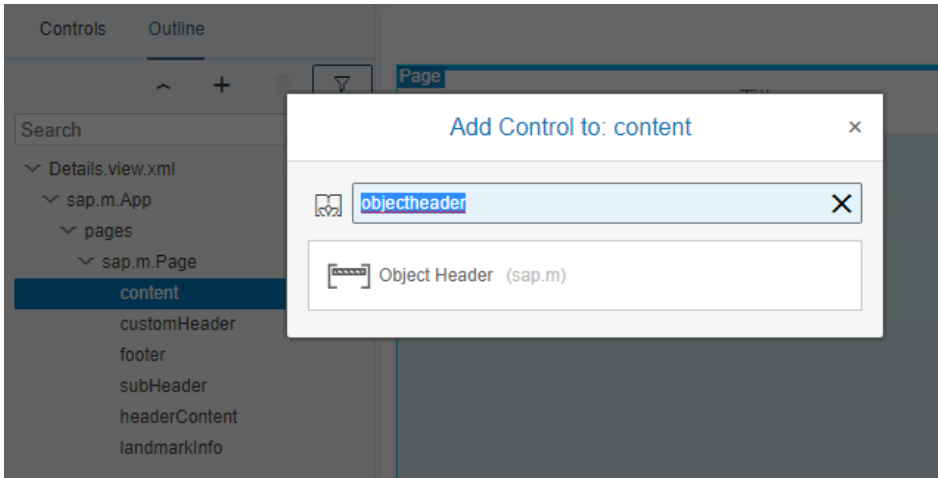
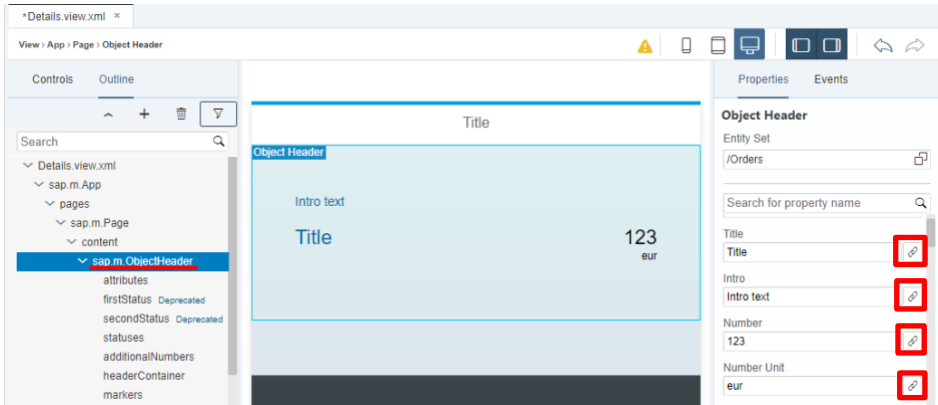
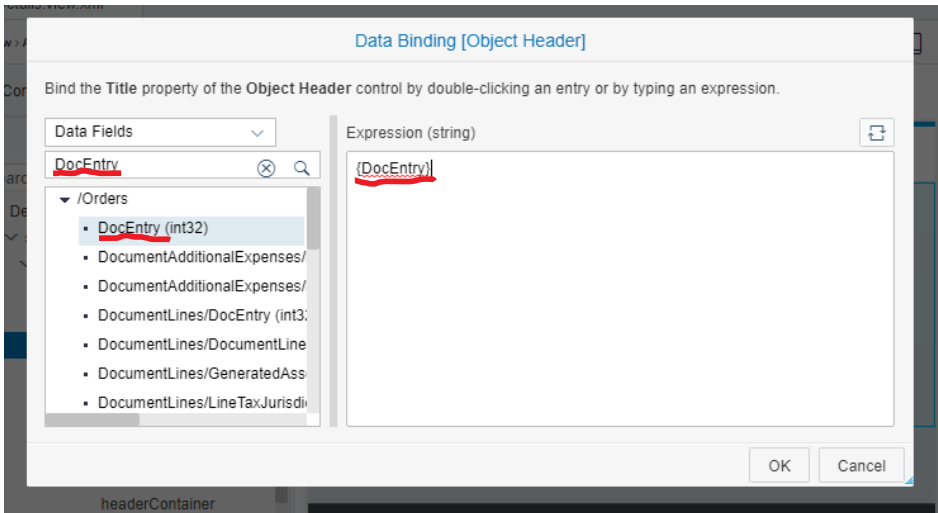
Create a Details view.

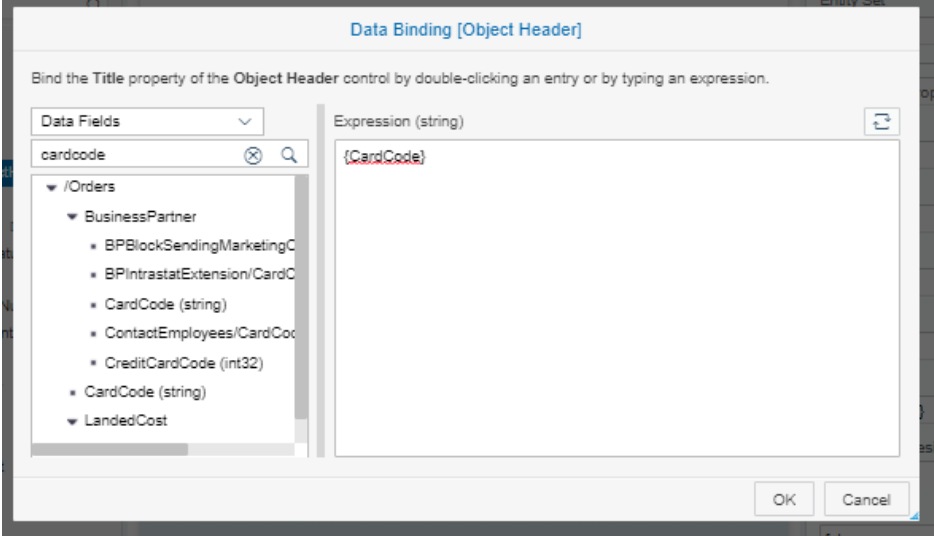
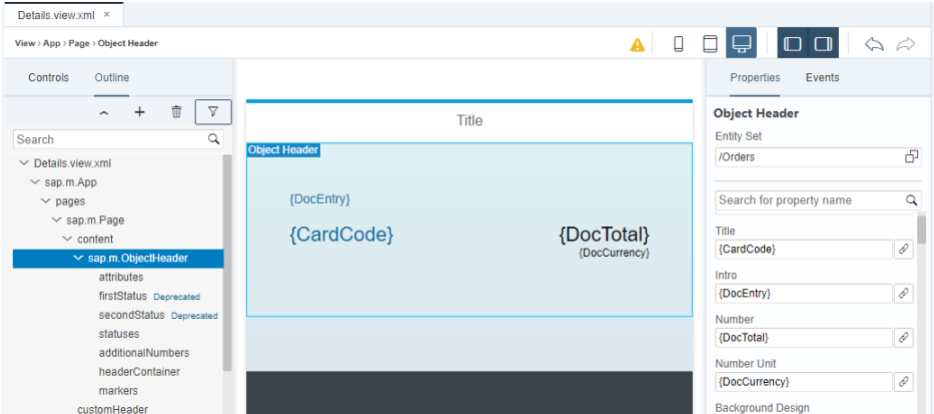
Explanation	Screenshot
<p>Right click on your application and select New -> SAPUI5 View.</p>	 <p>The screenshot shows the SAPUI5 IDE interface. The 'New' menu is open, and 'SAPUI5 View' is highlighted. The background shows a project structure with folders like 'B1SL_HUB_UI5' and 'B1SL_SUMMIT_2018'.</p>
<p>Keep the default values for View Type and Namespace. Enter the name of the new View: Details.</p> <p>Press Next.</p>	 <p>The screenshot shows the 'New SAPUI5 View' Template Customization dialog. The 'Initial View Details' section has three input fields: 'View Type*' (XML), 'Namespace' (sa.B1SL_SUMMIT_2018), and 'View Name*' (Details). The 'Next' button is highlighted.</p>
<p>Press Finish to confirm the creation of the Details view.</p>	 <p>The screenshot shows the 'New SAPUI5 View' Confirmation dialog. It displays the message 'Click Finish. A new component is created at /B1SL_SUMMIT_2018/webapp.' and an unchecked checkbox for 'Overwrite existing component'. The 'Finish' button is highlighted.</p>

Explanation	Screenshot
<p>Two files are created:</p> <ul style="list-style-type: none"> - Details.view.xml - Details.controller.js. 	

