



# 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: Integrate the server side NodeJS application into the Fiori application created in Step 1

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

| <p>Download and install git version control on your system from the following link</p> <p><a href="https://git-scm.com/downloads">https://git-scm.com/downloads</a></p>   |   |                     |                           |                |              |            |                     |                     |                           |          |                     |                     |                     |
|---|---|---------------------|---------------------------|----------------|--------------|------------|---------------------|---------------------|---------------------------|----------|---------------------|---------------------|---------------------|
| <p>We will also make use of SAP Cloud Platform Cloud Foundry Environment.</p> <p>To do so, we need the Cloud Foundry command line interface (CLI)</p> <p>You can download it and install if the CF CLI for your operating system on.</p> <p><a href="https://github.com/cloudfoundry/cli#downloads">https://github.com/cloudfoundry/cli#downloads</a></p> | <p><b>Downloads</b></p> <p><b>Installing using a package manager</b></p> <p>Mac OS X and Linux using Homebrew via the cloudfoundry tap:</p> <pre>brew install cloudfoundry/tap(cf-cli)</pre> <p>Debian and Ubuntu based Linux distributions:</p> <pre># ...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/cloudfo- # ...then, update your local package index, then finally install the cf CLI sudo apt-get update sudo apt-get install cf-cli</pre> <p>Enterprise Linux and Fedora systems (RHEL6/CentOS6 and up):</p> <pre># ...first configure the Cloud Foundry Foundation package repository sudo wget -O /etc/yum.repos.d/cloudfoundry-clients.repo https://packages.cloudfoundry.org/fedora/cloudfoundry-cl # ...then, install the cf CLI (which will also download and add the public key to your system) sudo yum install cf-cli</pre> <p><b>Installers and compressed binaries</b></p> <table border="1"><thead><tr><th></th><th>Mac OS X 64 bit</th><th>Windows 64 bit</th><th>Linux 64 bit</th></tr></thead><tbody><tr><td>Installers</td><td><a href="#">pkg</a></td><td><a href="#">zip</a></td><td><a href="#">rpm / deb</a></td></tr><tr><td>Binaries</td><td><a href="#">tgz</a></td><td><a href="#">zip</a></td><td><a href="#">tgz</a></td></tr></tbody></table> |                     | Mac OS X 64 bit           | Windows 64 bit | Linux 64 bit | Installers | <a href="#">pkg</a> | <a href="#">zip</a> | <a href="#">rpm / deb</a> | Binaries | <a href="#">tgz</a> | <a href="#">zip</a> | <a href="#">tgz</a> |
|   | Mac OS X 64 bit   | Windows 64 bit      | Linux 64 bit              |                |              |            |                     |                     |                           |          |                     |                     |                     |
| Installers  | <a href="#">pkg</a>   | <a href="#">zip</a> | <a href="#">rpm / deb</a> |                |              |            |                     |                     |                           |          |                     |                     |                     |
| Binaries  | <a href="#">tgz</a>   | <a href="#">zip</a> | <a href="#">tgz</a>       |                |              |            |                     |                     |                           |          |                     |                     |                     |

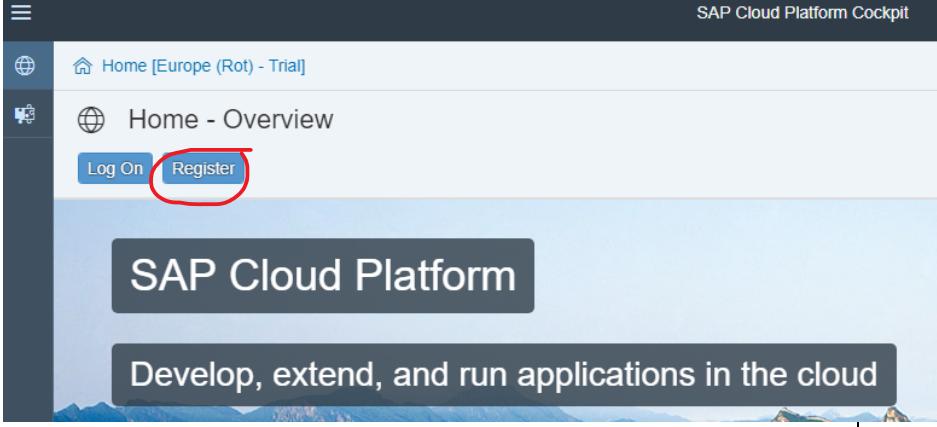
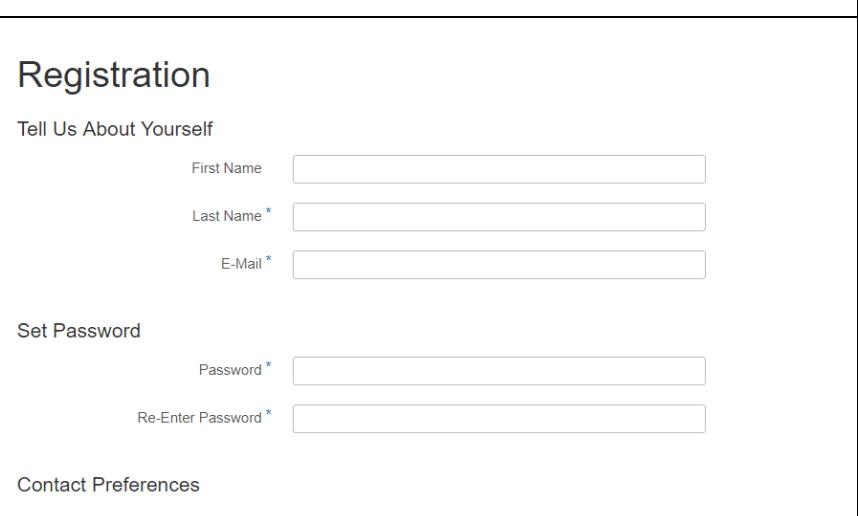
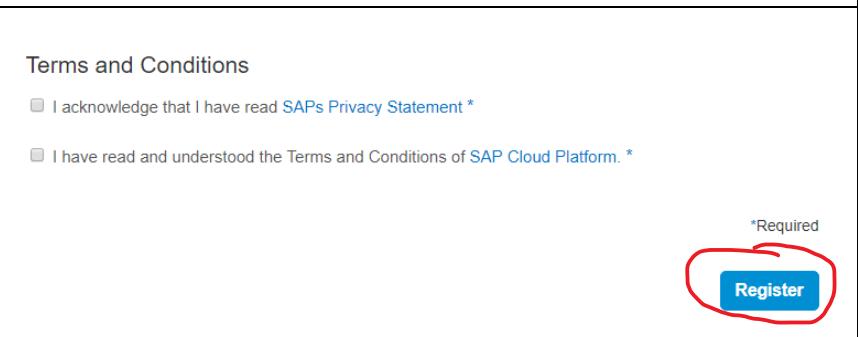


## ii. Create a SAP Cloud platform trial account

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:

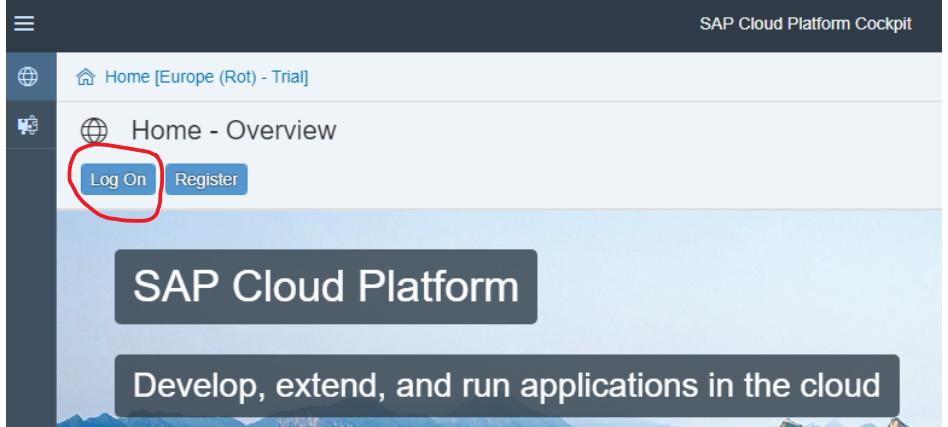
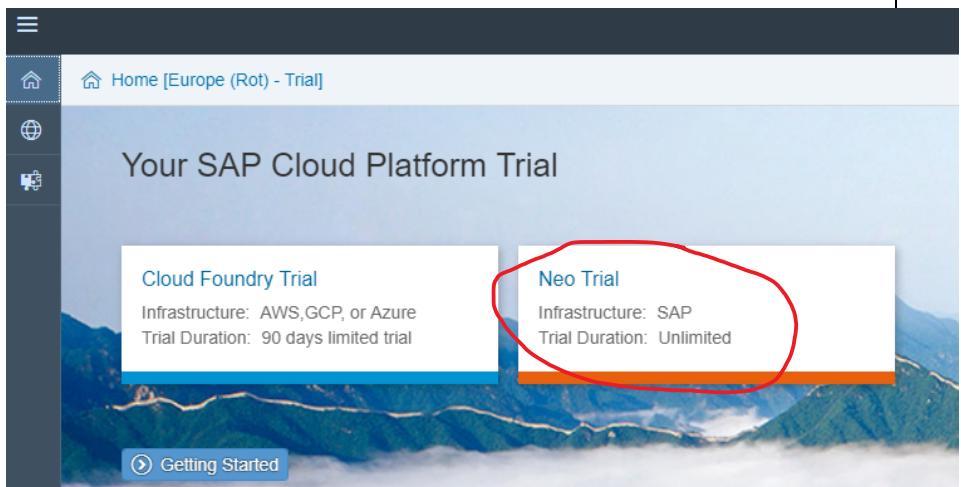
| Explanation   | Screenshot   |
|---|--|
| To create a trial SAP Cloud Platform account, go to the following link:<br><a href="https://account.hanatrial.ondemand.com">https://account.hanatrial.ondemand.com</a><br>Press the Register button |    |
| Enter all your details  |   |
| Accept the terms and conditions by checking both check boxes and press "Register".  |  |



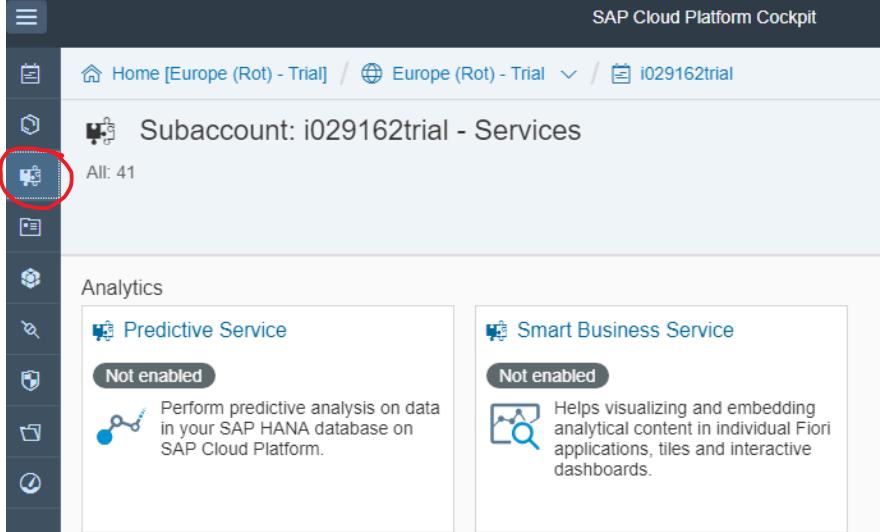
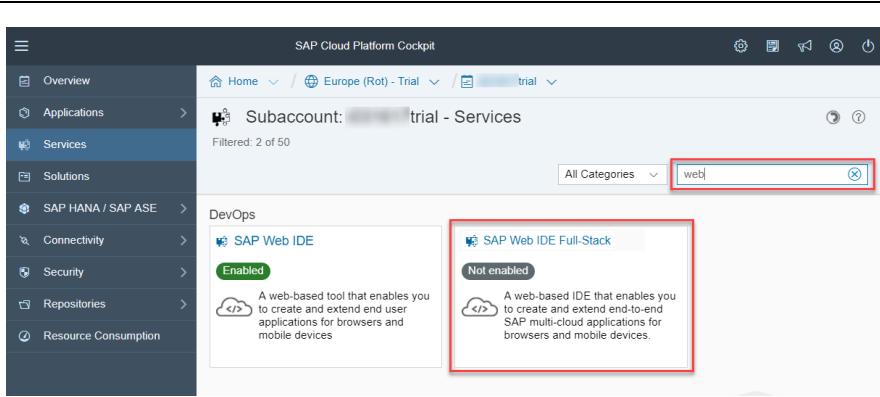
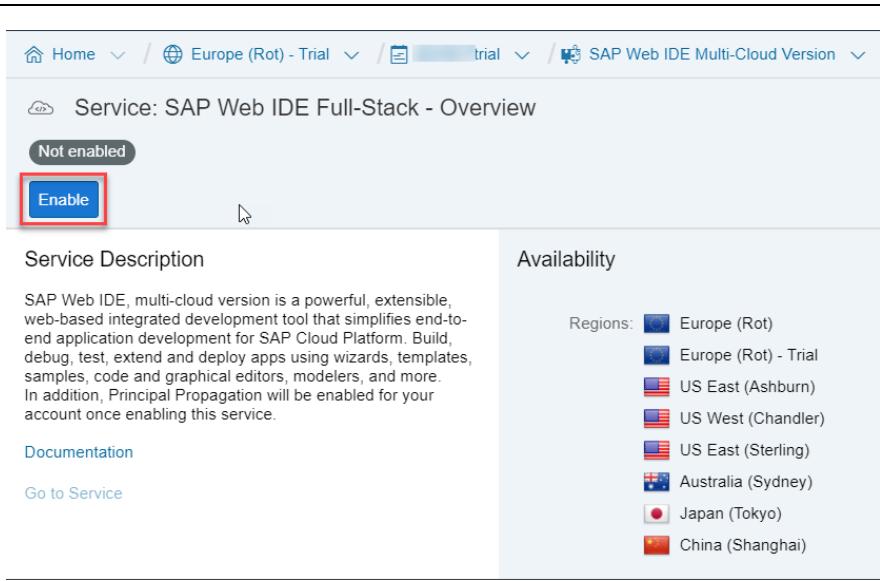
### iii. Activate Web IDE Full Stack service

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.

