

PUBLIC

Build a Workflow from Scratch with SAP Workflow Management

DEV163

Exercise 2.1 | Business Rules
Archana Shukla / SAP

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AUTHOR, ACTIVATE AND DEPLOY BUSINESS RULES

OVERVIEW

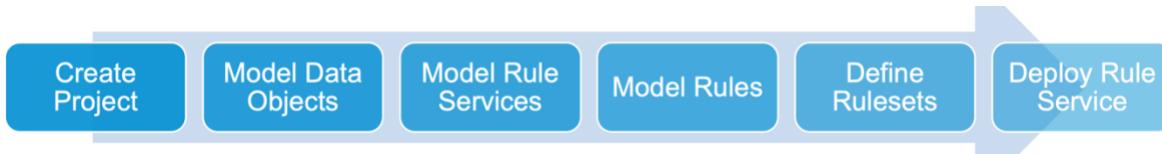
Estimated time: 45 minutes

The exercise is based on authoring and managing rules for capital expenditure, using SAP Business Rules service. The rule determines the approvers based on investment details.

The screenshot shows the SAP Business Rules application interface. At the top, there are navigation links: 'Manage Projects / Capital Expenditure Rules /' and buttons for 'Import', 'Export', 'Edit', and 'Validate'. Below this, a title bar says 'Determine Approvers Rule'. Underneath, there are two tabs: 'Details' and 'Decision Table', with 'Decision Table' being the active tab. The 'Decision Table' section contains a table with columns for 'If' and 'Then' conditions. The 'If' columns include 'Investment.Country', 'Investment.Type', and 'Investment.Total Cost'. The 'Then' columns include 'Central Manager User...', 'Local Manager User ID', 'Local Manager Appro...', and 'Central Manager Appro...'. The table rows define rules for different combinations of country and type, such as 'Germany' Software > 100, 'India' Software IN [200 .. 1000], etc.

If			Then			
Investment.Country	Investment.Type	Investment.Total Cost	Central Manager User...	Local Manager User ID	Local Manager Appro...	Central Manager Appro...
'Germany'	'Software'	> 100	'ibpmuser000'	'ibpmuser000'	true	true
'India'	'Software'	IN [200 .. 1000]	'varun.rao.001'	'kiran.shah.012'	false	true
'India'	'Software'	> 1000	'varun.rao.001'	'kiran.shah.012'	true	true
'United States of ...'	'Building'	EXISTSIN [100 , 5...	'frank.mathew.023'	'peter.collins.1441'	true	false
'United States of ...'	'Equipment'	>= 2500	'frank.mathew.023'	'nina.hanks.001'	true	true

In this exercise, you will learn about different enterprise rule models and how to author them using Manage Rules Application. You will create, configure and activate these business rules models, and learn how to deploy the rule service to cloud for consumption.

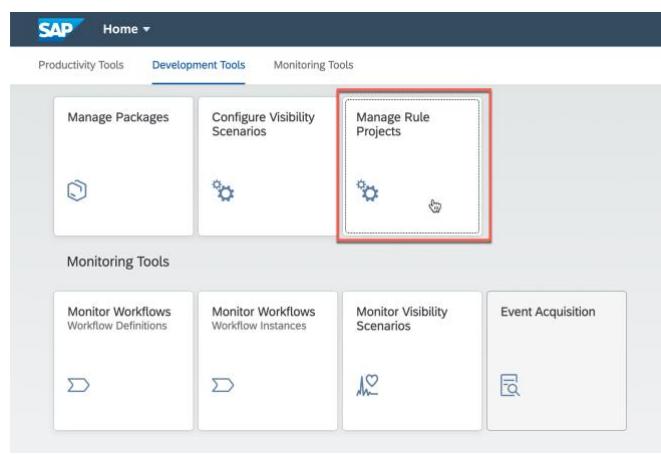
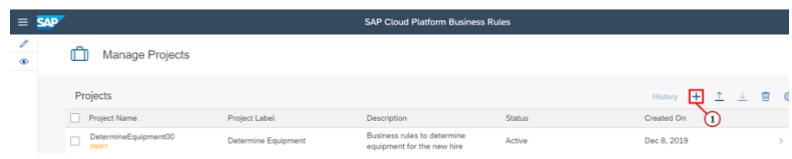
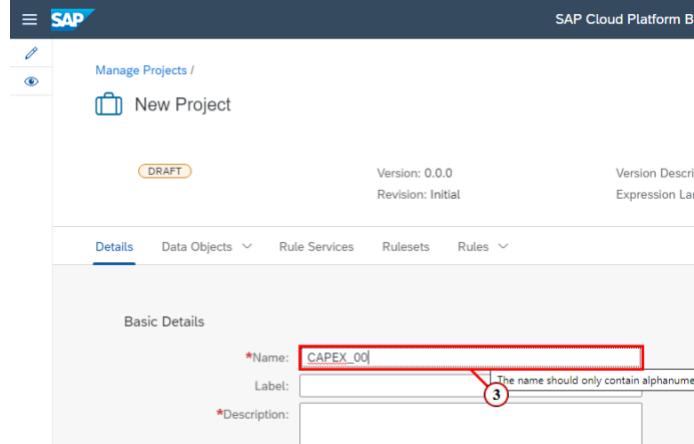
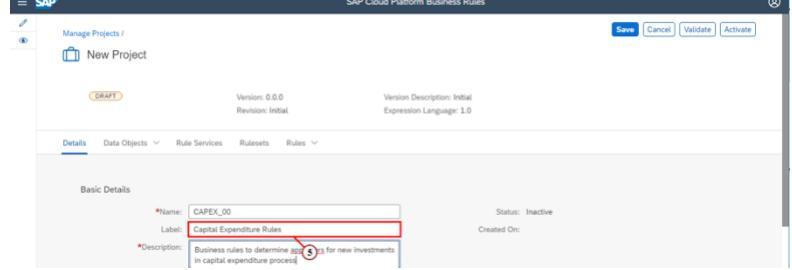


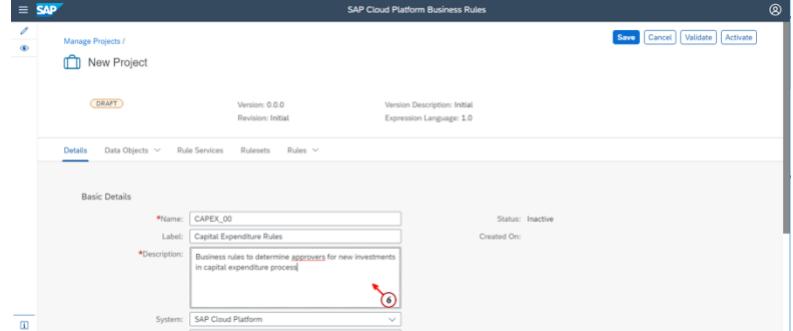
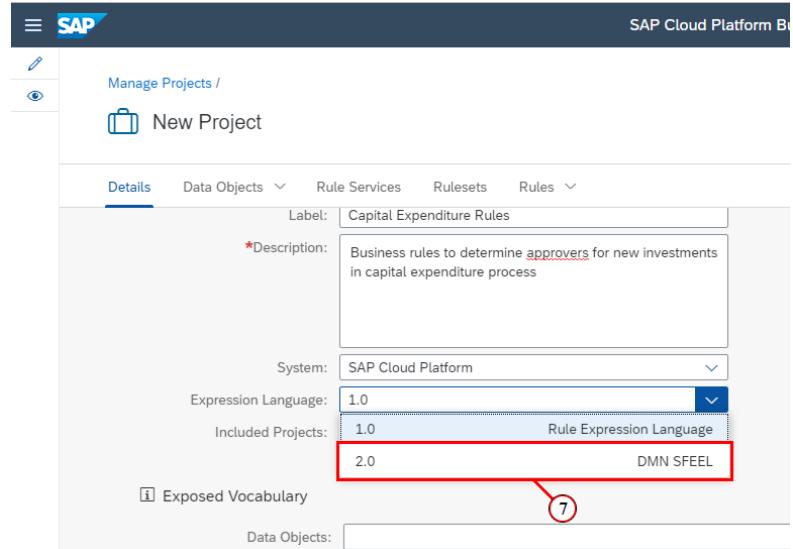
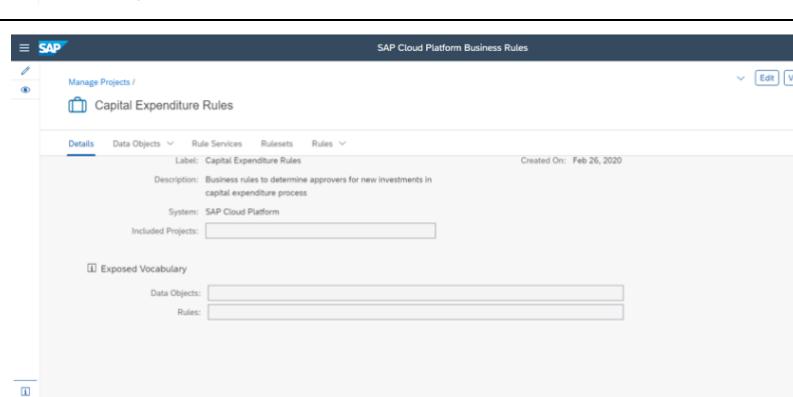
Exercise Description:

In this exercise you will do the following:

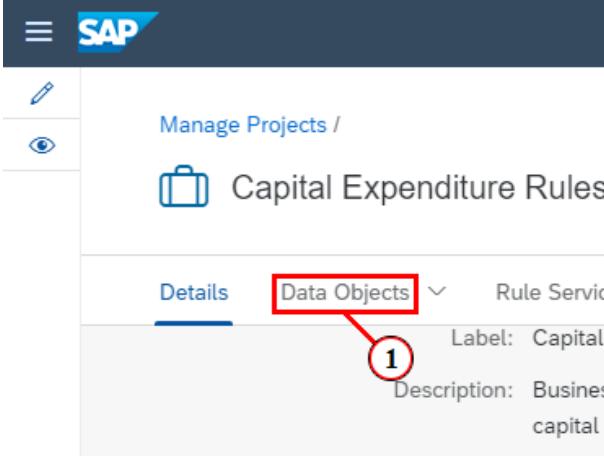
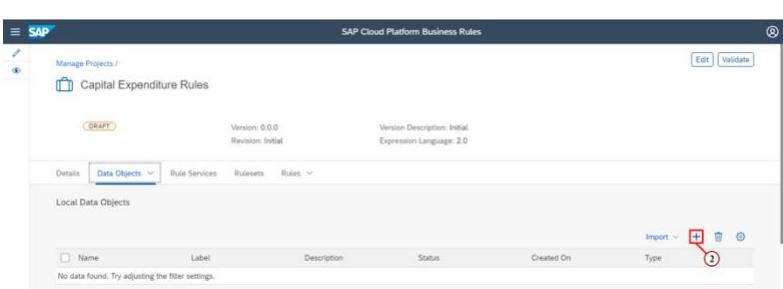
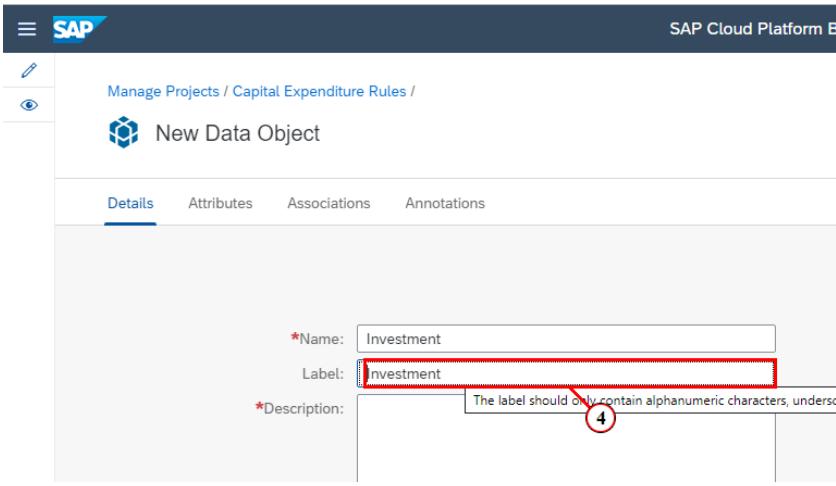
- *Create and Configure Project*
- *Create Data Objects*
- *Configure Data Object with Value Help*
- *Create Ruleservice*
- *Create Decision Table*
- *Create Ruleset*
- *Activate Projects and other Models*
- *Deploy Ruleservice in Cloud Runtime*
- *Create Rule Version*
- *Test Business Rules*

CREATE PROJECT

Explanation	Screenshot
<p>1. Open Workflow Management Launchpad and click to open Manage Rule Projects.</p> <ul style="list-style-type: none"> • Login with trial username and passwords 	
<p>2. Click + to create a new business rules project.</p>	
<p>3. Enter CAPEX_00 in the Name box.</p>	
<p>4. Enter Capital Expenditure Rules in the Label box.</p>	

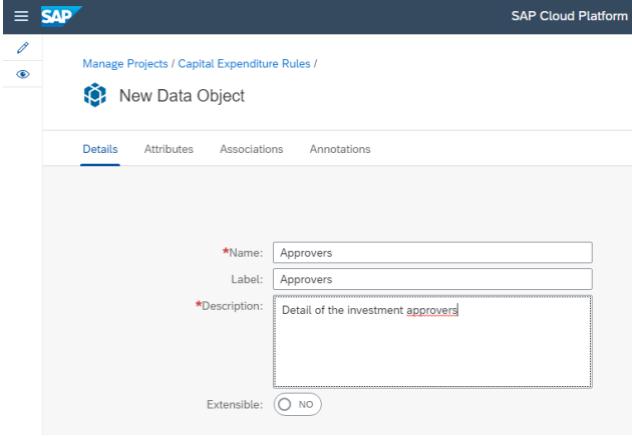
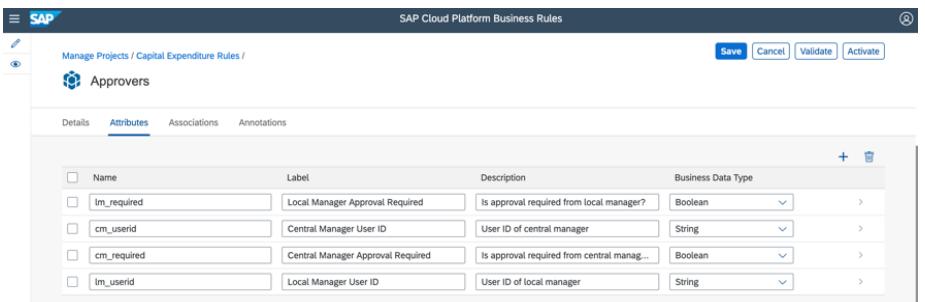
Explanation	Screenshot
<p>5. Enter Business rules to determine approvers for new investments in capital expenditure process in Description box.</p>	
<p>6. Click to select 2.0 as the Expression Language.</p>	
<p>7. Click Save.</p>	
<p>Your business rules project is created with the needed configurations.</p>	

CREATE DATA OBJECTS

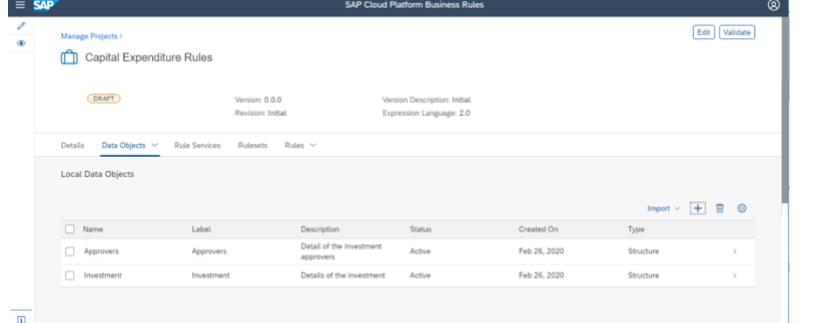
Explanation	Screenshot
<p>8. Click Data Objects.</p>	
<p>9. Click + to create data object</p>	
<p>10. Enter Investment in the Name and the Label box.</p>	