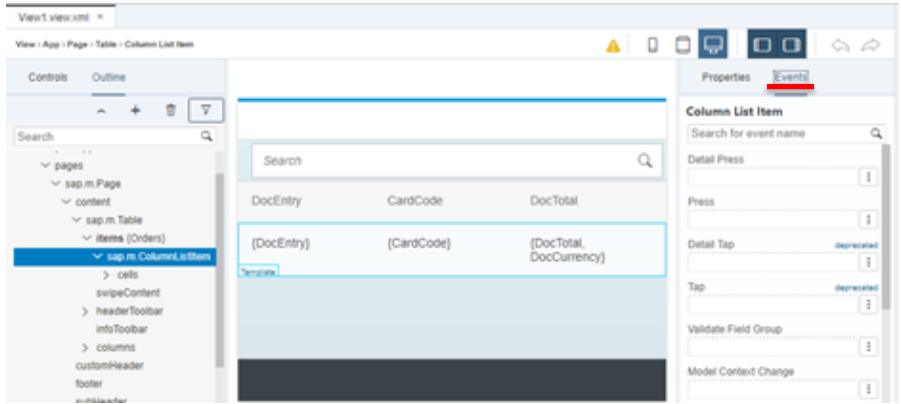

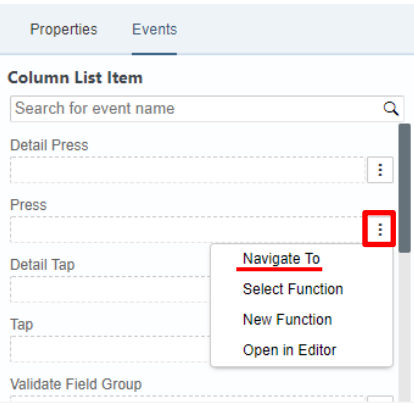
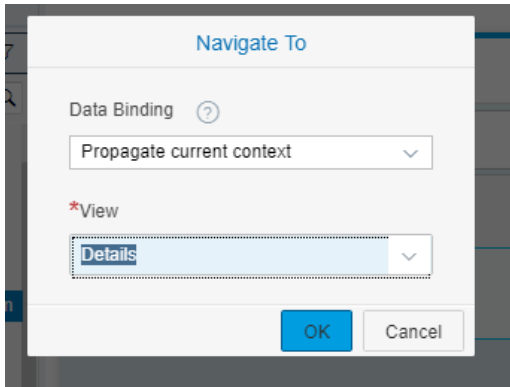
Add an Object Header control.

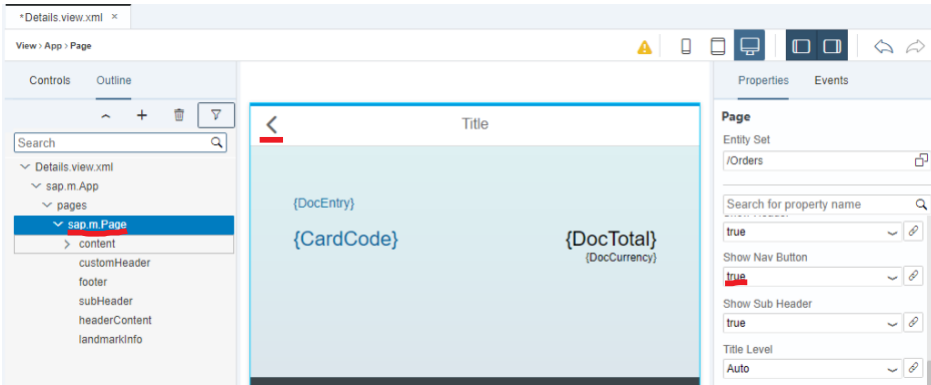

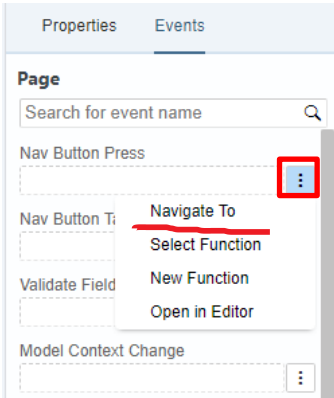
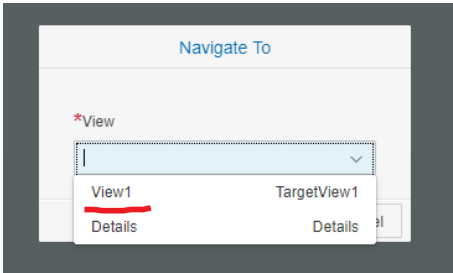
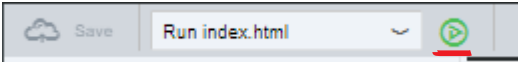
Explanation	Screenshot
<p>Open the Details.view.xml file with the Layout editor.</p> <p>Go to the Outline tab.</p> <p>Right click on Details.view.xml -> sap.m.App -> sap.m.Page -> content and select Add.</p>	

Explanation	Screenshot
<p>Enter objectheader to search for the Object Header control.</p> <p>Click on the Object Header proposed control.</p>	
<p>Select the created sap.m.ObjectHeader element in the Outline tree.</p> <p>Go to the Properties tab in the right side of the screen.</p> <p>Click one by one on the Data Binding icon for the properties:</p> <ul style="list-style-type: none"> - Title - Intro - Number - Number Unit 	
<p>A new dialog will be presented for each one of the properties.</p> <p>Search for the Orders Data Field to be assigned to each property:</p> <ul style="list-style-type: none"> - Title -> CardCode - Intro -> DocEntry - Number -> DocTotal - Number Unit -> DocCurrency <p>and double click on the proposed list to get it into the Expression string.</p>	

Explanation	Screenshot
<p>Note: Do not select BusinessPartners/CardCode for the CardCode property.</p> <p>Press Save button.</p>	
<p>The sap.m.ObjectHeader should look like this at this point.</p>	

vi. Define navigation between View1 and Details.