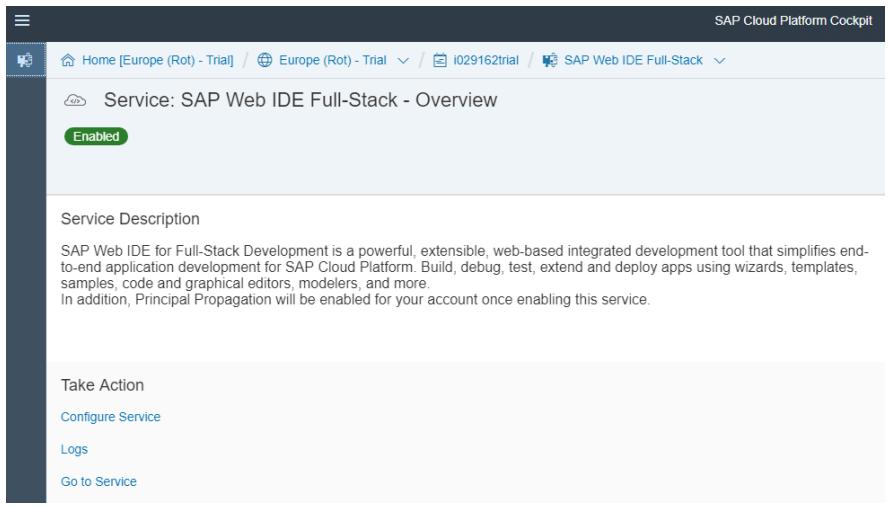
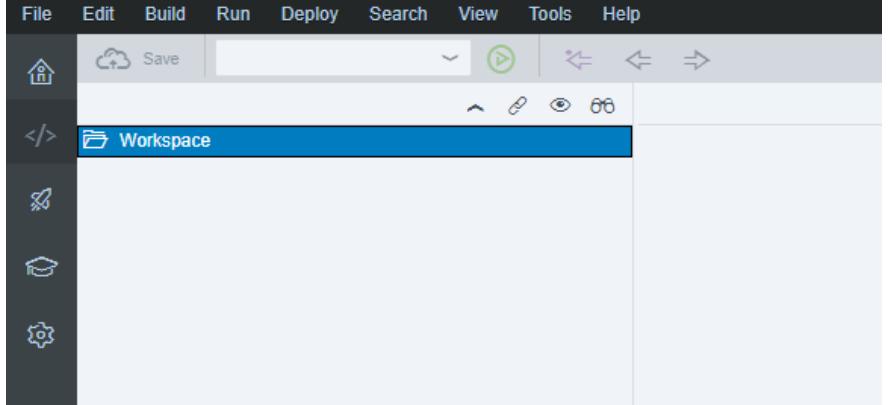
To activate Web IDE Full Stack service please follow the steps here below, if you already have Web IDE Full Stack service active in your account please skip this step.

| Explanation  | Screenshot   |
|--|--|
| Open your trial SAP Cloud Platform account from the following link:<br><a href="https://account.hanatrial.ondemand.com">https://account.hanatrial.ondemand.com</a> |   |
| Press the Log On button if you are not automatically logged in   |  |
| After login if you are proposed between Cloud Foundry Trial and Neo Trial please choose Neo Trial.   |  |



| Explanation   | Screenshot   |                     |              |   |   |
|---|--|---------------------|--------------|---|---|
| <p>Select the Services icon on the left side bar.</p>   |  <p>The SAP Cloud Platform Cockpit interface. On the left sidebar, the 'Services' icon (a gear with a plus sign) is highlighted with a red circle. The main area shows a list of services under 'Analytics', including 'Predictive Service' (Not enabled) and 'Smart Business Service' (Not enabled).</p>  |                     |              |   |   |
| <p>Enter <b>Web</b> in the search edit text.<br/>Click on the SAP Web IDE Full Stack box.</p>   |  <p>The SAP Cloud Platform Cockpit interface. The search bar at the top contains 'web'. The 'SAP Web IDE Full-Stack' service is highlighted with a red box. The service card shows it is 'Not enabled'.</p>   |                     |              |   |   |
| <p><b>Click Enable.</b><br/>This may take a few minutes.</p>  |  <p>The SAP Web IDE Multi-Cloud Version - Overview screen. The 'Enable' button for the SAP Web IDE Full-Stack service is highlighted with a red box. The service description and availability information are also visible.</p> <table border="1"><thead><tr><th data-bbox="541 1522 1038 1551">Service Description</th><th data-bbox="1038 1522 1441 1551">Availability</th></tr></thead><tbody><tr><td data-bbox="541 1551 1038 1814"><p>SAP Web IDE, multi-cloud version 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.</p><p><a href="#">Documentation</a></p><p><a href="#">Go to Service</a></p></td><td data-bbox="1038 1551 1441 1814"><p>Regions:</p><ul style="list-style-type: none"><li>Europe (Rot)</li><li>Europe (Rot) - Trial</li><li>US East (Ashburn)</li><li>US West (Chandler)</li><li>US East (Sterling)</li><li>Australia (Sydney)</li><li>Japan (Tokyo)</li><li>China (Shanghai)</li></ul></td></tr></tbody></table> | Service Description | Availability | <p>SAP Web IDE, multi-cloud version 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.</p> <p><a href="#">Documentation</a></p> <p><a href="#">Go to Service</a></p> | <p>Regions:</p> <ul style="list-style-type: none"><li>Europe (Rot)</li><li>Europe (Rot) - Trial</li><li>US East (Ashburn)</li><li>US West (Chandler)</li><li>US East (Sterling)</li><li>Australia (Sydney)</li><li>Japan (Tokyo)</li><li>China (Shanghai)</li></ul> |
| Service Description   | Availability   |                     |              |   |   |
| <p>SAP Web IDE, multi-cloud version 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.</p> <p><a href="#">Documentation</a></p> <p><a href="#">Go to Service</a></p> | <p>Regions:</p> <ul style="list-style-type: none"><li>Europe (Rot)</li><li>Europe (Rot) - Trial</li><li>US East (Ashburn)</li><li>US West (Chandler)</li><li>US East (Sterling)</li><li>Australia (Sydney)</li><li>Japan (Tokyo)</li><li>China (Shanghai)</li></ul>  |                     |              |   |   |



| Explanation   | Screenshot  |
|---|---|
| <p>Once Enabled select the link <b>Go to Service</b> to open Web IDE Full Stack.</p>                      |   |
| Web IDE opens with an empty Workspace unless you already developed applications with Web IDE in the past. |  |



#### iv. SAP API Business Hub

With SAP API Business Hub, you can easily build sample apps, extensions, and integrations. Discover and consume digital content packages with APIs, pre-packaged integrations, and sample apps from SAP and select partners.

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.

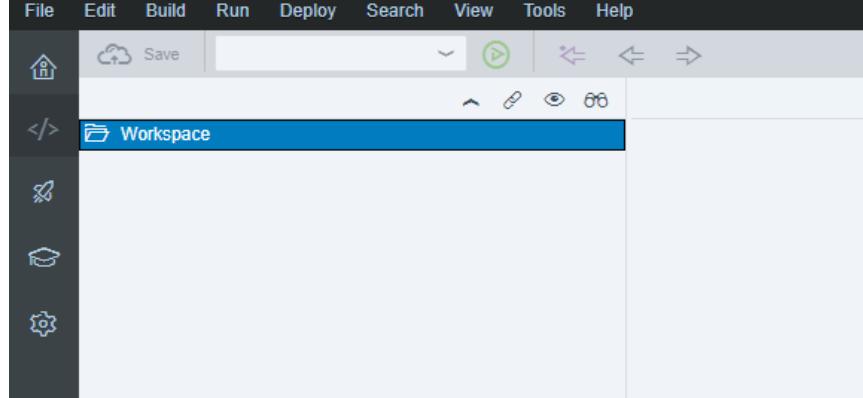
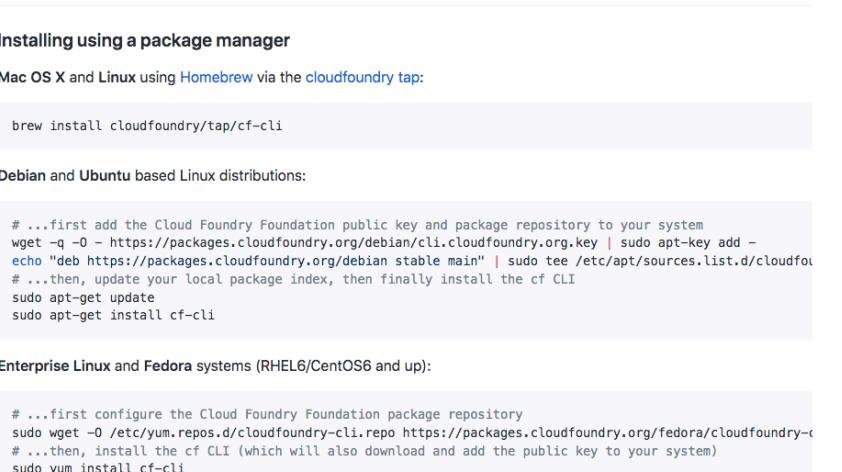
In this exercise, we will use the Service Layer APIs exposed via the SAP API Business Hub, please refer to the prerequisites section



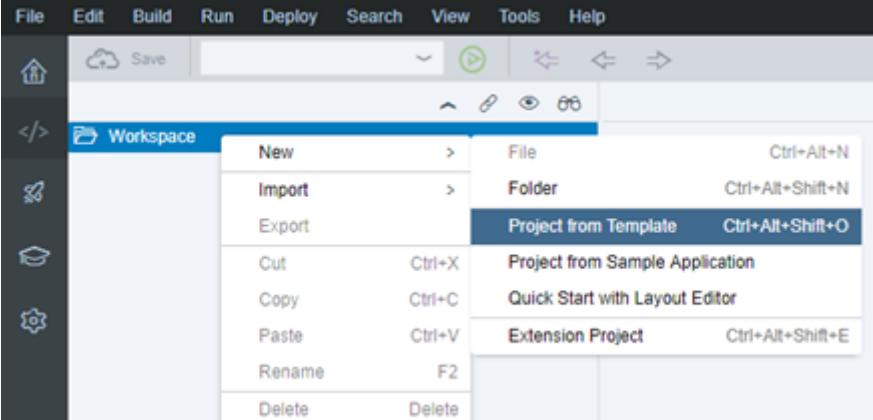
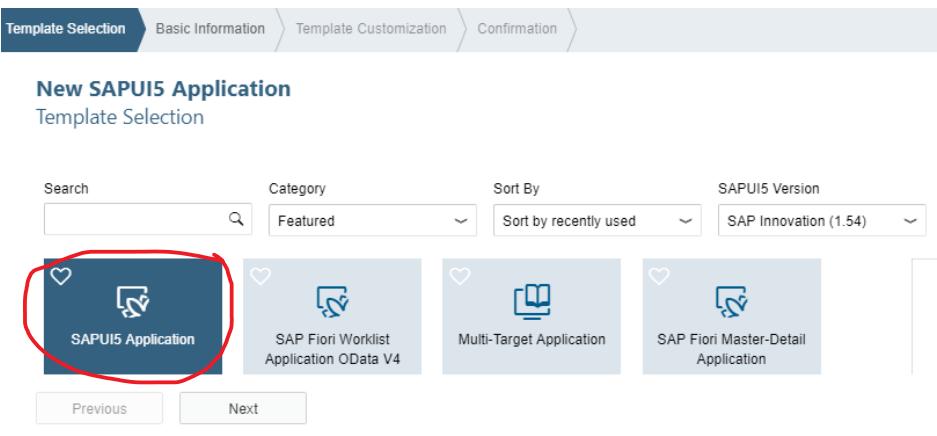
SAP API Business Hub for more details.

