


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 Build prototype connecting to B1
- Step 2: Import the Build prototype into a SCP WebIDE Fiori application and connect to your real B1 backend
- Step 3: Clone an existing NodeJS application
- Step 4: Deploy the server side NodeJS application to the Cloud Foundry environment
- Step 5: Modify the SAP Fiori app to consume the server side NodeJS application
- Step 6: Add a new service to the NodeJS application and consume it from SAP Fiori
- Step 7: Call the new NodeJS service from the SAP Fiori app

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 the 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

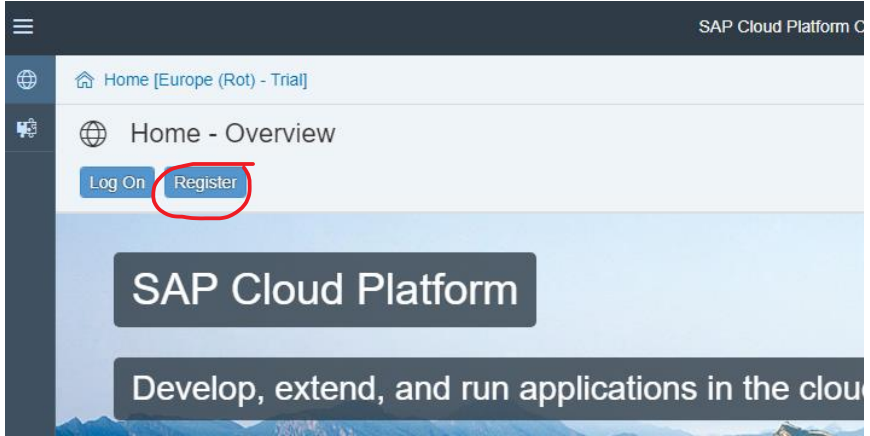
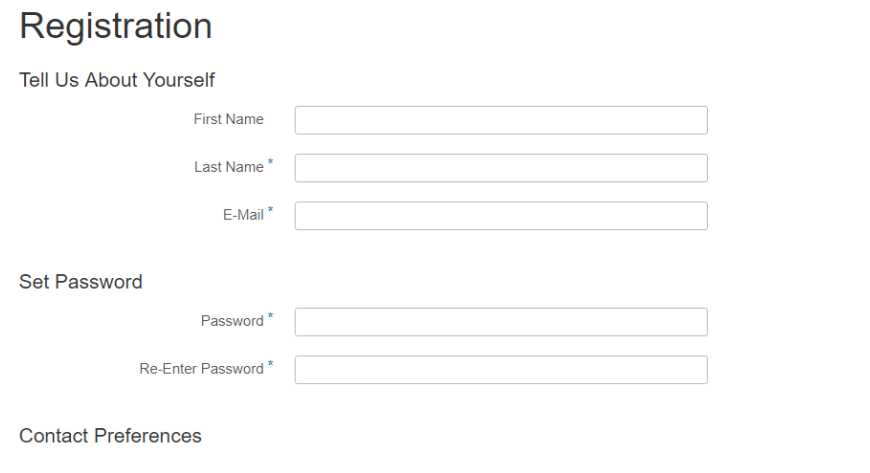
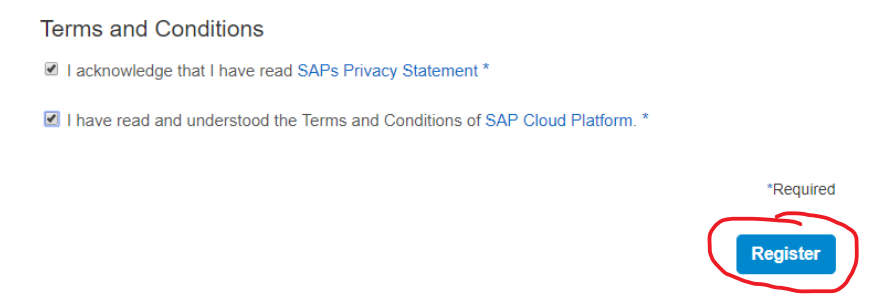
	Mac OS X 64 bit	Windows 64 bit	Linux 64 bit
Installers	pkg	zip	rpm / deb
Binaries	tgz	zip	tgz

ii. Create a SAP Cloud platform Neo 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.

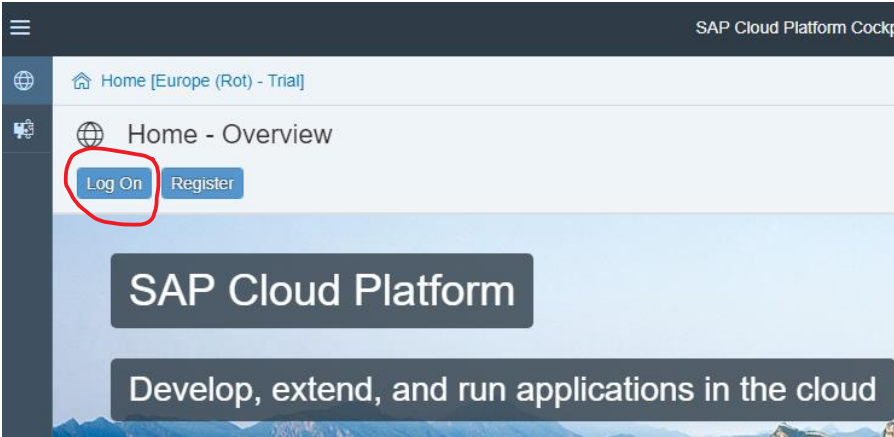
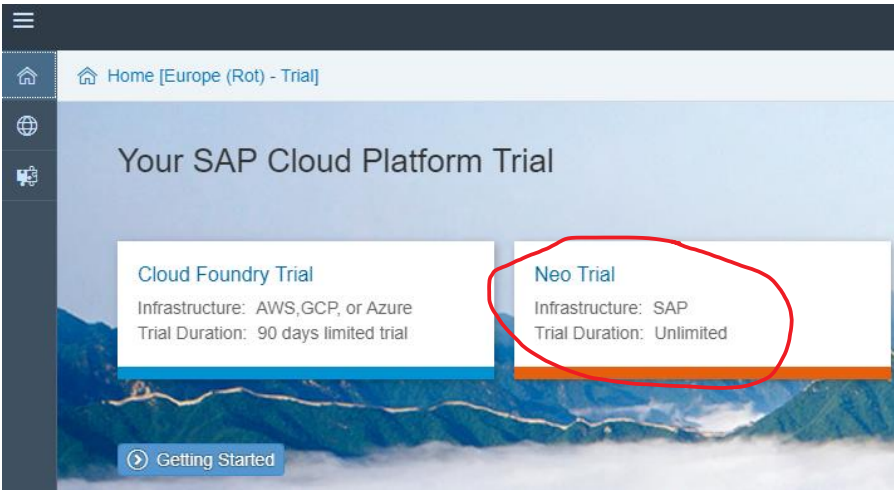
To create a trial SAP Cloud Platform account, go to the following link:

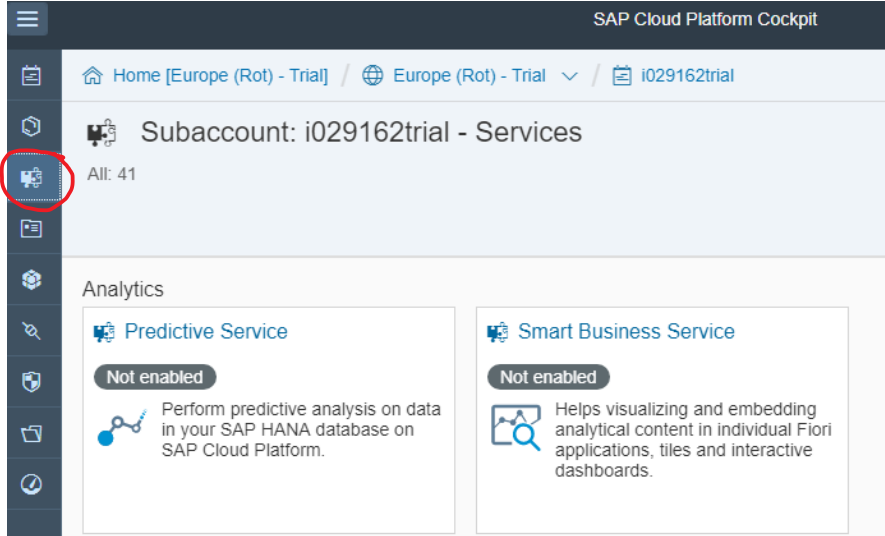
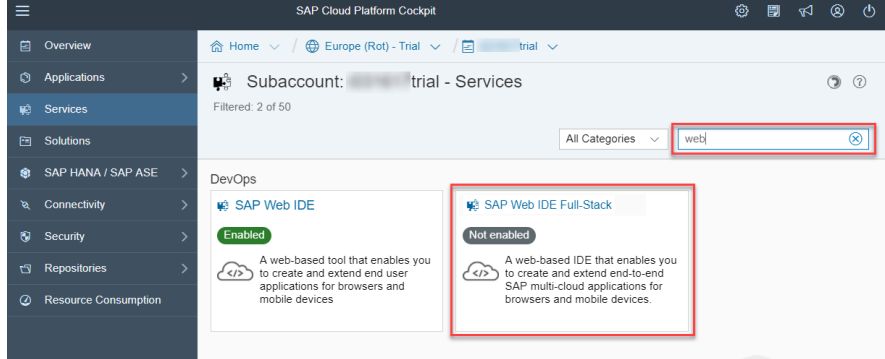
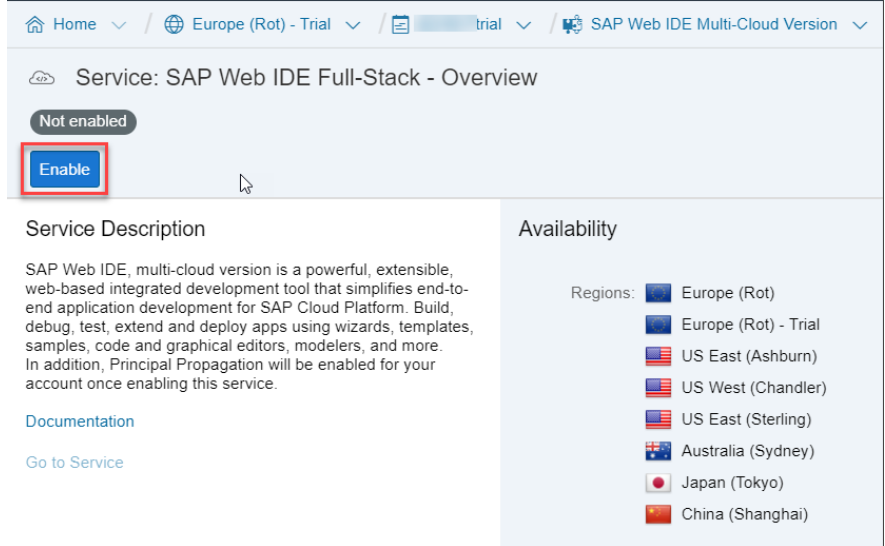
Explanation	Screenshot
<p>To create a trial SAP Cloud Platform account, go to the following link:</p> <p>https://account.hanatrial.ondemand.com</p> <p>Press the Register button</p>	
<p>Enter all your details</p>	
<p>Accept the terms and conditions by checking both check boxes and press "Register".</p>	

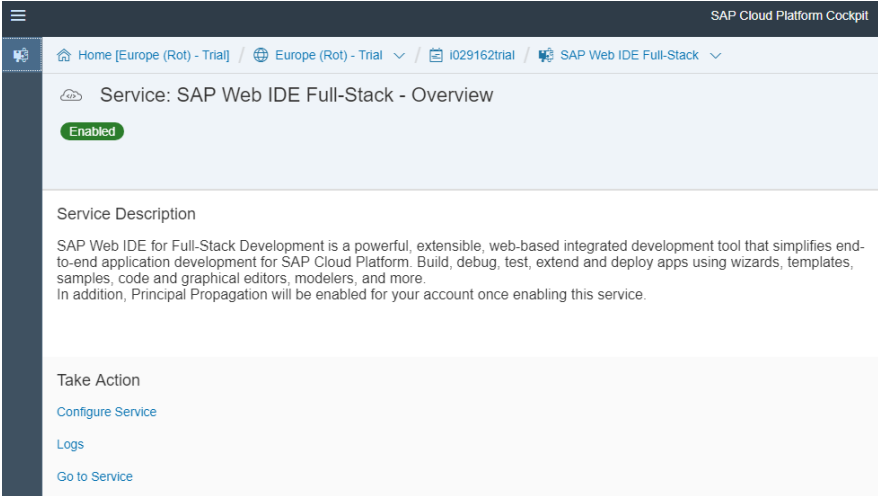
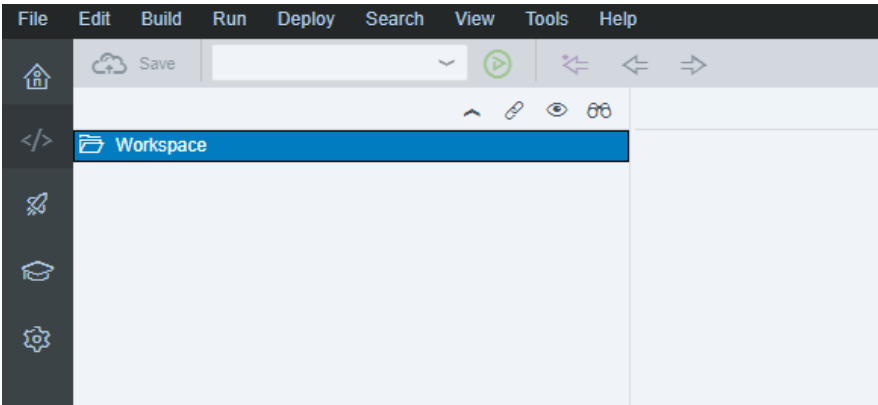
iii. Activate Web IDE Full Stack service

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.

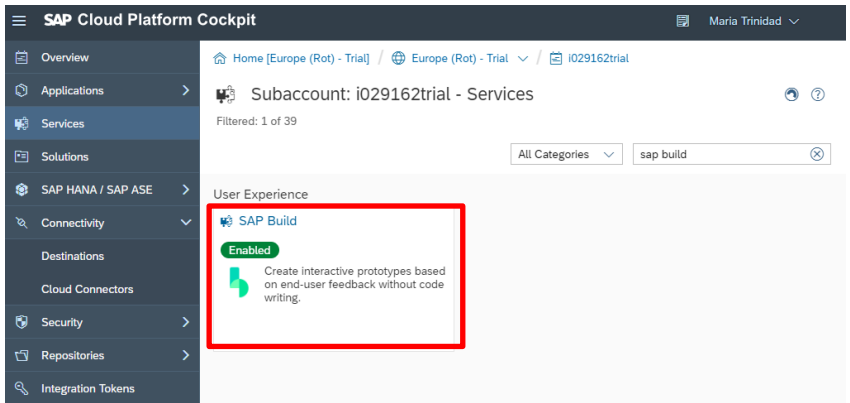
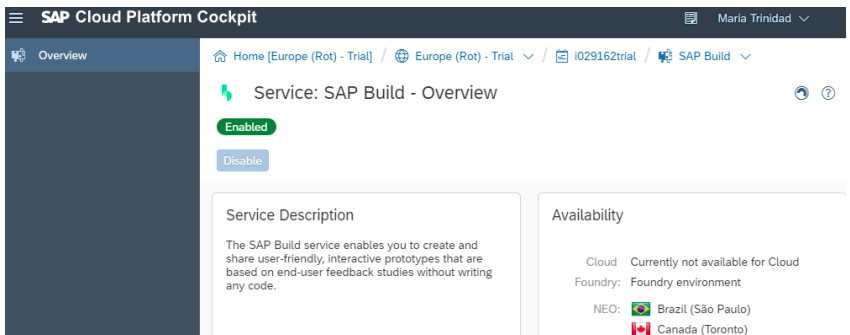
To activate Web IDE Full Stack service please follow the steps here below, if you already have Web IDE Full Stack service active in your account please skip this step.