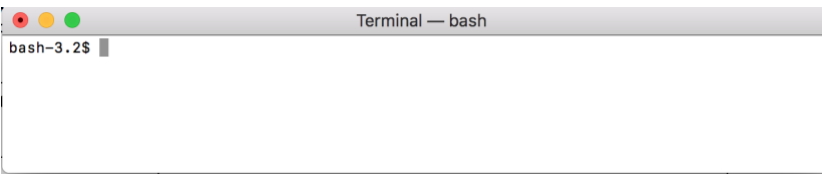

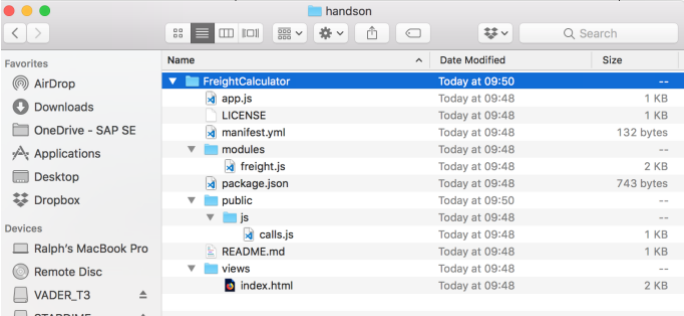
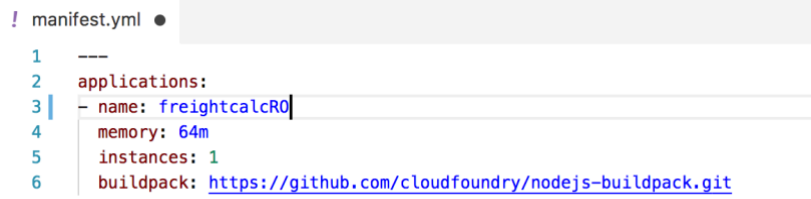
Explanation	Screenshot
<p>From our main View1 table we want to navigate to Details view when the user clicks on a row.</p> <p>Open View1.view.xml file with Layout Editor.</p> <p>Select Outline tab View1.view.xml -> sap.m.App -> sap.m.Page -> content -> sap.m.Table -> items -> sap.m.ColumnsListItem.</p> <p>Select the Events tab.</p>	
<p>Click on the  icon.</p> <p>Select Navigate To menu.</p>	
<p>Select Propagate current context on the Data Binding combo box.</p> <p>Select Details on the View combo box.</p> <p>Press OK.</p> <p>Press Save to save the View1.view.xml changes.</p> <p>The selected Order data from the View1 will be bound to the Details view.</p>	

Explanation	Screenshot
<p>From our Details view we want to navigate back to our main View1 when the user press on the Navigate back button.</p> <p>Open the Details.view.xml file with the Layout Editor.</p> <p>Go to the Outline tab and select sap.m.Page.</p> <p>On the Properties tab scroll down to see the Show Nav Button property and change its value to true.</p>	
<p>Go to the Events tab.</p> <p>On the Nav Button Press event click on the icon .</p> <p>Select the option Navigate To.</p>	
<p>Select View1 on the combo box.</p> <p>We will navigate back to View one when the Nav back button will be pressed.</p> <p>Click on the Save button.</p>	
<p>Test your app to see navigation is working fine between View1 and Details view.</p>	

Congratulations! You have created your first SAP UI5 application connecting to SAP API Business Hub

STEP 2: CREATE A NODEJS APP

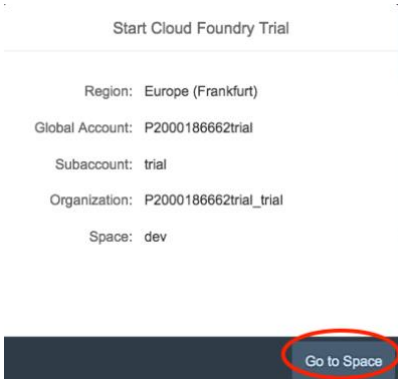
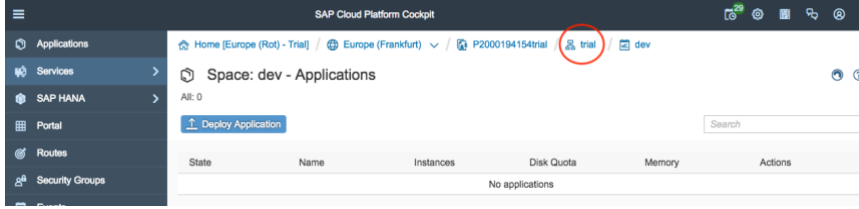
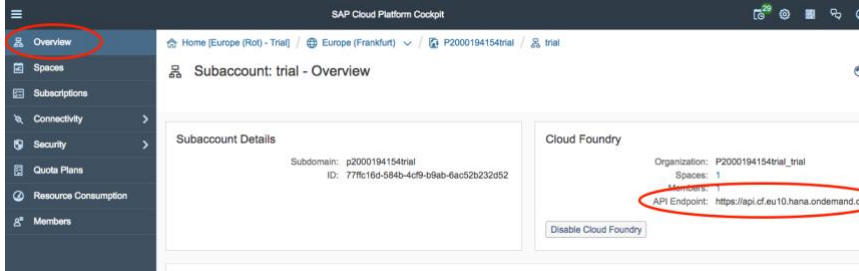
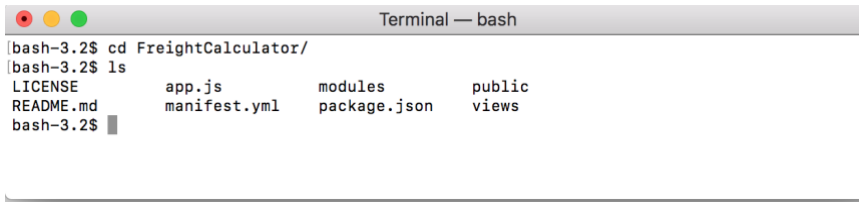

In this step we are going to implement the backend of our application. It will contain a simple business logic to calculate freight costs from different providers and consume 3rd Party services. The application is written in NodeJS and the source code is available on GitHub.

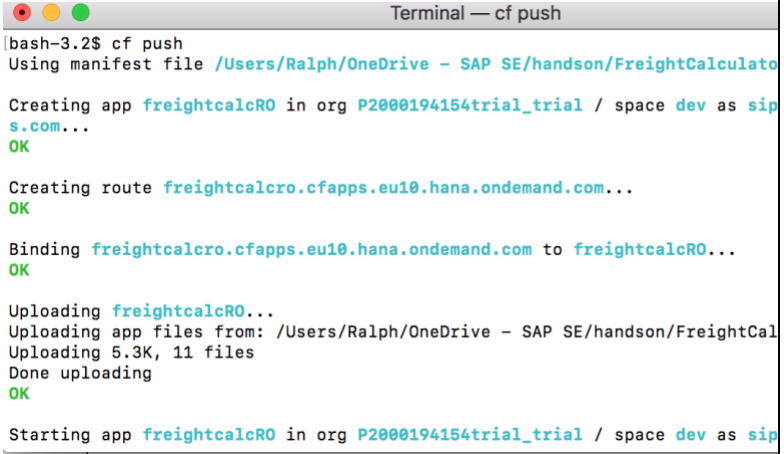
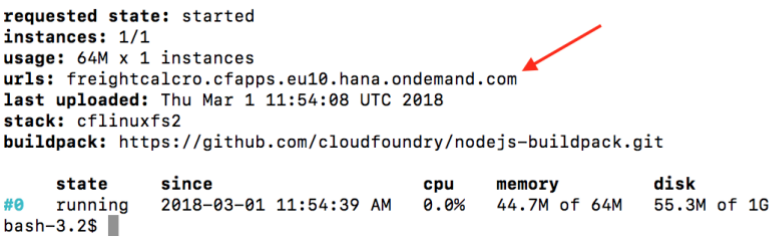
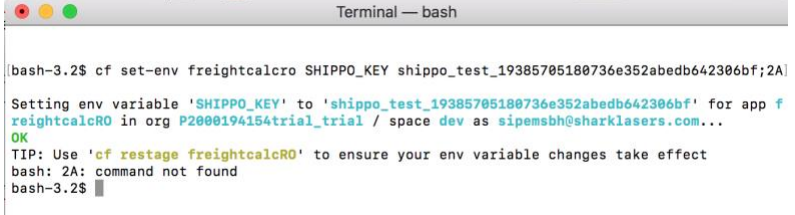
Explanation	Screenshot
<p>Once git is installed (according to the pre requisites), open your system terminal (cmd, bash..)</p> <p>Navigate to a specific folder where you will download a sample application.</p> <p>Pay attention what folder is it, we will access it later</p>	
<p>Execute the following command to clone our solution backend repository:</p> <pre>\$ git clone https://github.com/B1SA/FreightCalculator.git</pre>	
<p>You can see the app code on your file explorer:</p>	
<p>Edit the File manifest.yml and set a unique name for your application. E.eg FreightCalc<Your Initials></p>	