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.  |    |
| <b>ii. Check the prerequisites sections</b><br><b>Download and Install Development Tools</b>  |   |
| Download and install git control on your system from following link<br><a href="https://git-scm.com/download">https://git-scm.com/download</a>  |  |
| We will also make use of Cloud Platform Cloud Foundry Environment.<br><br>To do so, we need the Cloud Foundry command line interface (CLI)<br><br>You can download it and install the CF CLI for your operating system on.<br><br><a href="https://github.com/cloudfoundry/cli#download">https://github.com/cloudfoundry/cli#download</a> |  |



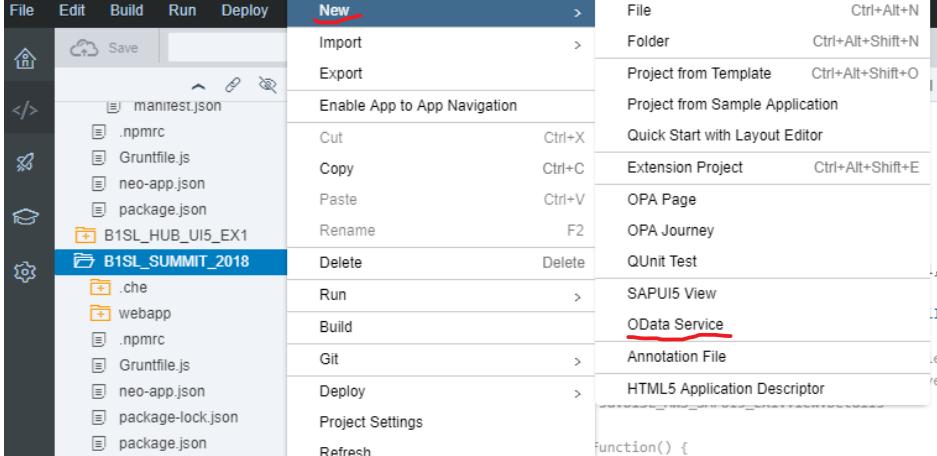
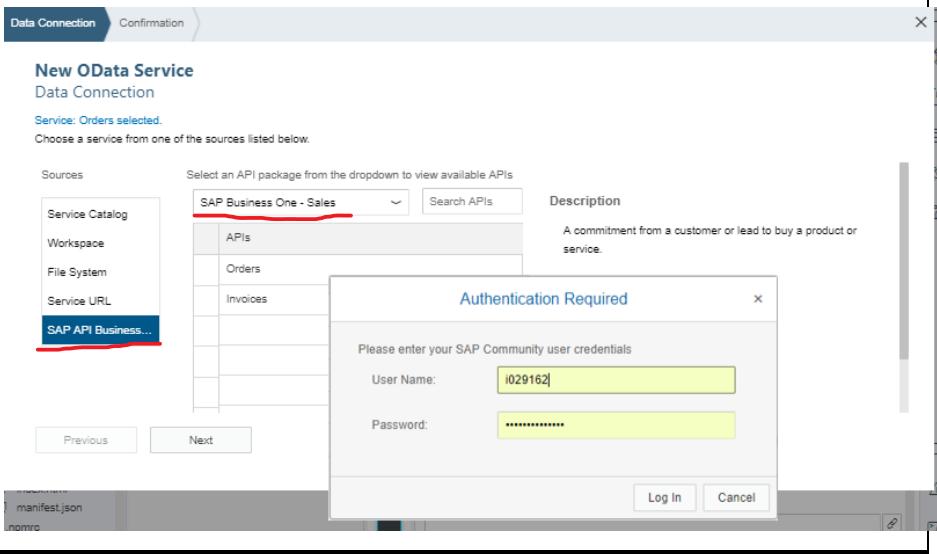
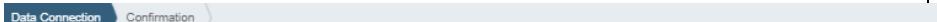
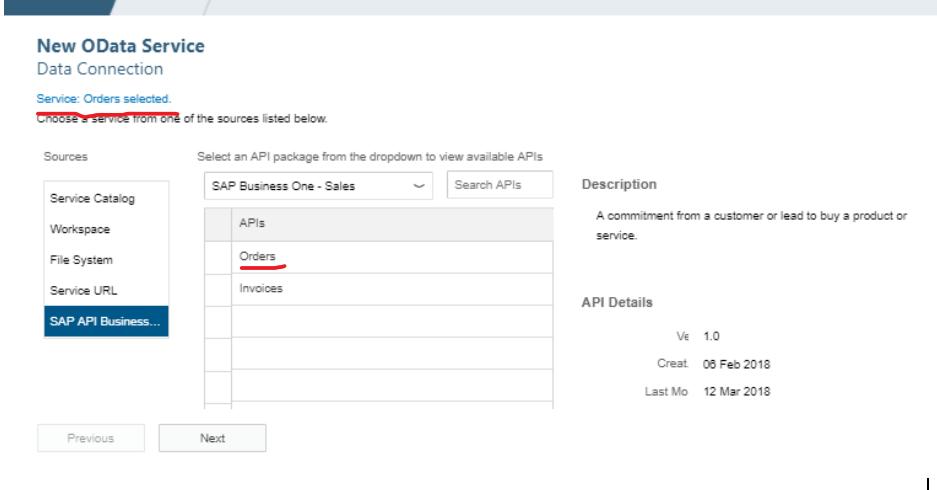
| Explanation   | Screenshot   |                |                 |                |              |            |     |     |           |          |     |     |     |
|---|--|----------------|-----------------|----------------|--------------|------------|-----|-----|-----------|----------|-----|-----|-----|
|   | <p style="text-align: center;"><b>Installers and compressed binaries</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"><thead><tr><th></th><th>Mac OS X 64 bit</th><th>Windows 64 bit</th><th>Linux 64 bit</th></tr></thead><tbody><tr><td>Installers</td><td>pkg</td><td>zip</td><td>rpm / deb</td></tr><tr><td>Binaries</td><td>tgz</td><td>zip</td><td>tgz</td></tr></tbody></table>   |                | Mac OS X 64 bit | Windows 64 bit | Linux 64 bit | Installers | pkg | zip | rpm / deb | Binaries | tgz | zip | tgz |
|   | Mac OS X 64 bit  | Windows 64 bit | Linux 64 bit    |                |              |            |     |     |           |          |     |     |     |
| Installers  | pkg  | zip            | rpm / deb       |                |              |            |     |     |           |          |     |     |     |
| Binaries  | tgz  | zip            | tgz             |                |              |            |     |     |           |          |     |     |     |
| Create a SAP Cloud platform trial account and<br>Activate Web IDE Full Stack service if you<br>don't know how to open Web IDE Full Stack.                       |  |                |                 |                |              |            |     |     |           |          |     |     |     |
| Right click on your Workspace and select <b>New</b><br>-> Project from Template.  |   |                |                 |                |              |            |     |     |           |          |     |     |     |
| Select the <b>SAPUI5 Application</b> template.<br><br>Press <b>Next</b> .<br><br>If you don't see this template, change the Category to <b>All categories</b> . | <p>Template Selection &gt; Basic Information &gt; Template Customization &gt; Confirmation &gt;</p> <p><b>New SAPUI5 Application</b><br/>Template Selection</p> <p>Search Category Sort By SAPUI5 Version</p> <p>Featured Sort by recently used SAP Innovation (1.54)</p> <p><b>SAPUI5 Application</b> (highlighted with a red circle)</p> <p>SAP Fiori Worklist Application OData V4 Multi-Target Application SAP Fiori Master-Detail Application</p> <p>Previous Next</p>  |                |                 |                |              |            |     |     |           |          |     |     |     |



| Explanation   | Screenshot  |
|---|---|
| <p>Enter a <b>Project Name</b>.</p> <p>Enter a <b>Namespace</b>.</p> <p>Press <b>Next</b>.</p>        | <p><b>New SAPUI5 Application</b><br/>Basic Information</p> <p>Project Name* B1SL_SUMMIT_2018</p> <p>Namespace* sal</p> <p>Previous Next</p>                               |
| <p>Keep the <b>Initial View Details</b> with the <b>default</b> values.</p> <p>Press <b>Next</b>.</p> | <p><b>New SAPUI5 Application</b><br/>Template Customization</p> <p>Initial View Details View Type* XML</p> <p>View Name View1</p> <p>Previous Next Finish</p>             |
| <p>Press <b>Finish</b> to confirm the creation of the SAPUI5 template.</p>                            | <p><b>New SAPUI5 Application</b><br/>Confirmation</p> <p>Click Finish. A new project named B1SL_SUMMIT_2018 will be created in your workspace.</p> <p>Previous Finish</p> |



### iii. Add a Data Source to the SAPUI5 Application

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



| Explanation   | Screenshot  |
|---|---|
| Press Finish.   | <p>New OData Service Confirmation</p> <p>Click Finish. The selected OData service is connected to the B1SL_SUMMIT_2018 project.</p> <p><input type="checkbox"/> Overwrite existing OData service connection</p> <p>Previous      Finish</p>   |
| <p>Open the file “<b>webap/manifest.json</b>” inside your application and select the <b>Code Editor</b>.</p> <p>Search for the element “<b>dataSources</b>”/“<b>Orders</b>” and change the “<b>odataVersion</b>” value inside “<b>settings</b>” to “<b>4.0</b>”.</p> <p><b>Save</b> your changes.</p> | <pre>version": "1.0.0" }, "title": "{{appTitle}}", "description": "{{appDescription}}", "sourceTemplate": {   "id": "servicecatalog.connectivityComponent",   "version": "0.0.0" }, "dataSources": {   "Orders": {     "uri": "/apihub_sandbox/sapb1/b1s/v2/",     "type": "OData",     "settings": {       "odataVersion": "4.0",       "localUri": "localService/metadata.xml"     } } }</pre> <p>Descriptor Editor      <b>Code Editor</b></p> |



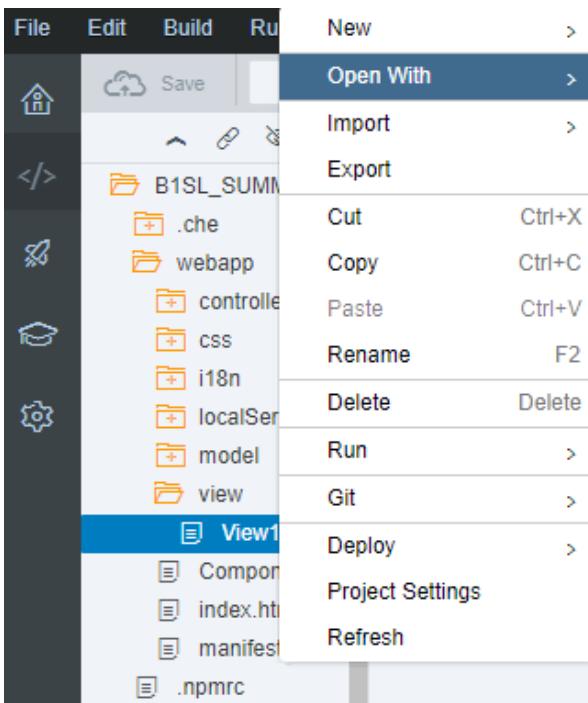
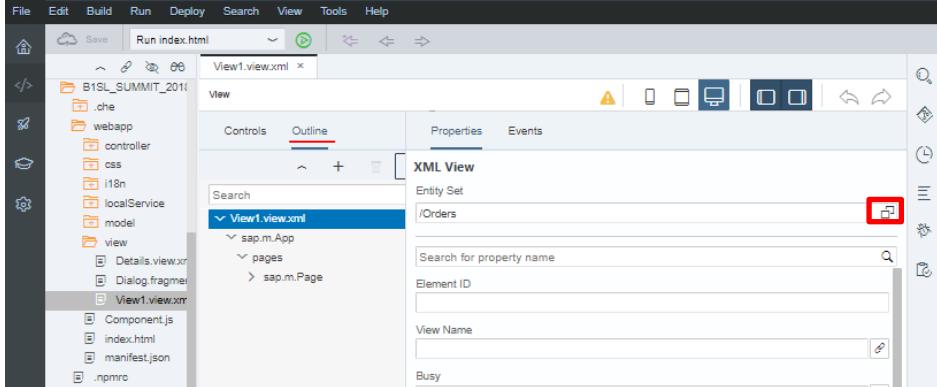
#### iv. Create a Model

| Explanation   | Screenshot |
|---|------------|
| <p>Open the <b>manifest.json</b> file, select <b>Descriptor Editor</b> (bottom of the screen) and <b>Models</b> tab.</p> <p>Press the <b>+</b> button to add a new model.</p>   |            |
| <p>Check the box “<b>Set as default model for the application</b>”.</p> <p>There is no need to enter a Model Name as we checked the default model option.</p> <p>Select <b>Orders</b> as the <b>Model Source</b>.</p> <p>Press <b>OK</b>.</p> |            |
| <p>A new <b>Default</b> model will be shown in the Models tab pointing to the API Hub URI for OData v4 Data Source.</p> <p>Press <b>Save</b> button to your changes.</p>  |            |



v. Add controls to the View1 view.