Explanation	Screenshot
<p>11. Enter Details of the investment in the Description box.</p>	
<p>12. Click Attributes.</p>	
<p>13. Click + to add new attributes</p>	
<p>14. Enter Type in the Name and Label box. 15. Enter Type of investment in the Description box.</p>	
<p>16. Click + to add attribute.</p>	

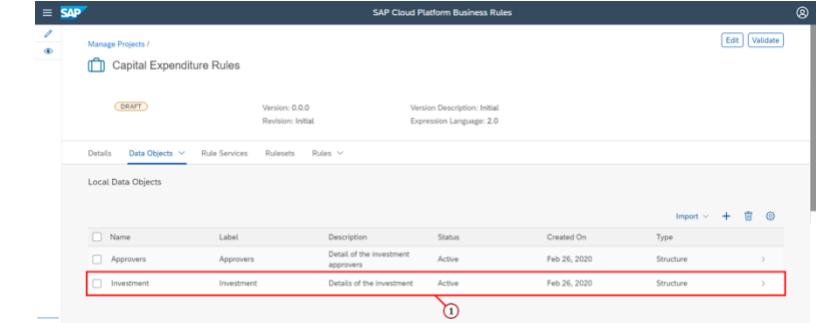
Explanation	Screenshot
<p>17. Repeat the steps to create more data object attributes with following details:</p> <p>Name: Currency Label: Currency Description: Currency Type: String</p> <p>Name: Country Label: Country Description: Country Type: String</p> <p>Name: TotalCost Label: Total Cost Description: Total cost of investment Type: Number</p>	
<p>18. Click Activate.</p>	
<p>19. Click Capital Expenditure Rules.</p>	
<p>20. Click + to new data object.</p> <p>Note: Ensure that you are in Data Objects tab.</p>	

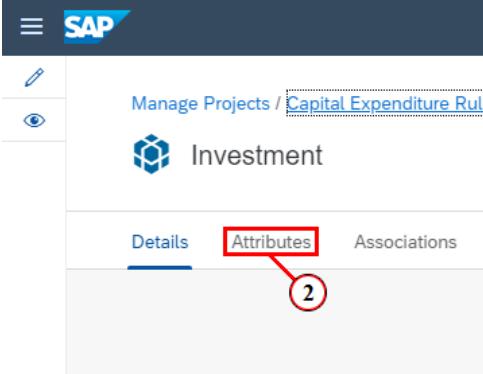
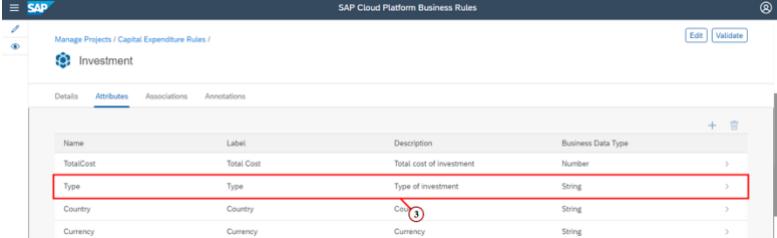
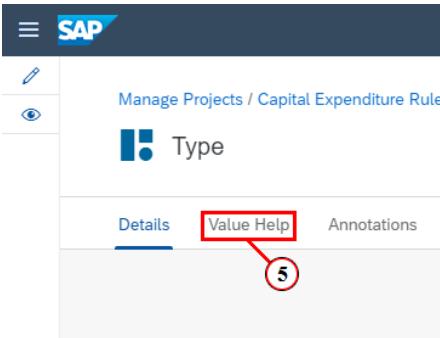
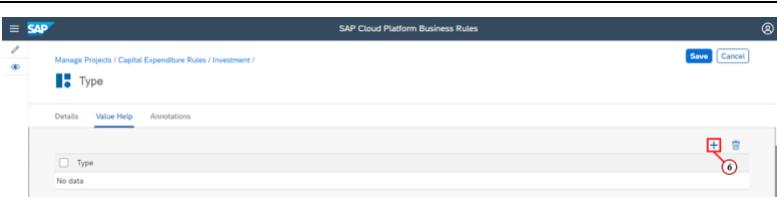
Explanation	Screenshot
<p>21. Enter Approvers in Name box.</p> <p>22. Enter Approvers in Label box.</p> <p>23. Enter Detail of investment approvers in Description box.</p>	
<p>24. Click Attributes.</p>	
<p>25. Repeat the steps to create Approvers data object attributes with following details:</p> <p>Name: cm_userid Label: Central Manager User ID Description: User ID of central manager Type: String</p> <p>Name: lm_userid Label: Local Manager User ID Description: User ID of local manager Type: String</p> <p>Name: lm_required Label: Local Manager Approval Required Description: Is approval required from local manager? Type: Boolean</p> <p>Name: cm_required Label: Central Manager Approval Required Description: Is approval required from central manager? Type: Boolean</p>	

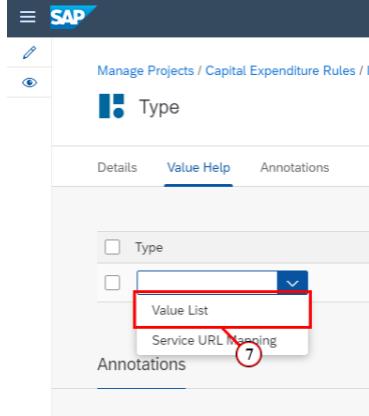
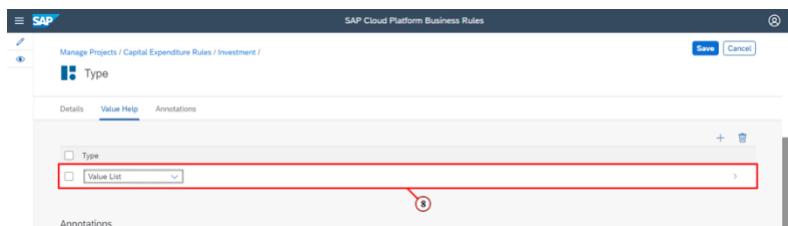
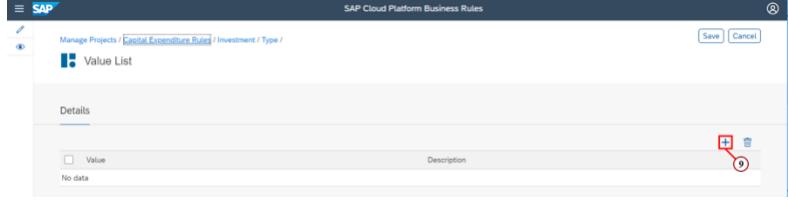
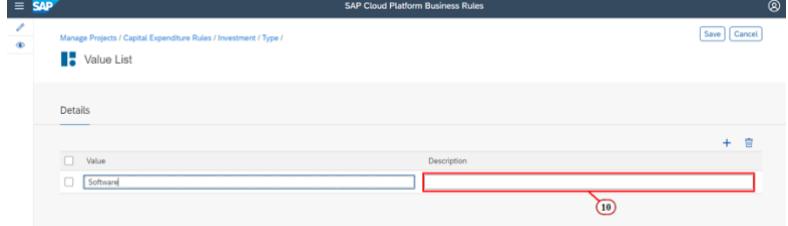
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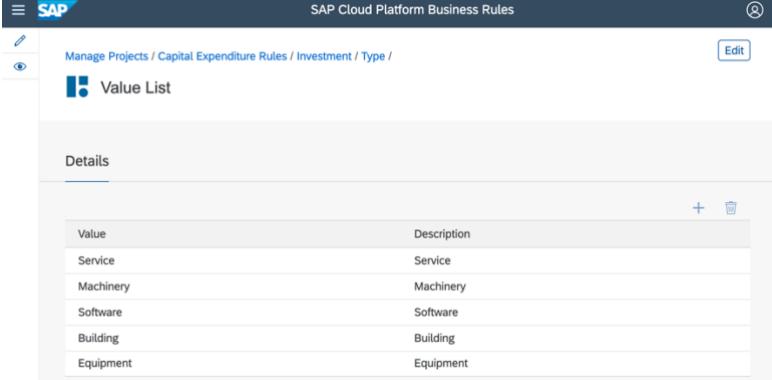
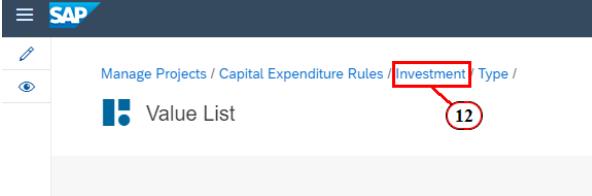
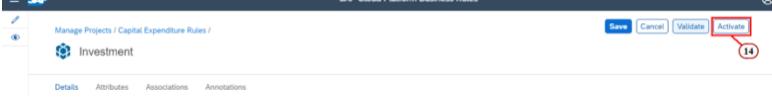
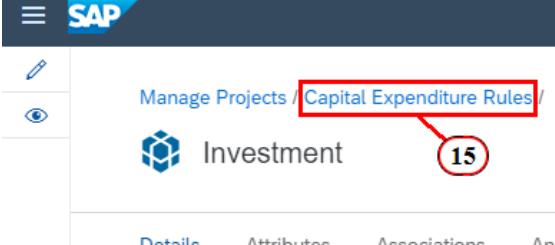
Explanation	Screenshot
26. Click Activate .	
27. Click Capital Expenditure Rules .	
<p>You have created and configured data objects in business rules project.</p> <p>Investment data object will be used as <i>Input</i> and Approver data object will be used as <i>Output</i> in the rule service.</p> <p>These data object & their attributes will be used while modelling rule expressions.</p>	

CONFIGURE VALUE HELP IN DATA OBJECT

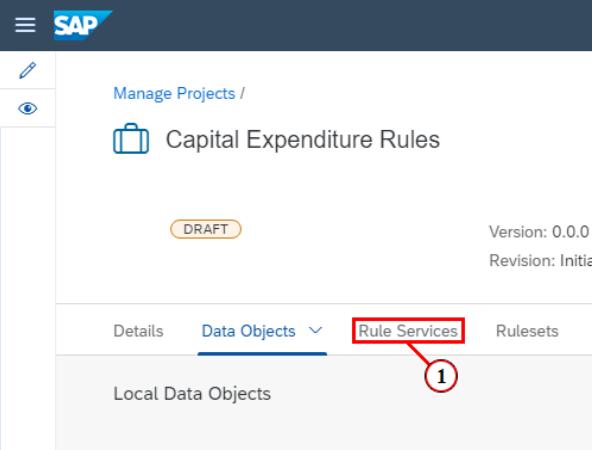
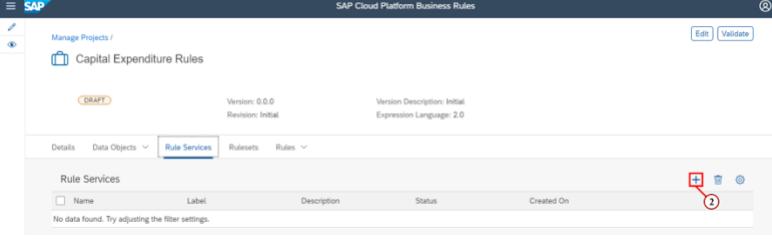
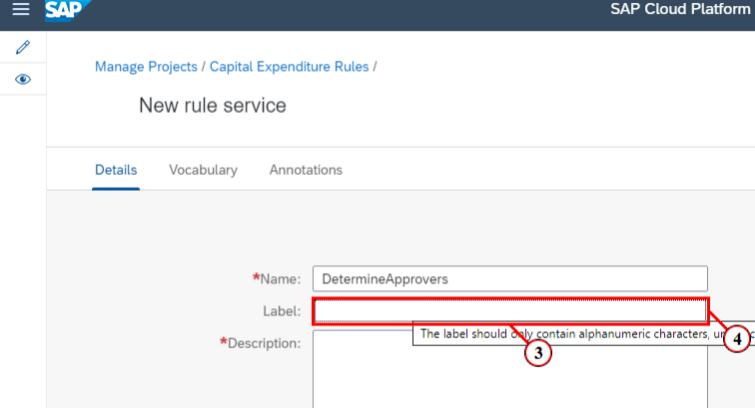
Explanation	Screenshot
28. Click to open Investment data object.	

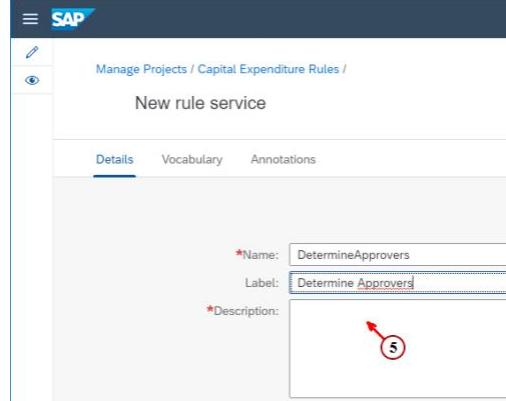
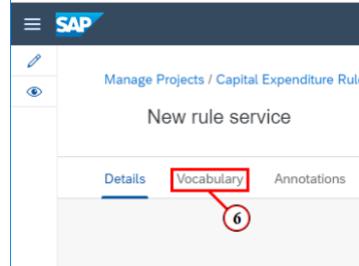
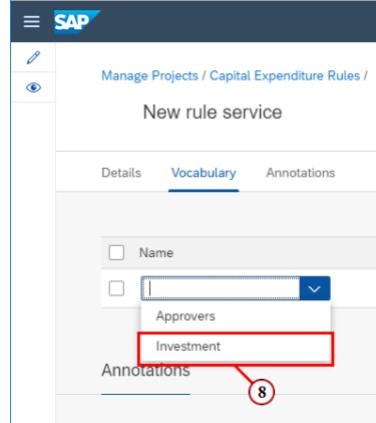
Explanation	Screenshot
29. Click Attributes to add attributes to the data object.	
30. Click to open Type attribute.	
31. Click Edit .	
32. Click Value Help .	
33. Click + to add value help	

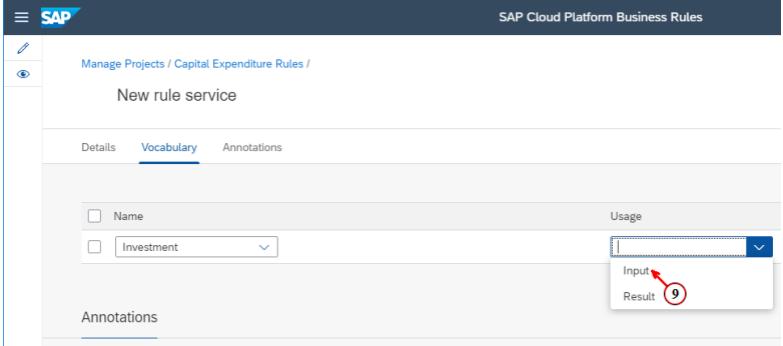
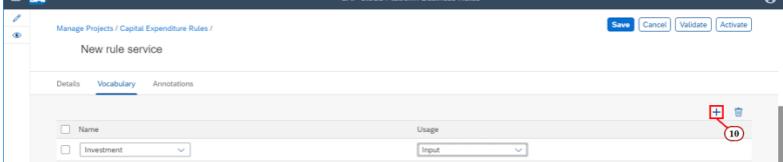
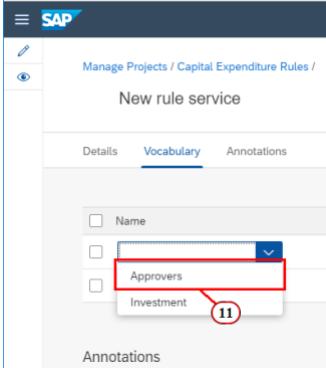
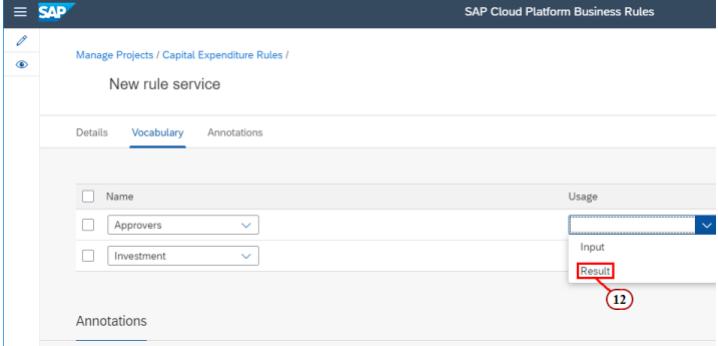
Explanation	Screenshot
<p>34. Click Value List from Type.</p>	
<p>Note: there are two kinds of value help (a) Static and (b) Dynamic. Dynamic value help can be created with Service URL Mapping and Static can be created with Value List type. In dynamic value you can connect any backend system and make a service call. In this exercise, you will create static value help where you will manually create value-description pair.</p>	
<p>35. Click to on the Value List row.</p>	
<p>36. Click + to add values to the value list.</p>	