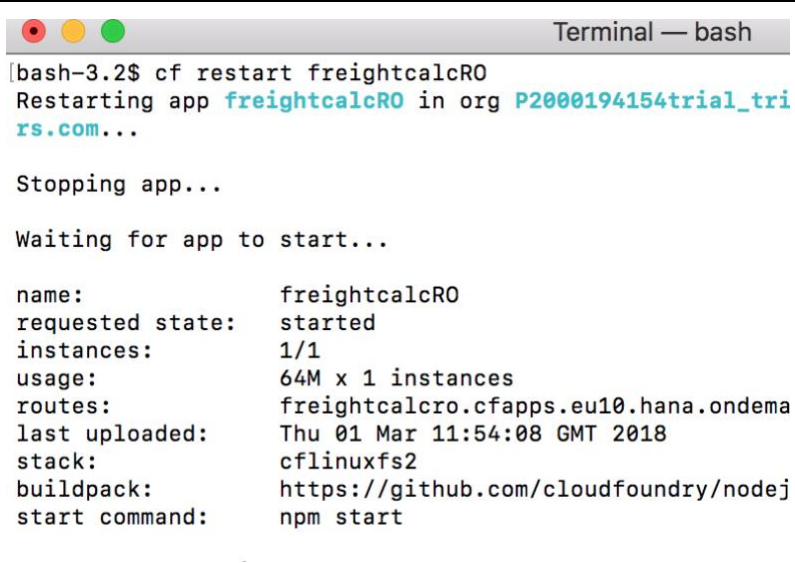
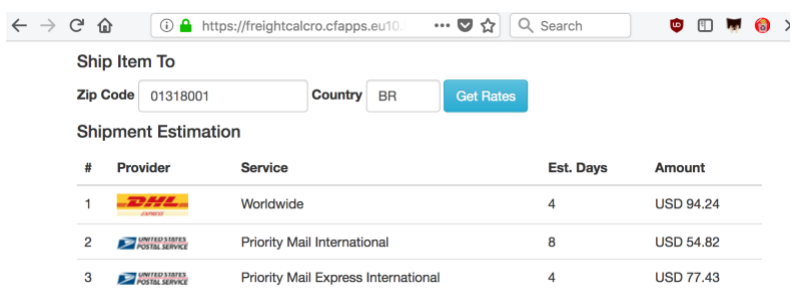
STEP 3: DEPLOY THE NODEJS APP INTO SAP CLOUD FOUNDRY

In this step, we are going to deploy our Freight Calculator app to SAP Cloud Platform Cloud Foundry.

Explanation	Screenshot
<p>First, we need to activate the SAP Cloud Platform Cloud Foundry Environment.</p> <p>On the SAP Cloud Platform Dashboard click on the HOME option</p>	
<p>First, we need to activate the SAP Cloud Platform Cloud Foundry Environment.</p> <p>From the SAP CP Home Screen, click on Cloud Foundry Trial</p>	
<p>Select the Trial Region that most suits you. And Click on OK</p>	

Explanation	Screenshot
This will initialize your Cloud Foundry Trial and create a DEV space (where the solutions will be deployed). Go Ahead and access your space.	
<p>Your space is created and ready to deploy your app. We now need your environment endpoint to be able to push our app.</p> <p>Click on the trial link</p>	
<p>And then on Overview option in the menu</p> <p>Select and copy your API Endpoint. E.g.</p> <p><code>https://api.cf.eu10.hana.ondemand.com</code></p>	
With the CLI installed (according to the pre requisites), open your system terminal and navigate to the folder of the backend app cloned on STEP 2 of this guide	
<p>From that folder, login to Cloud foundry using the command</p> <pre>cf login -a <API ENDPOINT></pre> <p>e.g.</p> <pre>\$ cf login -a api.cf.eu10.hana.ondeman d.com</pre> <p>When prompted provide your SAP Cloud Platform email and password</p>	

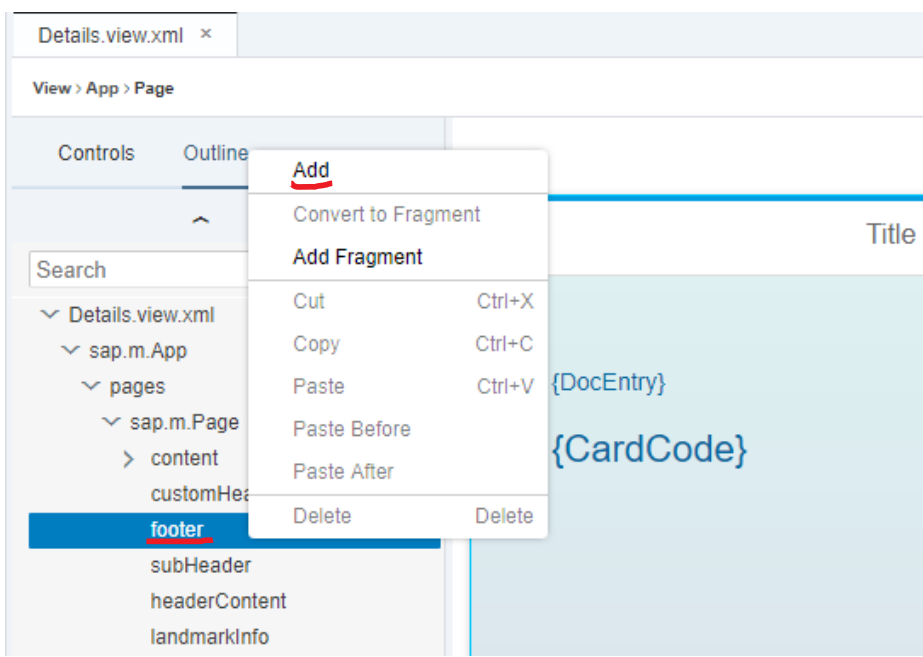
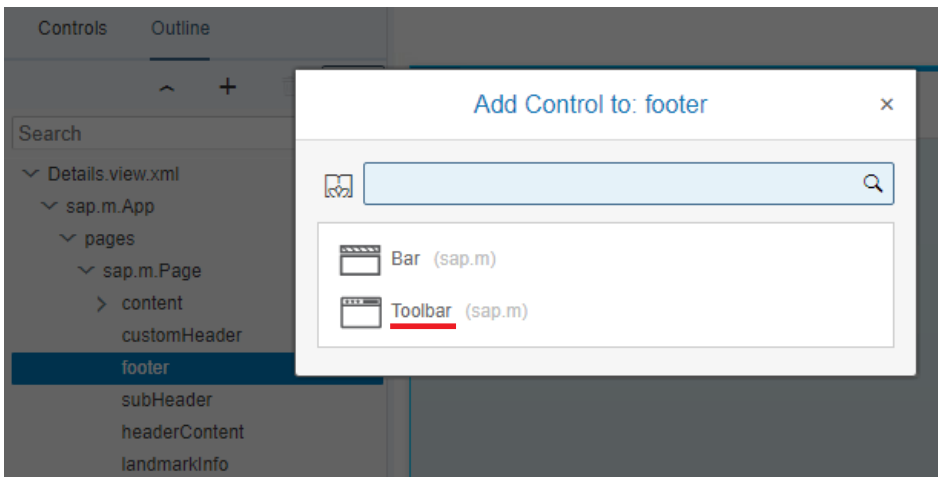
Explanation	Screenshot
<p>Now all you have to do is push your app to the SAP Cloud Platform Cloud Foundry by using the command:</p> <pre>cf push</pre>	 <pre> Terminal — cf push [bash-3.2\$ cf push Using manifest file /Users/Ralph/OneDrive - SAP SE/handson/FreightCalculato Creating app freightcalcRO in org P2000194154trial_trial / space dev as sip s.com... OK Creating route freightcalcro.cfapps.eu10.hana.ondemand.com... OK Binding freightcalcro.cfapps.eu10.hana.ondemand.com to freightcalcRO... OK Uploading freightcalcRO... Uploading app files from: /Users/Ralph/OneDrive - SAP SE/handson/FreightCal Uploading 5.3K, 11 files Done uploading OK Starting app freightcalcRO in org P2000194154trial_trial / space dev as sip </pre>
<p>This process will read the manifest.yml to name your application and also upload and deploy all the artefacts in a container in the Cloud Foundry Environment. Once the Process finishes, you can see your app URL:</p>	 <pre> requested state: started instances: 1/1 usage: 64M x 1 instances urls: freightcalcro.cfapps.eu10.hana.ondemand.com last uploaded: Thu Mar 1 11:54:08 UTC 2018 stack: cflinuxfs2 buildpack: https://github.com/cloudfoundry/nodejs-buildpack.git state since cpu memory disk #0 running 2018-03-01 11:54:39 AM 0.0% 44.7M of 64M 55.3M of 1G bash-3.2\$ </pre>
<p>This application makes use of a 3rd Party service called Shippo to calculate shipping costs. In order to consume their services, we need an API KEY.</p> <p>The Instructors of this hands-on session will provide a set of keys you can use in the next step. However, you can also get your own FREE test key on their website https://gohippo.com/</p> <p>Best practices of cloud development (see https://12factor.net/config) suggests that any kind of configuration (such as keys) should not be part of the codebase but set as environment variables. And that is easily done with Cloud Foundry</p>	
<p>Back to the terminal, set the Environment Variable SHIPPO_KEY to a valid API Key with the following command</p> <pre>cf set-env <appname> <variable name> <variable value e.g. cf set-env freightcalcRO SHIPPO_KEY shippo_test_1234</pre>	 <pre> Terminal — bash [bash-3.2\$ cf set-env freightcalcRO SHIPPO_KEY shippo_test_19385705180736e352abedb642306bf;2A] Setting env variable 'SHIPPO_KEY' to 'shippo_test_19385705180736e352abedb642306bf' for app f reightcalcRO in org P2000194154trial_trial / space dev as sipemsbh@sharklasers.com... OK TIP: Use 'cf restage freightcalcRO' to ensure your env variable changes take effect bash: 2A: command not found bash-3.2\$ </pre>