**Add a sap.m.Table control**

| Explanation   | Screenshot   |
|---|--|
| <p>Open the <b>view</b> folder.<br/>Open the <b>View1.view.xml</b> file with the <b>Layout Editor</b>.</p>  |   |
| <p>Select the <b>Outline</b> tab.<br/>Select <b>View.view.xml</b>.<br/><br/>Click on the  button to select the <b>Entity Set</b> associated to our view.</p> |  |



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

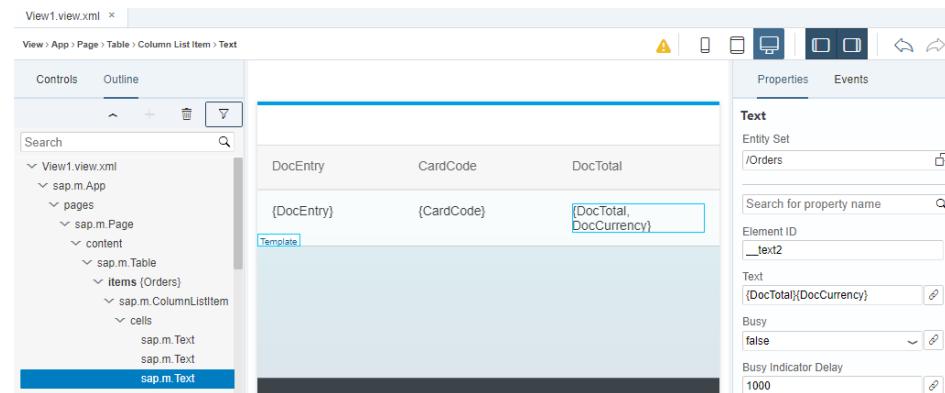
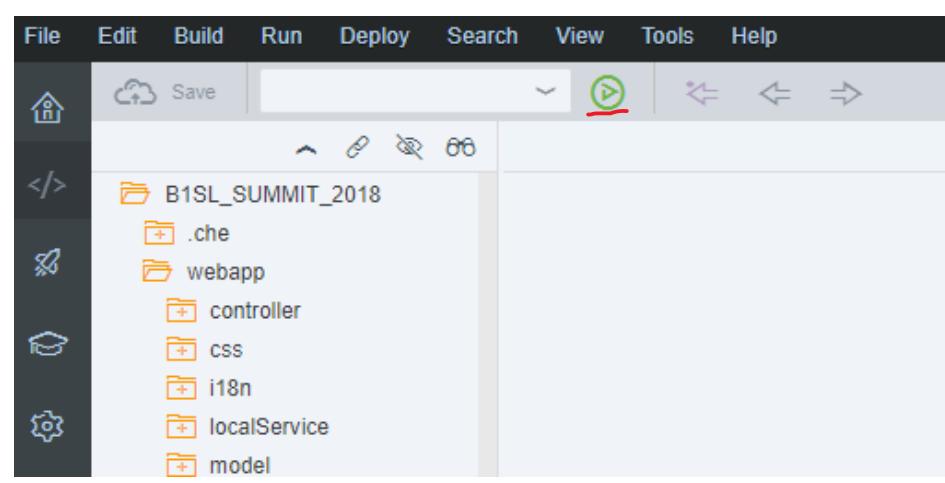
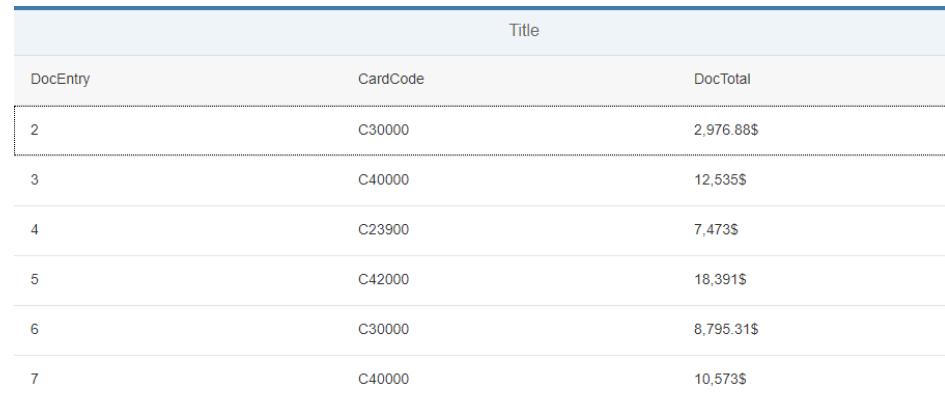


| Explanation   | Screenshot   |
|---|--|
| <p>Expand <b>sap.m.Page</b>.</p> <p><b>Right click on content</b> and select <b>Add</b>.</p>  | <p>The screenshot shows the SAP Studio interface with the file tree on the left and the XML editor on the right. In the XML editor, under the 'sap.m.Page' node, there is a 'content' node. A context menu is open over the 'content' node, with the 'Add' option highlighted. Other options like 'Convert to Fragment' and 'Add Fragment' are also visible.</p> |
| <p>Enter <b>table</b> to filter the controls shown in the list.</p> <p><b>Click on the Table control</b> so it will be added to our view.</p>   | <p>The screenshot shows the SAP Studio interface with the 'Add Control to: content' dialog open. The search bar contains 'table', and the 'Table (sap.m)' control is listed and highlighted.</p>   |
| <p>On the table created edit each <b>sap.m.Column</b> -&gt; <b>header</b> -&gt; <b>sap.m.Label</b></p> <p><b>Text Property:</b></p> <ul style="list-style-type: none"><li>- Change Header 1 by <b>DocEntry</b>.</li><li>- Change Header 2 by <b>CardCode</b>.</li><li>- Change Header 3 by <b>DocTotal</b>.</li></ul> | <p>The screenshot shows the SAP Studio interface with the XML editor displaying a table structure. In the properties panel on the right, for a 'sap.m.Label' control under the 'header' node of a 'sap.m.Column', the 'Text' property is set to 'DocEntry'. The XML code in the editor shows the 'DocEntry' placeholder in the table headers.</p>                |

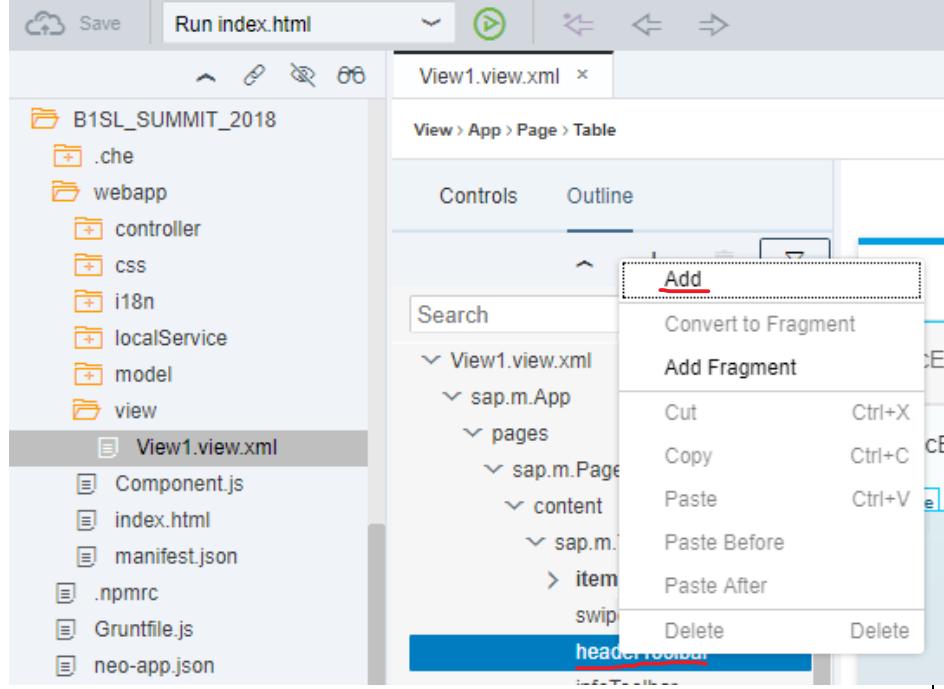
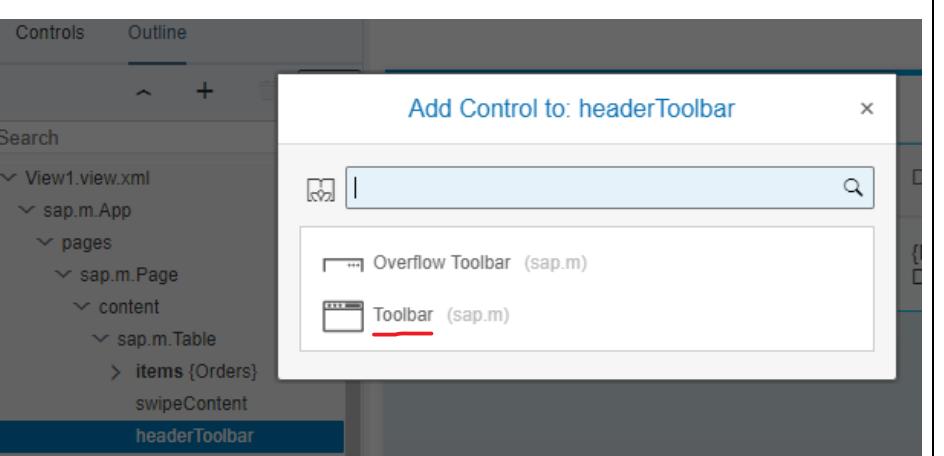


| Explanation   | Screenshot |
|---|------------|
| <p>Select each one of the <b>sap.m.ColumnListItem</b> -&gt; <b>sap.m.Text</b> cells to bind them to their corresponding Orders properties.</p> <p>Then on the <b>Text</b> property click the <b>Binding</b> button on the right side of the Text property.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



| Explanation  | Screenshot  |            |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |
|--|---|------------|----------|----------|----------|---|--------|------------|---|--------|----------|---|--------|---------|---|--------|----------|---|--------|------------|---|--------|----------|
| Your <b>View1.view.xml</b> layout should look like this at this point.   |   |            |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |
| Click on the green arrow to run your application.  |    |            |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |
| A new tab opens showing your application.<br><br>You can see the Table is automatically filled with the list of Orders available in the API Business Hub sandbox running SAP Business One. |  <table border="1"><thead><tr><th></th><th>DocEntry</th><th>CardCode</th><th>DocTotal</th></tr></thead><tbody><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></tbody></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\$ |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |
| 3  | C40000  | 12,535\$   |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |
| 4  | C23900  | 7,473\$    |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |
| 5  | C42000  | 18,391\$   |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |
| 6  | C30000  | 8,795.31\$ |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |
| 7  | C40000  | 10,573\$   |          |          |          |   |        |            |   |        |          |   |        |         |   |        |          |   |        |            |   |        |          |

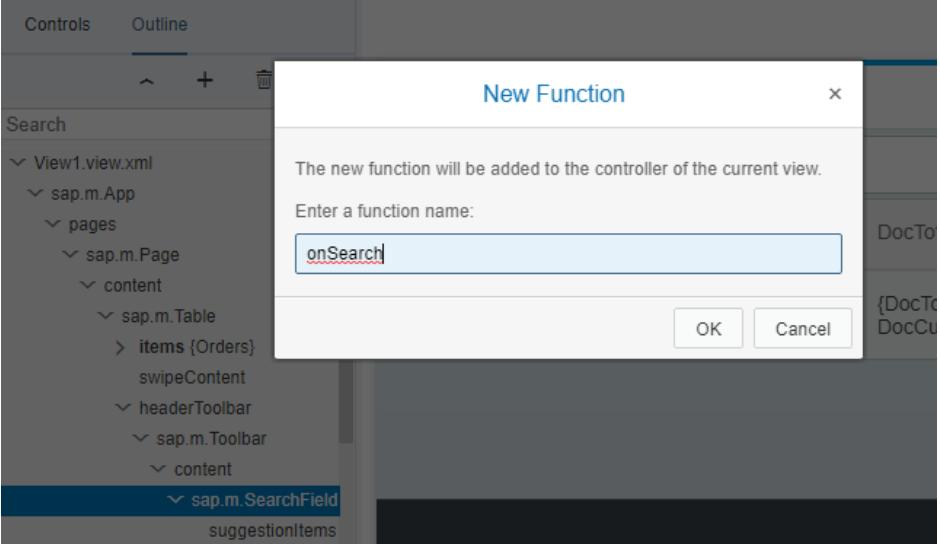
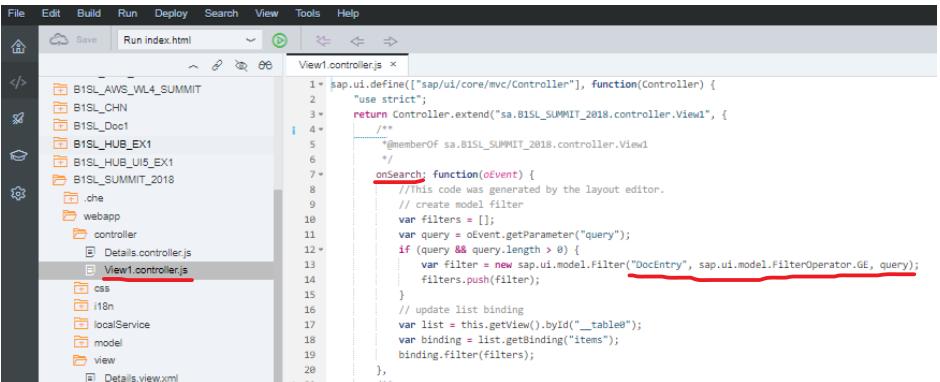
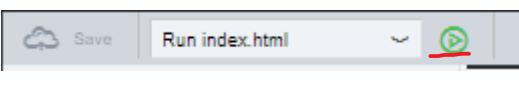
## Add a Search Field control to the sap.m.Table