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 Home 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' page. It displays two trial options: 'Cloud Foundry Trial' and 'Neo Trial'. The 'Neo Trial' option is circled in red. The 'Neo Trial' details are: Infrastructure: SAP, Trial Duration: Unlimited. The 'Cloud Foundry Trial' details are: Infrastructure: AWS, GCP, or Azure, Trial Duration: 90 days limited trial. A 'Getting Started' button is visible at the bottom.

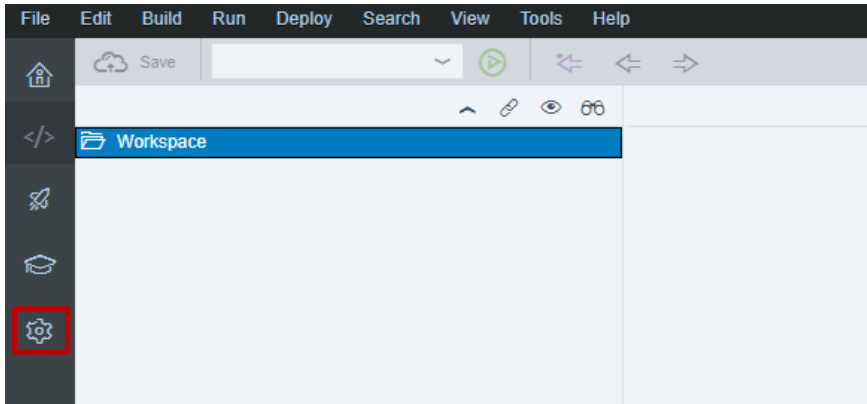
Explanation	Screenshot
Select the Services icon on the left side bar.	 <p>The screenshot shows the SAP Cloud Platform Cockpit interface. The left sidebar contains several icons, with the 'Services' icon (a gear with a plus sign) highlighted by a red circle. The main area displays the 'Subaccount: i029162trial - Services' page, showing 'All: 41' services. Below this, there are two service cards: '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 bar at the top right containing the text 'web'. The search results are displayed below, showing two service cards: 'SAP Web IDE' and 'SAP Web IDE Full-Stack'. The 'SAP Web IDE Full-Stack' card is highlighted with a red box and is marked as '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 at the top, and the 'Enable' button is highlighted with a red box. Below this, the 'Service Description' and 'Availability' sections are visible. The 'Availability' section lists the regions where the service is available: Europe (Rot), Europe (Rot) - Trial, US East (Ashburn), US West (Chandler), US East (Sterling), Australia (Sydney), Japan (Tokyo), and China (Shanghai).</p>

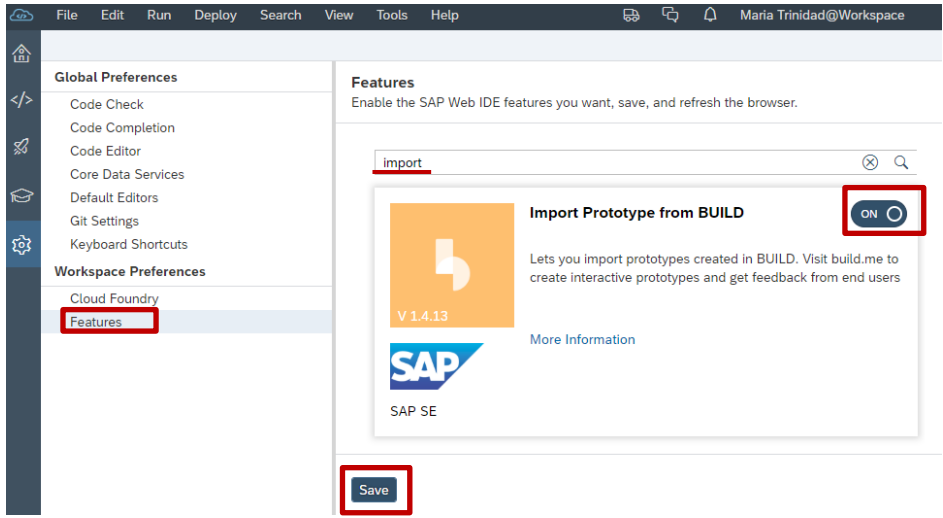
Explanation	Screenshot
<p>Once Enabled select the link Go to Service to open Web IDE Full Stack.</p>	 <p>The screenshot shows the SAP Cloud Platform Cockpit interface. The breadcrumb navigation at the top reads: Home [Europe (Rot) - Trial] / Europe (Rot) - Trial / i029162trial / SAP Web IDE Full-Stack. The main heading is 'Service: SAP Web IDE Full-Stack - Overview', followed by a green 'Enabled' button. 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 'Take Action', 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 shows the SAP Web IDE interface. It features a top menu bar with '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 main area is divided into a left sidebar with icons for home, code editor, explorer, and settings, and a large central workspace. The workspace is currently empty, with a 'Workspace' label visible in the top left of the main area.</p>

v. Activate Build service in SAP Cloud Platform cockpit

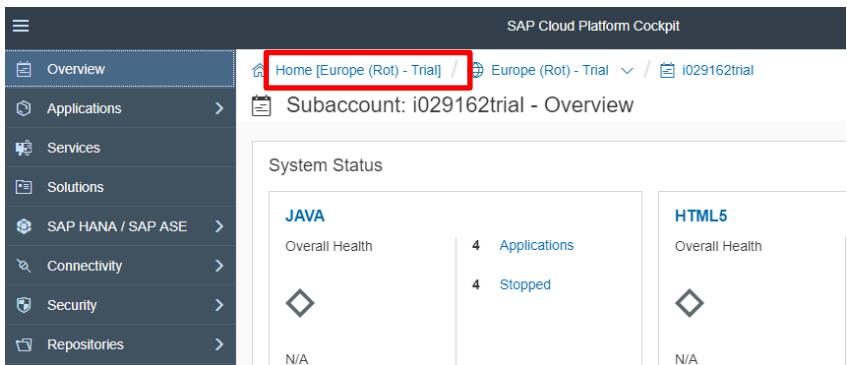
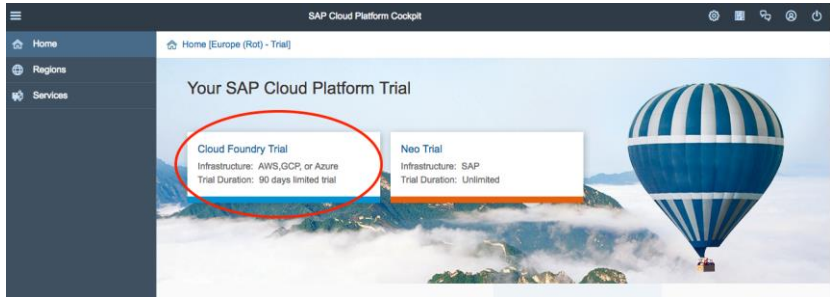
Explanation	Screenshot
<p>We need to activate the SAP Build service.</p> <p>Follow similar steps as in previous prerequisite to see the list of Services.</p> <p>Search for SAP Build service.</p>	 <p>The screenshot shows the SAP Cloud Platform Cockpit interface. On the left, there is a navigation menu with options like Overview, Applications, Services, Solutions, SAP HANA / SAP ASE, Connectivity, Destinations, Cloud Connectors, Security, Repositories, and Integration Tokens. The 'Services' option is selected. The main area displays 'Subaccount: i029162trial - Services' with a filter of '1 of 39'. A search bar contains 'sap build'. The 'SAP Build' service is listed under 'User Experience' and is marked as 'Enabled'. It is highlighted with a red rectangular box.</p>
<p>If not active select it and click the button Enable to activate it (in my case it is already Enabled).</p>	 <p>The screenshot shows the 'Service: SAP Build - Overview' page. The 'SAP Build' service is selected in the navigation menu. The main area shows the service is 'Enabled' with a green 'Enabled' button and a 'Disable' button. Below this, there is a 'Service Description' section stating: 'The SAP Build service enables you to create and share user-friendly, interactive prototypes that are based on end-user feedback studies without writing any code.' To the right, there is an 'Availability' section showing 'Cloud' as 'Currently not available for Cloud Foundry environment' and 'NEO' with locations 'Brazil (São Paulo)' and 'Canada (Toronto)'.</p>

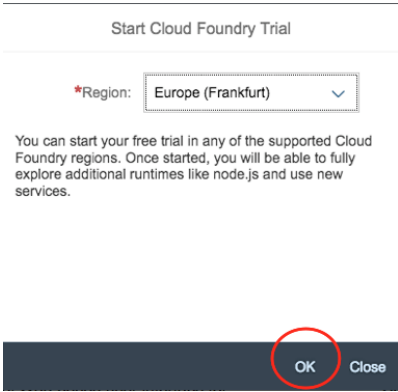
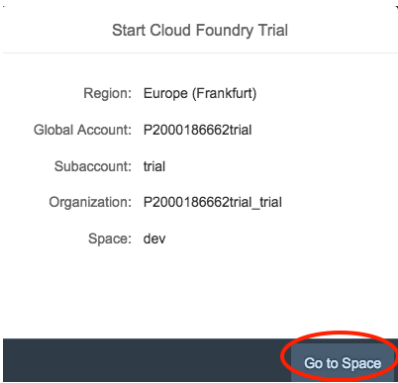
vi. Activate Build feature in WebIDE

Explanation	Screenshot
<p>Open SAP Web IDE Full Stack.</p> <p>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.</p> <p>Click on the Preferences icon.</p>	 <p>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 bar is a toolbar with icons for Save, Run, and other actions. The main workspace area is labeled 'Workspace'. On the left side, there is a vertical sidebar with icons for Home, Code, Run, and Preferences. The 'Preferences' icon, which is a gear, is highlighted with a red rectangular box.</p>

Explanation	Screenshot
<p>Select Features menu.</p> <p>Search for import. Change the button to ON to get the Import Prototype from BUILD feature available in WebIDE.</p> <p>Click Save!</p>	

vii. Activate a Cloud Foundry trial account

Explanation	Screenshot
<p>We need to activate the SAP Cloud Platform Cloud Foundry Environment.</p> <p>On the SAP Cloud Platform Dashboard click on the HOME link.</p>	
<p>From the SAP CP Home Screen, click on Cloud Foundry Trial.</p>	

Explanation	Screenshot
<p>Select the Trial Region that suits your location. And Click on OK</p>	
<p>This will initialize your Cloud Foundry Trial and create a DEV space (where the solutions will be deployed).</p>	

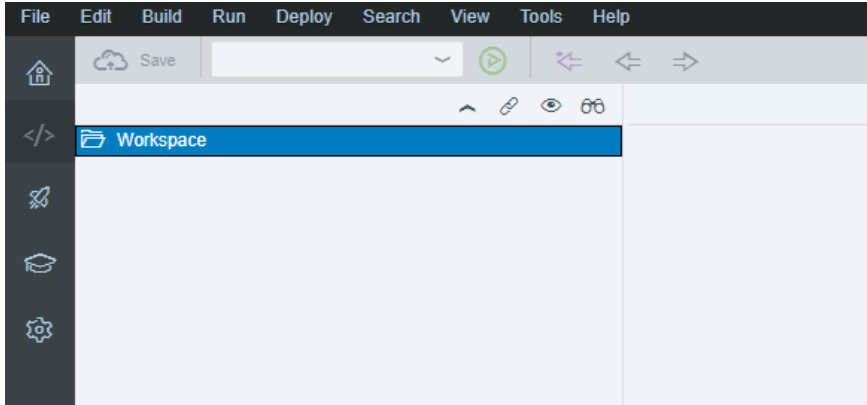
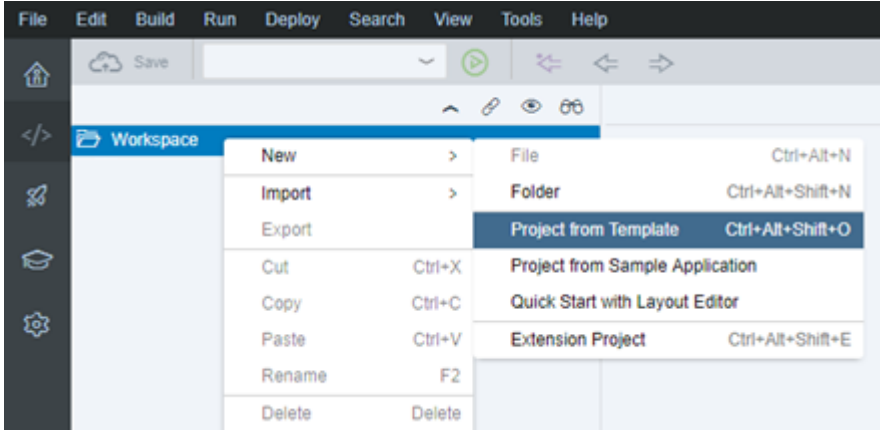
STEP 1: CREATE A BUILD HIGH FIDELITY PROTOTYPE