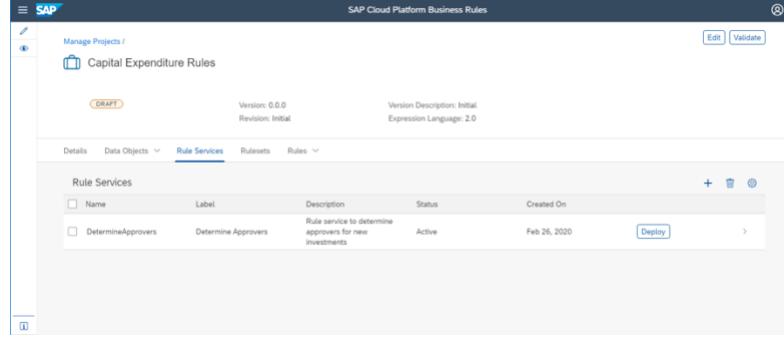
Explanation	Screenshot										
<p>38. Repeat the steps above to add few more values:</p> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Machinery</td><td>Machinery</td></tr> <tr> <td>Building</td><td>Building</td></tr> <tr> <td>Equipment</td><td>Equipment</td></tr> <tr> <td>Service</td><td>Service</td></tr> </tbody> </table>	Value	Description	Machinery	Machinery	Building	Building	Equipment	Equipment	Service	Service	
Value	Description										
Machinery	Machinery										
Building	Building										
Equipment	Equipment										
Service	Service										
<p>39. Click Save.</p>											
<p>40. Click Investment.</p>											
<p>41. Click Edit.</p>											
<p>42. Click Activate.</p>											
<p>43. Click Capital Expenditure Rules.</p>											

CREATE RULE SERVICE

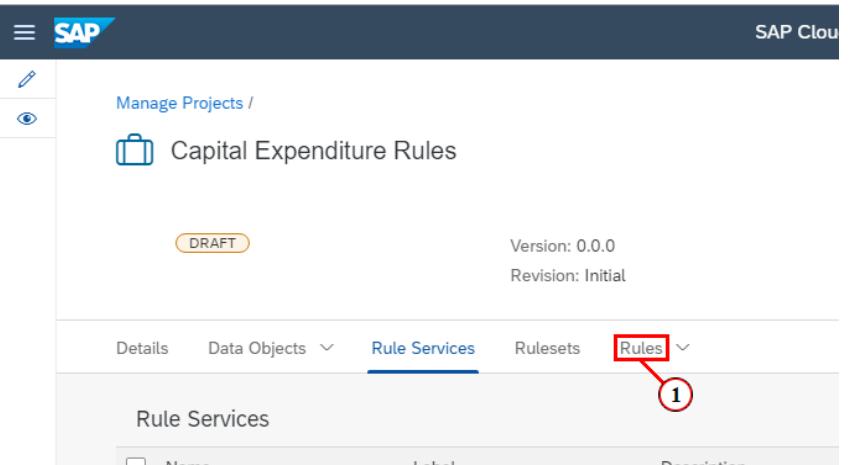
Explanation	Screenshot
<p>44. Click Rule Services.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface. The top navigation bar has 'Manage Projects / Capital Expenditure Rules'. Below it, there's a status bar with 'DRAFT', 'Version: 0.0.0', and 'Revision: Initial'. The main menu bar includes 'Details', 'Data Objects', 'Rule Services' (which is highlighted with a red box and circled with a red number 1), 'Rulesets', and 'Rules'. Under 'Rule Services', there's a section for 'Local Data Objects'.</p>
<p>45. Click + to add new rule service</p>	 <p>The screenshot shows the 'Rule Services' table in the SAP Cloud Platform Business Rules interface. A blue plus sign icon at the bottom right of the table is highlighted with a red box and circled with a red number 2.</p>
<p>53. Click to enter DetermineApprovers in Name box. 54. Click to enter Determine Approvers in Label box.</p>	 <p>The screenshot shows the 'New rule service' creation dialog. The 'Name' field contains 'DetermineApprovers' and the 'Label' field contains 'Determine Approvers'. A validation error message 'The label should only contain alphanumeric characters, underscores, or periods.' is shown next to the 'Label' field, with a red box and circled with a red number 3. A red box and circled with a red number 4 covers the 'Annotations' section.</p>

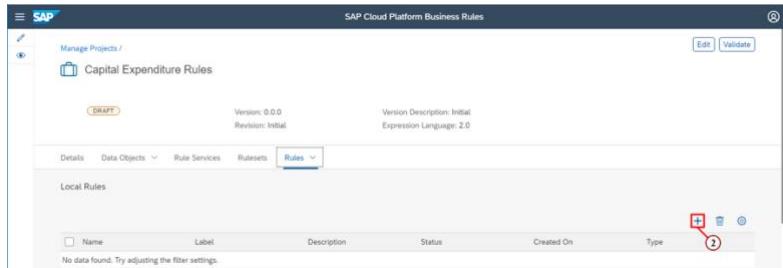
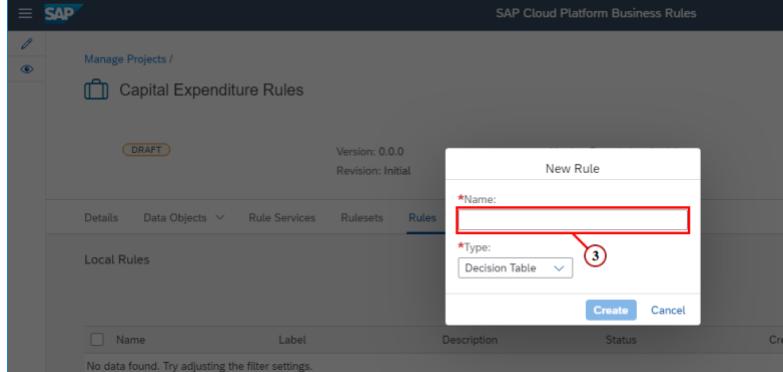
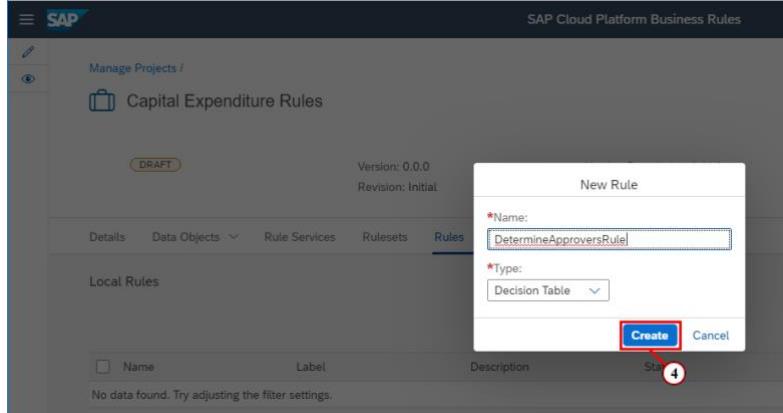
Explanation	Screenshot
<p>55. Click to enter Rule service to determine approvers for new investment in Description box.</p>	
<p>56. Click Vocabulary.</p>	
<p>57. Click  to add rule service vocabulary.</p>	
<p>58. Click to select Investment.</p>	

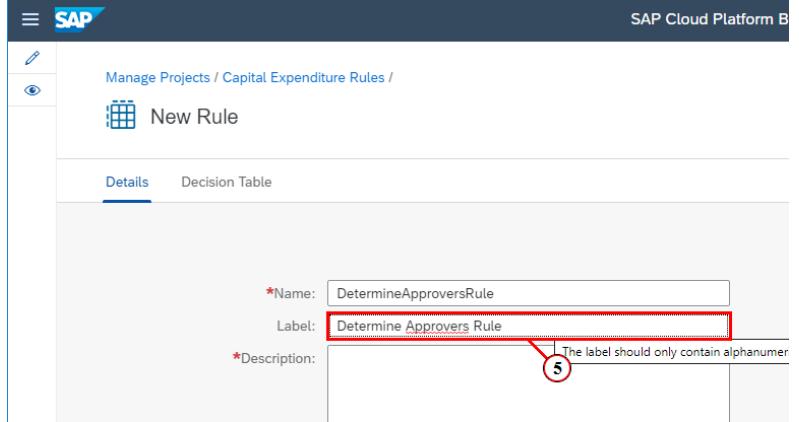
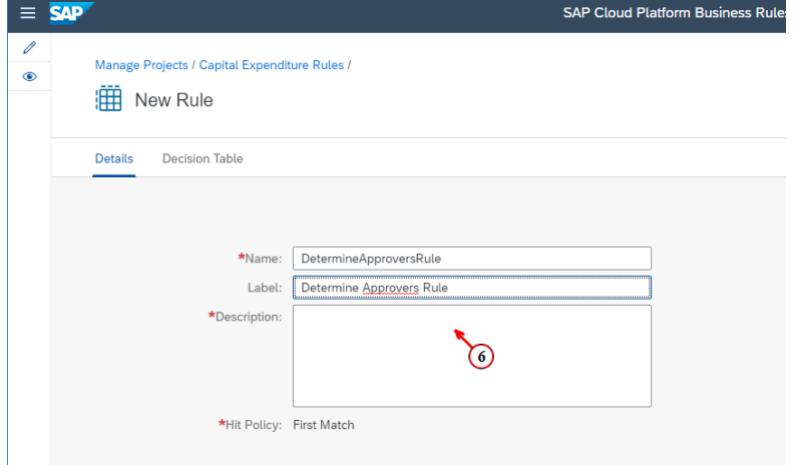
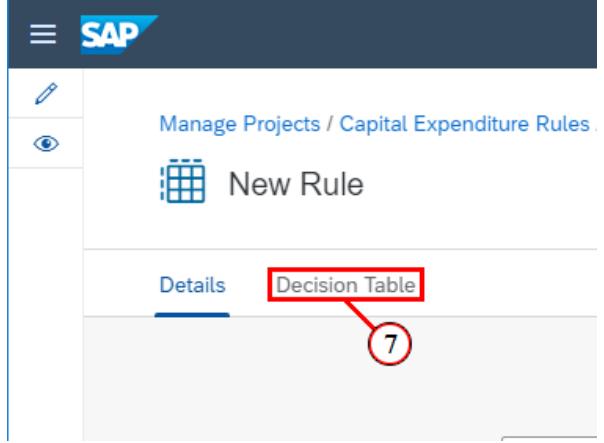
Explanation	Screenshot
<p>59. From Usage, select Input.</p>	
<p>60. Click  to add another rule service vocabulary.</p>	
<p>61. Click to select Approvers.</p>	
<p>62. From Usage, select Result</p>	
<p>63. Click .</p>	

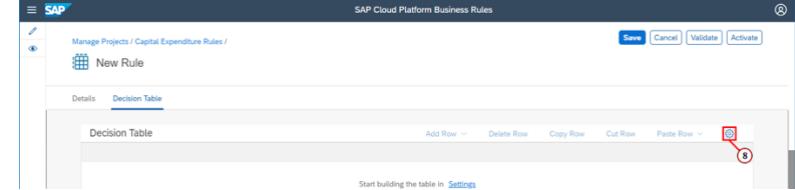
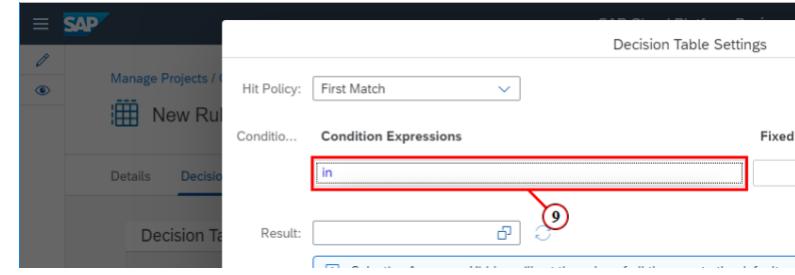
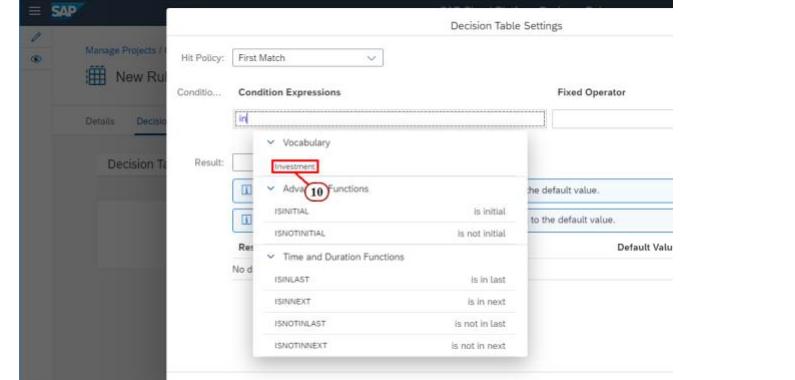
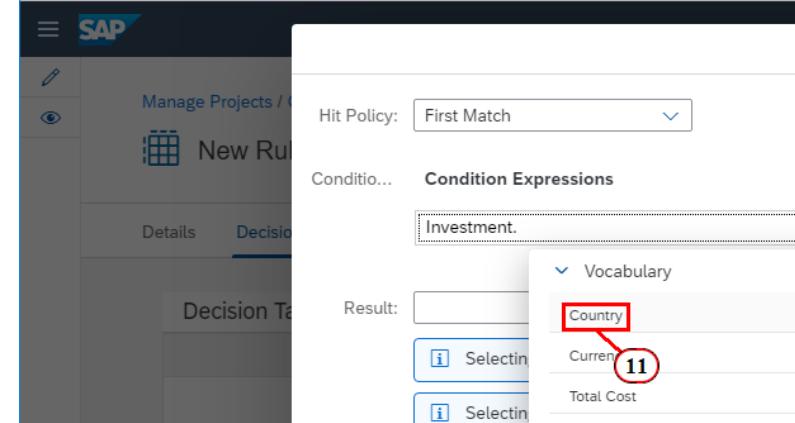
Explanation	Screenshot
<p>64. Click Capital Expenditure Rules</p>	
<p>You have created and configured Rule Service which will be finally deployed once we have configured all the rule entity models.</p>	

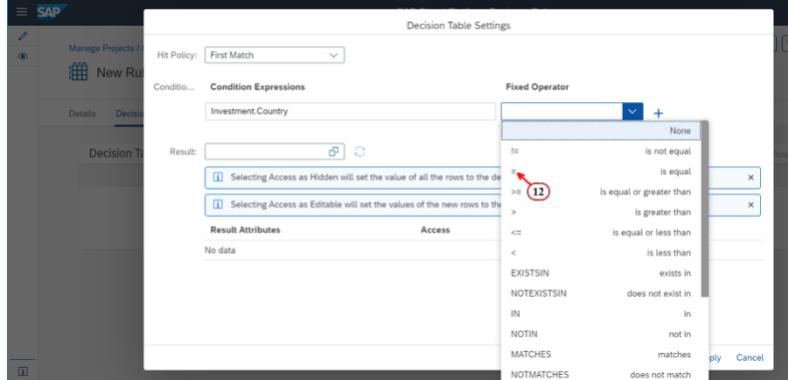
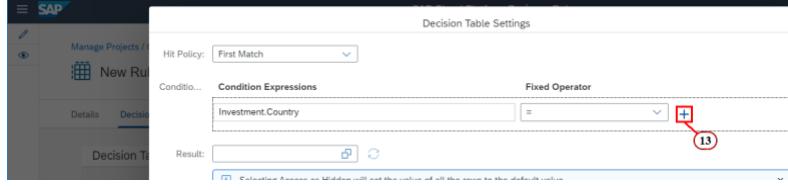
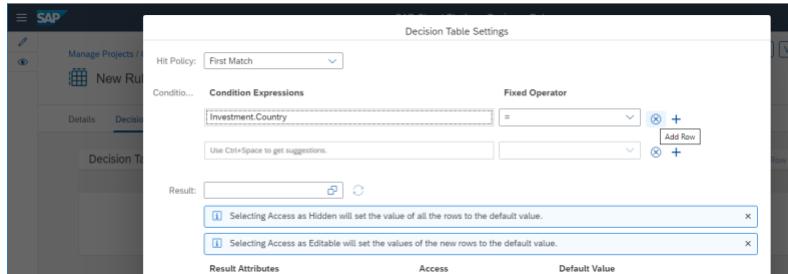
CREATE DECISION TABLE RULE