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



| Explanation   | Screenshot  |
|---|---|
| <p>Go to the created <b>sap.m.Toolbar</b> -&gt; <b>content</b> element and <b>right click</b> to select the <b>Add</b> menu.</p>  | <p>The screenshot shows the SAP Studio interface with the file *View1.view.xml open. A context menu is displayed over the 'content' element of a toolbar. The 'Add' option is highlighted with a red underline. Other options include 'Convert to Fragment', 'Add Fragment', 'Cut', 'Copy', 'Paste', 'Paste Before', 'Paste After', 'Delete', and 'Delete'.</p> |
| <p>Enter <b>SearchField</b> to filter the controls.</p> <p><b>Click on the Search Field</b> proposed control.</p>   | <p>The screenshot shows the SAP Studio interface with the search field containing 'SearchField'. The results list shows 'Search Field (sap.m)' with a red underline.</p>  |
| <p>Select the <b>sap.m.SearchField</b> control in the Outline tab.</p> <p>Select the <b>Events</b> tab in the right side of the screen.</p> <p>On the <b>Search</b> event click on the  button and select <b>New Function</b> option.</p> | <p>The screenshot shows the SAP Studio interface with the outline tab selected. A sap.m.SearchField control is selected in the outline. On the right side, the events tab is selected. In the properties panel, under the search field section, the 'Search' event is selected, and the 'New Function' button is highlighted with a red underline.</p>          |



| Explanation  | Screenshot   |
|--|--|
| <p>Enter <b>onSearch</b> as function name that will be called when the Search button will be pressed.</p> <p>Press <b>OK</b>.</p> <p>Press <b>Save</b>.</p> <p>A new function with that name will be created in the View.Controller.js.</p>  |    |
| <p>Open the <b>View1.controller.js</b> file.</p> <p>Copy the code from <a href="https://github.com/B1SA/B1_SC_P_HandsOn/blob/master/snippets/View1.controller.js">https://github.com/B1SA/B1_SC_P_HandsOn/blob/master/snippets/View1.controller.js</a> into your <b>onSearch</b> 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 <b>Save</b>.</p> |   |
| <p>Run your application.</p> <p>Check that the SearchField filters the table with Orders having a DocEntry higher than the entered value.</p>  |  |

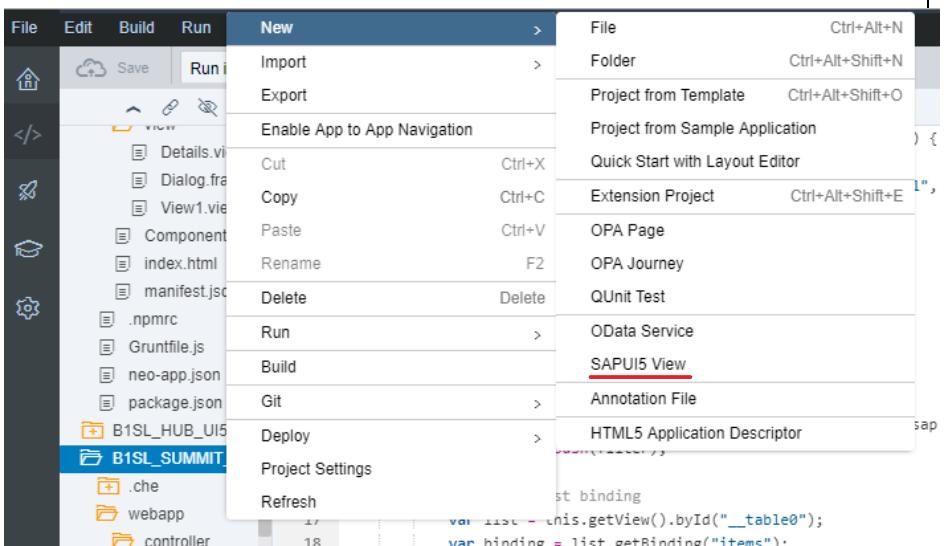
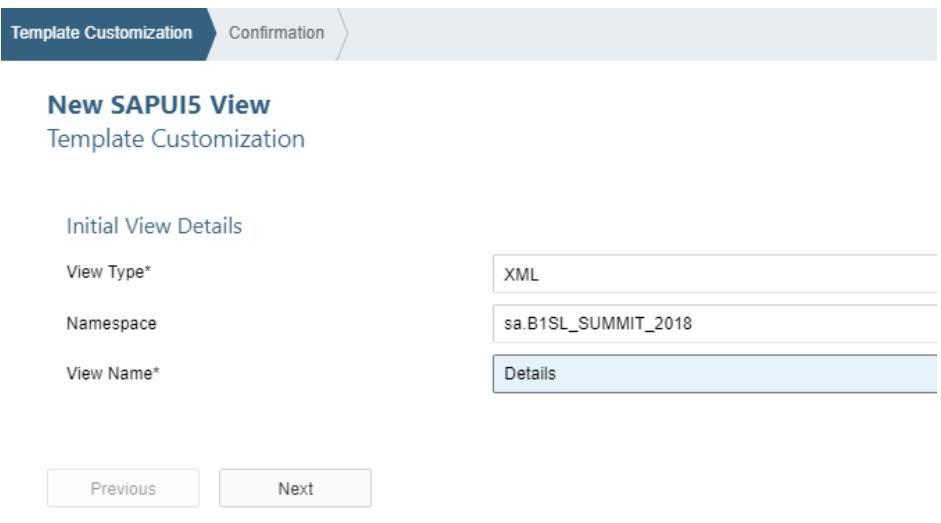
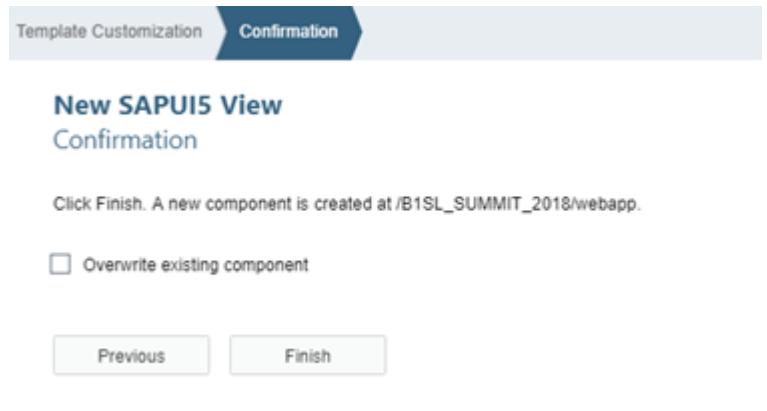


| Explanation | Screenshot |          |           |
|-------------|------------|----------|-----------|
|             |            |          |           |
|             | DocEntry   | CardCode | DocTotal  |
|             | 1,200      | 1103914  | 5,000\$   |
|             | 1,201      | 1103914  | 5,000\$   |
|             | 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\$ |



## vi. Add a second view called Details

Create a Details view.

| Explanation   | Screenshot   |
|---|--|
| <p>Right click on your application and select <b>New</b> -&gt; <b>SAPUI5 View</b>.</p>  |    |
| <p>Keep the default values for View Type and Namespace.<br/>Enter the name of the new View: <b>Details</b>.<br/><br/>Press <b>Next</b>.</p> |  |
| <p>Press Finish to confirm the creation of the <b>Details</b> view.</p>   |  |

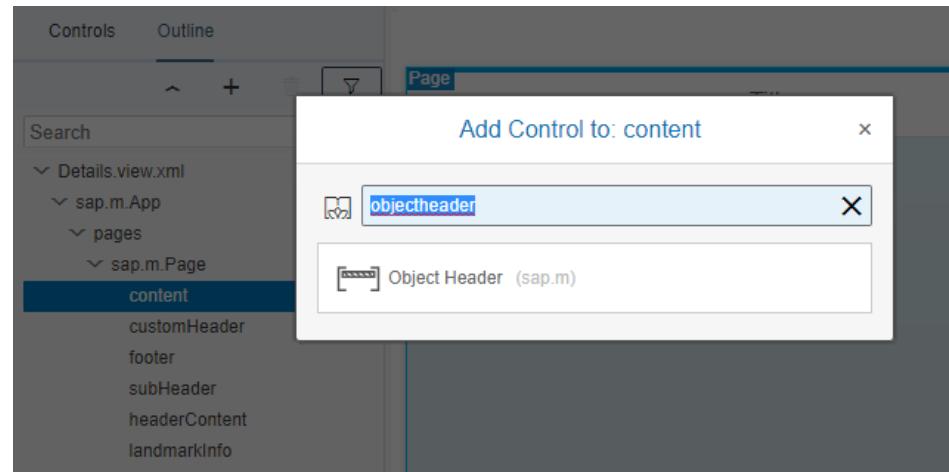
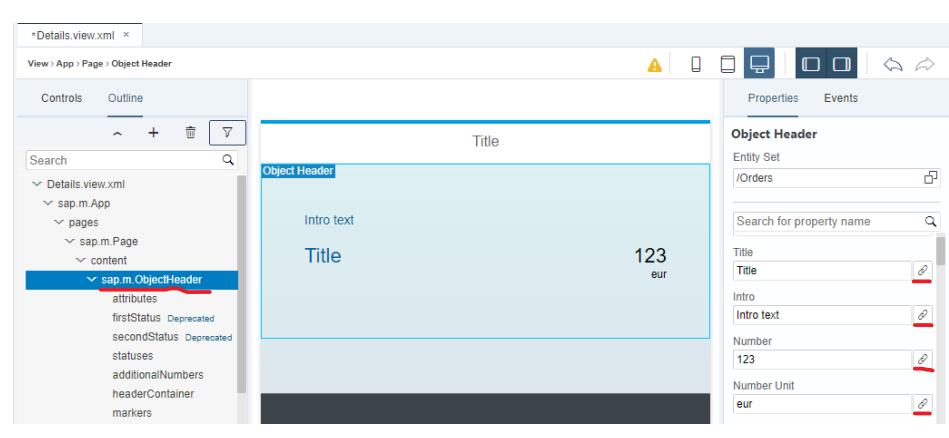
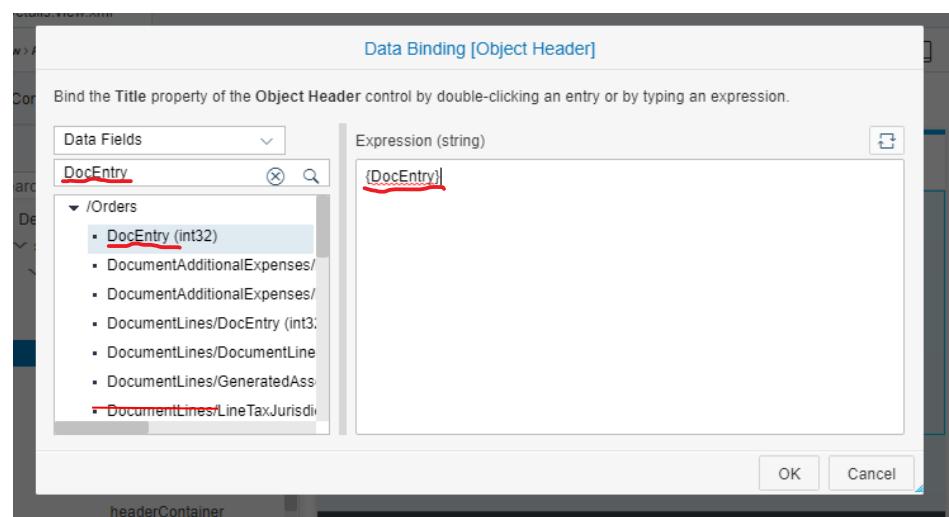


| Explanation   | Screenshot  |
|---|---|
| <p>Two files are created:</p> <ul style="list-style-type: none"><li>- Details.view.xml</li><li>- Details.controller.js.</li></ul> | A screenshot of the SAP Studio file tree. The root folder is 'B1SL_SUMMIT_2018'. It contains 'che', 'webapp', 'controller' (which has 'Details.controller.js' and 'View1.controller.js'), 'css', 'i18n', 'localService', 'model', and 'view'. Inside 'view', there are 'Details.view.xml' (highlighted with a blue selection bar) and 'View1.view.xml'. |

### Add an Object Header control.

| Explanation   | Screenshot   |
|---|--|
| <p>Open the <b>Details.view.xml</b> file with the Layout editor.<br/>Go to the <b>Outline</b> tab.<br/>Right click on <b>Details.view.xml -&gt; sap.m.App -&gt; sap.m.Page -&gt; content</b> and select <b>Add</b>.</p> | A screenshot of the SAP Studio Layout editor. The window title is 'Details.view.xml'. The 'Outline' tab is selected. In the outline tree, under 'sap.m.App > pages > sap.m.Page > content', the 'content' node is highlighted with a blue selection bar. A context menu is open over this node, with the 'Add' option highlighted. Other options in the menu include 'Convert to Fragment', 'Add Fragment', 'Cut (Ctrl+X)', 'Copy (Ctrl+C)', 'Paste (Ctrl+V)', 'Paste Before', 'Paste After', and 'Delete' (with a secondary 'Delete' option at the bottom). |