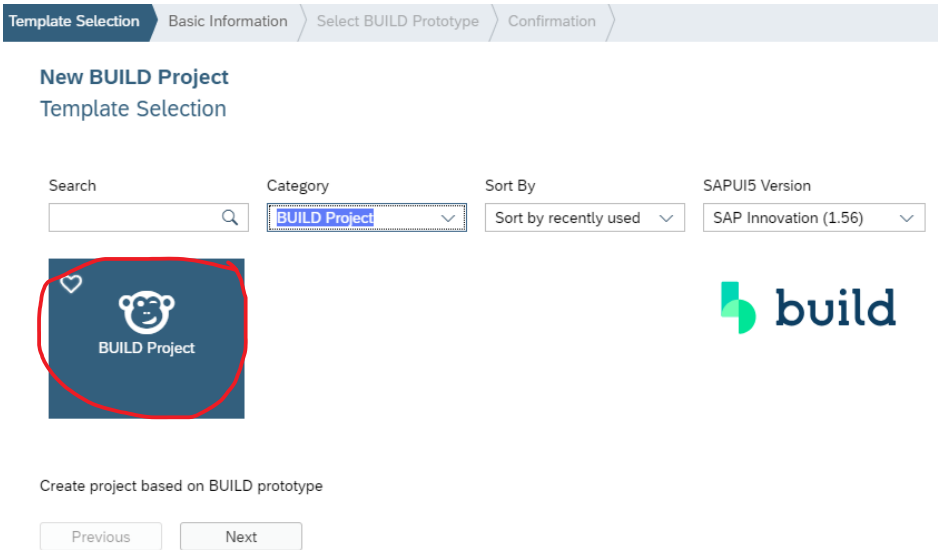
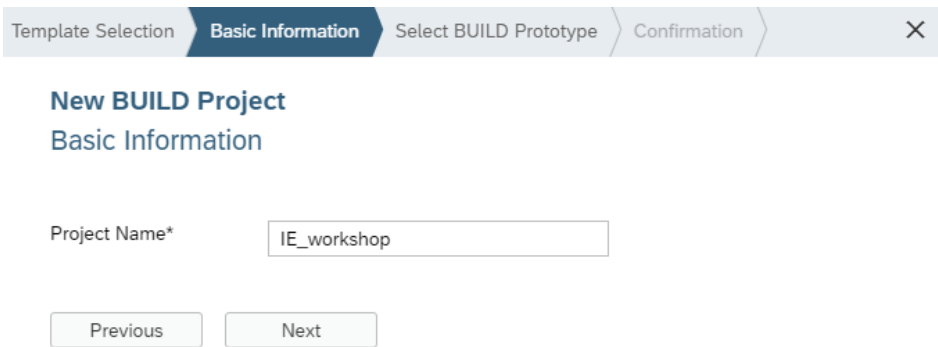
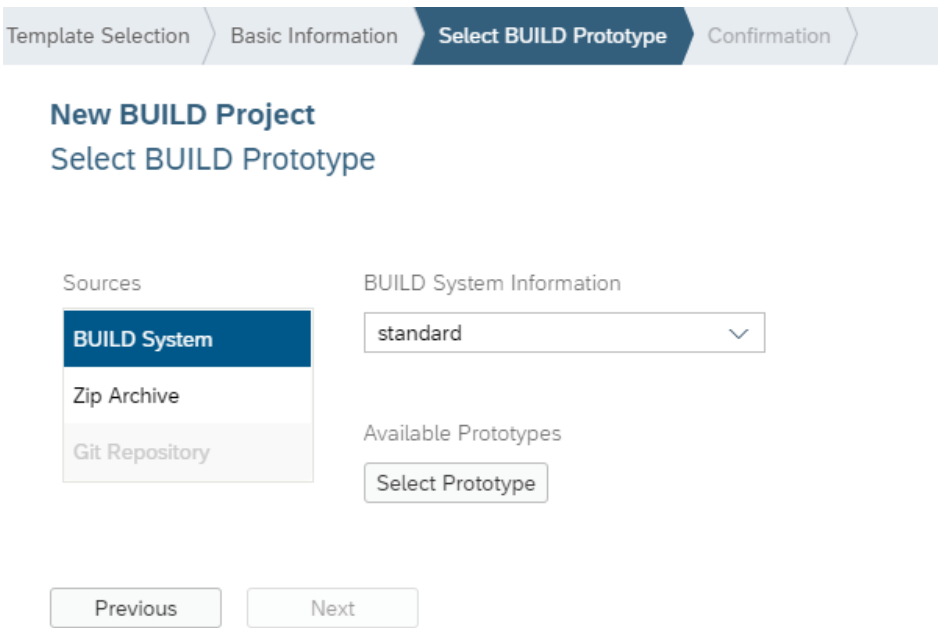
Follow the steps of the HandsOn_Build_B1_Instructions.pdf document.

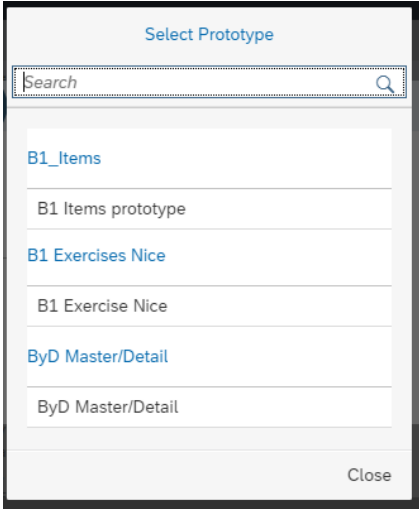
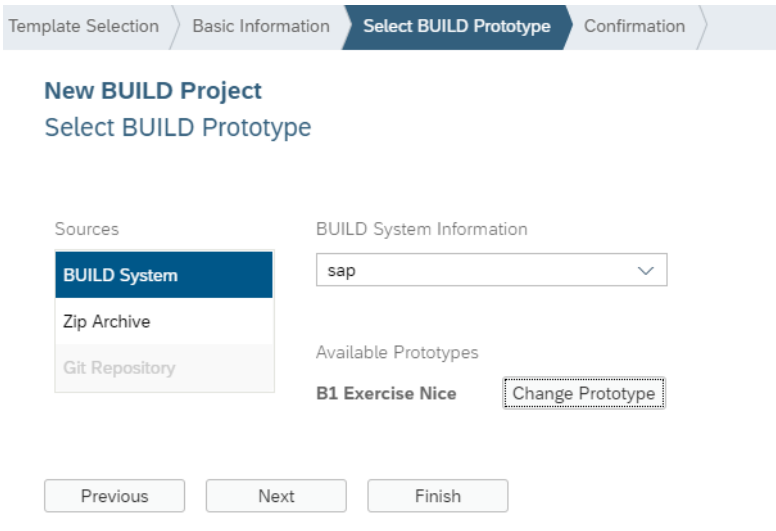
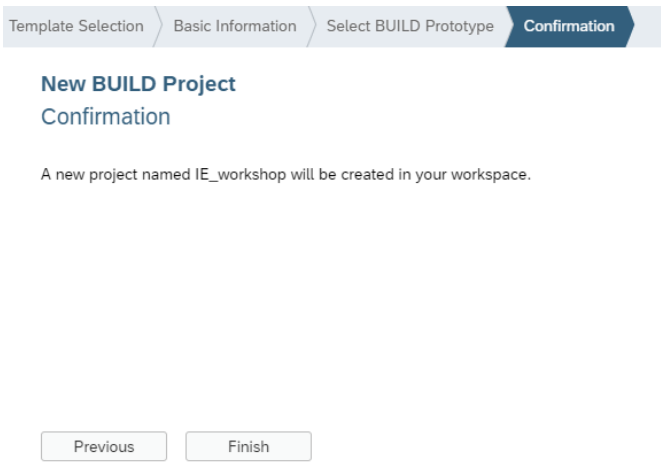
STEP 2: IMPORT YOUR BUILD PROTOTYPE INTO WEBIDE

The objective of this first exercise is to create a SAP Fiori app from your Build prototype.


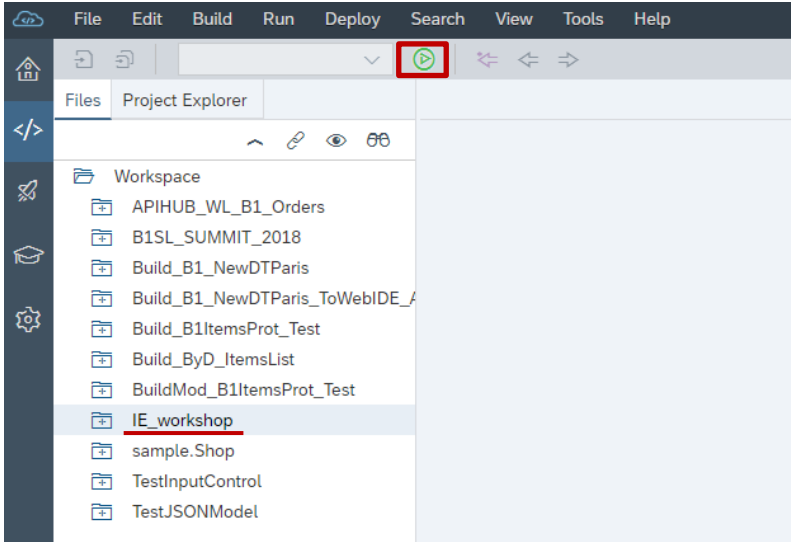
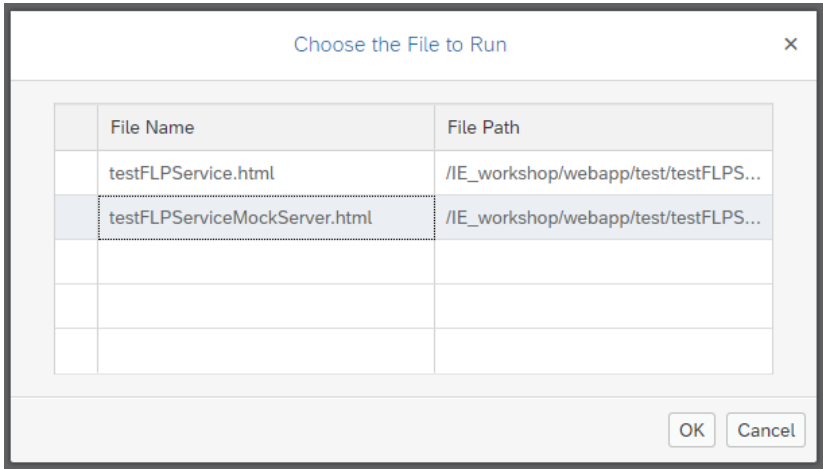
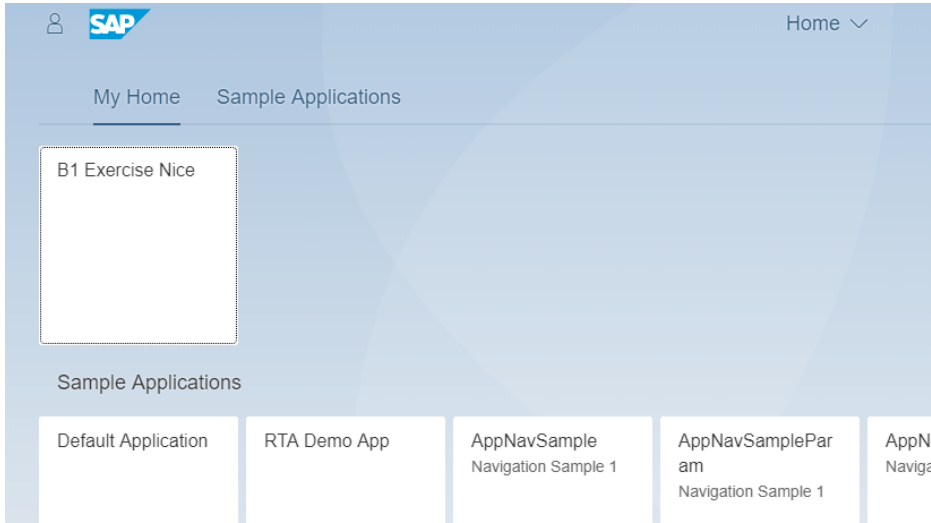
i. Create the Project

Explanation	Screenshot
<p>Open SAP Web IDE Full Stack.</p> <p>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.</p>	 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 bar 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 sidebar.
<p>Right click on your Workspace and select New -> Project from Template.</p>	 The screenshot shows the SAP Web IDE Full Stack interface with the context menu open for the 'Workspace' tab. The menu options are: New (Ctrl+Alt+N), Import (Ctrl+Alt+Shift+N), Export (Ctrl+Alt+Shift+O), Project from Template (Ctrl+Alt+Shift+E), Project from Sample Application, Quick Start with Layout Editor, and Extension Project. The 'Project from Template' option is highlighted.

Explanation	Screenshot
<p>Select the BUILD Project template.</p> <p>Press Next.</p> <p>If you don't see this template, change the Category to BUILD Project or All categories.</p>	
<p>Enter a Project Name.</p> <p>Press Next.</p>	
<p>Select BUILD System source.</p> <p>Select standard BUILD System Information.</p> <p>Press Select Prototype to get the list of available BUILD prototypes.</p> <p><i>You might be prompted to enter your BUILD User Name and Password. Enter your credentials and press Log In.</i></p>	

Explanation	Screenshot
<p>Select the prototype you shared previously in BUILD.</p> <p>Press Close.</p>	
<p>Press Next.</p>	
<p>Press Finish.</p>	

ii. Test the project with mock data

Explanation	Screenshot
<p>Go to your workspace, the new project should be listed.</p> <p>Select your project and press the Run  button.</p>	
<p>Select the testFLPServiceMockServer.html to run the application with the mock data we prepared in BUILD.</p> <p>Press OK.</p>	
<p>A new tab will be open and show an SAP Fiori launchpad.</p> <p>Select the tile on the launchpad that corresponds to the name your BUILD prototype application.</p>	

Explanation

Your application will now open and show the views you designed with BUILD.

Screenshot

iii. Create a destination pointing to your backend server

On the SAP Community [From SAP API Business Hub to your SAP Business One system](#) blog dedicated to SAP API Business Hub it is explained how to create a destination in SAP Cloud Platform pointing to your SAP Business One backed server. Please check step number 1 of this blog to learn how to create a destination.

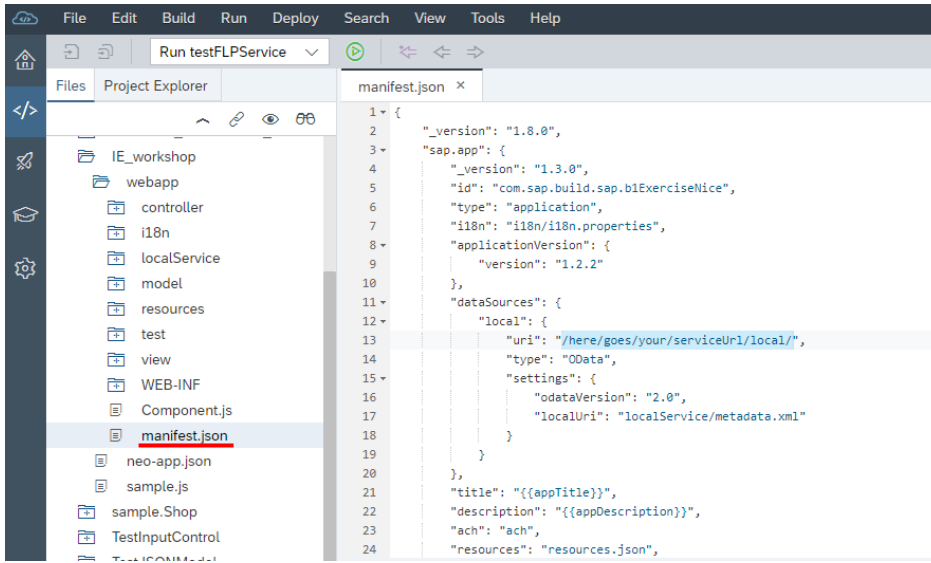

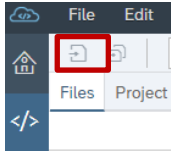
Destination Configuration

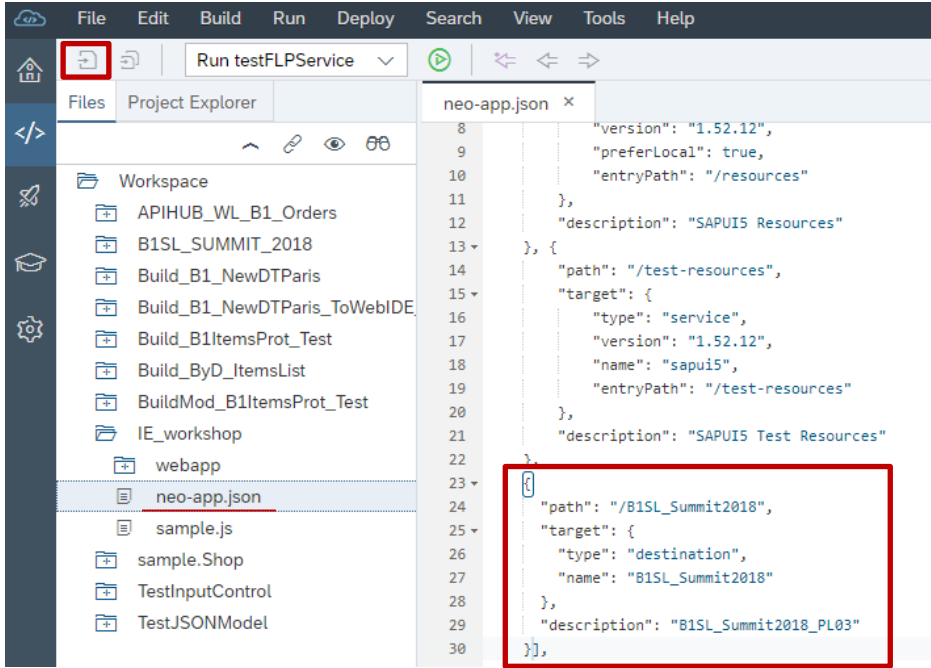
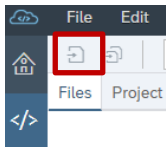
<p>*Name: B1SL_workshopNice</p> <p>Type: HTTP</p> <p>Description: B1SL_workshopNice</p> <p>*URL: https://[redacted]50000</p> <p>Proxy Type: Internet</p> <p>Authentication: BasicAuthentication</p> <p>User: {"UserName":"manager","CompanyDB":"SBOD</p> <p>Password: [redacted]</p>	<p>Additional Properties</p> <table border="0"> <tr> <td>TrustAll</td> <td>true</td> <td></td> </tr> <tr> <td>WebIDEEnabled</td> <td>true</td> <td></td> </tr> <tr> <td>WebIDEUsage</td> <td>ui5_execute</td> <td></td> </tr> </table>	TrustAll	true		WebIDEEnabled	true		WebIDEUsage	ui5_execute	
TrustAll	true									
WebIDEEnabled	true									
WebIDEUsage	ui5_execute									

[Edit](#)
[Clone](#)
[Export](#)
[Delete](#)
[Check Connection](#)

iv. Connect to your real B1 backend server

We have imported the BUILD prototype into a WebIDE SAP Fiori project, but we are still not connected to a real backend server. This section will show you how to modify the SAP Fiori project to connect to your real B1 backend server.