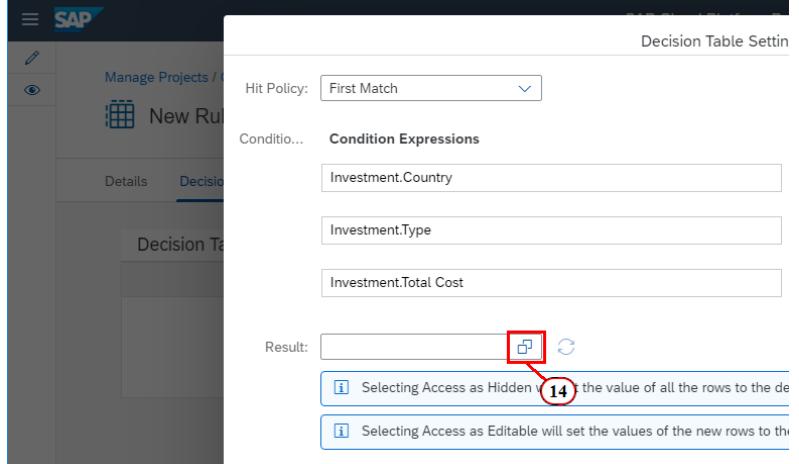
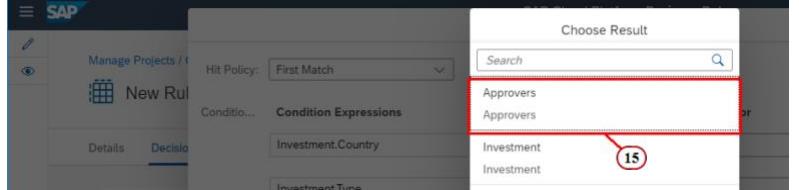
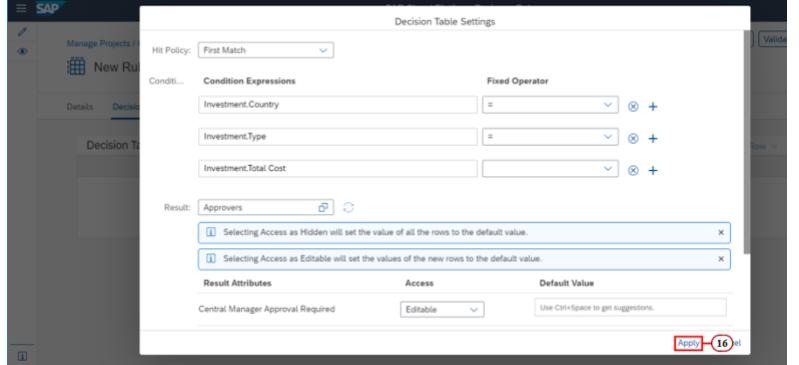
Explanation	Screenshot
<p>65. Click Rules.</p>	

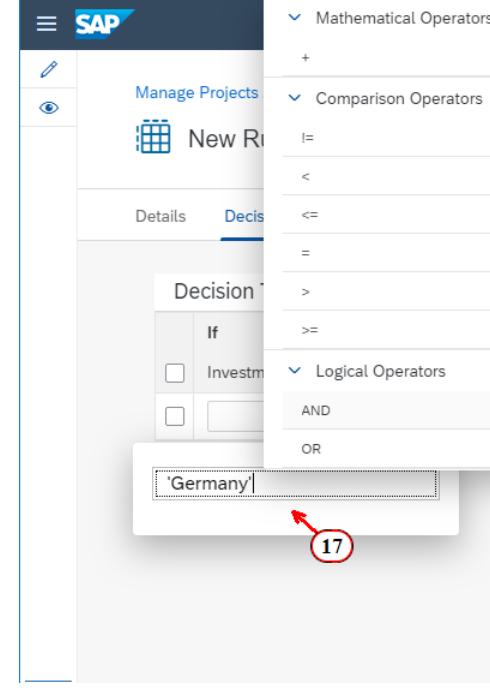
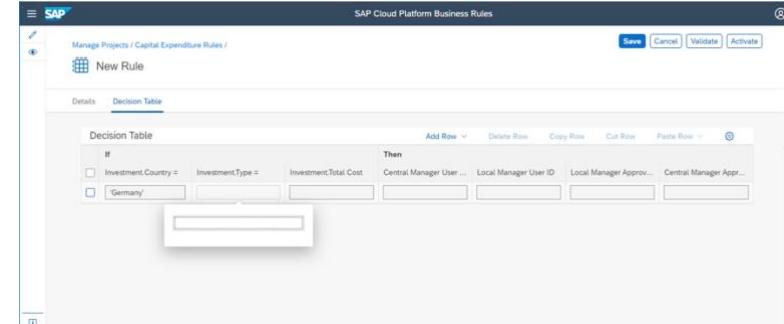
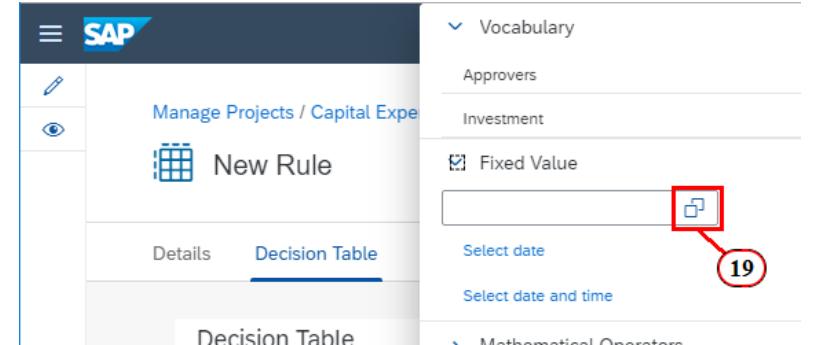
Explanation	Screenshot
<p>66. Click  to create rule.</p>	
<p>67. Click to enter DetermineApproversRule in Name box.</p>	
<p>68. Click .</p>	

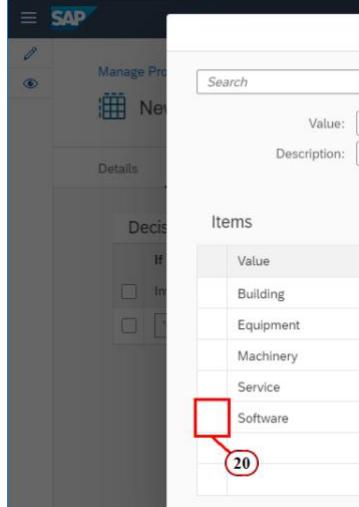
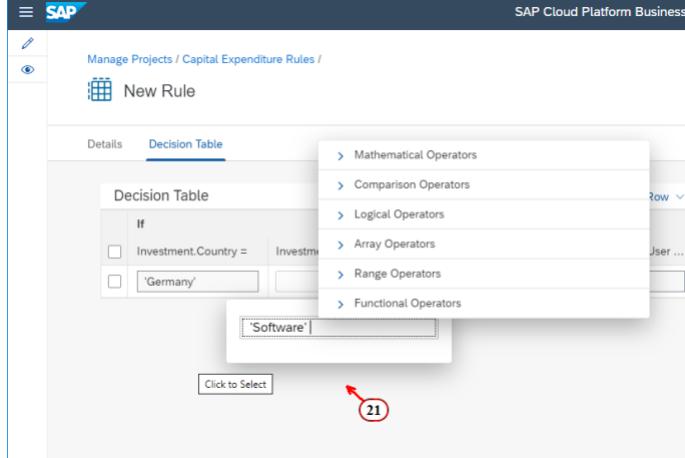
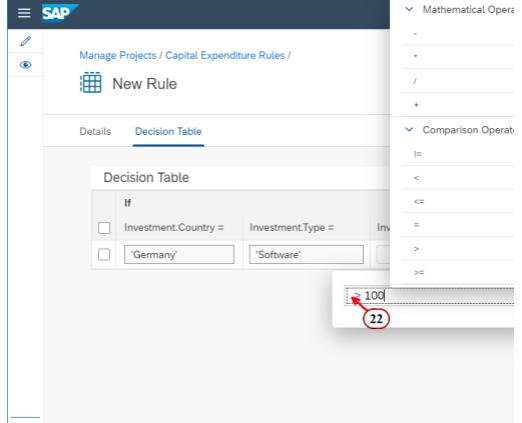
Explanation	Screenshot
<p>69. Click and enter Determine Approvers Rule in Label box.</p>	
<p>70. Click to enter Rules to determine approvers for the new investments based on type, country and total cost of the investment in Description box.</p>	
<p>71. Click Decision Table.</p>	

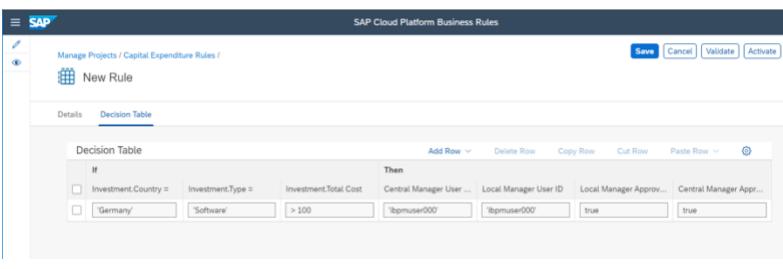
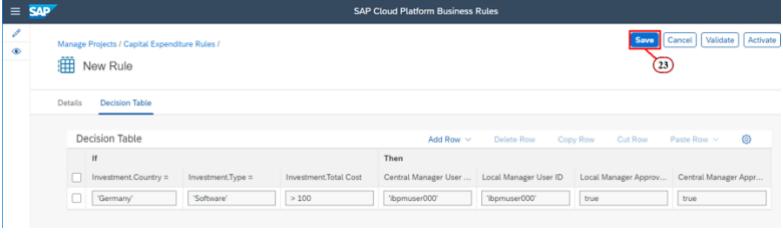
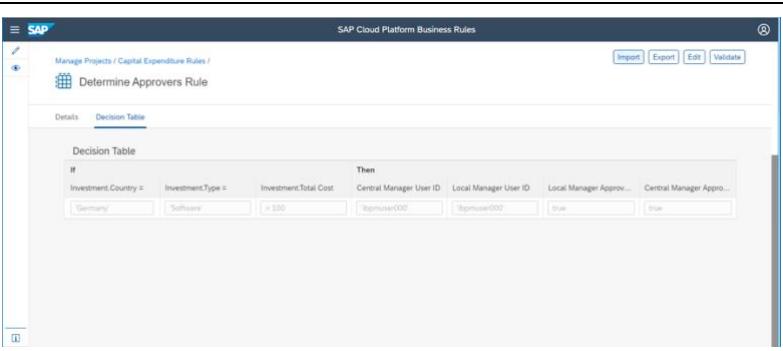
Explanation	Screenshot
<p>72. Click  to configure condition and result of the rule.</p>	
<p>Note: As you start typing in the Condition Expression box, you will get in-place context help with the list of Vocabulary, Operators and Functions.</p> <p>73. Click and enter in in the condition expression box.</p> <p>74. From the in-place context sensitive help options, select Investment >> Country</p>	
<p>75. Click Investment.</p>	
<p>76. Click Country.</p>	

Explanation	Screenshot						
<p>77. In Fixed Operator drop down, click = is equal operator.</p>							
<p>78. Click + to add new condition expression.</p>							
<p>79. Repeat the steps above to add few more condition expressions as following:</p> <table border="1"> <thead> <tr> <th>Condition Expression</th><th>Fixed Operator</th></tr> </thead> <tbody> <tr> <td>Investment.Type</td><td>=</td></tr> <tr> <td>Investment.Total Cost</td><td></td></tr> </tbody> </table>	Condition Expression	Fixed Operator	Investment.Type	=	Investment.Total Cost		
Condition Expression	Fixed Operator						
Investment.Type	=						
Investment.Total Cost							

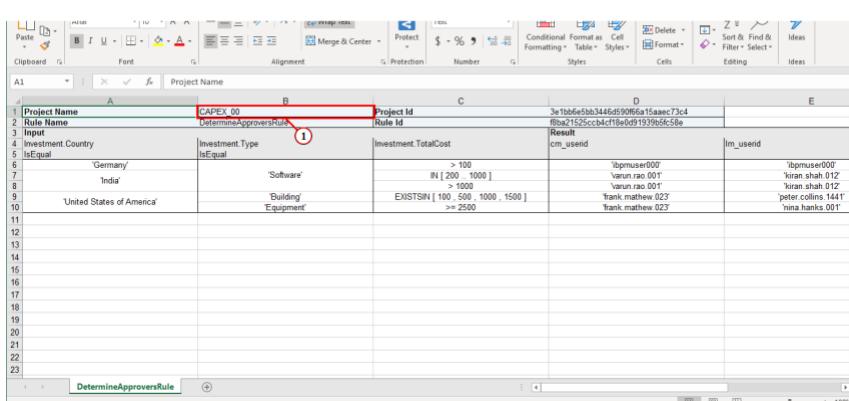
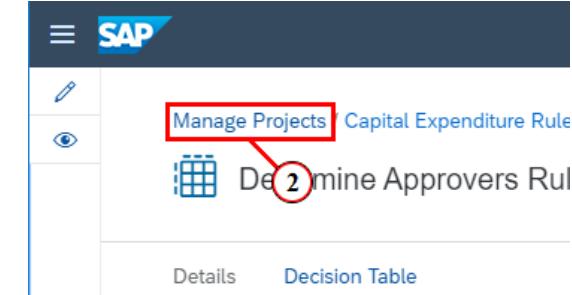
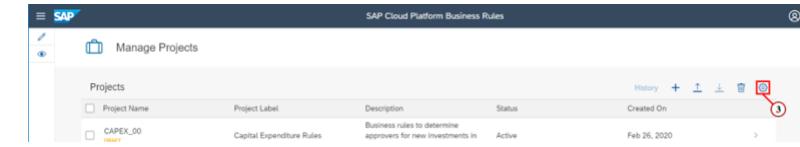
Explanation	Screenshot
<p>80. Click  to select Result data object.</p>	
<p>81. Select or Double-click on Approvers.</p>	
<p>Note: You will notice Access column as the result properties. When you set access as hidden, the respective column will not be seen during rule authoring in decision table.</p> <p>82. Click Apply.</p>	