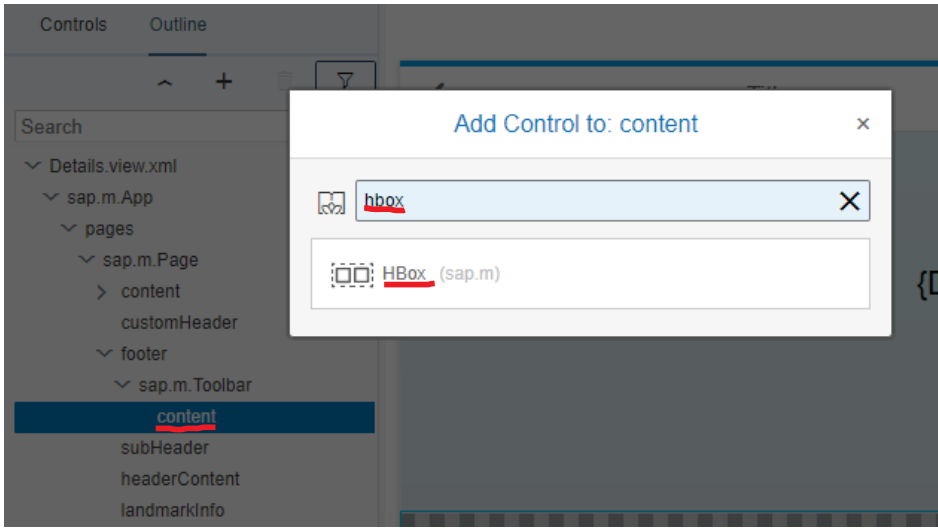
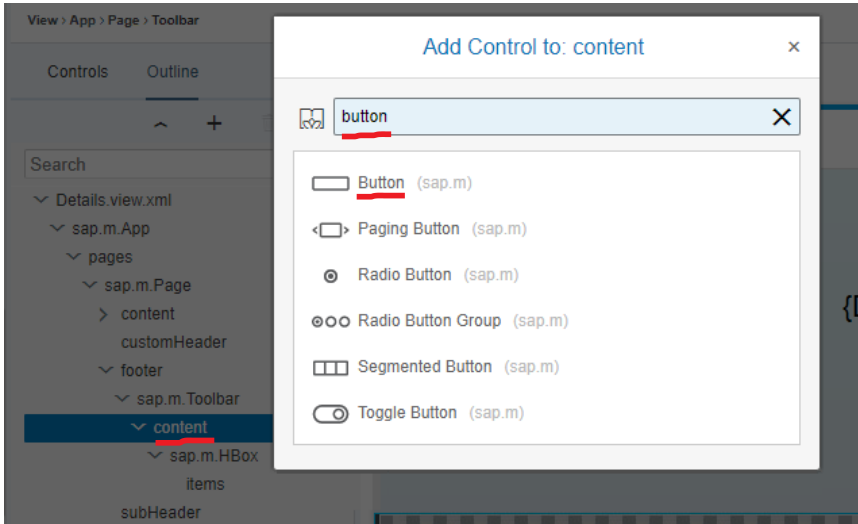
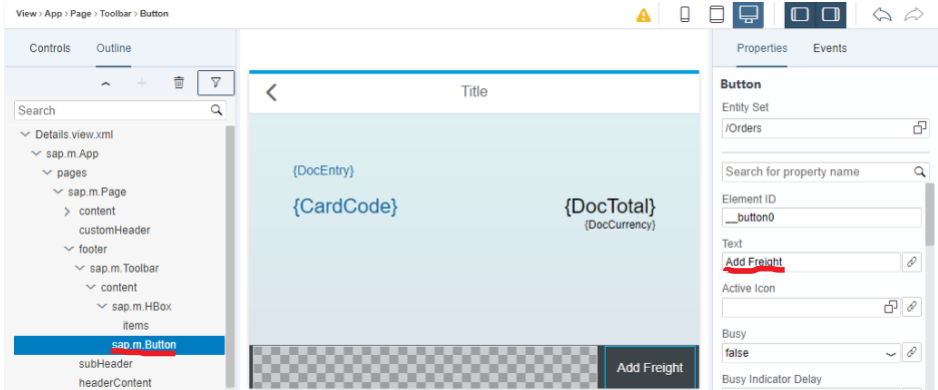
Explanation	Screenshot
<p>Up next, restart your app</p> <pre>cf restart <appname></pre>	
<p>You can test the app with a test page on the app URL</p>	

Congratulations! You have implemented and deployed your first Cloud Foundry application on SAP Cloud Platform!


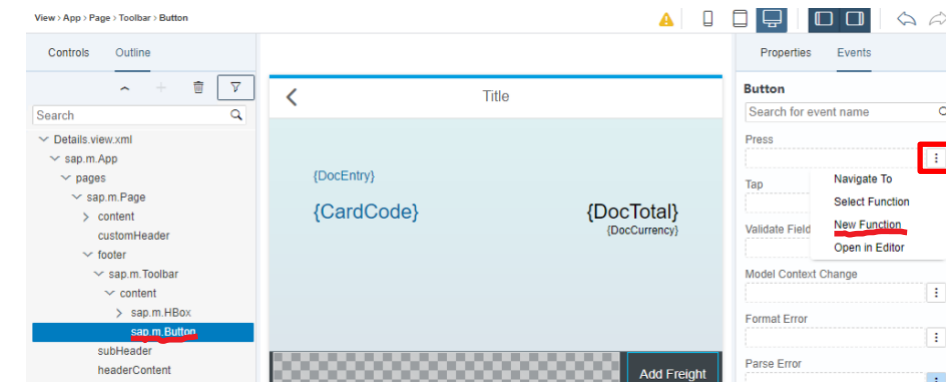
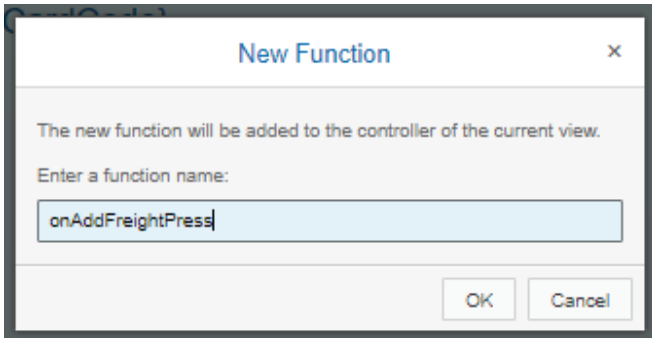


STEP 4: CONSUME THE NODEJS APP FROM THE SAP FIORI APP


- i. Add a Button “Add Freight” to the Details view.