Explanation	Screenshot
<p>In SAP Web IDE workspace, expand your project.</p> <p>In the webapp folder, open the manifest.json file with the code editor.</p>	
<p>In the manifest.json file.</p> <p>Replace the uri property value under dataSources section with your backend OData service path.</p> <p>The uri is built from your destination name (in my case /B1SL_Summit2018) plus the root Service Layer path for OData v4 (/b1s/v2).</p>	
<p>Press Save button.</p>	

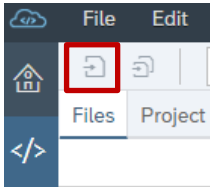
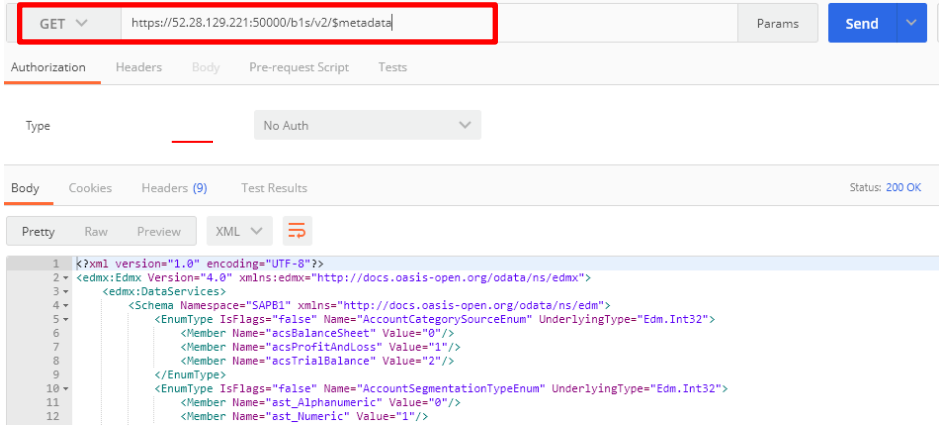
Explanation	Screenshot
<p>Open neo-app.json file.</p> <p>Add your backend destination entry to fetch data.</p> <pre> { "path": "/yourdest", "target": { "type": "destination", "name": "yourdest" }, "description": "yourdesc" } </pre>	 <p>The screenshot shows the SAP WebIDE interface. The Project Explorer on the left lists the workspace contents, including 'neo-app.json'. The editor on the right displays the content of 'neo-app.json'. A new destination entry is added at the bottom of the file, highlighted with a red box:</p> <pre> { "path": "/B1SL_Summit2018", "target": { "type": "destination", "name": "B1SL_Summit2018" }, "description": "B1SL_Summit2018_PL03" }], </pre>
<p>Press Save button.</p>	 <p>The screenshot shows the SAP WebIDE File menu. The 'Save' button, represented by a floppy disk icon, is highlighted with a red box.</p>

v. Extra SAP Business One backend configuration steps

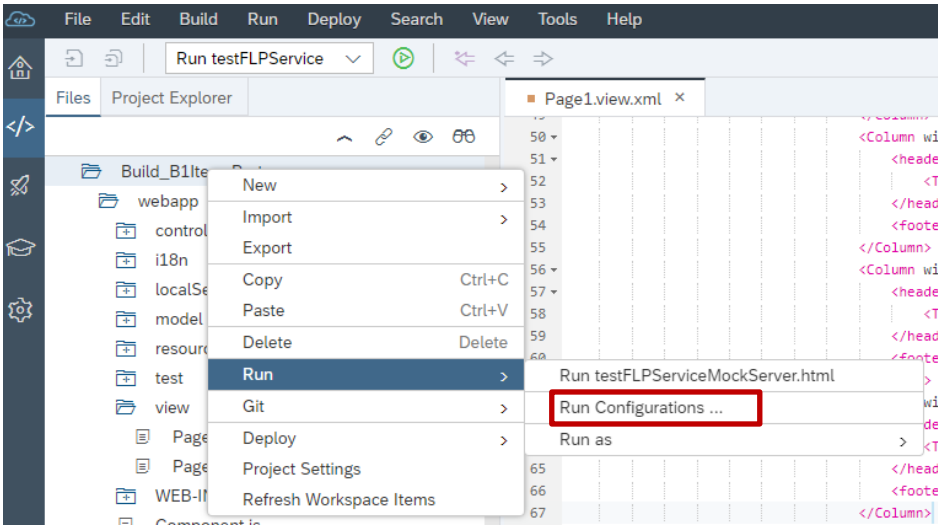
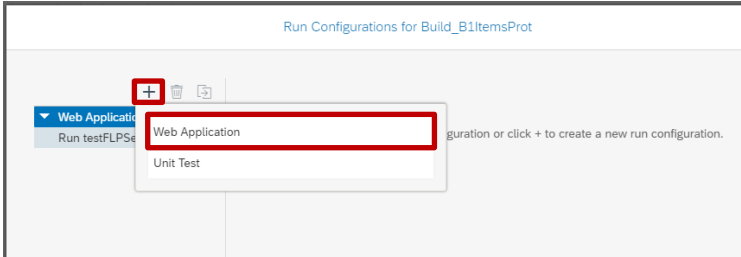
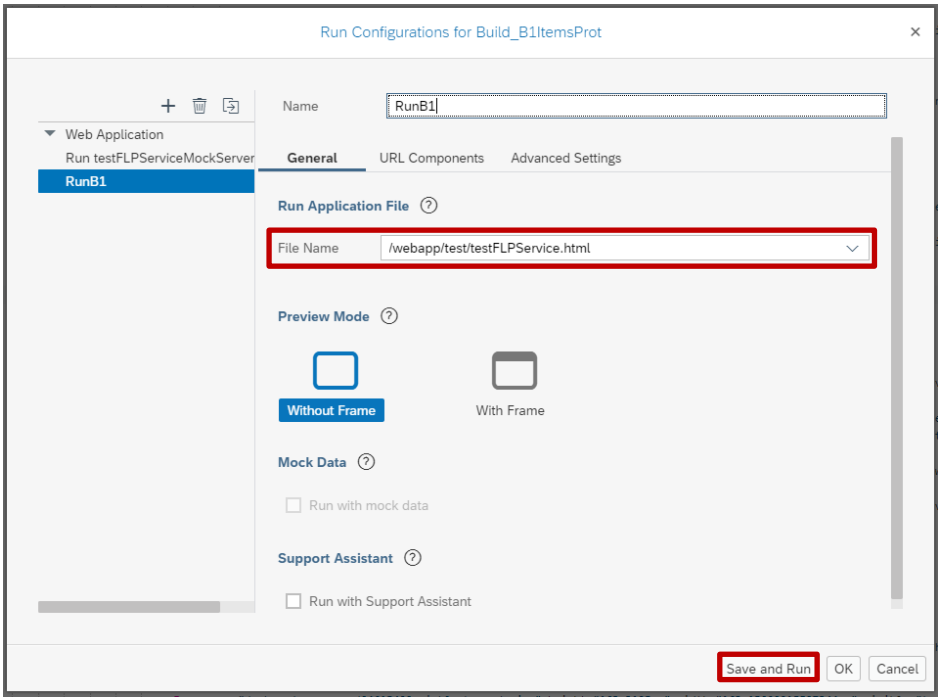
As at the time we have created this document SAP BUILD doesn't support yet OData v4 and SAP Business One Service Layer APIs are based on OData v4, to design our SAP Business One Build prototype we had to use a custom OData model in SAP Build to design our prototype. Therefore, the WebIDE project will not directly run after the changes done in previous steps but some extra steps will be required.

As SAP WebIDE supports OData v4 we can now replace the custom OData model we designed in SAP Build by the real SAP Business One Service Layer OData model to get SAP Business One data from our backend.

Explanation	Screenshot
<p>Open the manifest.json file.</p> <p>Change the “settings” “odataVersion” to 4.0.</p>	 <pre> 1 { 2 "_version": "1.8.0", 3 "sap.app": { 4 "_version": "1.3.0", 5 "id": "com.sap.build.sap.b1ExerciseNice", 6 "type": "application", 7 "i18n": "i18n/i18n.properties", 8 "applicationVersion": { 9 "version": "1.2.2" 10 }, 11 "dataSources": { 12 "local": { 13 "uri": "/B1SL_Summit2018/b1s/v2/", 14 "type": "OData", 15 "settings": { 16 "odataVersion": "4.0", 17 "localUri": "localService/metadata.xml" 18 } 19 } 20 }, </pre>
<p>Search models element inside sap.ui5</p>	 <pre> 64 }, 65 "models": { 66 "i18n": { 67 "type": "sap.ui.model.resource.ResourceModel", 68 "uri": "i18n/i18n.properties" 69 }, 70 "": { 71 "dataSource": "local", 72 "type": "sap.ui.model.odata.v2.ODataModel", 73 "settings": { 74 "loadMetadataAsync": false, 75 "json": true, 76 "bJSON": true, 77 "defaultBindingMode": "TwoWay", 78 "defaultCountMode": "Inline", 79 "useBatch": true, 80 "refreshAfterChange": false, 81 "disableHeadRequestForToken": true 82 } 83 } 84 }, </pre>

Explanation	Screenshot
<p>Replace the type of the model with empty name by sap.ui.model.odata.v4.ODataModel.</p> <p>Change the settings (copy the values here below) and add preload property with value true.</p> <p>Pay attention you keep the dataSource value unchanged as it matches the dataSource value defined at the beginning of the file.</p> <pre> "settings": { "operationMode": "Server", "synchronizationMode": "None", "groupId": "\$direct" }, "preload": true </pre>	<pre> "models": { "i18n": { "type": "sap.ui.model.resource.ResourceModel", "uri": "i18n/i18n.properties" }, "": { "dataSource": "local", "type": "sap.ui.model.odata.v4.ODataModel", "settings": { "operationMode": "Server", "synchronizationMode": "None", "groupId": "\$direct" }, "preload": true } }, </pre>
Press the Save button.	
<p>Retrieve the metadata file from SAP Business One Service Layer via Postman with the GET request <u>https://your b1sl server:50000/b1s/v2/\$metadata</u>.</p> <p>Save the response as a file named metadata.xml.</p>	

Explanation	Screenshot
<p>Replace the localService/metadata.xml file imported from BUILD by the SAP Business One Service Layer metadata file saved in the previous step.</p> <p>To avoid conflicts as the Build metadata.xml file is already there you can rename the existing file as build_metadata.xml.</p>	 <p>The screenshot shows the SAP Business One IDE interface. In the Project Explorer on the left, the file 'metadata.xml' is highlighted under the 'localService' folder. The main editor displays the XML content of 'metadata.xml', which includes an XML declaration and an EDMX namespace declaration. The XML content is as follows:</p> <pre><?xml version="1.0" encoding="UTF-8"?> <edmx:Edmx Version="4.0" xmlns:edmx="http://docs.oasis-open.org/odata/ns/edmx"> <edmx:DataServices> <Schema Namespace="SAPB1" xmlns="http://docs.oasis-open.org/odata/ns/edm"> <EntityType IsFlags="false" Name="AccountCategorySourceEnum" UnderlyingType="Edm.String"> <Member Name="acsBalanceSheet" Value="0"/> <Member Name="acsProfitAndLoss" Value="1"/> <Member Name="acsTrialBalance" Value="2"/> </EntityType> <EntityType IsFlags="false" Name="AccountSegmentationTypeEnum" UnderlyingType="Edm.String"> <Member Name="ast_Alphanumeric" Value="0"/> <Member Name="ast_Numeric" Value="1"/> </EntityType> <EntityType IsFlags="false" Name="AcquisitionPeriodControlEnum" UnderlyingType="Edm.String"> <Member Name="apcProRataTemporis" Value="0"/> <Member Name="apcFirstYearConvention" Value="1"/> <Member Name="apcHalfYear" Value="2"/> </EntityType> </Schema> </edmx:DataServices> </edmx:Edmx></pre>
<p>Open the Page1.view.xml file, search for ItemsSet and replace it by Items.</p> <p>In the model we created in BUILD entities have the suffix Set, while in SAP Business One Service Layer we don't have it, we need to fix it to be able to directly connect to Service Layer.</p>	 <p>The screenshot shows the SAP Business One IDE interface. In the Project Explorer on the left, the file 'Page1.view.xml' is highlighted. The main editor displays the XML content of 'Page1.view.xml'. The XML content is as follows:</p> <pre><mvc:View xmlns:mvc="sap.ui.core"> <Page showHeader="true"> <content> <IconTabBar> <select> <items> <IconTabFilter icon="" iconColor="Default" text="All Items" count="23" design="Vertical" showAll="false" enabled="true" visible="true" iconDensityAware="false"> <content> <Table width="auto" noDataText="No data" mode="None" showSeparators="All" growing="true" growable="true" class="sapUiResponsiveMargin" itemPress="onTableItemPress" items="{path: '/ItemsSet', type: 'json'}"> <infoToolbar> <Toolbar width="100%" height="auto" design="Auto" visible="false" enabled="true"> <content> <Label text="Label" design="Standard" width="100%" required="false" textAlign="center"> </content> </content> </Toolbar> </infoToolbar> </Table> </content> </IconTabFilter> </items> </select> </IconTabBar> </content> </Page> </mvc:View></pre>
<p>Open Component.js file.</p> <p>Replace ItemsSet by Items in the navigationWithContext definition.</p>	 <p>The screenshot shows the SAP Business One IDE interface. In the Project Explorer on the left, the file 'Component.js' is highlighted. The main editor displays the JavaScript code of 'Component.js'. The code is as follows:</p> <pre>sap.ui.define(["sap/ui/core/UIComponent", "sap/ui/Device", "com/sap/build/sap/b1ExerciseNice/model/models", "./model/errorHandling"], function (UIComponent, Device, models, errorHandling) { "use strict"; var navigationWithContext = { "Items": { "Page2": "" } }; });</pre>

Explanation	Screenshot
<p>To run the application this time connecting to your real B1 backend right click on your project and choose Run -> Run Configurations...</p>	
<p>Press +.</p> <p>Select Web Application.</p>	
<p>Give a Name to the new configuration.</p> <p>Select testFLPSERVICE.html as File Name.</p> <p>Press Save and Run.</p>	

Explanation	Screenshot
Now the data shown comes from B1 and not anymore from the Build sample data.	
You can also check the details page containing the different prices depending on their price list for a specific Item by clicking on one of the rows.	