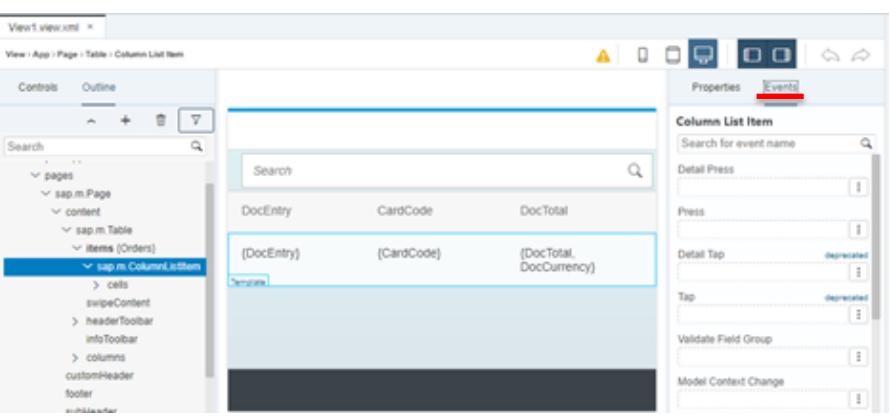
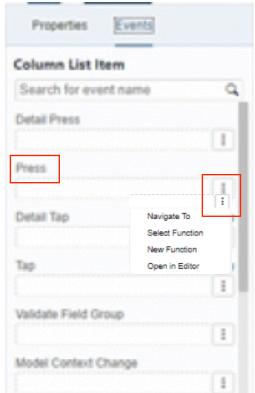
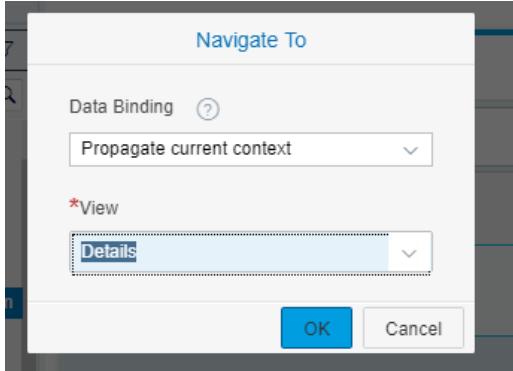


| Explanation   | Screenshot   |
|---|--|
| <p>Enter <b>objectheader</b> to search for the Object Header control.</p> <p>Click on the <b>Object Header</b> proposed control.</p>  |    |
| <p>Select the created <b>sap.m.ObjectHeader</b> element in the Outline tree.</p> <p>Go to the <b>Properties tab</b> in the right side of the screen.</p> <p>Click one by one on the <b>Data Binding icon</b> for the properties:</p> <ul style="list-style-type: none"><li>- Title</li><li>- Intro</li><li>- Number</li><li>- Number Unit</li></ul>   |   |
| <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"><li>- Title -&gt; CardCode</li><li>- Intro -&gt; DocEntry</li><li>- Number -&gt; DocTotal</li><li>- Number Unit -&gt; DocCurrency</li></ul> <p>and double click on the proposed list to get it into the Expression string.</p> |  |

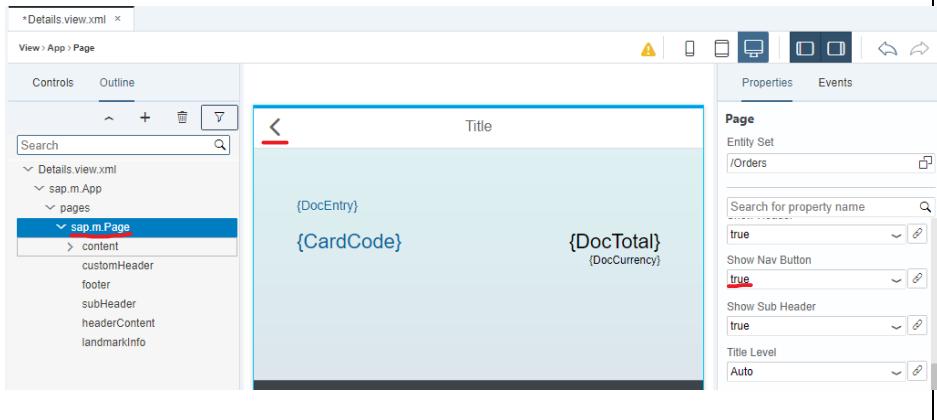
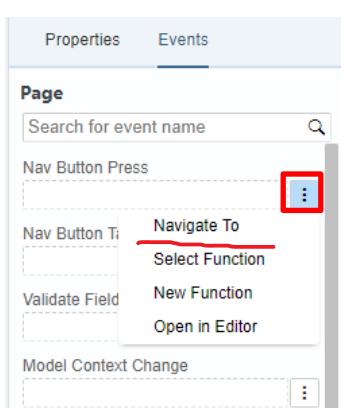
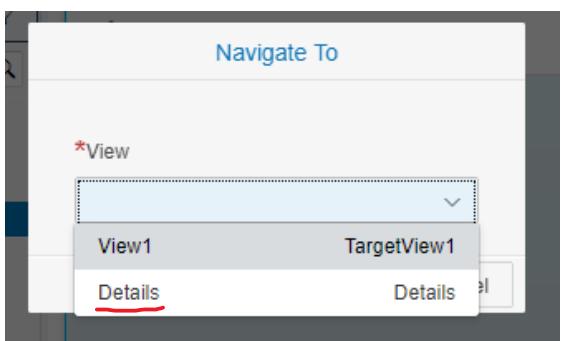
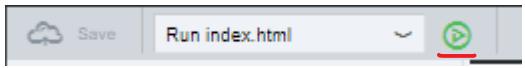


| Explanation   | Screenshot |
|---|------------|
| <p>Note: <b>Do not select BusinessPartners/CardCode</b> for the CardCode property.</p> <p>Press <b>Save</b> button.</p> |            |
| <p>The sap.m.ObjectHeader should look like this at this point.</p>  |            |

## vii. 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 <b>View1.view.xml</b> file with Layout Editor.</p>  |  |
| <p>Select <b>Outline</b> tab then <b>sap.m.ColumnsList Item</b>. Select the <b>Events</b> tab.</p>  |  |
| <p>Click on the  icon.<br/>Select <b>Navigate To</b> menu.</p>   |    |
| <p>Select <b>Propagate current context</b> on the Data Binding combo box.<br/>Select <b>Details</b> on the View combo box.<br/>Press <b>OK</b>.<br/>Press <b>Save</b> to save the View1.view.xml changes.<br/>The selected Order data from the View1 will be bound to the Details view.</p> |  |



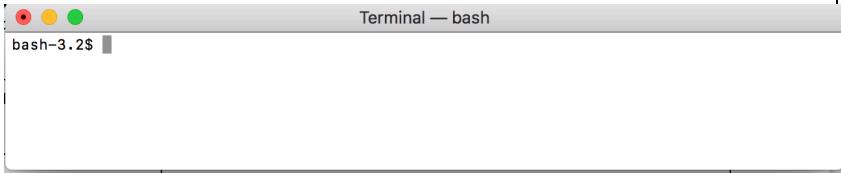
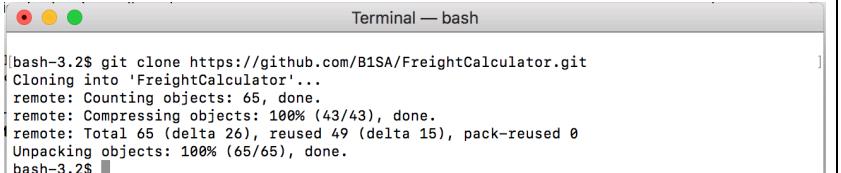
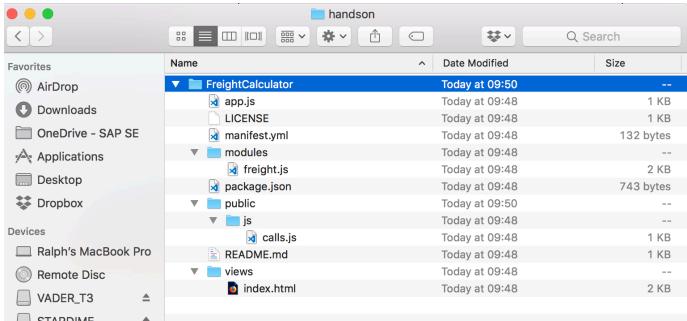
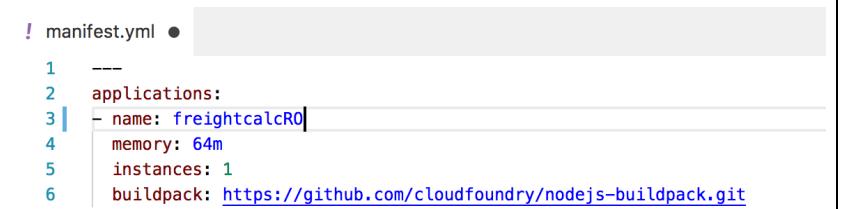
| Explanation   | Screenshot   |
|---|--|
| <p>From our Details view we want to navigate back to our main View1 when the user press on the Navigate back button.</p>  |    |
| <p>Open the <b>Details.view.xml</b> file with the Layout Editor.</p>  |  |
| <p>Go to the <b>Outline</b> tab and select <b>sap.m.Page</b>.</p>   |  |
| <p>On the <b>Properties</b> tab scroll down to see the <b>Show Nav Button</b> property and change its value to <b>true</b>.</p>   |  |
| <p>Go to the <b>Events</b> tab.</p>   |    |
| <p>On the <b>Nav Button Press</b> event click on the icon .</p> <p>Select the option <b>Navigate To</b>.</p> |  |
| <p>Select <b>View1</b> 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 <b>Save</b> 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

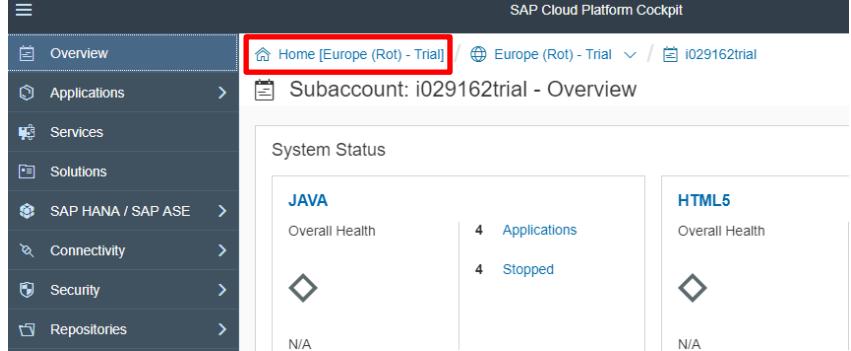
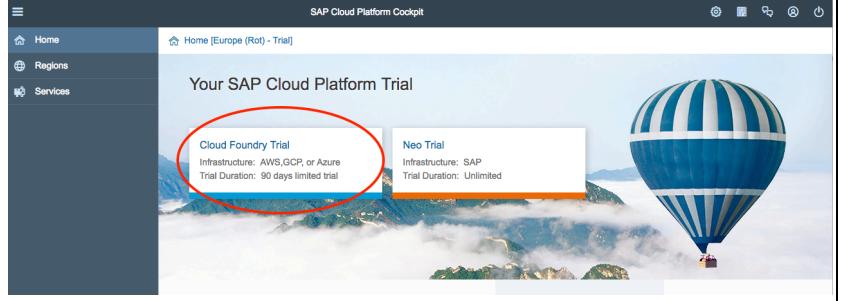
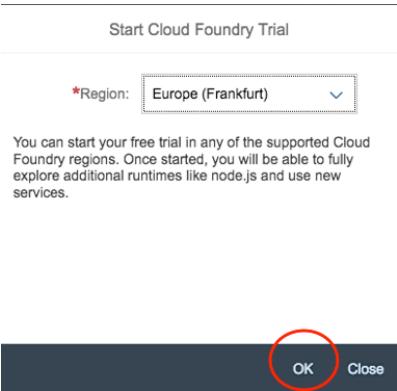
In this step we are going to implement the backend of our application. It will contain a simple business logic to calculate freight costs from different providers and consume 3<sup>rd</sup> Party services. The application is written in NodeJS and the source code is available on GitHub.

| Explanation   | Screenshot  |           |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
|---|---|-----------|---------------|------|-------------------|----------------|----|--------|----------------|------|---------|----------------|------|--------------|----------------|-----------|---------|----------------|----|------------|----------------|------|--------------|----------------|-----------|--------|----------------|----|----|----------------|----|----------|----------------|------|-----------|----------------|------|-------|----------------|----|------------|----------------|------|
| Once <b>git</b> is installed (according to the pre requisites), open your system <b>terminal</b> (cmd, bash..)  |   |           |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| <b>Navigate</b> to a specific folder where you will download a sample application.                              |   |           |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| <b>Pay attention</b> what folder is it, we will access it later   |   |           |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| Execute the following command to clone our solution backend repository:   |  <pre>bash-3.2\$ git clone https://github.com/B1SA/FreightCalculator.git Cloning into 'FreightCalculator'... remote: Counting objects: 65, done. remote: Compressing objects: 100% (43/43), done. remote: Total 65 (delta 26), reused 49 (delta 15), pack-reused 0 Unpacking objects: 100% (65/65), done. bash-3.2\$</pre>  |           |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| You can see the app code on your file explorer:   |  <table border="1"><thead><tr><th>Name</th><th>Date Modified</th><th>Size</th></tr></thead><tbody><tr><td>FreightCalculator</td><td>Today at 09:50</td><td>--</td></tr><tr><td>  app.js</td><td>Today at 09:48</td><td>1 KB</td></tr><tr><td>  LICENSE</td><td>Today at 09:48</td><td>1 KB</td></tr><tr><td>  manifest.yml</td><td>Today at 09:48</td><td>132 bytes</td></tr><tr><td>  modules</td><td>Today at 09:48</td><td>--</td></tr><tr><td>    freight.js</td><td>Today at 09:48</td><td>2 KB</td></tr><tr><td>  package.json</td><td>Today at 09:48</td><td>743 bytes</td></tr><tr><td>  public</td><td>Today at 09:50</td><td>--</td></tr><tr><td>    js</td><td>Today at 09:48</td><td>--</td></tr><tr><td>      calls.js</td><td>Today at 09:48</td><td>1 KB</td></tr><tr><td>      README.md</td><td>Today at 09:48</td><td>1 KB</td></tr><tr><td>    views</td><td>Today at 09:48</td><td>--</td></tr><tr><td>      index.html</td><td>Today at 09:48</td><td>2 KB</td></tr></tbody></table> | Name      | Date Modified | Size | FreightCalculator | Today at 09:50 | -- | app.js | Today at 09:48 | 1 KB | LICENSE | Today at 09:48 | 1 KB | manifest.yml | Today at 09:48 | 132 bytes | modules | Today at 09:48 | -- | freight.js | Today at 09:48 | 2 KB | package.json | Today at 09:48 | 743 bytes | public | Today at 09:50 | -- | js | Today at 09:48 | -- | calls.js | Today at 09:48 | 1 KB | README.md | Today at 09:48 | 1 KB | views | Today at 09:48 | -- | index.html | Today at 09:48 | 2 KB |
| Name  | Date Modified   | Size      |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| FreightCalculator   | Today at 09:50  | --        |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| app.js  | Today at 09:48  | 1 KB      |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| LICENSE   | Today at 09:48  | 1 KB      |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| manifest.yml  | Today at 09:48  | 132 bytes |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| modules   | Today at 09:48  | --        |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| freight.js  | Today at 09:48  | 2 KB      |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| package.json  | Today at 09:48  | 743 bytes |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| public  | Today at 09:50  | --        |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| js  | Today at 09:48  | --        |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| calls.js  | Today at 09:48  | 1 KB      |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| README.md   | Today at 09:48  | 1 KB      |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| views   | Today at 09:48  | --        |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| index.html  | Today at 09:48  | 2 KB      |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |
| Edit the File <b>manifest.yml</b> and set a unique name for your application.<br>E.g FreightCalc<Your Initials> |  <pre>! manifest.yml • 1  --- 2  applications: 3  - name: freightcalcR0 4    memory: 64m 5    instances: 1 6    buildpack: https://github.com/cloudfoundry/nodejs-buildpack.git</pre>   |           |               |      |                   |                |    |        |                |      |         |                |      |              |                |           |         |                |    |            |                |      |              |                |           |        |                |    |    |                |    |          |                |      |           |                |      |       |                |    |            |                |      |