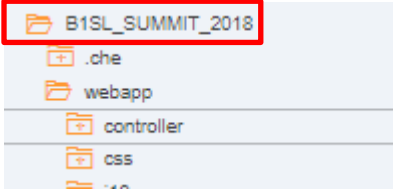
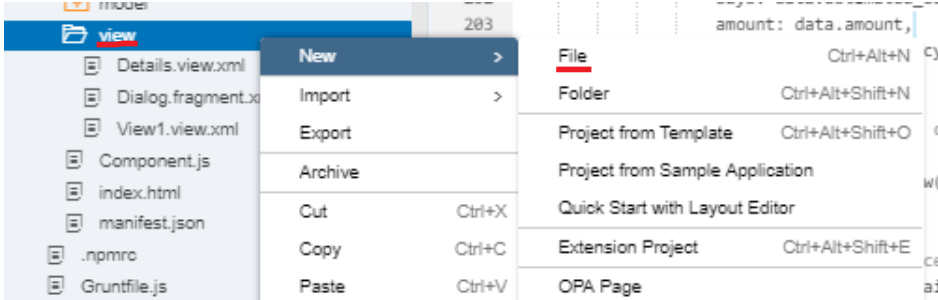
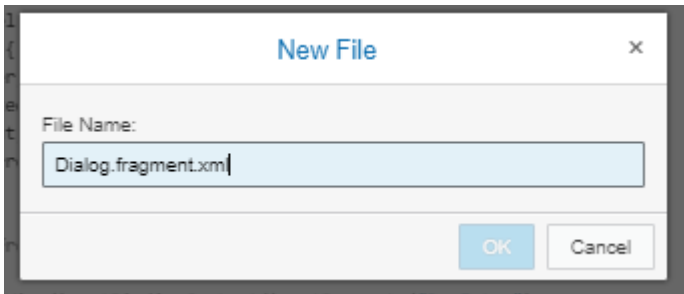
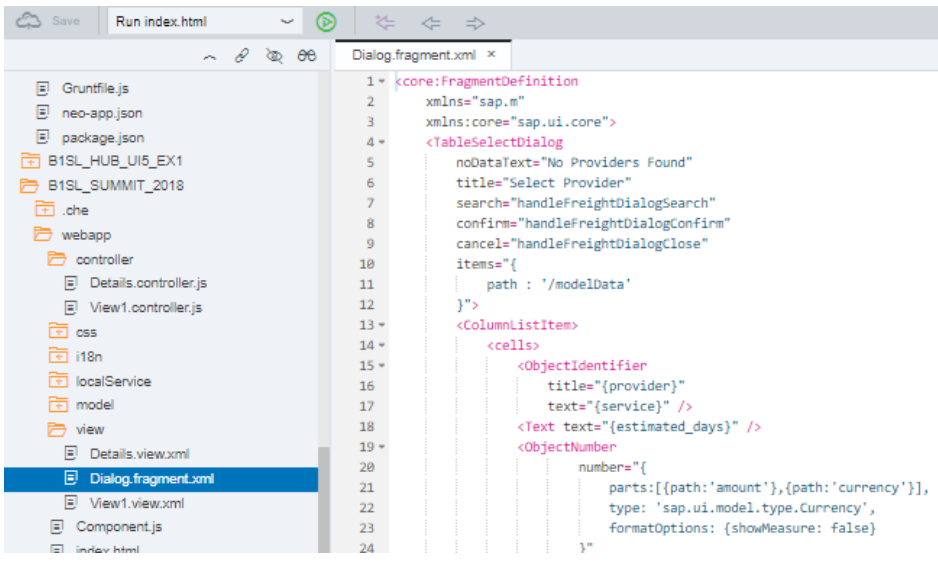
Explanation	Screenshot
<p>Open the Details.view.xml file with the Layout Editor.</p> <p>On the Outline tab right click on the sap.m.App -> pages -> sap.m.Page -> footer element and select Add.</p>	
<p>Select the Toolbar control proposed.</p>	

Explanation	Screenshot
<p>On the Outline tab right click on sap.m.Toolbar -> content and select Add.</p> <p>Enter hbox in the Add Control to: content new dialog.</p> <p>Select the proposed HBox control.</p>	
<p>On the Outline tab right click on sap.m.Toolbar -> content and select Add.</p> <p>Enter button in the Add Control to: content dialog.</p> <p>Select the Button control.</p>	
<p>On the Outline tab select the sap.m.Button.</p> <p>On the Properties tab change the Text property by Add Freight.</p>	

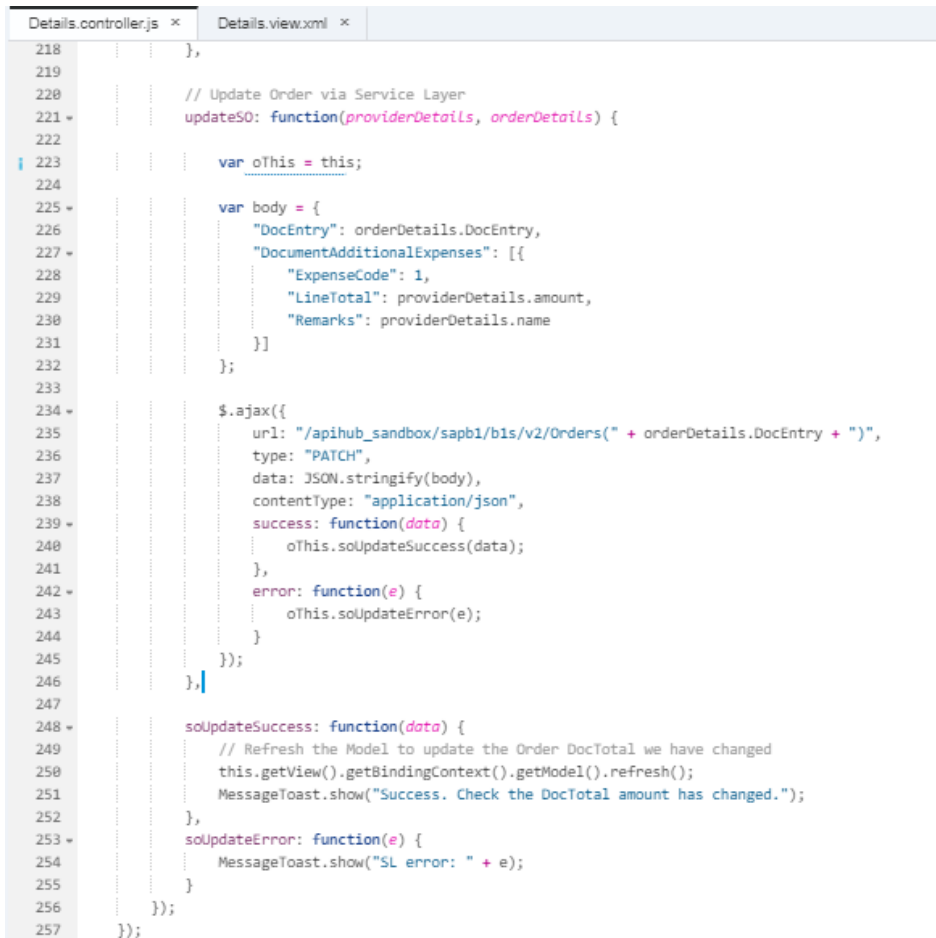
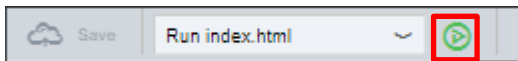
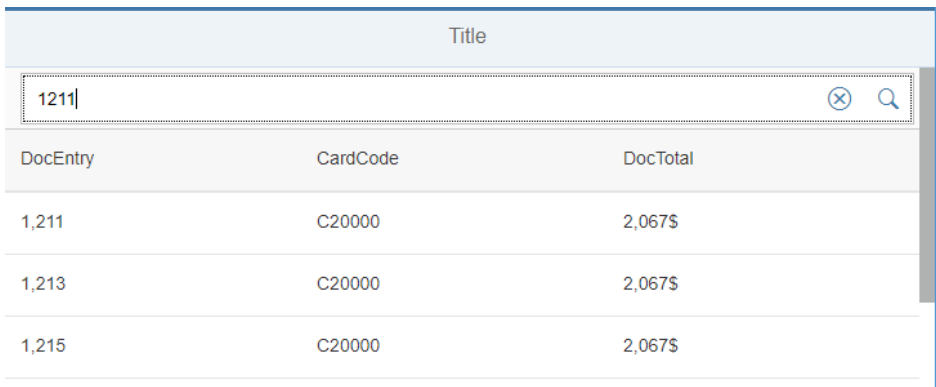
ii. Implement the Button business logic calling the NodeJS server side and Service Layer.