Congratulations! You have imported a Build prototype to your WebIDE development environment and connected to your real SAP Business One backend server.

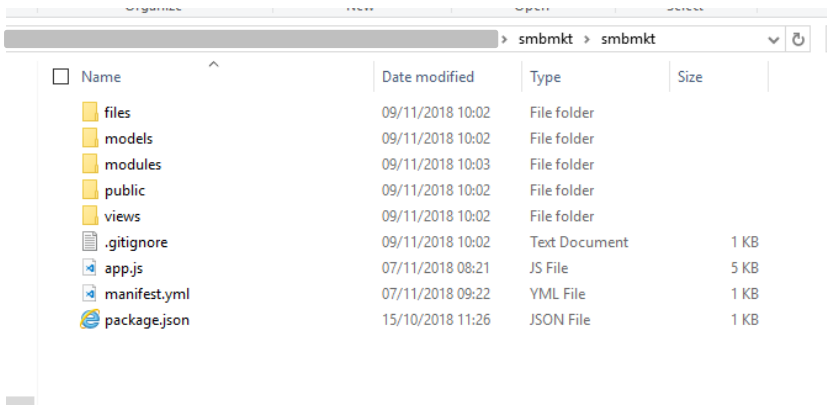
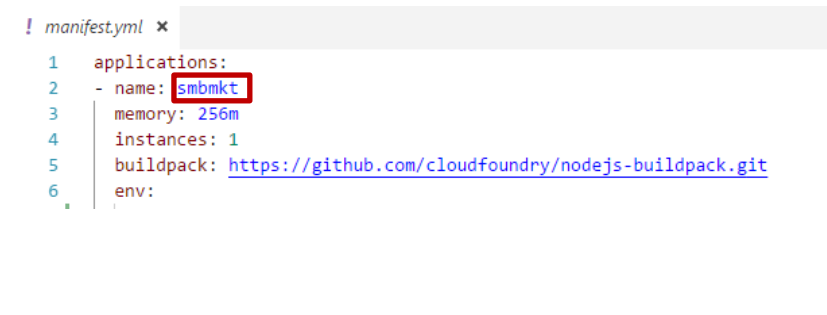
STEP 3: CLONE A NODEJS APP

In this step we are going to deploy the backend of our application.

The application we are going to deploy is based on the SMB Marketplace proof of concept we shared in the [Digital Transformation for SMBs – the Intelligent Enterprise blog](#).

It will contain the business logic required to call SAP Leonardo services and get Item details from SAP Business One and SAP Business ByDesign erps.

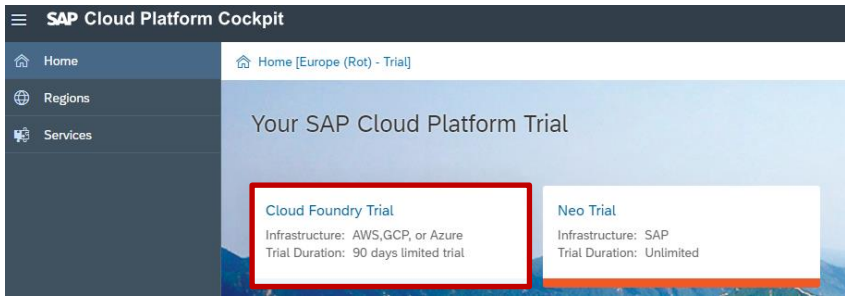
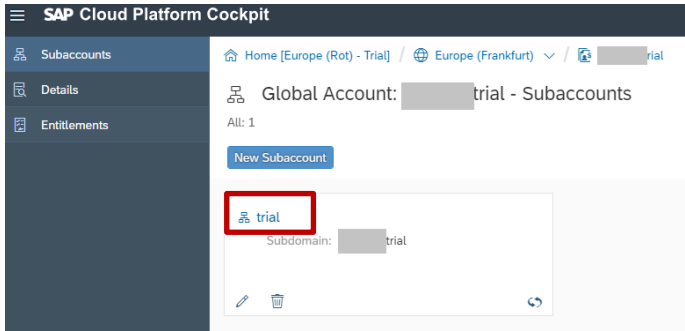
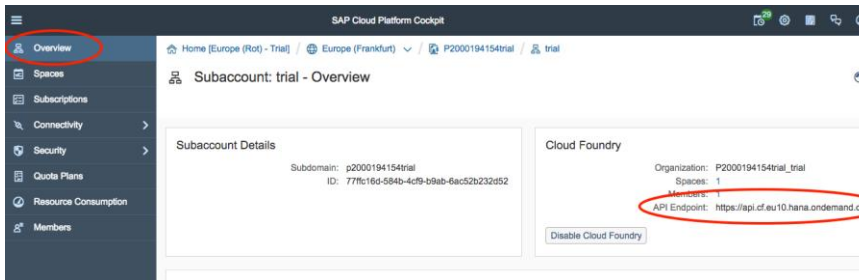
The application is written in NodeJS and the source code is available on GitHub.

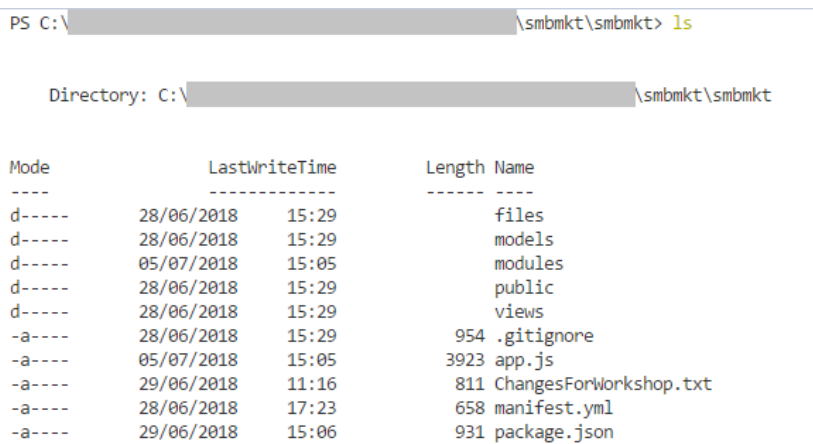

Explanation	Screenshot
<p>Once git is installed (according to the pre requisites), open your system terminal (cmd, bash..)</p> <p>Navigate to a specific folder where you will download the sample application.</p> <p>Pay attention what folder is it, we will access it later.</p>	
<p>Execute the following command to clone our solution:</p> <pre>\$ git clone -b CF_exercise https://github.com/BISA/smbmkt.git</pre>	
<p>Go to the directory smbmk/smbmk, this is the folder containing the code we will push into</p>	
<p>You can change the name of the app in manifest.yml file and set a unique name for your application, e.g.: smbmk<your Initials>.</p> <p>It is not a mandatory operation as we can generate a random url for our application to avoid conflicts with other accounts running the same app name, it will be shown in the next step.</p>	

STEP 4: DEPLOY THE NODEJS APP INTO SAP CLOUD FOUNDRY

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

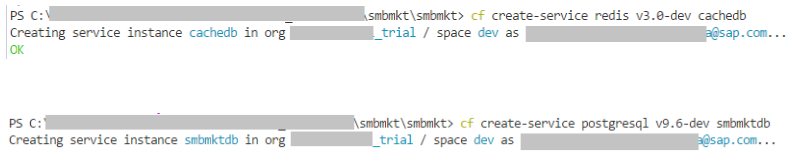
i. SAP Cloud Platform Cloud Foundry Environment

Go to your Cloud Foundry account.	 <p>The screenshot shows the SAP Cloud Platform Cockpit interface. On the left, there is a navigation menu with 'Home', 'Regions', and 'Services'. The main area displays 'Your SAP Cloud Platform Trial' with two cards: 'Cloud Foundry Trial' (Infrastructure: AWS, GCP, or Azure; Trial Duration: 90 days limited trial) and 'Neo Trial' (Infrastructure: SAP; Trial Duration: Unlimited). The 'Cloud Foundry Trial' card is highlighted with a red box.</p>
Select your trial subaccount. Click on the trial link.	 <p>The screenshot shows the 'Subaccounts' page in the SAP Cloud Platform Cockpit. The left navigation menu includes 'Subaccounts', 'Details', and 'Entitlements'. The main area shows 'Global Account: [redacted] trial - Subaccounts' with 'All: 1' subaccounts. A 'New Subaccount' button is visible. Below, a table lists subaccounts, with the first one, 'trial', highlighted by a red box. The subdomain for 'trial' is '[redacted]trial'.</p>
Open the Overview option in the menu Select and copy your API Endpoint. E.g. https://api.cf.eu10.hana.ondemand.com	 <p>The screenshot shows the 'Subaccount: trial - Overview' page. The left navigation menu has 'Overview' highlighted with a red circle. The main area is divided into two sections: 'Subaccount Details' and 'Cloud Foundry'. The 'Subaccount Details' section shows 'Subdomain: p2000194154trial' and 'ID: 77f616d-584b-4cf9-b9ab-6ac52b232d52'. The 'Cloud Foundry' section shows 'Organization: P2000194154trial_trial', 'Spaces: 1', 'Members: 1', and 'API Endpoint: https://api.cf.eu10.hana.ondemand.com'. The API Endpoint is circled in red.</p>

<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 3 of this guide</p>	 <pre> PS C:\[redacted]\smbmktd> ls Directory: C:\[redacted]\smbmktd Mode LastWriteTime Length Name ---- - d----- 28/06/2018 15:29 files d----- 28/06/2018 15:29 models d----- 05/07/2018 15:05 modules d----- 28/06/2018 15:29 public d----- 28/06/2018 15:29 views -a----- 28/06/2018 15:29 954 .gitignore -a----- 05/07/2018 15:05 3923 app.js -a----- 29/06/2018 11:16 811 ChangesForWorkshop.txt -a----- 28/06/2018 17:23 658 manifest.yml -a----- 29/06/2018 15:06 931 package.json </pre>
<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.ondemand.com</pre> <p>When prompted provide your SAP Cloud Platform email and password</p>	 <pre> PS C:\[redacted]\smbmktd> cf login API endpoint: https://api.cf.eu10.hana.ondemand.com Email> [redacted]@sap.com Password> Authenticating... OK Targeted org [redacted]_trial Targeted space dev API endpoint: https://api.cf.eu10.hana.ondemand.com (API version: 2.114.0) User: [redacted]@sap.com Org: [redacted]_trial Space: dev </pre>

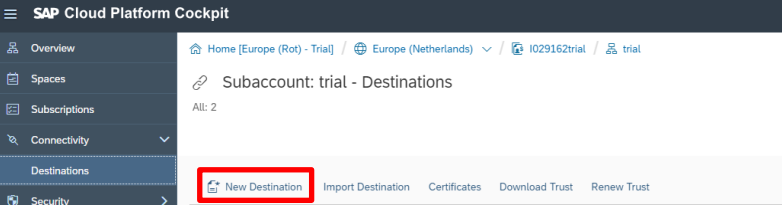
ii. Create the backing services

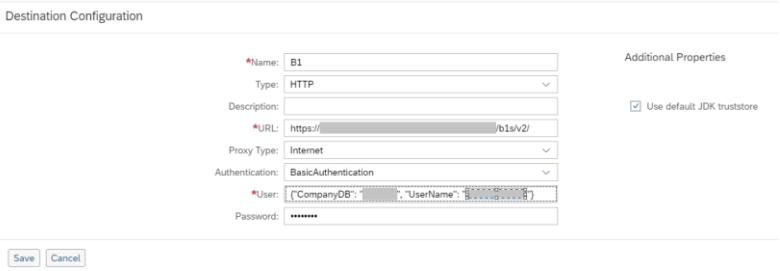

This app uses 2 [backing services](#) from SAP Cloud Platform. [Redis](#) for storing B1 Service Layer Sessions ID in cache and [PostgreSQL](#) to store [SAP Leonardo Feature Extraction Vectors](#). Here are the steps to create them:


Explanation	Screenshot
<p>Using the command terminal, navigate to the smbmktd directory.</p> <p>Execute the following commands to create the Redis and PostgreSQL services:</p> <pre>cf create-service redis v3.0-dev cachedb</pre> <pre>cf create-service postgresql v9.6-dev itemsdb</pre>	 <pre> PS C:\[redacted]\smbmktd> cf create-service redis v3.0-dev cachedb Creating service instance cachedb in org [redacted]_trial / space dev as [redacted]@sap.com... OK PS C:\[redacted]\smbmktd> cf create-service postgresql v9.6-dev itemsdb Creating service instance itemsdb in org [redacted]_trial / space dev as [redacted]@sap.com... </pre>

Explanation	Screenshot																														
<p>PS: When using a trial account some limitations apply. If you already had a postgresql or redis service you will not be able to create a second one, just reuse the one you have or delete your old one.</p>																															
<p>Execute the following commands to create the Destination, Connectivity and Authorization & Trust Management services:</p> <pre>cf create-service destination lite destination-demo-lite cf create-service connectivity lite connectivity-demo-lite cf create-service xsuaa application xsuaa-demo -c '{"xsappname": \"connectivity-app-demo\", \"tenant-mode\": \"dedicated\"}'</pre>																															
<p>You can check which services are active and the bound apps with the command:</p> <pre>cf services</pre> <p>Note: your services might not be bound to any app if just created now, bound apps column might then be empty.</p>	<pre>C:\>cf services Getting services in org <redacted>trial_trial / space dev as <redacted>.com...</pre> <table><thead><tr><th>name</th><th>service</th><th>plan</th><th>bound apps</th><th>last operation</th></tr></thead><tbody><tr><td>cachedb</td><td>redis</td><td>v3.0-dev</td><td>smbmkt</td><td>create succeeded</td></tr><tr><td>connectivity-demo-lite</td><td>connectivity</td><td>lite</td><td>cfdestinations18, smbmk</td><td>create succeeded</td></tr><tr><td>destination-demo-lite</td><td>destination</td><td>lite</td><td>cfdestinations18, smbmk</td><td>create succeeded</td></tr><tr><td>itemsdb</td><td>postgresql</td><td>v9.6-dev</td><td>smbmkt</td><td>create succeeded</td></tr><tr><td>xsuaa-demo</td><td>xsuaa</td><td>application</td><td>cfdestinations18, smbmk</td><td>create succeeded</td></tr></tbody></table>	name	service	plan	bound apps	last operation	cachedb	redis	v3.0-dev	smbmkt	create succeeded	connectivity-demo-lite	connectivity	lite	cfdestinations18, smbmk	create succeeded	destination-demo-lite	destination	lite	cfdestinations18, smbmk	create succeeded	itemsdb	postgresql	v9.6-dev	smbmkt	create succeeded	xsuaa-demo	xsuaa	application	cfdestinations18, smbmk	create succeeded
name	service	plan	bound apps	last operation																											
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connectivity-demo-lite	connectivity	lite	cfdestinations18, smbmk	create succeeded																											
destination-demo-lite	destination	lite	cfdestinations18, smbmk	create succeeded																											
itemsdb	postgresql	v9.6-dev	smbmkt	create succeeded																											
xsuaa-demo	xsuaa	application	cfdestinations18, smbmk	create succeeded																											


iii. Create the required destinations

Explanation	Screenshot
<p>To connect to our B1 and/or ByD ERP server we will use Cloud Foundry destinations.</p>	
<p>Go to your Cloud Foundry account. Select your trial subaccount.</p> <p>Select the Destinations menu.</p> <p>Click on the “New Destination” option.</p>	