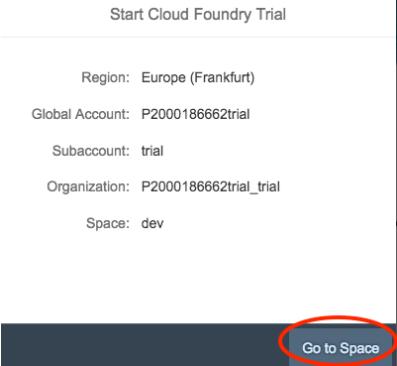
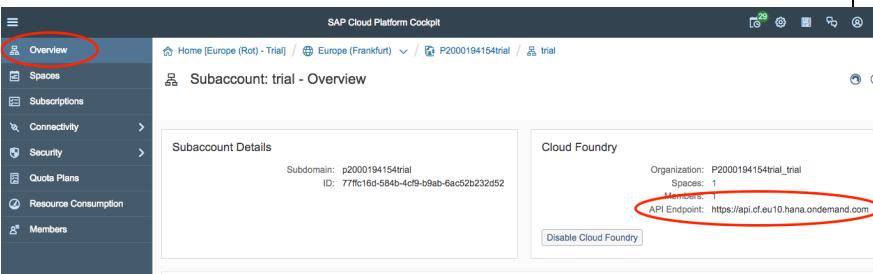
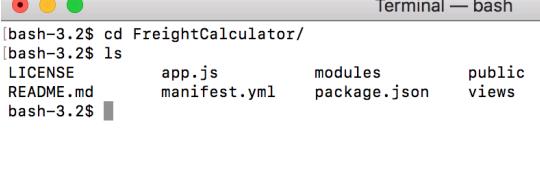
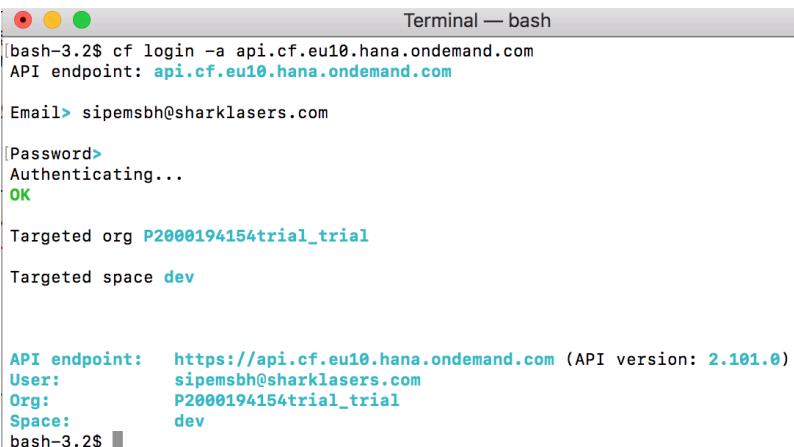


### STEP 3: DEPLOY THE NODEJS APP INTO SAP CLOUD FOUNDRY

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 <b>HOME</b> 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 <b>Cloud Foundry Trial</b></p>    |   |
| Select the Trial Region that most suits you. And Click on <b>OK</b>  |  |

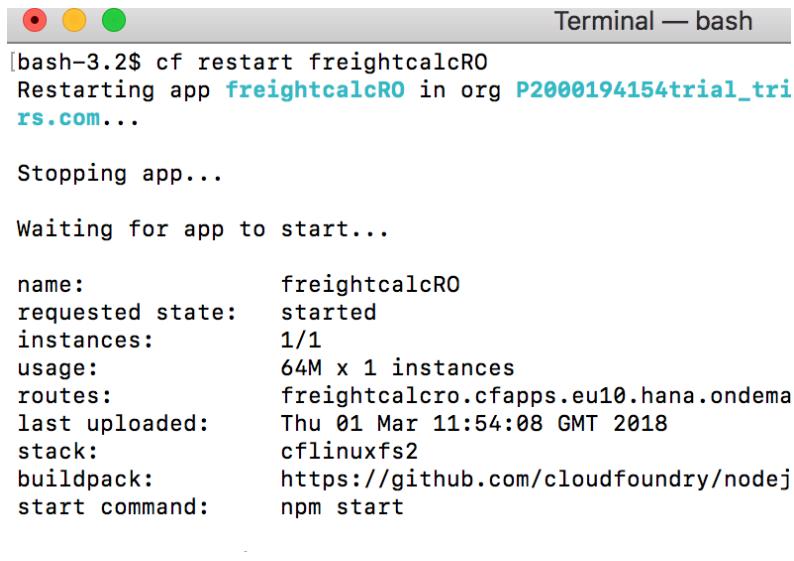
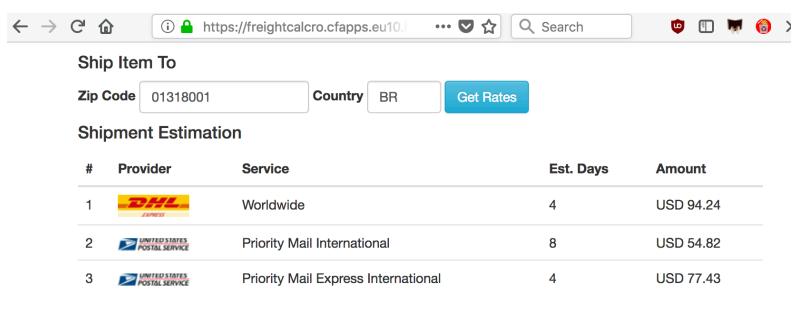


| Explanation   | Screenshot   |
|---|--|
| <p>This will initialize your Cloud Foundry Trial and create a DEV space (where the solutions will be deployed). Go Ahead and access your space.</p>   |    |
| <p>Your space is created and ready to deploy your app. We now need your environment endpoint to be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



| Explanation   | Screenshot  |
|---|---|
| <p>Now all you have to do is push your app to the SAP Cloud Platform Cloud Foundry by using the <b>command</b>:</p> <pre>cf push</pre>  | <pre>Terminal — cf push bash-3.2\$ cf push Using manifest file /Users/Ralph/OneDrive - SAP SE/handson/FreightCalculator/manifest.yml  Creating app freightcalcRO in org P2000194154trial_trial / space dev as sipemsbh@sharklasers.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/FreightCalculator Uploading 5.3K, 11 files Done uploading OK  Starting app freightcalcRO in org P2000194154trial_trial / space dev as sipemsbh@sharklasers.com...</pre> |
| <p>This process will read the <b>manifest.yml</b> 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      details #0  running   2018-03-01 11:54:39 AM  0.0%   44.7M of 64M  55.3M of 1G bash-3.2\$</pre>   |
| This application makes use of a 3 <sup>rd</sup> Party service called Shippo to calculate shipping costs. In order to consume their services, we need an API KEY.  |   |
| 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 <a href="https://goshippo.com/">https://goshippo.com/</a>   |   |
| Best practices of cloud development (see <a href="https://12factor.net/config">https://12factor.net/config</a> ) 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 |   |
| Back to the terminal, set the Environment Variable <b>SHIPPO_KEY</b> to a valid API Key with the following command  | <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 freightcalcRO in org P2000194154trial_trial / space dev as sipemsbh@sharklasers.com... OK TIP: Use 'cf restart freightcalcRO' to ensure your env variable changes take effect bash: 2A: command not found bash-3.2\$</pre>  |



| Explanation   | Screenshot  |                                     |           |           |           |        |   |  |           |   |           |   |  |                             |   |           |   |  |                                     |   |           |
|---|---|-------------------------------------|-----------|-----------|-----------|--------|---|--|-----------|---|-----------|---|--|-----------------------------|---|-----------|---|--|-------------------------------------|---|-----------|
| Up next, restart your app<br><br>cf restart <appname> |  <pre>[bash-3.2\$ cf restart freightcalcRO Restarting app <b>freightcalcRO</b> in org <b>P2000194154trial_tris.com...</b>  Stopping app...  Waiting for app to start...  name:          freightcalcRO requested state:  started instances:      1/1 usage:          64M x 1 instances routes:          freightcalcro.cfapps.eu10.hana.ondem last uploaded:  Thu 01 Mar 11:54:08 GMT 2018 stack:          cflinuxfs2 buildpack:      https://github.com/cloudfoundry/nodejs start command:  npm start</pre>  |                                     |           |           |           |        |   |  |           |   |           |   |  |                             |   |           |   |  |                                     |   |           |
| You can test the app with a test page on the app URL  |  <p>Ship Item To<br/>Zip Code <input type="text" value="01318001"/> Country <input type="text" value="BR"/> Get Rates</p> <p>Shipment Estimation</p> <table border="1"><thead><tr><th>#</th><th>Provider</th><th>Service</th><th>Est. Days</th><th>Amount</th></tr></thead><tbody><tr><td>1</td><td></td><td>Worldwide</td><td>4</td><td>USD 94.24</td></tr><tr><td>2</td><td></td><td>Priority Mail International</td><td>8</td><td>USD 54.82</td></tr><tr><td>3</td><td></td><td>Priority Mail Express International</td><td>4</td><td>USD 77.43</td></tr></tbody></table> | #                                   | Provider  | Service   | Est. Days | Amount | 1 |  | Worldwide | 4 | USD 94.24 | 2 |  | Priority Mail International | 8 | USD 54.82 | 3 |  | Priority Mail Express International | 4 | USD 77.43 |
| #   | Provider  | Service                             | Est. Days | Amount    |           |        |   |  |           |   |           |   |  |                             |   |           |   |  |                                     |   |           |
| 1   |   | Worldwide                           | 4         | USD 94.24 |           |        |   |  |           |   |           |   |  |                             |   |           |   |  |                                     |   |           |
| 2   |   | Priority Mail International         | 8         | USD 54.82 |           |        |   |  |           |   |           |   |  |                             |   |           |   |  |                                     |   |           |
| 3   |   | Priority Mail Express International | 4         | USD 77.43 |           |        |   |  |           |   |           |   |  |                             |   |           |   |  |                                     |   |           |

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

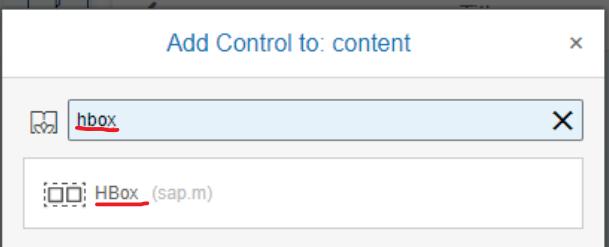
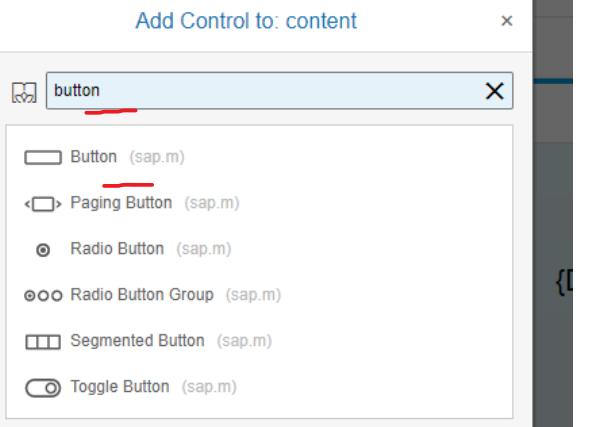
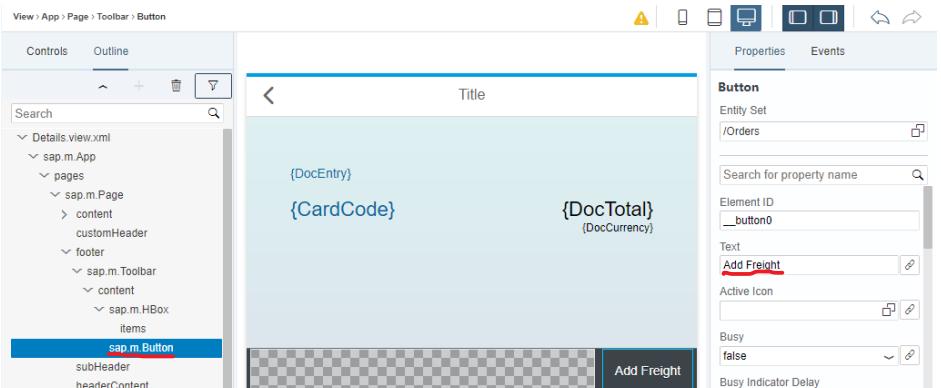