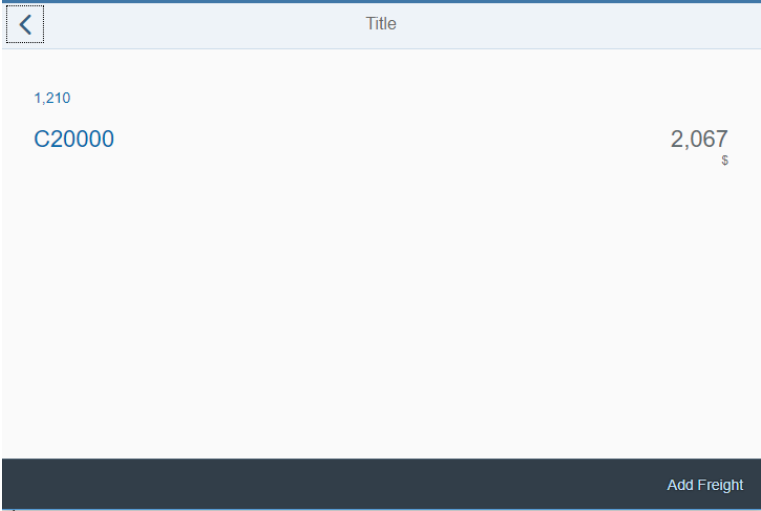
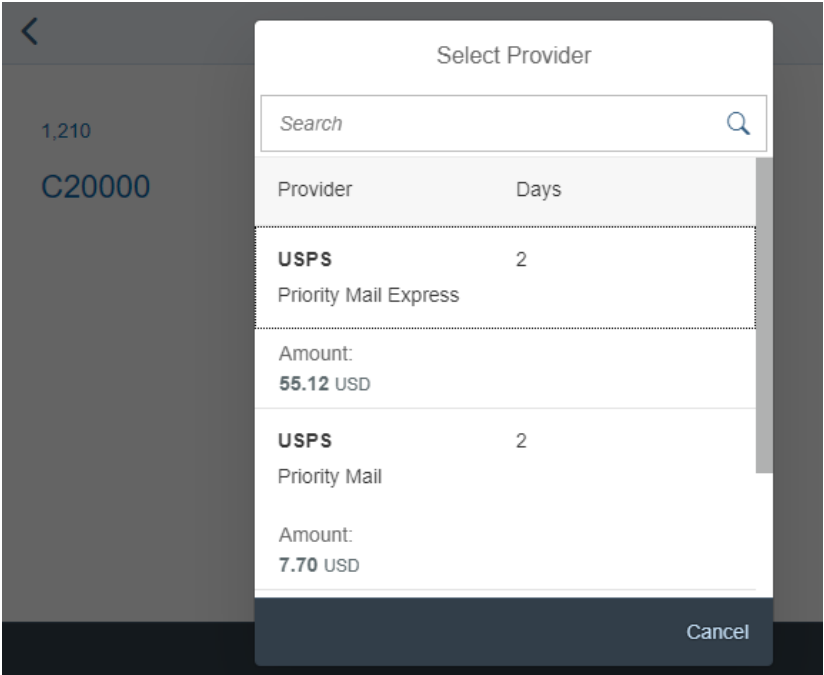
Explanation	Screenshot
<p>Select Outline tab,</p> <p>sap.m.Button.</p> <p>Open Events tab.</p> <p>Click on the Press event</p> <p> icon and select New Function.</p>	
<p>Enter onAddFreightPress as the function name.</p> <p>This function will be called when the event Press is fired on the AddFreight button.</p>	
<p>Open the Details.controller.js file and scroll down to the bottom of the file.</p> <p>A new empty function called onAddFreightPress has been automatically created.</p>	
<p>Before implementing this function lets add some definitions to the Details.controller.js file.</p> <p>Open the Details.controller.js file.</p> <p>Remove the code at the beginning of the file until "use strict"; as shown here in the first screen.</p> <p>Replace that code from by the one shared at https://github.com/B1SA/B1_SCP_HandsOn/blob/master/snippets/Details.controller.js_definitions.js as</p>	

Explanation	Screenshot
<p>shown in the second screen.</p> <p>Let now implement the function onAddFreightPress.</p> <p>When the user clicks on the AddFreight button we call the server side NodeJS to get freight options.</p> <p>Replace the URL to the freight calculator by your backend application URL (code marked in red in the screen capture).</p> <p>In case of success we call the function <code>openFreightDialog</code>.</p> <p>In case of error we simply show a <code>MessageToast</code>.</p> <p>You can get this code from https://github.com/B1SA/B1_SCP_HandsOn/blob/master/snippets/Details.controller.js_onAddFreight.js. PS: The code contains more functions than this one, please copy the full set of functions. We will explain each one of the functions in the coming steps.</p>	<pre> onAddFreightPress: function(oEvent) { //This code was generated by the layout editor. // Get Data from ODataModel V4 /Orders var body = { "to": { "zip": this.getView().getBindingContext().getProperty("AddressExtension/ShipToZipCode"), "country": this.getView().getBindingContext().getProperty("AddressExtension/ShipToCountry") } }; // open Freight view // from Freight view selection we will get back to Object view var oThis = this; \$.ajax({ url: "https://freightcalc.cfapps.eu10.hana.ondemand.com/Rates", type: "POST", data: JSON.stringify(body), contentType: "application/json", success: function(data) { oThis.openFreightDialog(data); }, error: function(e) { MessageToast.show("POST Freight error: " + e); } }); }, </pre>
<p>On the <code>Details.controller.js</code> scroll and search for the function openFreightDialog. This function opens a new Dialog showing the freight options returned by the server side.</p> <p>This function will use an xml fragment to design the freight options dialog.</p> <p>Edit this function and change the pointer to the xmlfragment to match the name of your namespace and SAPUI5 application (you can get this information from the beginning of your <code>Details.controller.js</code> file. In my case it is</p>	 <pre> 159 // open Freight Dialog 160 openFreightDialog: function(data) { 161 var detailsView = this.getView(); 162 163 //Create a model and bind the table rows to this model 164 var oModel = new sap.ui.model.json.JSONModel(); 165 // created a JSON model 166 oModel.setData({ 167 modelData: data 168 }); 169 170 // create dialog lazily 171 if (!this._oDialog) { 172 // create dialog via fragment factory 173 this._oDialog = sap.ui.xmlfragment("sa.B1SL_SUMMIT_2018/view.Dialog", this); 174 this._oDialog.setModel(oModel); 175 } 176 // connect dialog to view (models, lifecycle) 177 detailsView.addDependent(this._oDialog); 178 179 // toggle compact style 180 jQuery.sap.syncStyleClass("sapUiSizeCompact", detailsView, this._oDialog); 181 this._oDialog.open(); 182 } 183 </pre>