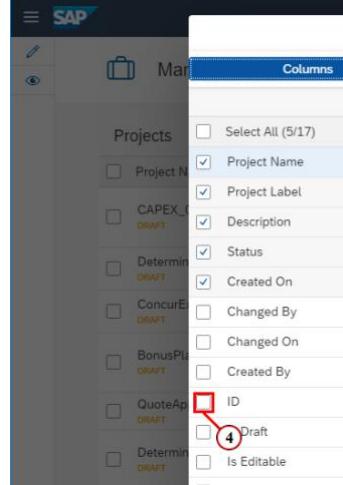
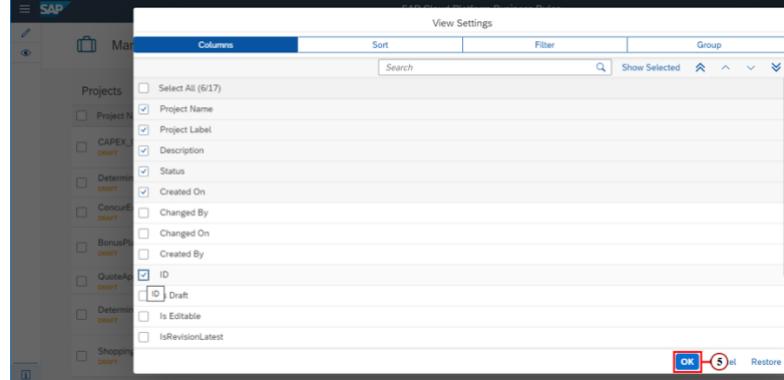
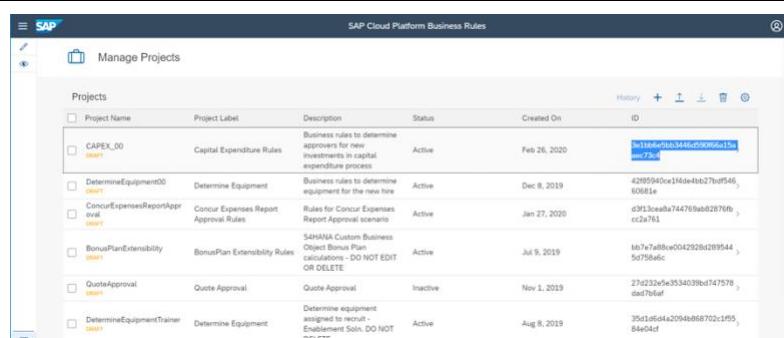
Explanation	Screenshot
<p>83. Click on the input field of Investment.Country column and enter 'Germany'.</p> <p>After you have finished typing, press Enter key to confirm or click outside the input field.</p>	
<p>Note: In this expression, you will choose the value from the value help defined for this attribute.</p> <p>84. Please press Ctrl+ Space or press any key.</p>	
<p>85. Expand Fixed Value and click  to select value help.</p>	

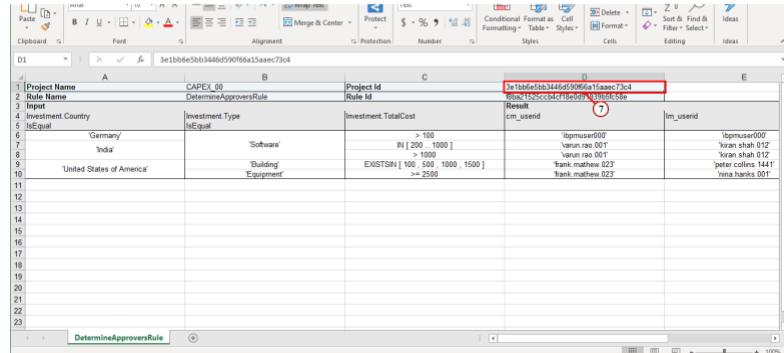
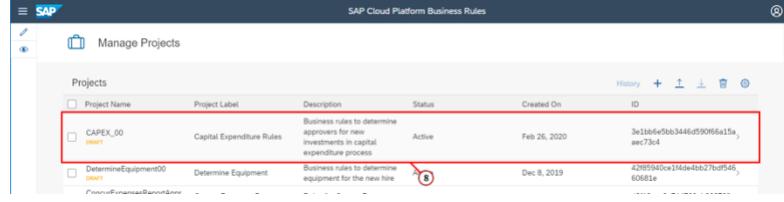
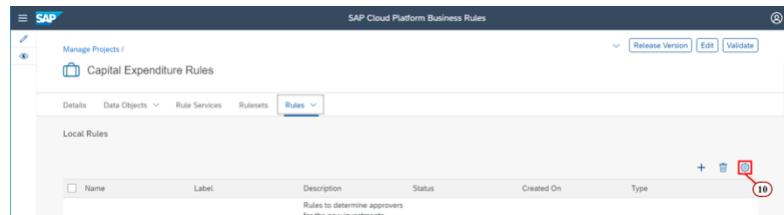
Explanation	Screenshot
<p>86. Click to select Software from the value help.</p>	
<p>87. Click Enter to confirm or click outside the input field.</p>	
<p>88. Click to enter > 100 89. Press Enter to confirm.</p>	

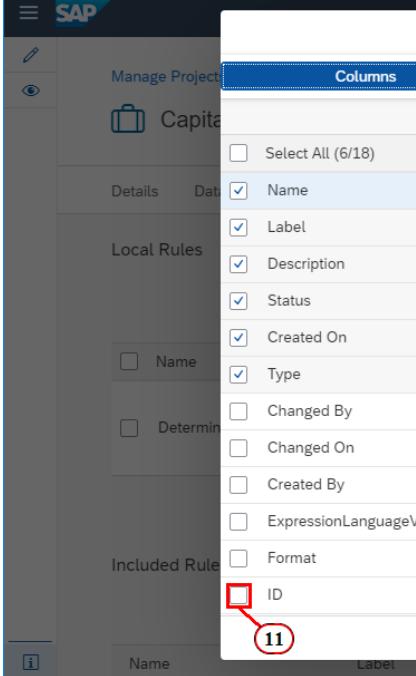
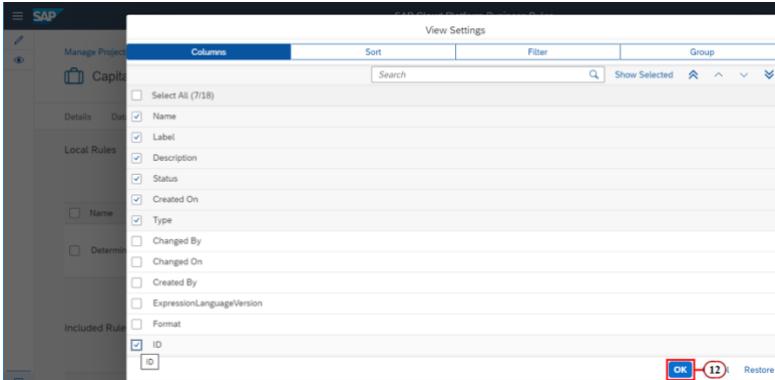
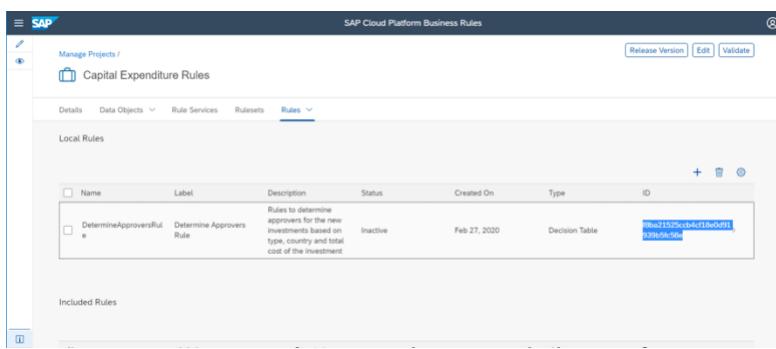
Explanation	Screenshot										
<p>90. Similarly, enter the following expression values for the respective result column:</p> <table border="1"> <thead> <tr> <th>Result Column</th><th>Expression Value</th></tr> </thead> <tbody> <tr> <td>Central Manager User ID</td><td>'your trial user number'</td></tr> <tr> <td>Local Manager User ID</td><td>'your trial user number'</td></tr> <tr> <td>Local Manager Approval Required</td><td>true</td></tr> <tr> <td>Central Manager Approval Required</td><td>true</td></tr> </tbody> </table>	Result Column	Expression Value	Central Manager User ID	'your trial user number'	Local Manager User ID	'your trial user number'	Local Manager Approval Required	true	Central Manager Approval Required	true	
Result Column	Expression Value										
Central Manager User ID	'your trial user number'										
Local Manager User ID	'your trial user number'										
Local Manager Approval Required	true										
Central Manager Approval Required	true										
<p>23. Click Save.</p>											
<p>You have created a decision table-based rule with condition and result columns. You have added a row to the decision table and used in-place context sensitive help to add expressions to the cell values. Now, in next chapter you will use Microsoft Excel to import the data in the decision table.</p>											

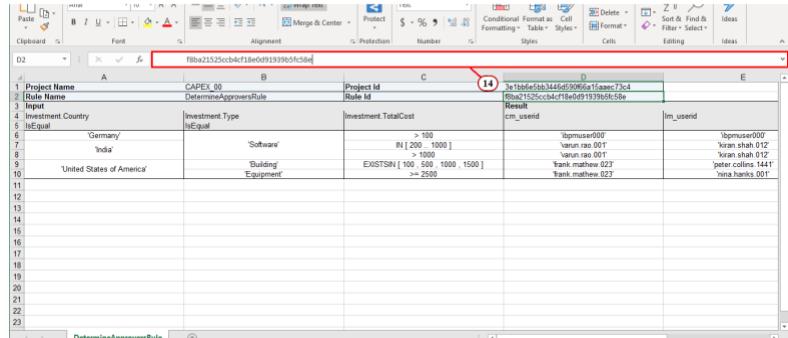
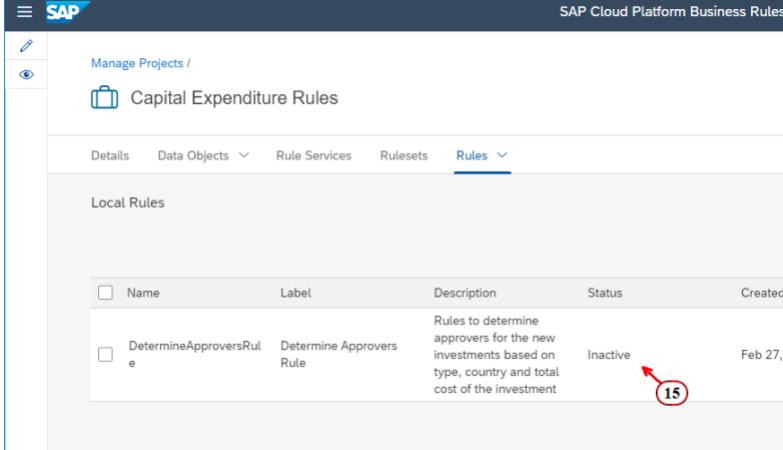
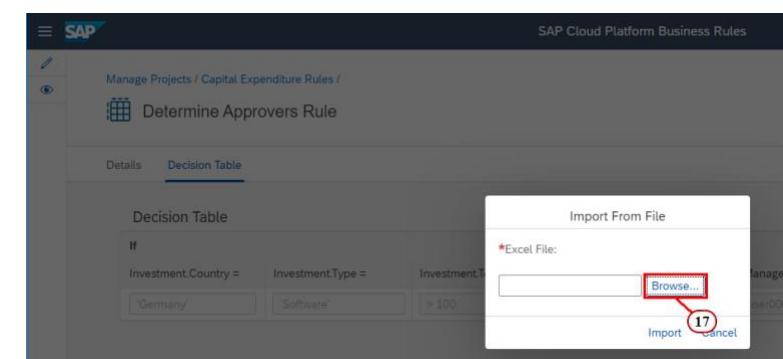
IMPORT DECISION TABLE FROM MICROSOFT EXCEL

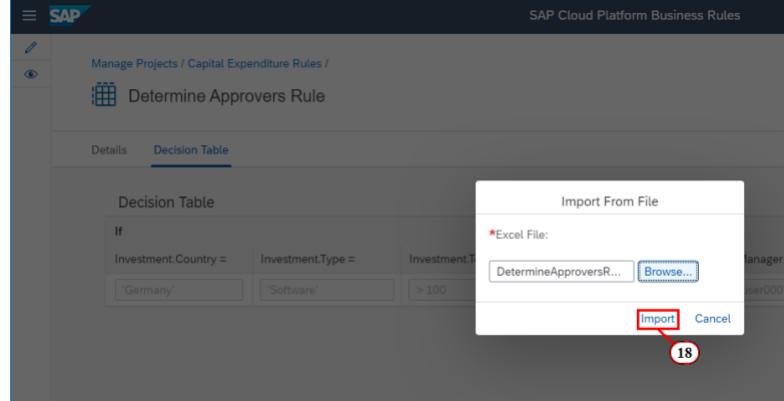
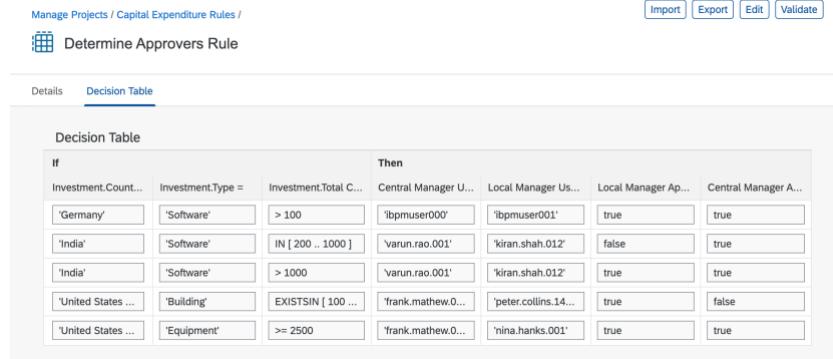
Explanation	Screenshot
<p>91. Download the DetermineApproversRule excel in the same folder in GitHub.</p> <p>92. Open the excel and update Project Name, Project ID and Rule ID in the available excel sheet as shown in steps below.</p> <p>93. Update project name with your rules project name like CAPEX_00.</p>	
<p>Now, to update the Project ID and Rule ID you have to go back to the Manage Rule Projects application.</p> <p>94. Navigate back to projects. 95. Click Manage Projects.</p>	
<p>96. Click  to add new display column to get ID of the project.</p>	

Explanation	Screenshot
<p>97. Click <input type="checkbox"/> to select ID column.</p>	
<p>98. Click OK.</p>	
<p>99. Select and press Ctrl+C or Command+C to copy.</p>	

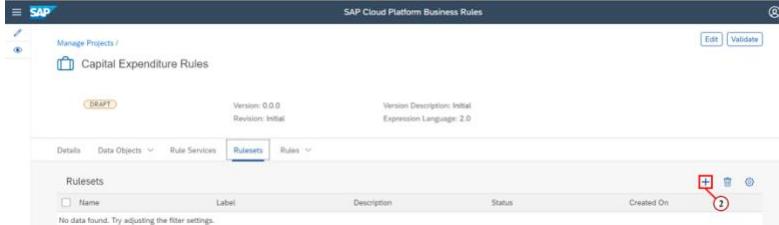
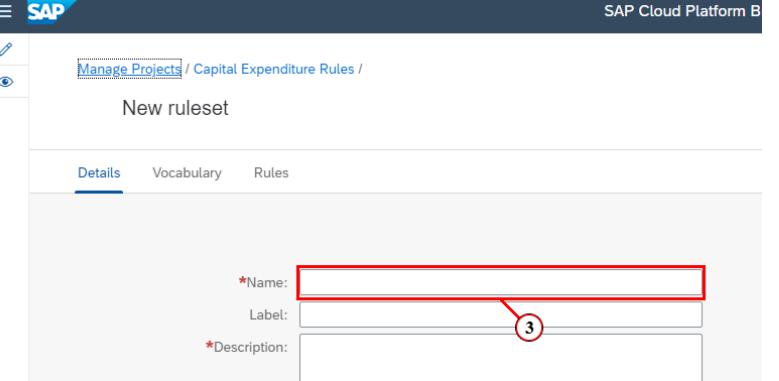
Explanation	Screenshot
<p>100. Paste the copied Project ID.</p> <p>Note: ensure that there are no leading or lagging space while you do the copy & paste.</p>	
<p>101. Click to open project.</p>	
<p>102. Click Rules.</p>	
<p>103. Click  to add new display column to get ID of the rule.</p>	

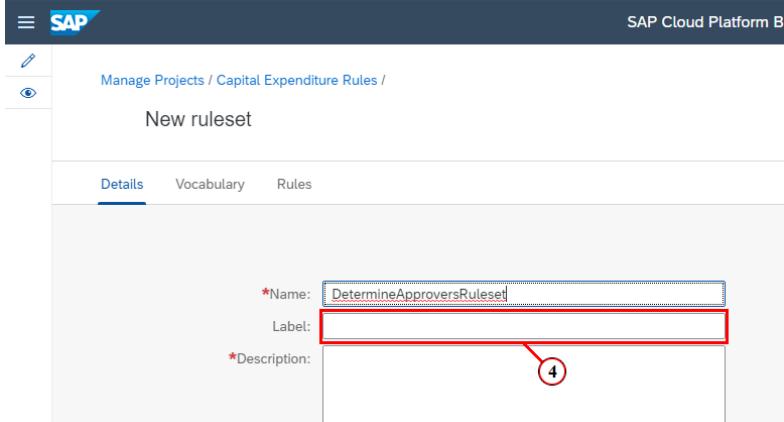
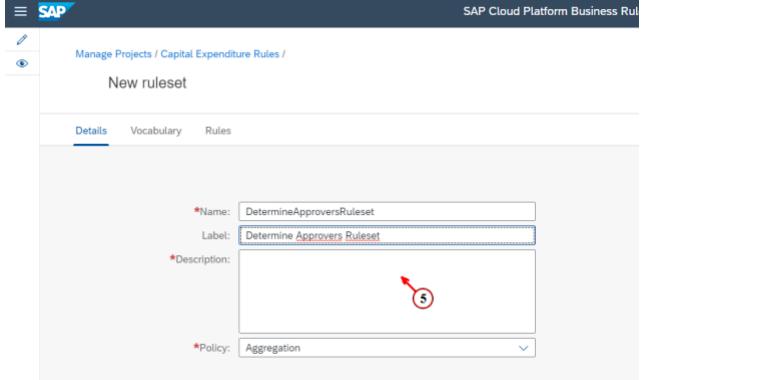
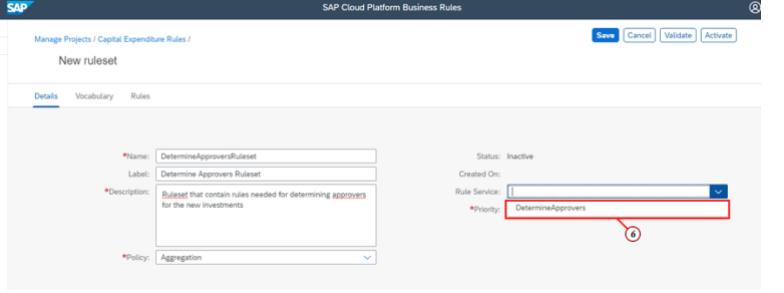
Explanation	Screenshot
104. Click <input type="checkbox"/> of ID option.	
105. Click  .	
106. Select and press Ctrl+C or Command+C to copy.	