## STEP 4: INTEGRATE THE NODEJS APP INTO THE SAP FIORI APP

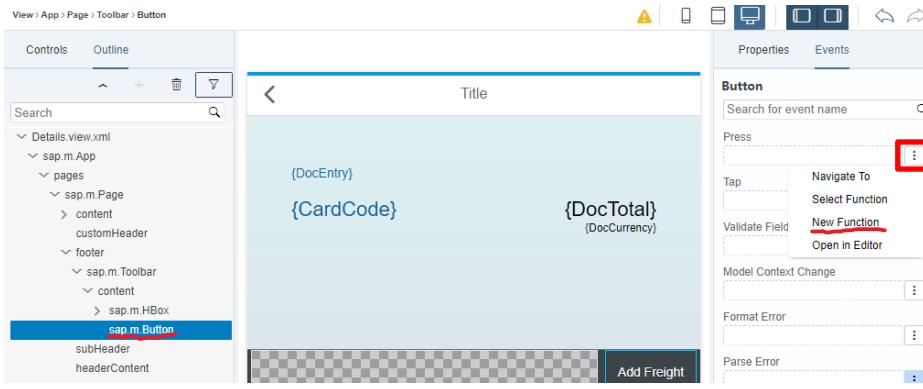
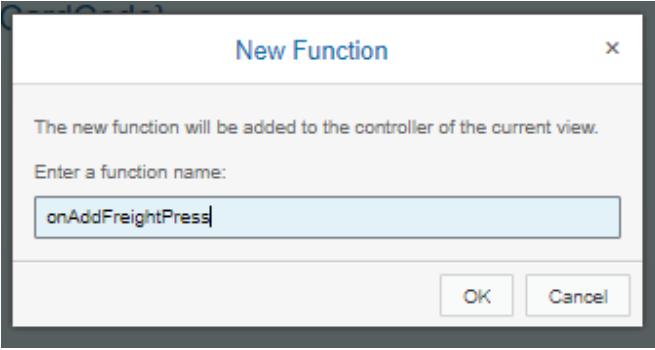
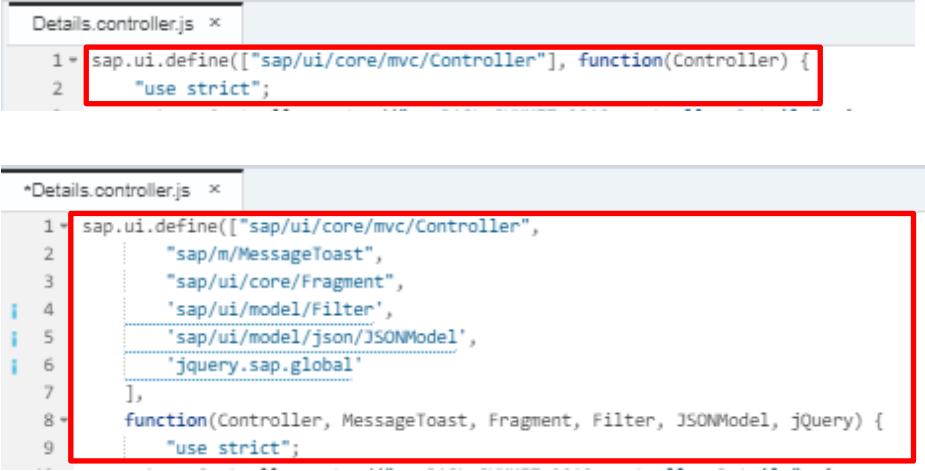
### i. Add a Button “Add Freight” to the Details view.

| Explanation   | Screenshot  |
|---|---|
| <p>Open the <b>Details.view.xml</b> file with the Layout Editor.</p> <p>On the <b>Outline</b> tab right click on the <b>sap.m.App</b> -&gt; <b>pages</b> -&gt; <b>sap.m.Page</b> -&gt; <b>footer</b> element and select <b>Add</b>.</p> | <p>The screenshot shows the SAP Fiori Layout Editor interface. The title bar says 'Details.view.xml'. The top navigation bar has 'View &gt; App &gt; Page'. Below it, there are two tabs: 'Controls' and 'Outline', with 'Outline' being the active tab. On the left, there's a tree view of the XML structure: 'Details.view.xml' &gt; 'sap.m.App' &gt; 'pages' &gt; 'sap.m.Page' &gt; 'content' &gt; 'customHeader' &gt; 'footer'. A context menu is open at the 'footer' node, with 'Add' highlighted in red. Other options in the menu include 'Convert to Fragment', 'Add Fragment', 'Cut (Ctrl+X)', 'Copy (Ctrl+C)', 'Paste (Ctrl+V)', 'Paste Before', 'Paste After', 'Delete', and 'Delete' again.</p> |
| Select the <b>Toolbar</b> control proposed.   | <p>The screenshot shows the SAP Fiori Layout Editor interface with the 'Controls' tab selected. A dialog box titled 'Add Control to: footer' is open. Inside the dialog, there's a search bar and a list of controls. The 'Toolbar (sap.m)' control is listed and highlighted with a red underline.</p>   |



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

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

| Explanation  | Screenshot   |
|--|--|
| <p>Select Outline tab, <b>sap.m.Button</b>.</p> <p>Open Events tab.</p> <p>Click on the <b>Press</b> event icon and select <b>New Function</b>.</p>  |    |
| <p>Enter <b>onAddFreightPress</b> 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 <b>Details.controller.js</b> file and scroll down to the bottom of the file.</p> <p>A new empty function called <b>onAddFreightPress</b> has been automatically created.</p>   | <pre data-bbox="509 1230 1108 1410">     /**      * @memberOf sa.B1SL_SUMMIT_2018.controller.Details      */     onAddFreightPress: function(oEvent) {         //This code was generated by the layout editor.     }   </pre>  |
| <p>Before implementing this function lets add some definitions to the <b>Details.controller.js</b> file.</p> <p>Open the <b>Details.controller.js</b> 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 <a href="https://github.com/B1SA/B1 SCP HandsOn/blob/master/snippets/Details.controller.js">https://github.com/B1SA/B1 SCP HandsOn/blob/master/snippets/Details.controller.js</a> as</p> |  <pre data-bbox="509 1522 1362 1596"> 1 = sap.ui.define(["sap/ui/core/mvc/Controller"], function(Controller) { 2   "use strict"; }   </pre><br><pre data-bbox="509 1664 1378 1971"> 1 = sap.ui.define([ 2   "sap/ui/core/mvc/Controller", 3   "sap/m/MessageToast", 4   "sap/ui/core/Fragment", 5   "sap/ui/model/Filter", 6   "sap/ui/model/json/JSONModel", 7   "jquery.sap.global" 8 ], 9   function(Controller, MessageToast, Fragment, Filter, JSONModel, jQuery) { 10   "use strict"; }   </pre> |



| Explanation  | Screenshot   |
|--|--|
| shown in the second screen.  |  |
| <p>Let now implement the function <b>onAddFreightPress</b>.</p> <p>When the user clicks on the AddFreight button we call the server side NodeJS to get freight options.</p> <p><b>Replace</b> the URL to the freight calculator by <b>your backend application URL</b> (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 <a href="https://github.com/B1SA/B1 SCP HandsOn/blob/master/snippets/Details.controller.js_onAddFreight.js">https://github.com/B1SA/B1 SCP HandsOn/blob/master/snippets/Details.controller.js_onAddFreight.js</a>.<br/>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 <b>openFreightDialog</b>. 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><b>Edit</b> this function and <b>change</b> the pointer to the <b>xmlfragment</b> 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>Details.controller.js x Details.view.xml x 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 |
|---|------------|
| <p>"sa.B1SL_SUMMIT_2018.view.Dialog".</p>   |            |
| <p>Let's add the Fragment required to show the Dialog.</p> <p>Right click on <b>view folder</b> and select <b>New-&gt;File</b> menu.</p>  |            |
| <p>Give the name <b>Dialog.fragment.xml</b> to the new file.</p> <p>Press <b>OK</b>.</p>  |            |
| <p>Download the <b>Dialog.fragment.xml</b> file from <a href="https://github.com/B1SA/B1 SCP HandsOn/blob/master/snippets/Dialog.fragment.xml">https://github.com/B1SA/B1 SCP HandsOn/blob/master/snippets/Dialog.fragment.xml</a>.</p> <p>Copy the code inside your <b>Dialog.fragment.xml</b> file.</p> <p>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:</p> <ul style="list-style-type: none"><li>- search</li><li>- confirm</li><li>- cancel</li></ul> <p>We will implement those functions in our <b>Details.controller.js</b> file.</p> |            |



| Explanation  | Screenshot  |
|--|---|
| <p>Open the <b>Details.controller.js</b> file.</p>   |   |
| <p>The <b>handleFreightDialogSearch</b> (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>                                    | <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]); },</pre>   |
| <p>The <b>handleFreightDialogConfirm</b> function is called when the user selects one of the freight options proposed by the Dialog. This function calls the function <code>UpdateSO</code> to update the Order via Service Layer API.</p> | <pre>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 + "."); },</pre> |
| <p>The <b>handleFreightDialogClose</b> function is called when the user closes the Dialog without selecting a freight option. A <code>MessageToast</code> will show to the user the message "No Provider selected."</p>                    |   |



| Explanation   | Screenshot   |          |          |          |       |        |         |       |        |         |       |        |         |
|---|--|----------|----------|----------|-------|--------|---------|-------|--------|---------|-------|--------|---------|
| <p>The <code>updateSO</code> 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                 { 229                     "ExpenseCode": 1, 230                     "LineTotal": providerDetails.amount, 231                     "Remarks": providerDetails.name 232                 } 233             ]; 234 235             \$.ajax({ 236                 url: "/apihub_sandbox/sapb1/b1s/v2/Orders(" + orderDetails.DocEntry + ")", 237                 type: "PATCH", 238                 data: JSON.stringify(body), 239                 contentType: "application/json", 240                 success: function(data) { 241                     oThis.soUpdateSuccess(data); 242                 }, 243                 error: function(e) { 244                     oThis.soUpdateError(e); 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.  | <table border="1"><thead><tr><th data-bbox="477 1439 573 1473">DocEntry</th><th data-bbox="573 1439 890 1473">CardCode</th><th data-bbox="890 1439 1192 1473">DocTotal</th></tr></thead><tbody><tr><td data-bbox="477 1473 573 1596">1,211</td><td data-bbox="573 1473 890 1596">C20000</td><td data-bbox="890 1473 1192 1596">2,067\$</td></tr><tr><td data-bbox="477 1596 573 1720">1,213</td><td data-bbox="573 1596 890 1720">C20000</td><td data-bbox="890 1596 1192 1720">2,067\$</td></tr><tr><td data-bbox="477 1720 573 1799">1,215</td><td data-bbox="573 1720 890 1799">C20000</td><td data-bbox="890 1720 1192 1799">2,067\$</td></tr></tbody></table>   | DocEntry | CardCode | DocTotal | 1,211 | C20000 | 2,067\$ | 1,213 | C20000 | 2,067\$ | 1,215 | C20000 | 2,067\$ |
| DocEntry  | CardCode   | DocTotal |          |          |       |        |         |       |        |         |       |        |         |
| 1,211   | C20000   | 2,067\$  |          |          |       |        |         |       |        |         |       |        |         |
| 1,213   | C20000   | 2,067\$  |          |          |       |        |         |       |        |         |       |        |         |
| 1,215   | C20000   | 2,067\$  |          |          |       |        |         |       |        |         |       |        |         |
| Filter the Orders table with <b>DocEntry higher than 1211</b> .<br><br>Please follow directions from instructors so you only update a specific Order DocEntry to avoid conflicts between hands-on participants.   |  |          |          |          |       |        |         |       |        |         |       |        |         |



| Explanation   | Screenshot   |
|---|--|
| Check the Order DocTotal before adding the freight costs. | <p>The screenshot shows a mobile application interface. At the top, there is a navigation bar with a back arrow icon and the word "Title". Below this, the order details are displayed: "1,210" and "C20000" on the left, and "2,067 \$" on the right. A dark blue button at the bottom right is labeled "Add Freight".</p>  |
| Select one of the providers.                              | <p>The screenshot shows a modal dialog titled "Select Provider". It contains a search bar with a magnifying glass icon. Below it, there are two rows of provider information. The first row shows "USPS" and "Priority Mail Express" with "2 Days". The second row shows "USPS" and "Priority Mail" with "2 Days". Both rows also mention an "Amount: 55.12 USD" and "7.70 USD" respectively. A "Cancel" button is at the bottom right of the modal.</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> | <p>The screenshot shows the SAP Business One Order screen. At the top, there is a navigation bar with a back arrow and a title field. Below the title, the document number 'C20000' is displayed. To the right of the document number, the 'DocTotal' value '1,210' is shown above the 'Add Freight' button. Further to the right, the total amount '2,074.7' is displayed with a '\$' sign below it. A success message 'Order updated successfully!' is visible at the bottom of the screen.</p> |

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

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