Explanation	Screenshot
<p>Create your B1 Destination.</p> <p>Enter a name for your B1 Destination. If you enter a different name than B1 pay attention to following steps as you will need to replace the Name in all references.</p> <p>Enter Type HTTP and BasicAuthentication.</p> <p>Enter your B1 ERP URL and credentials as well as any specific configuration you might require.</p> <p>Press Save.</p> <p>Note: Even if you only work with ByD please create B1 destination to avoid exceptions in the sample code.</p>	
<p>Create your ByD Destination.</p> <p>Enter a name for your ByD Destination. If you enter a different name than ByD pay attention to following steps as you will need to replace the Name in all references.</p> <p>Enter Type HTTP and BasicAuthentication.</p> <p>Enter your ByD ERP URL and credentials as well as any specific configuration you might require.</p> <p>Press Save.</p> <p>Note: Even if you only work with B1 please create ByD destination to avoid exceptions in the sample code.</p>	

Explanation	Screenshot
<p>Open the <code>modules/dest/dest-app.json</code> file.</p> <p>Check the parameters specified for both routes are correctly pointing to your Destinations and their <code>entryPath</code> is correct.</p> <p>Check the blog Call SAP Cloud Platform destinations from your Node.js application for more details on Destinations.</p>	 <pre> 1 {} dest-app.json x 2 { 3 "routes": [4 { 5 "path": "/data-byd", 6 "target": { 7 "type": "destination", 8 "name": "ByD", 9 "entryPath": "/sap/byd/odata/cust/v1" 10 }, 11 "description": "Backend ByD OData services" 12 }, 13 { 14 "path": "/data-b1", 15 "target": { 16 "type": "destination", 17 "name": "B1", 18 "entryPath": "" 19 }, 20 "description": "Backend B1 OData services" 21 } 22] </pre>

iv. Deploy the smbmktp app

Explanation	Screenshot
<p>This app has 2 microservices (bot and smbmktp) that can be deployed at once or separately. Their specifications are detailed in the manifest.yml.</p> <p>In this exercise we will only work with the smbmktp microservice as the other service is the one related to Facebook Messenger that is not used in this exercise.</p> <p>From the same terminal of the previous step go to your smbmktp/smbmktp app folder and execute:</p> <pre>cf push --random-route</pre> <p><i>--random-route avoids name collisions with other accounts that might deploy the same app on SCP. You can choose your own app name by changing the application names in the manifest.yml.</i></p>	 <pre> PS C:\smbmktp> cf push --random-route Using manifest file C:\smbmktp\manifest.yml Updating app smbmktp in org [redacted] / space dev as [redacted]@sap.com... OK Uploading smbmktp... Uploading app files from: C:\smbmktp\smbmktp Uploading 32.1K, 40 files Done uploading OK Binding service cachedb to app smbmktp in org [redacted] / space dev as [redacted]@sap.com... OK Binding service itemdb to app smbmktp in org [redacted] / space dev as [redacted]@sap.com... OK </pre>

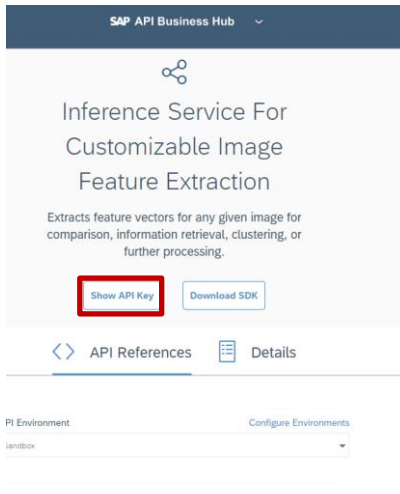
Explanation	Screenshot
<p>At the end of the process your smb app must be running.</p> <p>You can check your apps with the command:</p> <pre>cf apps</pre>	<pre> PS C:\smbmkt\smbmkt> cf apps Getting apps in org [redacted] / space dev as [redacted]@sap.com... OK name requested state instances memory disk urls webide-builder-sapwebide-di-ec8zz90JUsGtliNp stopped 0/1 1G 4G smbmkt started 1/1 256M 1G cfdemosummit18 stopped 0/1 64M 1G b1leo stopped 0/1 64M 1G PS C:\smbmkt\smbmkt> </pre>

i. Configuration for only B1 or ByD systems

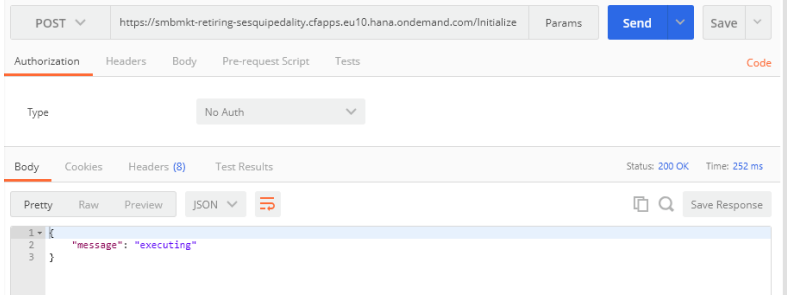
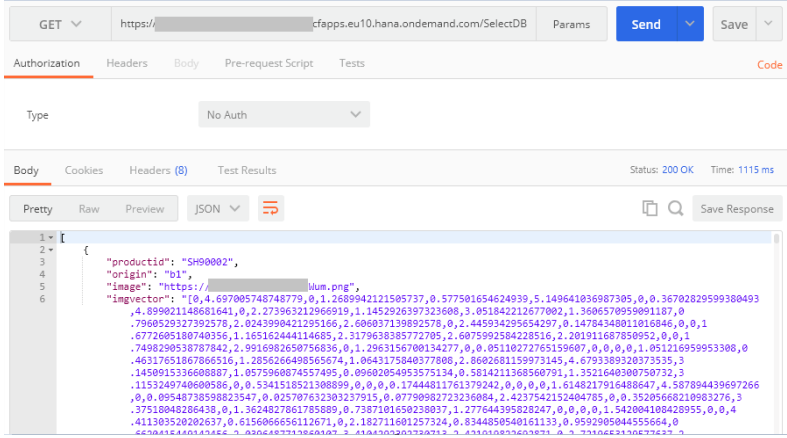
Explanation	Screenshot
<p>If you don't have a B1 or a ByD system (you need at least one of them) please follow this section.</p> <p>Go to the directory <code>smbmkt/smbmkt/modules</code>.</p> <p>Open the file <code>start.js</code>.</p> <p>Search for the <code>Initialize</code> function, keep in the array only the ERP you have a connection to and have been defined in the environment variables. In my case I just kept a <code>b1</code> system here.</p> <p>E.g. <code>'b1'</code> for SAP Business One.</p>	<pre> 21 const biz = require("./biz") 22 const b1 = require("./erp/b1") 23 const byd = require("./erp/byd") 24 const normalize = require("./normalize") 25 26 27 function Initialize() { 28 var erps = ['b1'] 29 30 sql.Initialize(function (error) { 31 if (!error) { </pre>
<p>Run <code>cf push</code> command again to reflect the changes on the <code>start.js</code> file.</p> <pre>cf push</pre>	

ii. Configure the SMB Mktplace backend

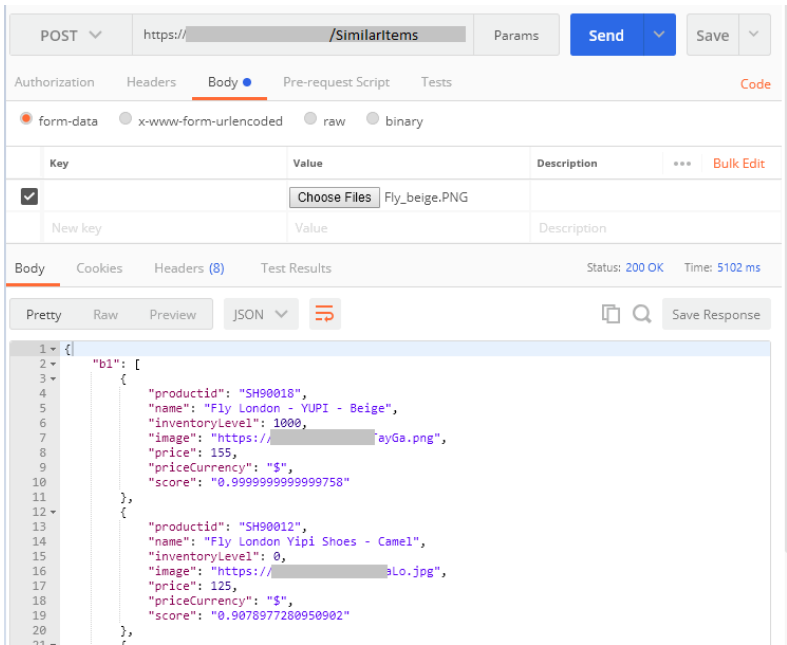
Explanation	Screenshot
<p>Set the following <u>Environment Variables</u> so the app can work properly.</p> <p>The ones marked in red are mandatory (B1 or ByD variable depending on your backend).</p> <p>Please note that you need at least one ERP system from both to be able to retrieve items data.</p>	<pre> B1_DEFAULT_BP: <A Business Partner Code for the B1 Sales Order> BYD_DEFAULT_BP: <A Business Partner Code for the ByD Sales Order> FILE_SEP: -_- LEO_API_KEY: <SAP Leonardo API Key> TEMP_DIR: files/tmp VECTOR_DIR: files/vectors </pre>

Explanation	Screenshot
If you don't have a B1 or ByD system available, you can then skip its corresponding environment variable.	
Set one by one the environment variables with the command: cf set-env smbmkmt B1_COMP_ENV SBODEMOUS	<pre>PS C:\smbmkmt\smbmkmt> cf set-env smbmkmt B1_COMP_ENV SBODEMOUS Setting env variable 'B1_COMP_ENV' to 'SBODEMOUS' for app smbmkmt in org [redacted]_trial / space dev as [redacted] OK TIP: Use 'cf restage smbmkmt' to ensure your env variable changes take effect PS C:\smbmkmt\smbmkmt></pre>
To obtain the SAP Leonardo API Key please open the following link SAP Leonardo Feature Extraction Vectors and press the button "Show API Key".	 <p>The screenshot shows the SAP API Business Hub interface. At the top, it says 'SAP API Business Hub'. Below that, there's a section titled 'Inference Service For Customizable Image Feature Extraction'. It describes the service as 'Extracts feature vectors for any given image for comparison, information retrieval, clustering, or further processing.' There are two buttons: 'Show API Key' (highlighted with a red box) and 'Download SDK'. Below the buttons, there are tabs for 'API References' and 'Details'. At the bottom, there's a section for 'PI Environment' with a dropdown menu showing 'sandbox' and a link to 'Configure Environments'.</p>
Restart your application so it can get the new environment variables with the following command: cf restart smbmkmt	<pre>PS C:\smbmkmt\smbmkmt> cf restart smbmkmt Restarting app smbmkmt in org [redacted]_trial / space dev as [redacted] Stopping app... Waiting for app to start... name: smbmkmt requested state: started instances: 1/1 usage: 256M x 1 instances routes: [redacted].cfapps.eu10.hana.ondemand.com last uploaded: Thu 05 Jul 10:28:00 CEST 2018 stack: cflinuxfs2 buildpack: https://github.com/cloudfoundry/nodejs-buildpack.git start command: npm start state since cpu memory disk details #0 running 2018-07-05T08:45:16Z 0.0% 40K of 256M 8K of 1G _</pre>

iii. Initialize the SMB Mktplace backend

Explanation	Screenshot
<p>To initialize the Postgresql database with the existing items from B1 and ByDesign as well as the vectors for each item please call the following API with Postman for example:</p> <p>POST <code><your_backend_url>/Initialize</code></p>	
<p>After initialization you can check the Postgresql items table content with the following API:</p> <p>GET <code><your_backend_url>/SelectDB</code></p> <p>If the Initialize command runs successfully an entry should be available for each one of your items containing the productid, origin, image and imgVector properties.</p>	

iv. Test the SMB Mktplace backend /SimilarItems API

Explanation	Screenshot
<p>With Postman call the /SimilarItems API:</p> <p>POST <code><your_backend_url>/SimilarItem</code> s</p> <p>In the body select “form-data” and choose a file containing the image of a shoe.</p>	



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

STEP 5: CONSUME THE NODEJS APP FROM THE SAP FIORI APP

Until now our SAP Fiori application hasn't been modified and reflects exactly what was designed in BUILD. In this step we are going to modify the tab "Matching Items" to consume the services provided by our NodeJS backend.

i. Create a destination pointing to your smbmkmt backend

Your destination in your SAP Cloud Platform cockpit -> Connectivity -> Destinations should look like the one here, just replace the URL with your smbmkmt url.

Check the following tutorial [Create a Destination on SAP Cloud Platform](#) to learn more details about destinations.

Destination Configuration

*Name: smbmkmt_workshopNice

Type: HTTP

Description: smbmkmt_workshopNice

*URL: https://smbmkmt-...cfaf

Proxy Type: Internet

Authentication: NoAuthentication

Additional Properties


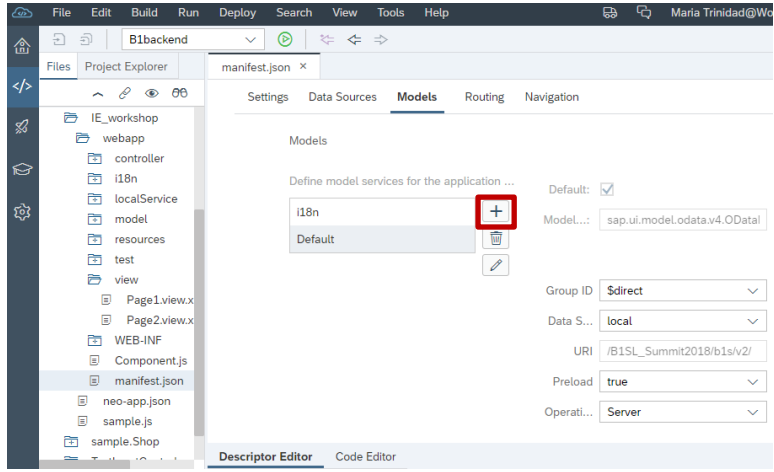
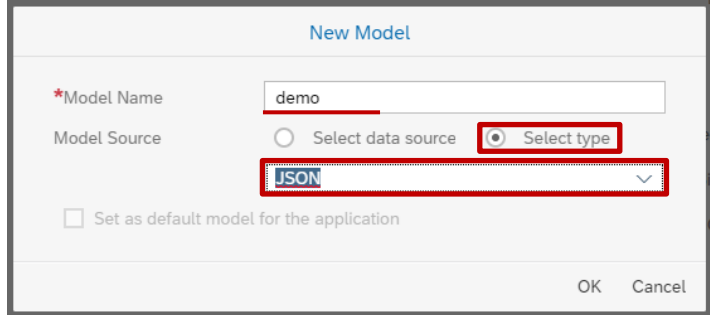
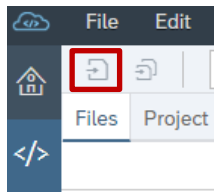
TrustAll	true	
WebIDEEnabled	true	
WebIDESystem	smbmkmt_workNice	
WebIDEUsage	ui5_execute, odata_gen	

New Property

Edit Clone Export Delete Check Connection

Explanation	Screenshot
<p>Open neo-app.json file.</p> <p>Add your backend destination entry to fetch data.</p> <pre>{ "path": "/yourdest", "target": { "type": "destination", "name": "yourdest" }, "description": "yourdesc" }</pre>	
<p>Press Save button.</p>	

ii. Create a new JSON model

Explanation	Screenshot
<p>Open the manifest.json file with the Descriptor Editor.</p> <p>Go to the Models tab.</p> <p>Press the  button to add a new model.</p>	
<p>Enter the Model Name of the model demo if you want to avoid changing the references in the following steps.</p> <p>Choose Select type as Model Source.</p> <p>Select JSON as type.</p> <p>Press OK.</p>	
<p>Press Save button.</p>	

iii. Change the Image control in the Page1.view.xml file.