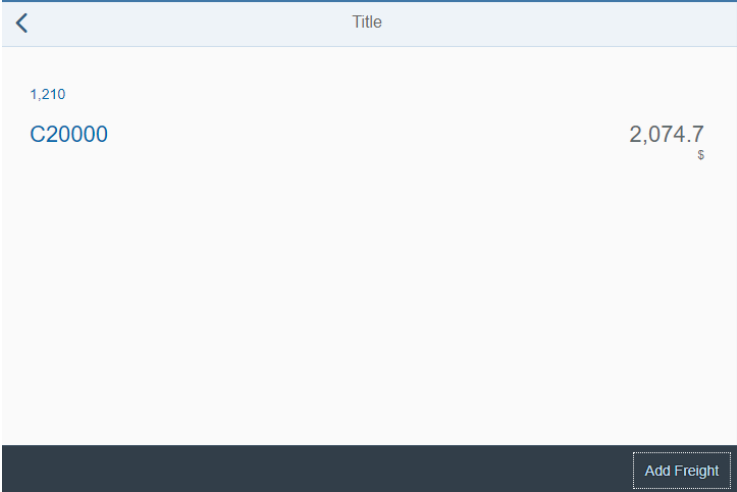
Explanation	Screenshot
“sa.B1SL_SUMMIT_2018.view.Dialog”.	
Let's add the Fragment required to show the Dialog. Right click on view folder and select New->File menu.	
Give the name Dialog.fragment.xml to the new file. Press OK .	
Download the Dialog.fragment.xml file from https://github.com/B1SA/B1_SCP_HandsOn/blob/master/snippets/Dialog.fragment.xml . Copy the code inside your Dialog.fragment.xml file. You can notice in that file contains the controls of the Dialog. Also, that file contains 3 callback functions will be called for the events: <ul style="list-style-type: none"> - search - confirm - cancel We will implement those functions in our Details.controller.js file.	

Explanation	Screenshot
<p>Open the Details.controller.js file.</p> <p>The handleFreightDialogSearch (code copied already earlier) is called when the user enters data to filter the list of freight options. The filter will be based on the provider property.</p> <p>The handleFreightDialogConfirm function is called when the user selects one of the freight options proposed by the Dialog. This function calls the function UpdateSO to update the Order via Service Layer API.</p> <p>The handleFreightDialogClose function is called when the user closes the Dialog without selecting a freight option. A MessageToast will show to the user the message "No Provider selected."</p>	<pre> handleFreightDialogSearch: function(oEvent) { var sValue = oEvent.getParameter("value"); var oFilter = new Filter("provider", sap.ui.model.FilterOperator.Contains, sValue); var oBinding = oEvent.getSource().getBinding("items"); oBinding.filter([oFilter]); }, handleFreightDialogConfirm: function(oEvent) { // Get SelectedItem details var oSelectedItem = oEvent.getParameter("selectedItem"); var ctx = oSelectedItem.getBindingContext(); var data = ctx.getModel().getProperty(ctx.getPath()); var providerDetails = { name: data.provider, days: data.estimated_days, amount: data.amount, currency: data.currency }; // Get Order details from current view binding context var orderDetails = { DocEntry: this.getView().getBindingContext().getProperty("DocEntry") }; // Update Order via Service Layer this.updateSO(providerDetails, orderDetails); console.log("You have chosen " + providerDetails.name + ", " + providerDetails.days + " Days, " + providerDetails.amount + providerDetails.currency + "."); }, handleFreightDialogClose: function(oEvent) { MessageToast.show("No Provider selected."); }, </pre>

Explanation	Screenshot																		
<p>The updateSO function calls SAP Business One Service Layer via the SAP API Business Hub sandbox.</p> <p>We do an ajax call to the destination <code>/apihub_sandbox/</code> automatically created when we added the Data Source pointing to the SAP API Business Hub. Then we specify the DocEntry of the Order to be updated with a PATCH request.</p> <p>In case of success we show a MessageToast message "SL success".</p> <p>In case of error we show a MessageToast message "SL error".</p>	 <pre>218 }, 219 220 // Update Order via Service Layer 221 updateSO: function(providerDetails, orderDetails) { 222 223 var oThis = this; 224 225 var body = { 226 "DocEntry": orderDetails.DocEntry, 227 "DocumentAdditionalExpenses": [{ 228 "ExpenseCode": 1, 229 "LineTotal": providerDetails.amount, 230 "Remarks": providerDetails.name 231 }] 232 }; 233 234 \$.ajax({ 235 url: "/apihub_sandbox/sapb1/b1s/v2/Orders(" + orderDetails.DocEntry + ")", 236 type: "PATCH", 237 data: JSON.stringify(body), 238 contentType: "application/json", 239 success: function(data) { 240 oThis.soUpdateSuccess(data); 241 }, 242 error: function(e) { 243 oThis.soUpdateError(e); 244 } 245 }); 246 }, 247 248 soUpdateSuccess: function(data) { 249 // Refresh the Model to update the Order DocTotal we have changed 250 this.getView().getBindingContext().getModel().refresh(); 251 MessageToast.show("Success. Check the DocTotal amount has changed."); 252 }, 253 soUpdateError: function(e) { 254 MessageToast.show("SL error: " + e); 255 } 256 }); 257 </pre>																		
Test your application.																			
<p>Filter the Orders table with DocEntry higher than 1211.</p> <p>Please follow directions from instructors so you only update a specific Order DocEntry to avoid conflicts between hands-on participants.</p>	 <table><tr><th colspan="3">Title</th></tr><tr><td colspan="3">1211</td></tr><tr><th>DocEntry</th><th>CardCode</th><th>DocTotal</th></tr><tr><td>1,211</td><td>C20000</td><td>2,067\$</td></tr><tr><td>1,213</td><td>C20000</td><td>2,067\$</td></tr><tr><td>1,215</td><td>C20000</td><td>2,067\$</td></tr></table>	Title			1211			DocEntry	CardCode	DocTotal	1,211	C20000	2,067\$	1,213	C20000	2,067\$	1,215	C20000	2,067\$
Title																			
1211																			
DocEntry	CardCode	DocTotal																	
1,211	C20000	2,067\$																	
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1,215	C20000	2,067\$																	

Explanation	Screenshot
<p>Check the Order DocTotal before adding the freight costs.</p>	 <p>The screenshot shows a mobile application screen. At the top, there is a back arrow icon and a title bar. Below the title bar, the text '1,210' is displayed in blue. Underneath, the document identifier 'C20000' is shown in blue. To the right, the total amount '2,067' is displayed with a small 's' symbol below it. At the bottom right, there is a dark blue button labeled 'Add Freight'.</p>
<p>Select one of the providers.</p>	 <p>The screenshot shows a mobile application screen with a 'Select Provider' dialog box overlaid. The dialog box has a search bar at the top. Below the search bar, there is a table with two columns: 'Provider' and 'Days'. The table lists two providers: 'USPS Priority Mail Express' with 2 days and an amount of 55.12 USD, and 'USPS Priority Mail' with 2 days and an amount of 7.70 USD. A 'Cancel' button is located at the bottom right of the dialog box. The background of the screen shows the same document as the previous screenshot, with the text '1,210' and 'C20000' visible.</p>



Explanation	Screenshot
<p>Check the Order DocTotal amount is updated after you select a freight provider based on the provider costs.</p> <p>You will also see the success message if the update of the Order is successful.</p>	

Congratulations! You have just implemented your first full stack loosely coupled SAP Business One extension!

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