Explanation	Screenshot
<p>107. Paste the Rule ID</p> <p>Note: ensure that there are no leading or trailing spaces while you do the copy paste</p> <p>108. Also, change the <i>cm_userid</i> and <i>lm_userid</i> of the first row (line number 6) to your trial username.</p>	
<p>109. Click to open the rule.</p>	
<p>110. Click Import.</p>	
<p>111. Click Browse... and select the excel sheet updated in steps above.</p>	

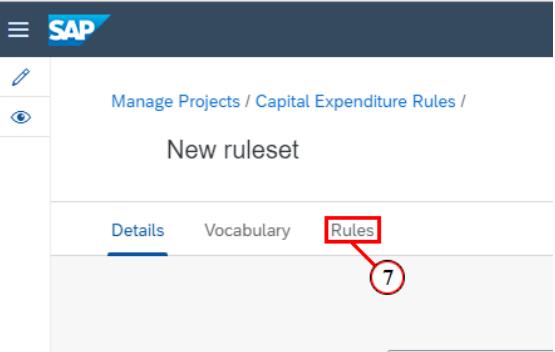
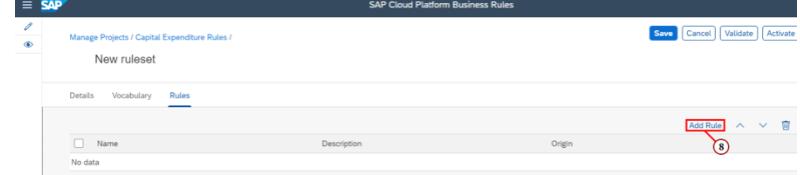
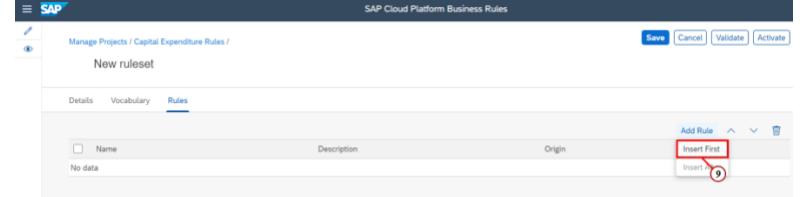
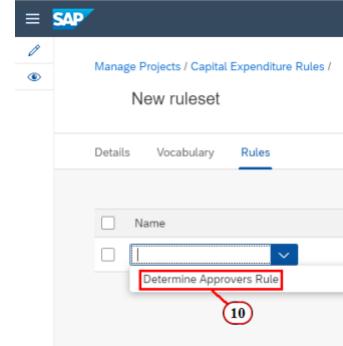
Explanation	Screenshot
112. Click Import .	
You will have the rows imported in your decision table.	
113. Click Edit .	
114. Click Activate .	
115. Click Capital Expenditure Rules .	

CREATE RULESET

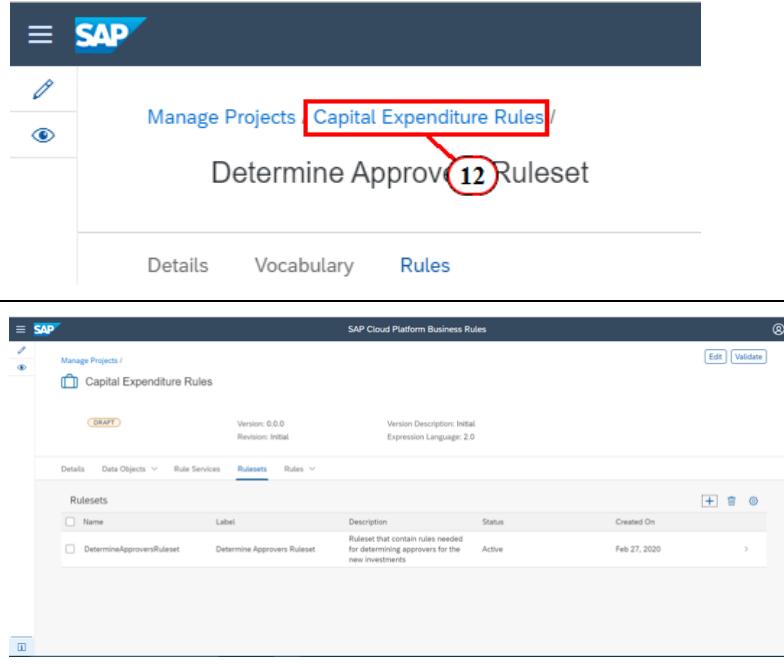
Explanation	Screenshot
<p>116. Click Rulesets.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface. A project named "Capital Expenditure Rules" is selected. The top navigation bar includes "Manage Projects / Capital Expenditure Rules", "Edit", and "Validate". Below the navigation is a status bar with "Version: 0.0.0", "Revision: Initial", "Version Description: Initial", and "Expression Language: 2.0". The main area has tabs for "Details", "Data Objects", "Rule Services", "Rulesets" (which is highlighted with a red box and circled with a red number 1), and "Rules". A sub-header "Local Rules" is visible.</p>
<p>117. Click  to create ruleset.</p>	 <p>The screenshot shows the same SAP Cloud Platform Business Rules interface. The "Rulesets" tab is still selected. A new row for a ruleset is being created, indicated by a plus sign icon with a red box and circled with a red number 1. The columns for Name, Label, Description, Status, and Created On are shown.</p>
<p>118. Click to enter DetermineApproversRuleset in Name box.</p>	 <p>The screenshot shows the "New ruleset" dialog. It has tabs for "Details", "Vocabulary", and "Rules", with "Details" selected. The "Name" field is highlighted with a red box and circled with a red number 3. Below it are fields for "Label" and "Description".</p>

Explanation	Screenshot
<p>119. Click to enter Determine Approvers Ruleset in Label box.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface. In the 'Details' tab, the 'Name' field contains 'DetermineApproversRuleset'. The 'Label' field is highlighted with a red box and circled with a red number 4. The 'Description' field is empty.</p>
<p>120. Click to enter Ruleset that contain rules needed for determining approvers for the new investments in Description box.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface. The 'Name' field contains 'DetermineApproversRuleset'. The 'Label' field contains 'Determine Approvers Ruleset'. The 'Description' field contains 'Ruleset that contain rules needed for determining approvers for the new investments' and is highlighted with a red box and circled with a red number 5. The 'Policy' dropdown is set to 'Aggregation'.</p>
<p>121. Click to select DetermineApprovers as Rule Service.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface. The 'Name' field contains 'DetermineApproversRuleset'. The 'Label' field contains 'Determine Approvers Ruleset'. The 'Description' field contains 'Ruleset that contain rules needed for determining approvers for the new investments'. The 'Status' is listed as 'Inactive'. The 'Created On' field is empty. The 'Rule Service' dropdown is highlighted with a red box and circled with a red number 6. The 'Priority' dropdown is also highlighted with a red box.</p>

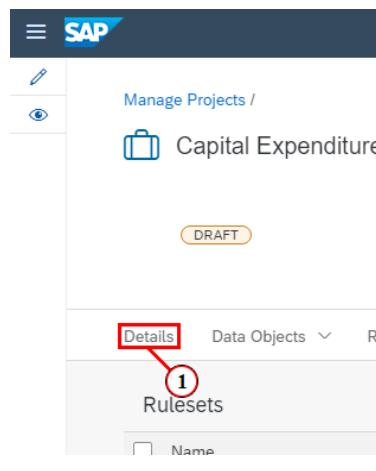
DEV163 - Build a Workflow from Scratch with SAP Workflow Management

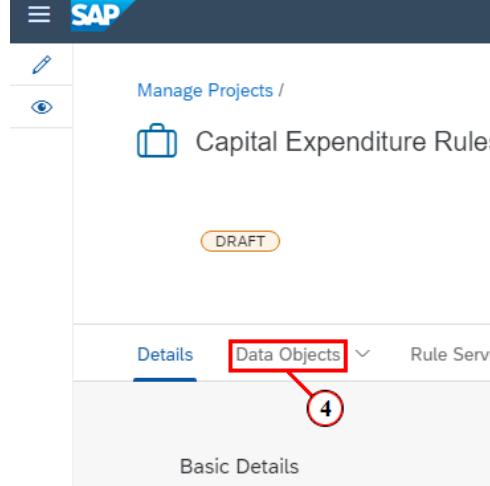
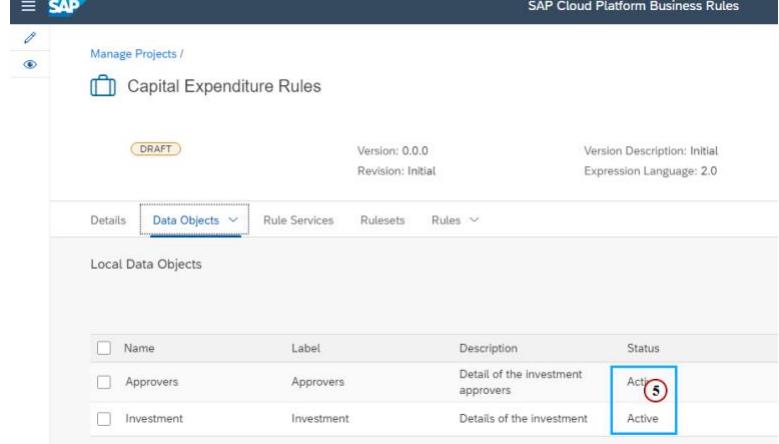
Explanation	Screenshot
122. Click Rules .	
123. Click Add Rule .	
124. Click Insert First .	
125. Click to select Determine Approvers Rule .	
126. Click Activate .	

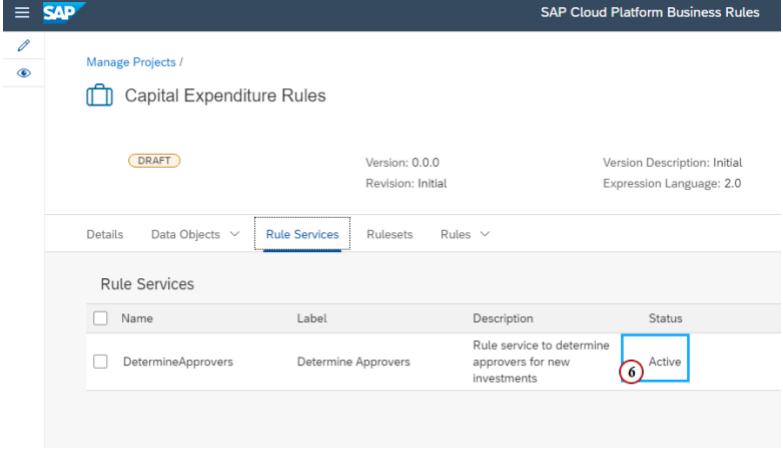
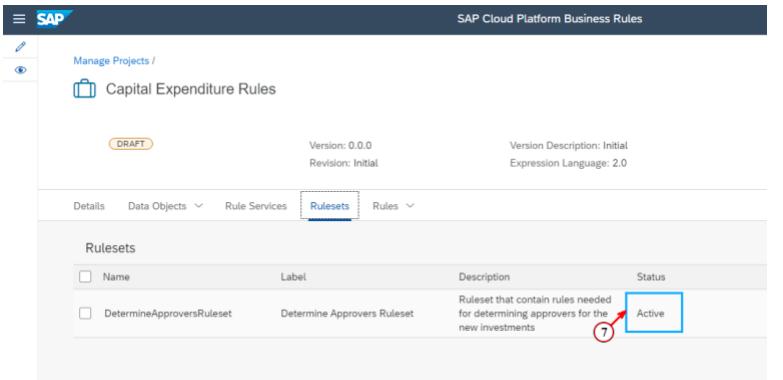
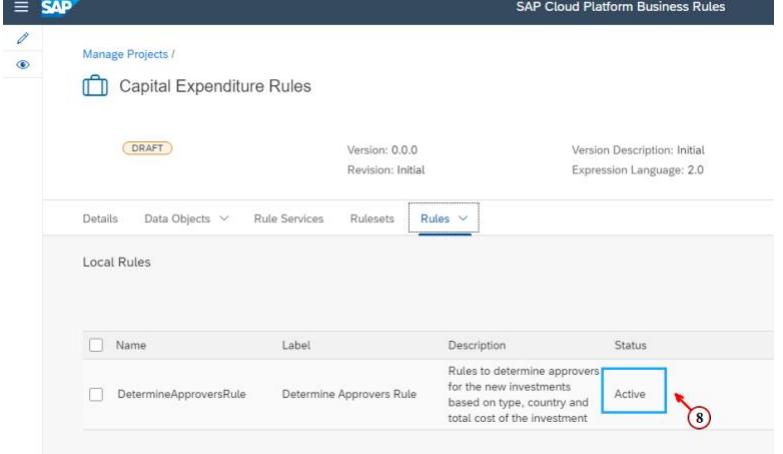
DEV163 - Build a Workflow from Scratch with SAP Workflow Management

Explanation	Screenshot
<p>127. Click Capital Expenditure Rules.</p> <p>You have created the ruleset, associated it with rule service and added the rule. Ruleset is a collection of rules of similar output.</p>	