Explanation	Screenshot
<p>Open the Page1.view.xml file with the Code Editor.</p> <p>Search for the Image control and replace it with the following code:</p> <pre><Image id="img" tooltip="image" class="sapUiLargeMargin"</pre>	

Explanation	Screenshot
<pre>n" src="{demo}/fileURL}"/ ></pre>	

iv. Create a FileUploader control.

In BUILD we added a SearchField control as the FileUploader control was not available. We will now replace it with a FileUploader.

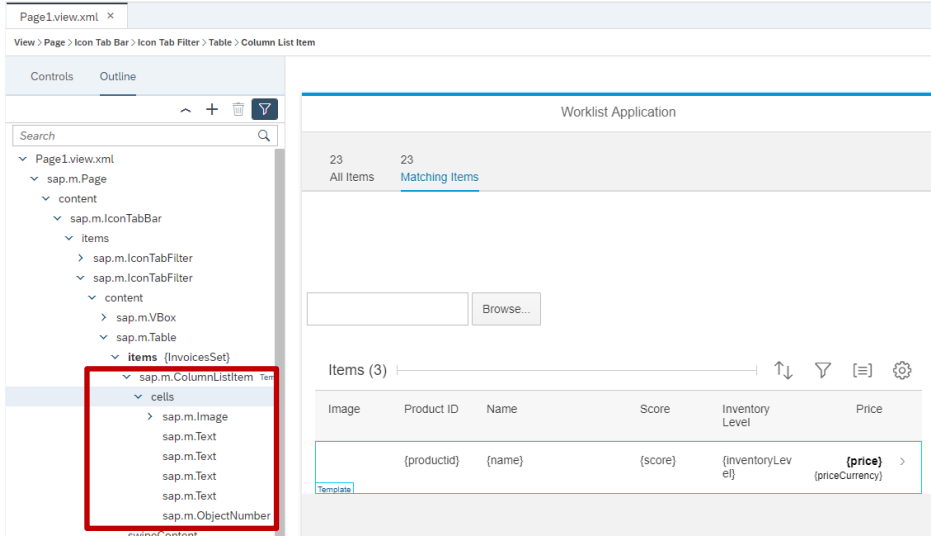
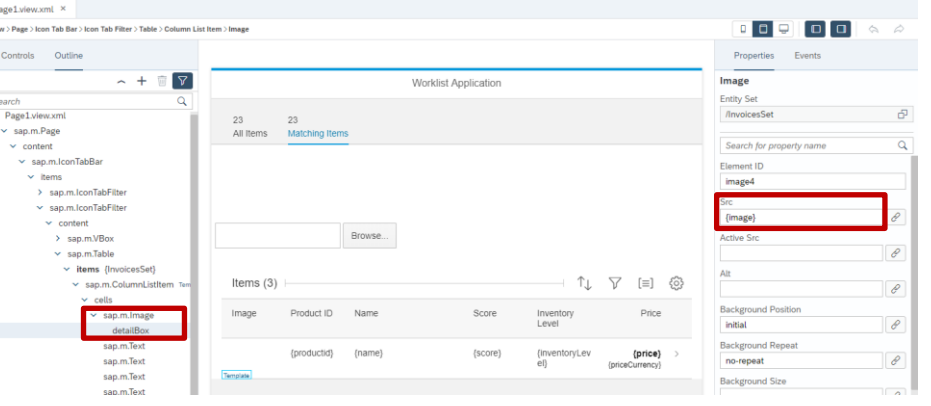
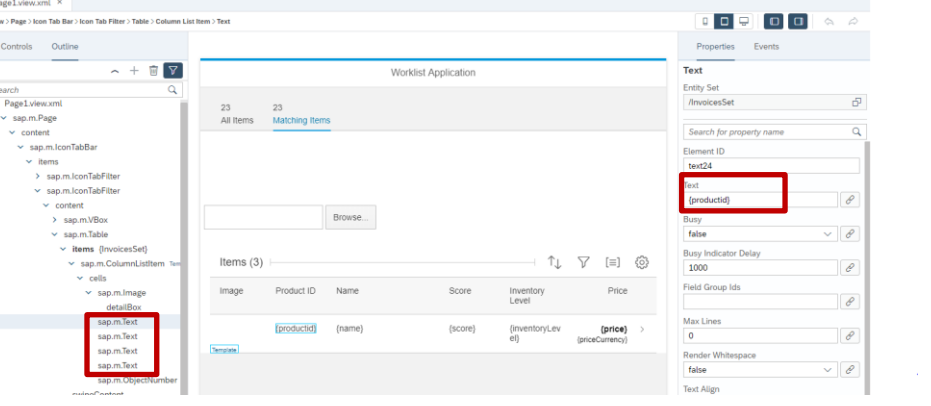
Explanation	Screenshot
<p>Open the Page1.view.xml file with the Code Editor.</p> <p>Search the SearchField control and replace it by the following code.</p> <p>We use the smbmkt destination created in a previous step to get the SimilarItems url.</p> <p>Replace smbmkt_destination with your smbmkt destination name.</p>	 <pre><IconTabFilter icon="" iconColor="Default" text="Matching Items" count="50" design="Vertical" showAll="false" <content> <Image id="img" tooltip="image" class="sapUiLargeMargin" src="{demo}/fileURL}/> <u:FileUploader id="fileUploader" name="files" uploadUrl="/smbmkt_workshopNice/SimilarItems" useMulti <u:headerParameters> <u:FileUploaderParameter name="Accept" value="application/json"/> </u:headerParameters> </u:FileUploader></pre> <pre><u:FileUploader id="fileUploader" name="files" uploadUrl="/smbmkt_destination/SimilarItems" useMultipart="true" sendXHR="true" uploadOnChange="true" tooltip="Upload your file to the local server" fileType="jpg,png,gif" mimeType="application/x-zip- compressed,application/zip,application/octet- stream,image/png,image/jpg,image/jpeg,image/bmp,image/tiff" change="fileUploadChange" uploadStart="fileUploadStart" uploadComplete="fileUploadComplete"> <u:headerParameters> <u:FileUploaderParameter name="Accept" value="application/json"/> </u:headerParameters> </u:FileUploader></pre>
<p>Add the prefix xmlns:u="sap.ui.unified", required by the FileUploader control, at the beginning of the Page1.view.xml file.</p> <p>Press Save button.</p>	 <pre><mvc:View xmlns:mvc="sap.ui.core.mvc" xmlns:u="sap.ui.unified" controllerName="com.sap.bui xmlns:layout="sap.ui.layout"> <Page showHeader="true" title="Shoe Store" showFooter="true" showNavButton="false"> <content></pre>

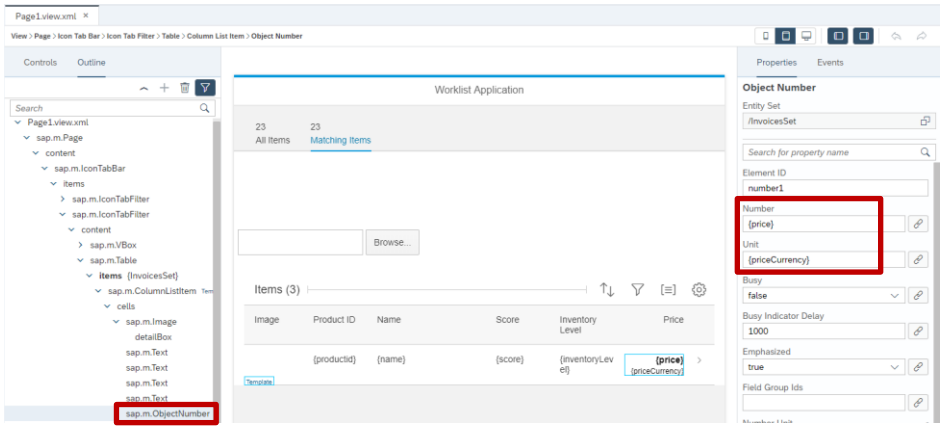
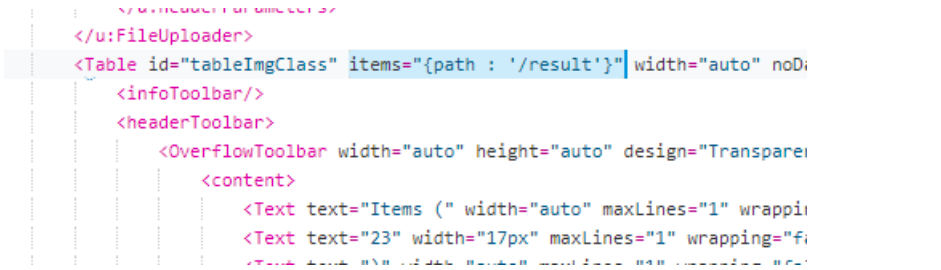
v. Bind the Matching Items Table to our backend properties

Let's define first the IDs of our Table and ColumnListItem controls, we will need them to further bind them to our backend response.

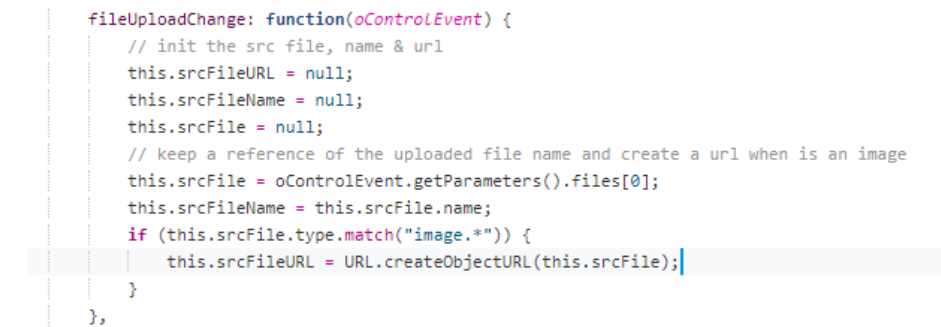
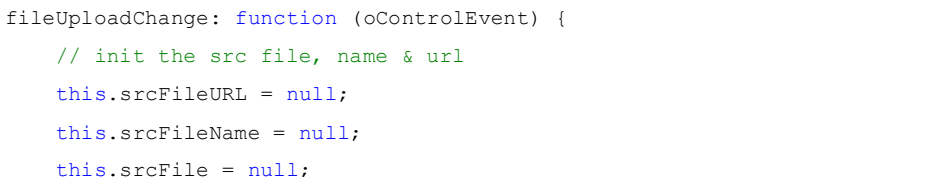
Explanation	Screenshot
<p>Open the Page1.view.xml file with the Layout Editor.</p> <p>In the Outline tab (left of the screen) open the second IconTabFilter content and select the sap.m.Table.</p> <p>In the Properties tab (right of the screen) enter tablemgClass as Element ID.</p>	
<p>In the Outline tab (left of the screen), inside the sap.m.Table we selected in previous step now select the Items -> sap.m.ColumnListItem element.</p> <p>In the Properties tab (right of the screen) enter collmgClass as Element ID.</p> <p>If you have more than one ColumnListItem you can remove them.</p>	

Now let's map each column in the Table to our backend response properties.








Explanation	Screenshot
<p>Open the Page1.view.xml file with the Layout Editor.</p> <p>Open the Outline tab (left of the screen) and select the sap.m.ColumnListItem -> cells element.</p> <p>Make sure you get 6 cells defined with the types as marked in the screen capture. Maybe the easier is to delete them and recreate them in the right order.</p>	
<p>For the sap.m.Image open the detailBox and enter {image} in the Src property.</p>	
<p>For the cells of type sap.m.Text go over them and set the Text property to the different properties names returned by the smbmkt backend:</p> <ul style="list-style-type: none"> {productid} {name} {score} {inventoryLevel} 	

Explanation	Screenshot
<p>For the last cell of type sap.m.ObjectNumber set the property Number to {price} and Unit to {priceCurrency}.</p>	
<p>Open the Page1.view.xml file with the Code Editor.</p> <p>Search for the Table with id "tableImgClass" we updated in previous steps.</p> <p>Add the following property to indicate the path to the results from SimilarItems:</p> <pre>items="{path : '/result'}"</pre>	

vi. Implement the Page1.controller.js.

Explanation	Screenshot
<p>Open the Page1.controller.js file.</p> <p>Implement the fileUploadChange function.</p> <p>This function will be called when a file has been selected.</p>	
<p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmkt/blob/CF_exercise/exercise/extras/STEP</p>	

Explanation	Screenshot
%205/Page1.controller.js_ext.txt	<pre> // keep a reference of the uploaded file name and create a url out of that when this is an image this.srcFile = oControlEvent.getParameters().files[0]; this.srcFileName = this.srcFile.name; if (this.srcFile.type.match("image.*")) { this.srcFileURL = URL.createObjectURL(this.srcFile); } }, </pre>
<p>Now let's implement the fileUploadComplete function.</p> <p>This function will be called after the fileUploader uploadUrl ({demo>/url}) has been called and a response returned.</p>	<pre> fileUploadComplete: function (oControlEvent) { // get the current view var oView = this.getView(); // smbmk backend // clear previous results from the model oView.getModel("demo").setProperty("/result", null); var processResult = function (oController, data) { oView = oController.getView(); // merge with existing results - working with B1 only on this case var result = oView.getModel("demo").getProperty("/result"); if (result) { result.push.apply(result, data.b1); } else { result = data.b1; } oView.getModel("demo").setProperty("/result", result); oView.getModel("demo").setProperty("/fileURL", oController.srcFileURL); // Set Model to Table var oTable = oView.byId("tableImgClass"); oTable.setModel(oView.getModel("demo")); }; if (oControlEvent.getParameters().status === 200) { // get the response as JSON and process the results processResult(this, JSON.parse(oControlEvent.getParameters().responseRaw)); } else { MessageToast.show("Error " + oControlEvent.getParameters().status + " : " + JSON.parse(oControlEvent } } </pre>
<p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmk/blob/CF_exercise/exercise/extras/STEP%205/Page1.controller.js_ext.txt</p>	<pre> fileUploadComplete: function (oControlEvent) { // get the current view var oView = this.getView(); // smbmk backend // clear previous results from the model oView.getModel("demo").setProperty("/result", null); var processResult = function (oController, data) { oView = oController.getView(); // merge with existing results - working with B1 only on this case var result = oView.getModel("demo").getProperty("/result"); if (result) { result.push.apply(result, data.b1); } else { result = data.b1; } oView.getModel("demo").setProperty("/result", result); }; if (oControlEvent.getParameters().status === 200) { // get the response as JSON and process the results processResult(this, JSON.parse(oControlEvent.getParameters().responseRaw)); } else { MessageToast.show("Error " + oControlEvent.getParameters().status + " : " + JSON.parse(oControlEvent } } </pre>