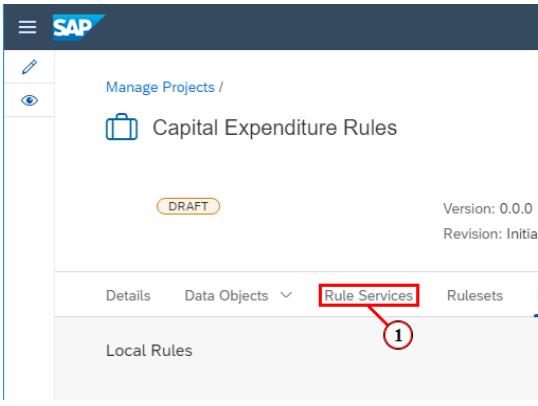
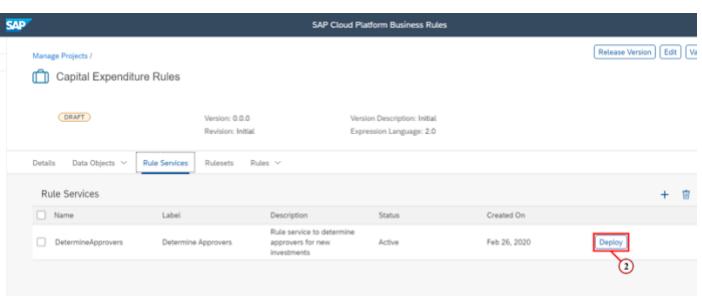
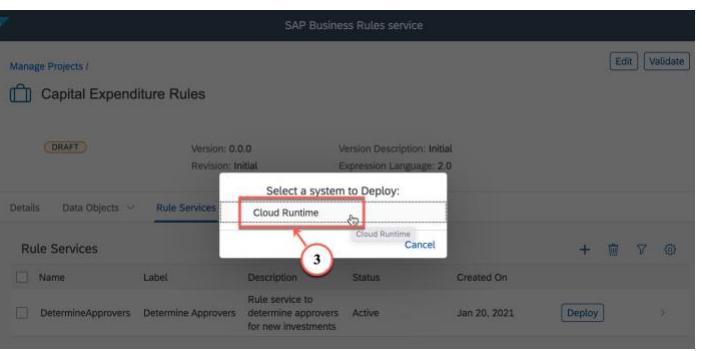
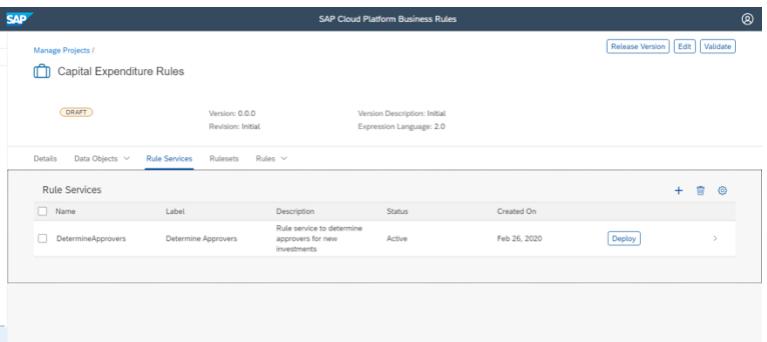
ACTIVATE RULES PROJECT

Explanation	Screenshot
<p>Before you deploy the rule service, all the rule entity models have to be in activated state. In this chapter, you will go through all the models to ensure that they are activated.</p> <p>128. Click Details.</p>	
<p>129. Click Edit.</p>	

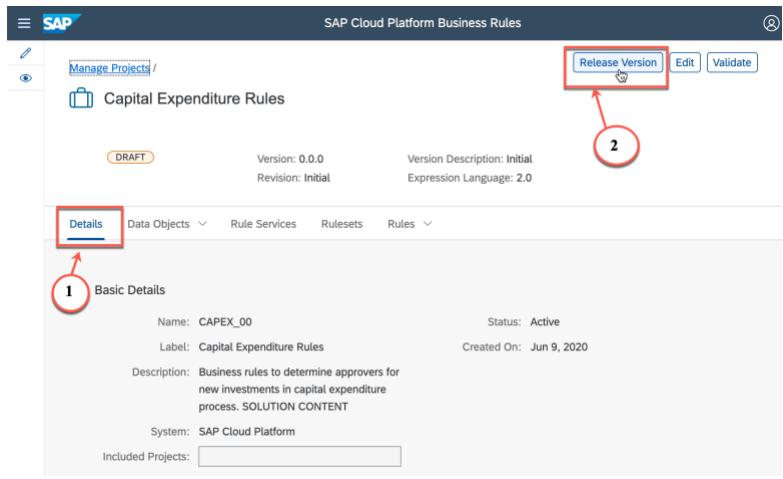
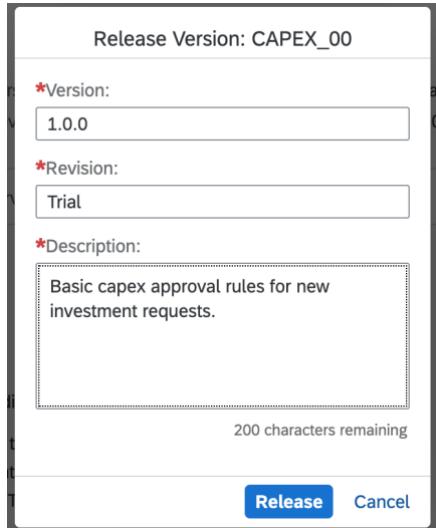
Explanation	Screenshot												
130. Click Activate .													
131. Click Data Objects .													
132. Check if all the data objects are in Active state.	 <table border="1"> <thead> <tr> <th>Name</th> <th>Label</th> <th>Description</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Approvers</td> <td>Approvers</td> <td>Detail of the investment approvers</td> <td>Active</td> </tr> <tr> <td>Investment</td> <td>Investment</td> <td>Details of the investment</td> <td>Active</td> </tr> </tbody> </table>	Name	Label	Description	Status	Approvers	Approvers	Detail of the investment approvers	Active	Investment	Investment	Details of the investment	Active
Name	Label	Description	Status										
Approvers	Approvers	Detail of the investment approvers	Active										
Investment	Investment	Details of the investment	Active										

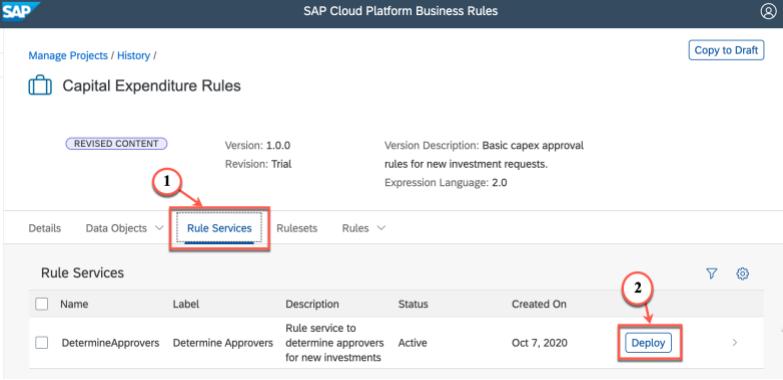
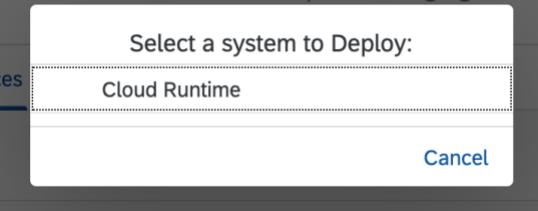
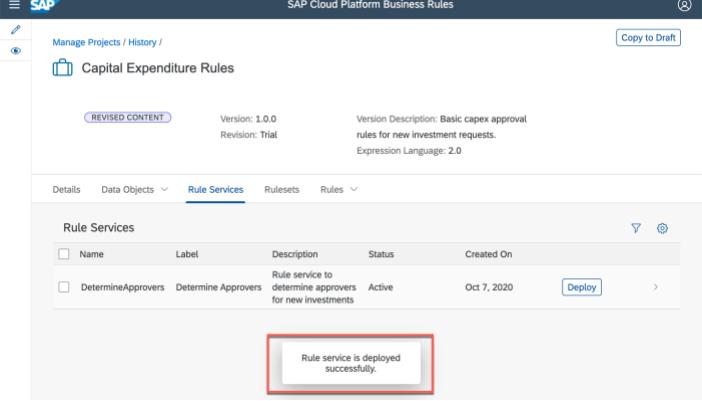
Explanation	Screenshot								
<p>133. Check if all the rule services are in Active state.</p>	 <table border="1"> <thead> <tr> <th>Name</th> <th>Label</th> <th>Description</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>DetermineApprovers</td> <td>Determine Approvers</td> <td>Rule service to determine approvers for new investments</td> <td>Active</td> </tr> </tbody> </table>	Name	Label	Description	Status	DetermineApprovers	Determine Approvers	Rule service to determine approvers for new investments	Active
Name	Label	Description	Status						
DetermineApprovers	Determine Approvers	Rule service to determine approvers for new investments	Active						
<p>134. Check if all rulesets are in Active state.</p>	 <table border="1"> <thead> <tr> <th>Name</th> <th>Label</th> <th>Description</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>DetermineApproversRuleset</td> <td>Determine Approvers Ruleset</td> <td>Ruleset that contain rules needed for determining approvers for the new investments</td> <td>Active</td> </tr> </tbody> </table>	Name	Label	Description	Status	DetermineApproversRuleset	Determine Approvers Ruleset	Ruleset that contain rules needed for determining approvers for the new investments	Active
Name	Label	Description	Status						
DetermineApproversRuleset	Determine Approvers Ruleset	Ruleset that contain rules needed for determining approvers for the new investments	Active						
<p>135. Check if all rules are in Active state.</p>	 <table border="1"> <thead> <tr> <th>Name</th> <th>Label</th> <th>Description</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>DetermineApproversRule</td> <td>Determine Approvers Rule</td> <td>Rules to determine approvers for the new investments based on type, country and total cost of the investment</td> <td>Active</td> </tr> </tbody> </table>	Name	Label	Description	Status	DetermineApproversRule	Determine Approvers Rule	Rules to determine approvers for the new investments based on type, country and total cost of the investment	Active
Name	Label	Description	Status						
DetermineApproversRule	Determine Approvers Rule	Rules to determine approvers for the new investments based on type, country and total cost of the investment	Active						

DEPLOY RULE SERVICE

Explanation	Screenshot
<p>136. Click Rule Services.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface. In the top navigation bar, the 'Rule Services' tab is highlighted with a red box and circled with a red number '1'. Below the tabs, there is a table with one row: 'DetermineApprovers' under 'Name', 'Determine Approvers' under 'Label', 'Rule service to determine approvers for new investments' under 'Description', 'Active' under 'Status', and 'Feb 26, 2020' under 'Created On'.</p>
<p>137. Click Deploy.</p>	 <p>The screenshot shows the same interface as above, but now the 'Deploy' button in the bottom right corner of the table row is highlighted with a red box and circled with a red number '2'.</p>
<p>138. Click Cloud Runtime to deploy the rule service.</p>	 <p>The screenshot shows a modal dialog titled 'Select a system to Deploy:' with 'Cloud Runtime' selected. The dialog has three buttons: 'Cloud Runtime', 'Cancel', and 'OK'. The 'Cloud Runtime' button is highlighted with a red box and circled with a red number '3'.</p>
<p>139. After the ruleset is deployed successfully, you will see the message. Now, the rule service can be consumed via the REST APIs</p>	 <p>The screenshot shows the same interface as the previous step, but now a success message 'Deployment successful' is displayed above the table. The 'Deploy' button is no longer highlighted.</p>

CREATE VERSION

Explanation	Screenshot
<p>140. Click on Details tab</p> <p>141. Click Release Version to create a new version of the rules project.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface. A red box highlights the 'Details' tab in the navigation bar. Another red box highlights the 'Release Version' button in the top right corner. A circled '2' points to the 'Release Version' button.</p>
<p>142. Enter the following in the Release Version pop-up:</p> <p>Version: 1.0.0 Revision: Trial Description: Basic capex approval rules for new investment requests.</p> <p>143. Click Release</p>	 <p>The screenshot shows a 'Release Version' dialog box. It contains fields for Version (1.0.0), Revision (Trial), and Description (Basic capex approval rules for new investment requests). A character counter at the bottom left says '200 characters remaining'. At the bottom are 'Release' and 'Cancel' buttons.</p>
<p>144. To view the version created, navigate back to main page by clicking on Manage Projects link on top-left corner of the screen</p> <p>145. Click the checkbox of the business rules project for which you created the version.</p> <p>146. Click History.</p>	 <p>The screenshot shows the 'Manage Projects' page. A red box highlights the checkbox next to the project name 'CAPEX_00'. Another red box highlights the 'History' button in the top right corner. A circled '2' points to the 'History' button.</p>

Explanation	Screenshot										
<p>You will see all the versions of the rule Project created here.</p> <p>147. Click to navigate into version 1.0.0</p>	 <table border="1"> <thead> <tr> <th>Version</th> <th>Revision</th> <th>Description</th> <th>Changed By</th> <th>Changed On</th> </tr> </thead> <tbody> <tr> <td>1.0.0</td> <td>Trial</td> <td>Basic capex approval rules for new investment requests.</td> <td>Archana</td> <td>Oct 7, 2020</td> </tr> </tbody> </table>	Version	Revision	Description	Changed By	Changed On	1.0.0	Trial	Basic capex approval rules for new investment requests.	Archana	Oct 7, 2020
Version	Revision	Description	Changed By	Changed On							
1.0.0	Trial	Basic capex approval rules for new investment requests.	Archana	Oct 7, 2020							
<p>148. Click Rule Services tab.</p> <p>149. Click Deploy.</p>											
<p>150. Click Cloud Runtime to deploy the rule service.</p>											
<p>151. After the rule service is deployed successfully, you will see the message.</p> <p>Now, the rule service can be consumed via the REST APIs</p>											

TEST BUSINESS RULE

OVERVIEW

Estimated time: 15 minutes

In the following exercise you will learn the basics of testing business rules invocation from APIs available in SAP API Business Hub.

The screenshot shows the SAP API Business Hub interface. At the top, there is a navigation bar with links for SAP API Business Hub, Getting Started, API Cockpit (BETA), My Favorites, Community, and Partner With Us. On the right, it says "Hi Archana". Below the navigation bar, there is a section titled "Rule Execution API for Cloud Foundry" with a sub-section "Deploy, Search and Invoke Business Rules for your organization". There are three buttons: "Show API Key", "Download SDK", and "Add to API Cockpit". Below this, there are two tabs: "API References" (which is selected) and "Details". Under "API Environment", it says "US10" and has a "Configure Environments" dropdown. On the left, there is a sidebar with links: "Deploy/Undeploy Rule Service", "Invoke Rule Service", and "XSRF Handling". The main content area displays two API endpoints:

Method	Endpoint	Description	Try out	Code Snippet
POST	/v2/rule-services	Invoke a revision or version of a rule service	Try out	Code Snippet
POST	/v2/workingset-rule-services	Invoke a working set rule service	Try out	Code Snippet

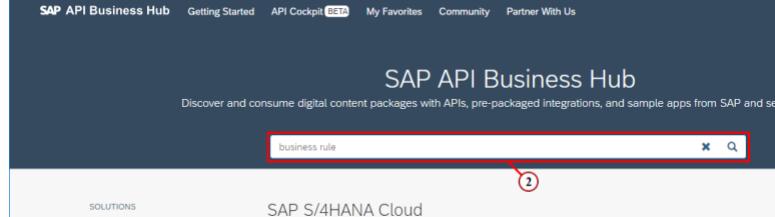
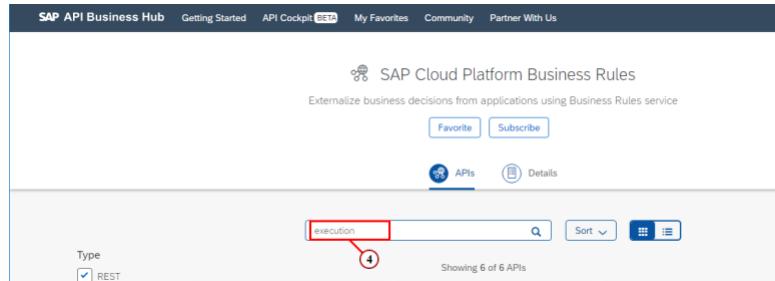
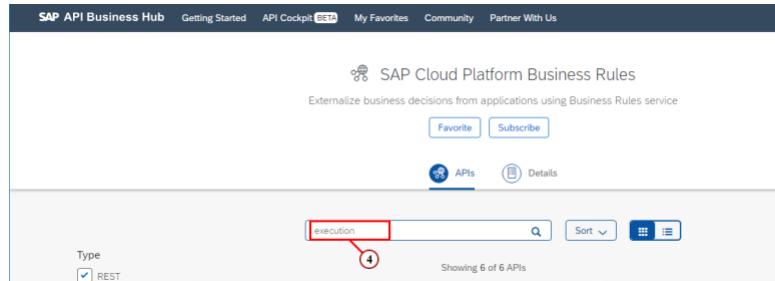
For the second endpoint, there is a "Parameters" section with a "body" parameter described as "JSON payload of the input to rule service execution". A "Cancel" button is also present in this section.

Exercise Description

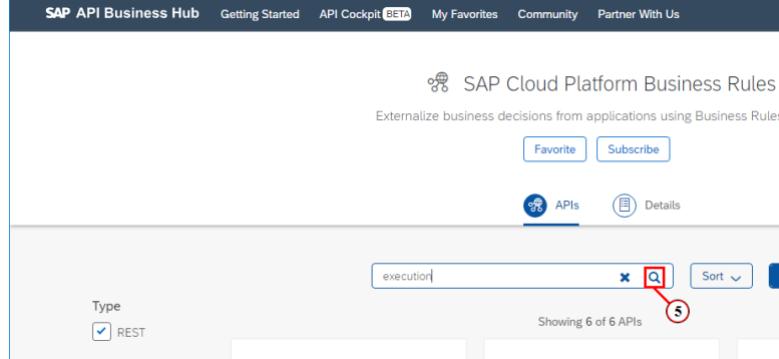
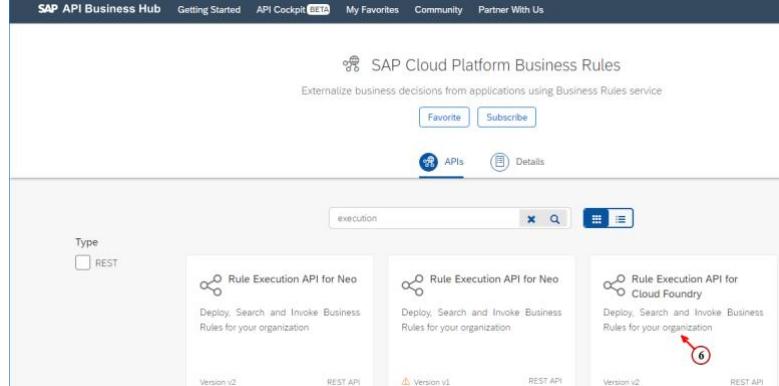
In this exercise you will do the following:

- Discover Business Rules API in SAP API Business Hub
- Configure Cloud Foundry Test Environment
- Invoke Business Rules

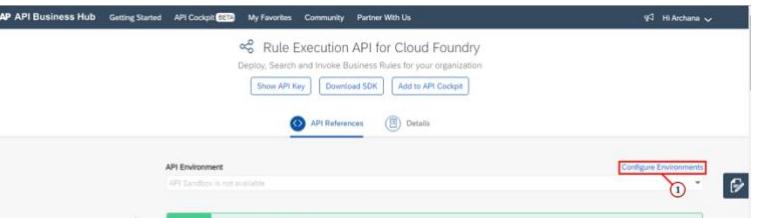
DISCOVER BUSINESS RULES API

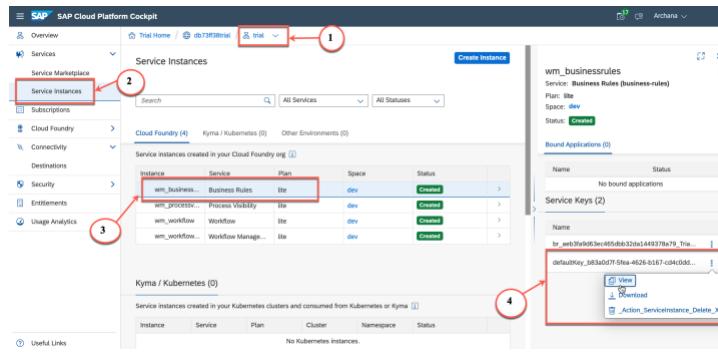
Explanation	Screenshot
<p>152. Open API Business Hub using this URL: https://api.sap.com</p> <p style="text-align: center;">Log On →</p> <p>153. Click Log On.</p>	
<p>154. using your S or P user ID</p>	
<p>155. Search Business Rules API 156. In Search box, enter business rule and press Enter key to search.</p>	
<p>157. Click SAP Cloud Platform Business Rules API Package.</p>	
<p>158. Enter execution in the  box.</p>	

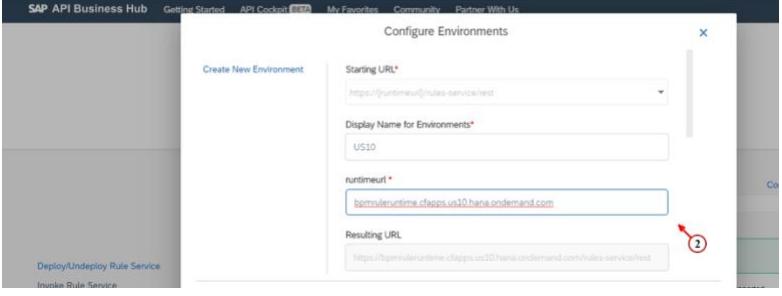
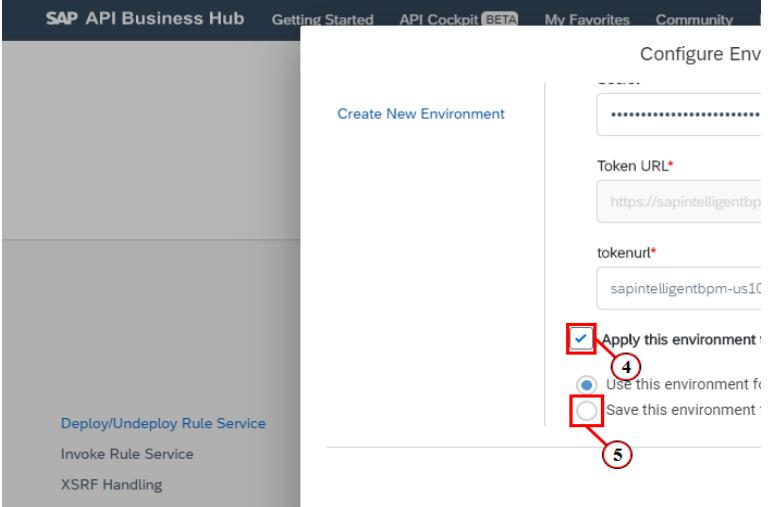
DEV163 - Build a Workflow from Scratch with SAP Workflow Management

Explanation	Screenshot
<p>Note: Business Rules have two set of APIs: Authoring and Execution. You will also notice two set of versions v1 and v2. Version v1 is currently deprecated and will soon be unsupported.</p> <p>159. Click  to search the execution APIs.</p>	
<p>160. Click on Rule Execution API for Cloud Foundry version v2 APIs.</p>	

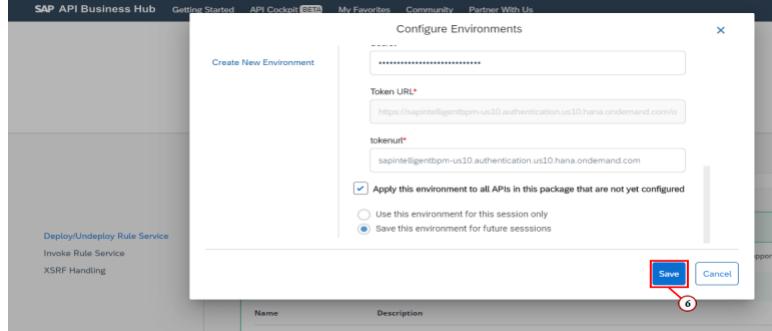
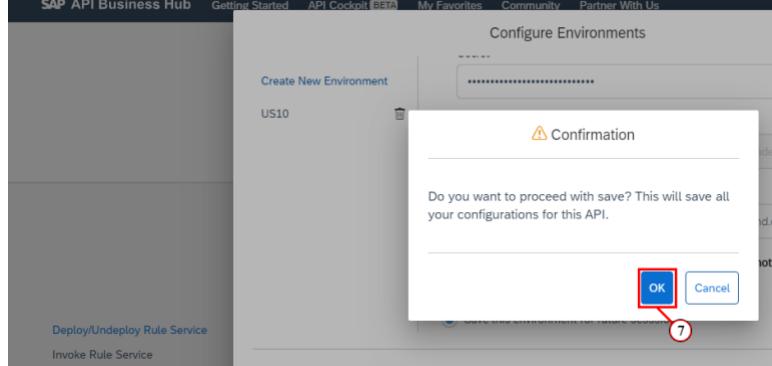
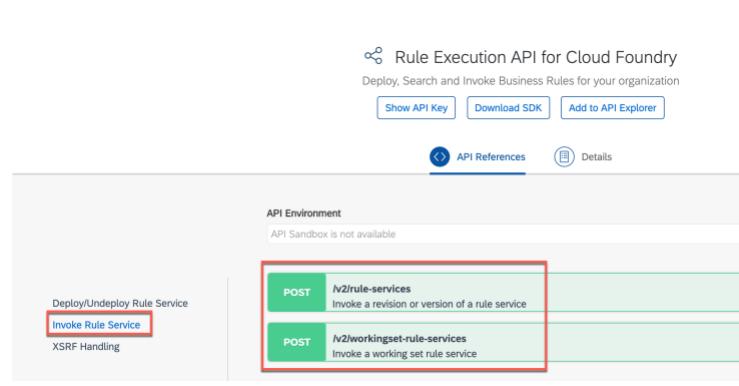
CONFIGURE TEST ENVIRONMENT

Explanation	Screenshot
<p>161. Click Configure Environments.</p>	

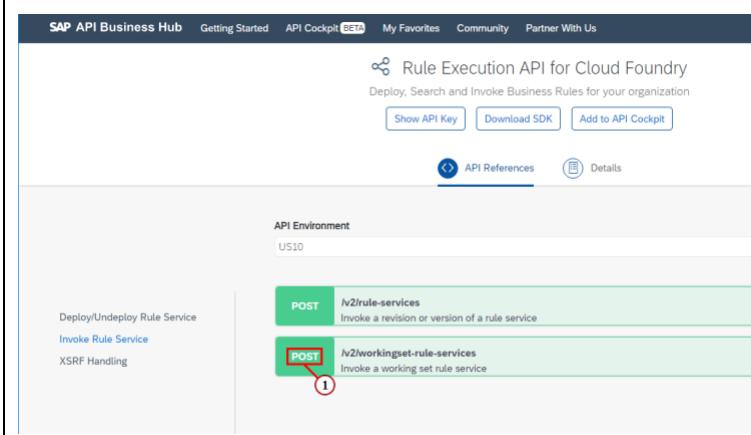
Explanation	Screenshot
<p>Fetch the information from Business Rules service instance key to configure the API Hub environment. To do so,</p> <ol style="list-style-type: none"> 162. Login to your trial account and navigate into your sub-account. 163. From left panel, click Service Instances. 164. From among the available instances, click on wm_businessrules instance to view service keys. 165. From available service keys, click  on any service key and select View. 	
<ol style="list-style-type: none"> 166. Copy the <ul style="list-style-type: none"> ○ rule_runtime_url, ○ clientid, ○ clientsecret, ○ url (this is token url) <p>These will be used to configure the testing environment in API Business Hub.</p>	 <pre>{ "endpoints": { "rule_repository_url": "https://bpmrulerrepository.cfapps.eu10.hana.ondemand.com", "rule_runtime_url": "https://bpmruleruntime.cfapps.eu10.hana.ondemand.com" }, "html5-apps-repo": { "app_host_id": "4e486beb-e3e3-4aaa-8a5a-c843e767f708" }, "uaa": { "tenantmode": "dedicated", "sburl": "https://internal-xsuaa.authentication.eu10.hana.ondemand.com", "subaccountid": "bc6567da-cabb-49f2-998d-6177896d0d93", "clientid": "sb-clone-b83a0d7f-5fea-4626-b167-cd4c0dd187b4", "clientsecret": "Y1Ry", "url": "https://db73ff38trial.authentication.eu10.hana.ondemand.com", "uaadomain": "authentication.eu10.hana.ondemand.com", "verificationkey": "-----BEGIN PUBLIC KEY-----", "-----END PUBLIC KEY-----" } }</pre>

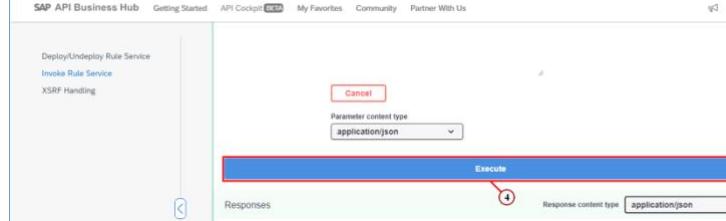
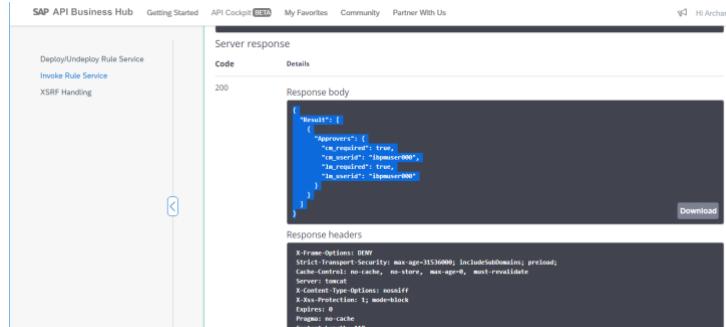
Explanation	Screenshot
<p>167. Set configuration properties</p> <p>Enter the respective details in the configuration properties as copied from the business rules service key in previous step:</p> <ul style="list-style-type: none"> • Display Name: Trial • runtimeurl: <as copied above> • Client Id: <as copied above> • Secret: <as copied above> <p>Press Tab to move to next property.</p>	
<p>168. Enter the following as token url and other standard properties:</p> <p>tokenurl: <as copied above></p> <p>Note: please remove https:// from the token url and copy the rest.</p> <p>For Example: If the URL is https://db73ff38trial.authentication.eu10.hana.ondemand.com</p> <p>Then token URL will be: db73ff38trial.authentication.eu10.hana.ondemand.com</p> <p>169. Click  for Apply this environment to all APIs.</p> <p>170. Click  for Save this environment for future sessions.</p>	

DEV163 - Build a Workflow from Scratch with SAP Workflow Management

Explanation	Screenshot
<p>171. Click .</p>	
<p>172. Click .</p>	
<p>There are two kinds of runtime APIs.</p> <ul style="list-style-type: none"> ○ The first one is for versioned invocation which means if you have deployed any version of the rule service and want to invoke it. ○ The second one is for the working set invocation which means that you do not have any version but have deployed the working set directly. <p>173. From the left options, click <u>Invoke Rule Service</u>.</p>	

INVOKE BUSINESS RULES

Explanation	Screenshot
<p>174. Click POST of /v2/working-set-rule-services API.</p>	
<p>175. Click Try out.</p>	
<p>176. Press Tab until you reach the body section.</p> <p>177. In the body section, Copy & Paste this text:</p> <pre> { "RuleServiceId": "ba2229ca79874fe381ced8a4ee6dad21", "Vocabulary": [{ "Investment": { "Currency": "EUR", "Country": "Germany", "Type": "Software", "TotalCost": 10000 } }] } </pre> <p>Replace the RuleServiceId with rule service id of your rules project.</p>	 <p>⚠️ Be careful during copying. Sometimes during copy and paste, the spaces are added automatically. In that case the payload will be considered as invalid and execution will fail. Remove the spaces.</p>

Explanation	Screenshot
<p>178. Click Execute.</p>	
<p>You will see the response after the successful rule execution. Try and change the country to “India” in the input body, and you will see a different response.</p>	 <pre> { "Result": { "Approver": "US", "Ok": "true", "OkWorld": "Hausmeier000", "Is_required": true, "Is_error": "false" } } </pre>

SUMMARY

You have completed the exercise!

You are now able to:

- Create & Activate Project, Data Object, Ruleservice, Ruleset and Rules.
- Configure Value Help in Data Object.
- Use Microsoft Excel Import/Export functionality in Decision Table.
- Deploy Ruleservice in Cloud Runtime.
- Discover Business Rules API in SAP API Business Hub.
- Configure Test Environment for Cloud Foundry.
- Execute Business Rules Execution API.

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