Explanation	Screenshot																					
	<pre>oView.getModel("demo").setProperty("/fileURL", oController.srcFileURL); // Set Model to Table var oTable = oView.byId("tableImgClass"); oTable.setModel(oView.getModel("demo")); }; if (oControlEvent.getParameters().status === 200) { // get the response as JSON and process the results processResult(this, JSON.parse(oControlEvent.getParameters().responseRaw)); } else { MessageToast.show("Error " + oControlEvent.getParameters().status + " : " + JSON.parse(oControlEvent.getParameters().responseRaw).error_description); } }</pre>																					
<p>Add the MessageToast definition at the beginning of the file.</p> <pre>"sap/m/MessageToast", , MessageToast</pre>	<pre>sap.ui.define(["sap/ui/core/mvc/Controller", "sap/m/MessageBox", "sap/m/MessageToast", "./utilities", "sap/ui/core/routing/History"], function (BaseController, MessageBox, MessageToast, Utilities, History) { "use strict";</pre>																					
<p>Now the code should be complete.</p> <p>Run your SAP Fiori application to check all the new features.</p> <p>Press Browse and choose an image containing a shoe.</p> <p>The SimilarItems backed API is called and similar items result shown in the table.</p>	<div><div>All ItemsMatching Items</div><div></div><div><div>Fly_beige.PNG</div><div>Browse...</div></div><div>Items (23)</div><table><tr><th>Image</th><th>Product Id</th><th>Name</th><th>Inventory Level</th><th>Score</th><th>Price</th><th></th></tr><tr><td></td><td>SH90018</td><td>Fly London - YUPI - Beige</td><td>0.99999999999999758</td><td>0</td><td>190 GBP</td><td>></td></tr><tr><td></td><td>SH90012</td><td>Fly London Yipi Shoes - Camel</td><td>0.9078977280950902</td><td>0</td><td>180 GBP</td><td>></td></tr></table></div>	Image	Product Id	Name	Inventory Level	Score	Price			SH90018	Fly London - YUPI - Beige	0.99999999999999758	0	190 GBP	>		SH90012	Fly London Yipi Shoes - Camel	0.9078977280950902	0	180 GBP	>
Image	Product Id	Name	Inventory Level	Score	Price																	
	SH90018	Fly London - YUPI - Beige	0.99999999999999758	0	190 GBP	>																
	SH90012	Fly London Yipi Shoes - Camel	0.9078977280950902	0	180 GBP	>																

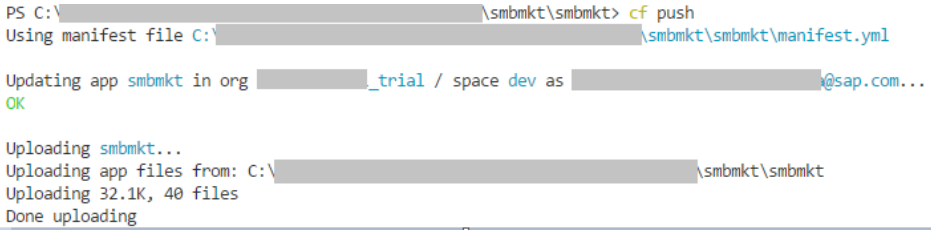
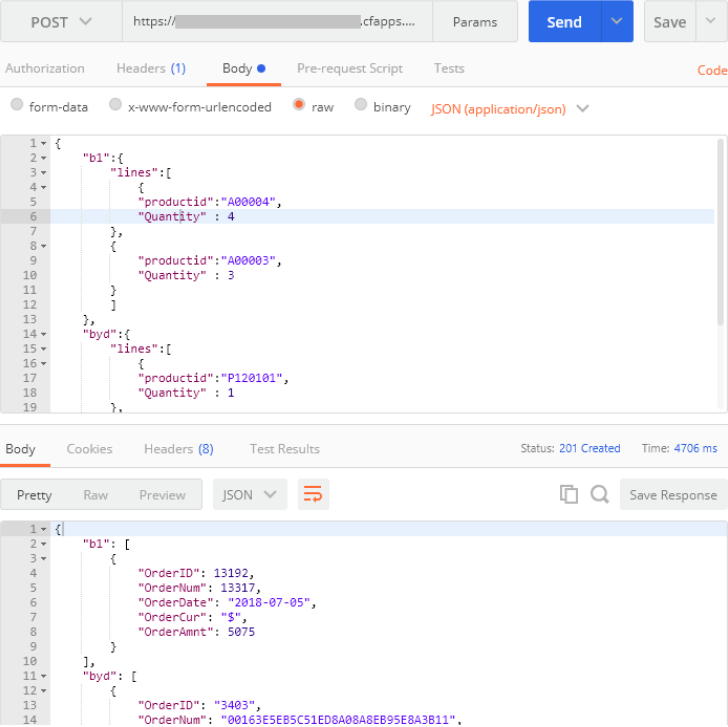
Congratulations! You have just implemented your first full stack loosely coupled extension!

STEP 6: ADD A NEW SERVICE TO THE NODEJS APPLICATION


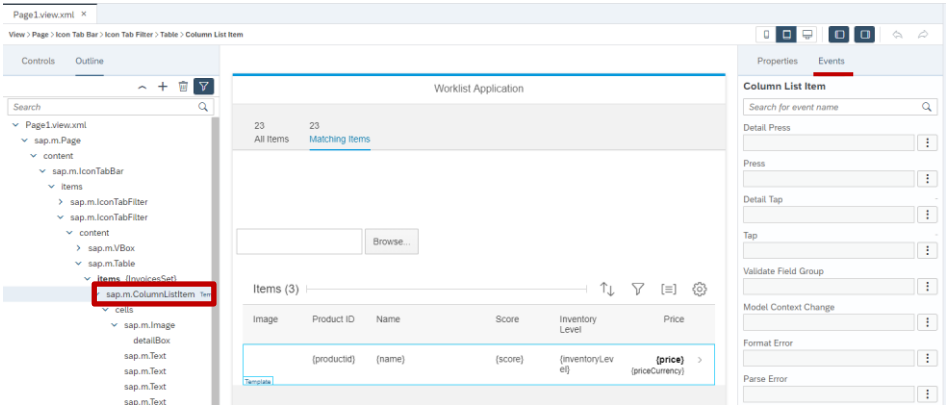
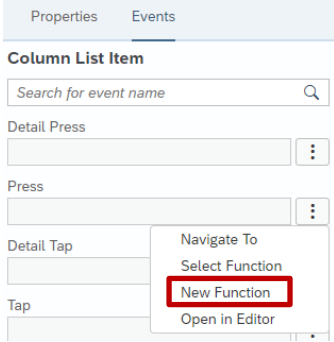
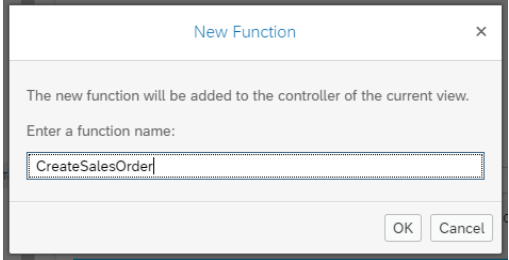
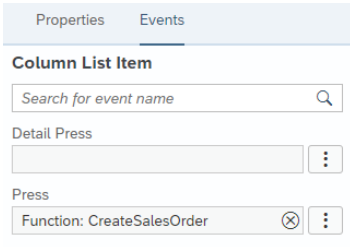
Let's add a new service to the NodeJS app that will create Sales Orders in the ERP system.

Explanation	Screenshot
<p>Go to the smbmkt folder you deployed before in Cloud Foundry.</p> <p>Open the app.js file with a Java Script editor (Visual Studio Code is an option).</p> <p>Add a post service called /SalesOrders.</p> <p>This service will call a function in the biz module.</p> <p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmkt/blob/CF_exercise/exercise/extras/STEP%206/app_ext.txt</p>	<pre>app.post('/SalesOrders', function (req, res) { console.log("REQUEST: Create Sales Order") biz.CreateSalesOrder(req.body, function (response) { res.setHeader('Content-Type', 'application/json') res.status(201) res.send(response) }) });</pre>
<p>Open the modules/biz.js file.</p> <p>Add a function called CreateSalesOrder.</p> <p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmkt/blob/CF_exercise/exercise/extras/STEP%206/biz_ext.txt</p>	<pre>function CreateSalesOrder(body, callback) { /* Receives a body with all items from each erp */ var fResp = {}; call = 0; for (key in body) { var re = PostErpSalesOrder(key, body[key]).then(function (salesOrder) { fResp[Object.keys(salesOrder)] = salesOrder[Object.keys(salesOrder)].values; call++; if (call == Object.keys(body).length) { callback(fResp) } }) } }</pre>
<p>In the modules/biz.js file.</p> <p>Add a function called PostErpSalesOrder.</p> <p>This function will create a new sales order in the corresponding erp module (B1 or ByD) for each item ordered.</p> <p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmkt/blob/CF_exercise/exercise/extras/STEP%206/biz_ext.txt</p>	<pre>let PostErpSalesOrder = function (origin, body) { return new Promise(function (resolve, reject) { var erp = eval(origin); erp.PostSalesOrder(body, function (error, salesOrder) { if (error) { salesOrder = {}; salesOrder.error = error; } var output = {}; if (salesOrder.hasOwnProperty("value")) { salesOrder = salesOrder.value } output[origin] = { values: salesOrder.error salesOrder } resolve(normalize.SalesOrders(output)) }) }) }</pre>

Explanation	Screenshot
<p>In the modules/biz.js file.</p> <p>Declare in module.exports the CreateSalesOrder function.</p> <p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmkt/blob/CF_exercise/exercise/extras/STEP%206/biz_ext.txt</p>	<pre> module.exports = { GetItems: function (query, callback) { return (GetItems(query, callback)) }, GetSalesOrders: function (options, callback) { return (GetSalesOrders(options, callback)) }, SimilarItems: function (body, callback) { return (SimilarItems(body, callback)) }, CreateSalesOrder: function (body, callback) { return (CreateSalesOrder(body, callback)) }, } </pre>
<p>Open the erp/b1.js file.</p> <p>Add a new function PostSalesOrder.</p> <p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmkt/blob/CF_exercise/exercise/extras/STEP%206/b1_ext.txt</p>	<pre> function PostSalesOrder(body, callback) { var options = {} options.url = SLServer + "/Orders" options.method = "POST" options.body = { "CardCode" : process.env.B1_DEFAULT_BP, "DocDueDate" : moment().format('YYYY-MM-DD'), "Comments": "Order created via SMB Mkt Place @" + moment.now(), "DocumentLines":[] } options.body.DocumentLines = JSON.parse(b1Normalize(JSON.stringify(body.lines))) options.body = JSON.stringify(options.body); ServiceLayerRequest(options, function (error, response, body) { if (!error && response.statusCode == 201) { console.log("Sales order created: " + body.DocEntry) body = odata.formatResponse(JSON.parse(body)); callback(null, body); } else { callback(error); } }); } </pre>
<p>In the erp/b1.js file.</p> <p>Declare in module.exports the PostSalesOrder function.</p> <p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmkt/blob/CF_exercise/exercise/extras/STEP%206/b1_ext.txt</p>	<pre> JS b1.js 1 /* Service Layer module to interact with B1 Data */ 2 /* Server Configuration and User Credentials set in environment varia 3 /* Session and Node ID stored in Redis cache database */ 4 5 var client; // Redis Client 6 7 module.exports = { 8 GetItems: function (options, callback) { 9 return (GetItems(options, callback)) 10 }, 11 GetOrders: function (options, callback) { 12 return (GetOrders(options, callback)) 13 }, 14 PostSalesOrder: function (body, callback) { 15 return (PostSalesOrder(body, callback)) 16 }, 17 setClient: function (inClient) { client = inClient; } 18 } </pre>

Explanation	Screenshot
<p>Go to your cmd line window.</p> <p>Run the cf command cf push</p> <p>To upload the changes you did to your app to Cloud Foundry.</p>	 <pre> PS C:\[redacted]\smbmkt\smbmkt> cf push Using manifest file C:\[redacted]\smbmkt\smbmkt\manifest.yml Updating app smbmkt in org [redacted]_trial / space dev as [redacted]@sap.com... OK Uploading smbmk... Uploading app files from: C:\[redacted]\smbmkt\smbmkt Uploading 32.1K, 40 files Done uploading </pre>
<p>You can test now your new service with Postman with the url of your app as follows:</p> <p>https://smbmkt-YOURAPP/SalesOrders</p>	 <pre> POST https://[redacted].cfapps.... Authorization: [redacted] Headers: (1) Body: { "b1": { "lines": [{ "productid": "A00004", "Quantity": 4 }, { "productid": "A00003", "Quantity": 3 }], "byd": { "lines": [{ "productid": "P120101", "Quantity": 1 }] } } } </pre> <p>Status: 201 Created Time: 4706 ms</p> <pre> { "b1": [{ "OrderID": 13192, "OrderNum": 13317, "OrderDate": "2018-07-05", "OrderCur": "\$", "OrderAmt": 5075 }], "byd": [{ "OrderID": "3403", "OrderNum": "00163E5EB5C51ED8A08A8EB95E8A3B11", }] } </pre>

STEP 7: CALL THE NEW NODEJS SERVICE FROM YOUR SAP FIORI APP

Explanation	Screenshot
<p>Open the Page1.view.xml file with the Layout Editor.</p> <p>Open the Outline tab and select sap.m.ColumnsListItem control we worked on previously (second TabFilter for Matching Items).</p> <p>Select the Events tab (right side).</p> <p>Click on the  button corresponding to the Press event.</p>	
<p>Choose the New Function option.</p>	
<p>Enter CreateSalesOrder as function name.</p> <p>Press OK.</p>	
<p>The new function will be indicated inside the Press event.</p>	

Explanation	Screenshot
<p>Open the Page1.controller.js file.</p> <p>A new empty function has been automatically created based on our last step.</p>	<pre> CreateSalesOrder: function (oEvent) { //This code was generated by the layout editor. } </pre>
<p>Let's implement this function to call our smbmk backend nodejs /SalesOrder service.</p> <p>We use here the destination pointing to our smbmk backend.</p>	<pre> CreateSalesOrder: function (oEvent) { // Get Data from ODataModel V4 /Orders var body = { "b1": { "lines": [{ "productid": oEvent.getSource().getBindingContext().getObject().productid, "Quantity": 1 }] } }; \$.ajax({ url: "/smbmk_workshopNice/SalesOrders", type: "POST", data: JSON.stringify(body), contentType: "application/json", success: function (data) { MessageToast.show("B1 SalesOrder number " + data.b1[0].OrderNum + " created."); }, error: function (jqXHR, textStatus, errorThrown) { MessageToast.show("POST SalesOrders error: " + JSON.stringify(jqXHR.responseJSON)); } }); } </pre>
<p>You can get the code from the following link:</p> <p>https://github.com/B1SA/smbmk/blob/CF_exercise/exercise/extras/STEP%207/Page1.controller.js_ext.txt</p> <p>Replace smbmk_destination with your smbmk destination name.</p>	<pre> CreateSalesOrder: function (oEvent) { // Get Data from ODataModel V4 /Orders var body = { "b1": { "lines": [{ "productid": oEvent.getSource().getBindingContext().getObject().productid, "Quantity": 1 }] } }; \$.ajax({ url: "/smbmk_destination/SalesOrders", type: "POST", data: JSON.stringify(body), contentType: "application/json", success: function (data) { MessageToast.show("B1 SalesOrder number " + data.b1[0].OrderNum + " created."); }, error: function (jqXHR, textStatus, errorThrown) { MessageToast.show("POST SalesOrders error: " + JSON.stringify(jqXHR.responseJSON)); } }); } </pre>

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

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