

PUBLIC

Build a Workflow from Scratch with SAP Cloud Platform Workflow Management

DEV163

Exercise 2.1 | Business Rules
Archana Shukla / SAP

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AUTHOR, ACTIVATE AND DEPLOY BUSINESS RULES

OVERVIEW

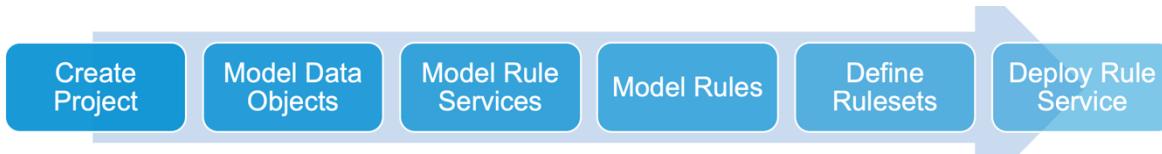
Estimated time: 45 minutes

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

The screenshot shows the SAP Cloud Platform Business Rules 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 'Determine Approvers Rule' is displayed next to a grid icon. A 'Decision Table' tab is selected, showing a table with two sections: 'If' and 'Then'. The 'If' section contains columns for 'Investment.Country', 'Investment.Type', and 'Investment.Total Cost'. The 'Then' section contains columns for 'Central Manager User...', 'Local Manager User ID', 'Local Manager Appro...', and 'Central Manager Appro...'. The table rows define approver logic based on investment details like country, type, and cost.

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.

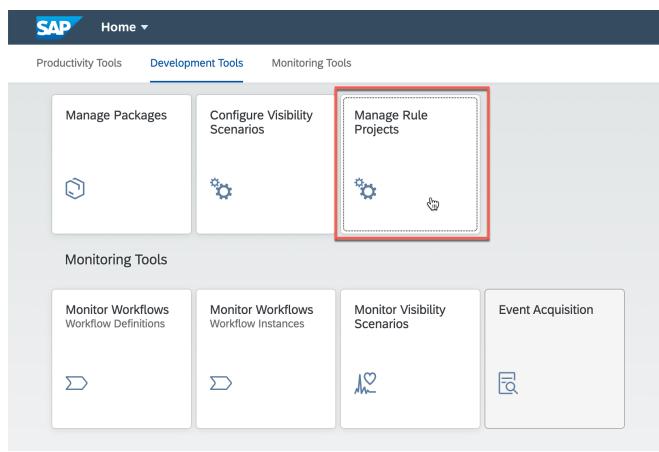
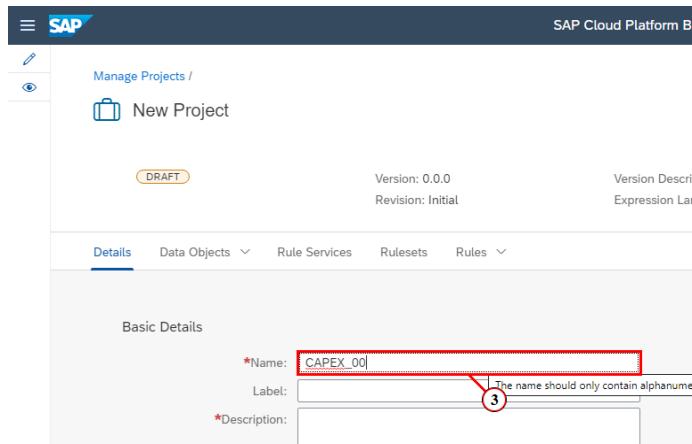
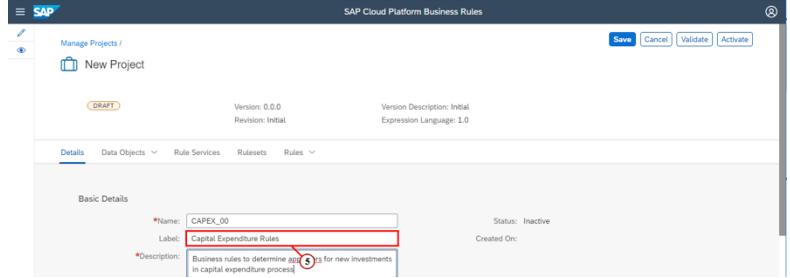


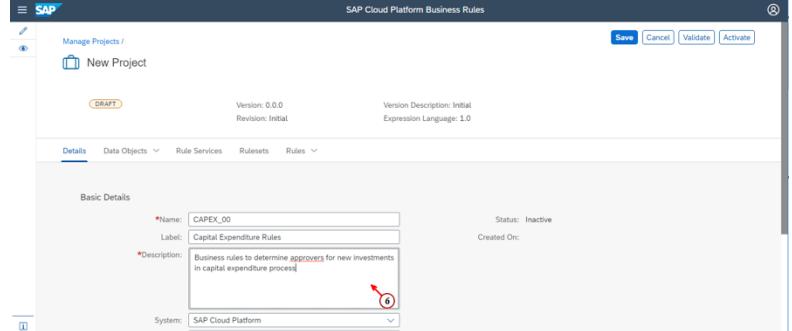
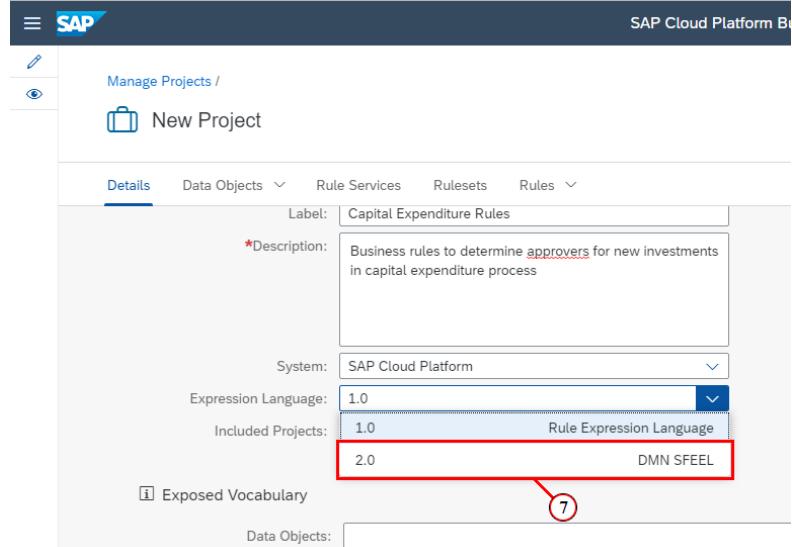
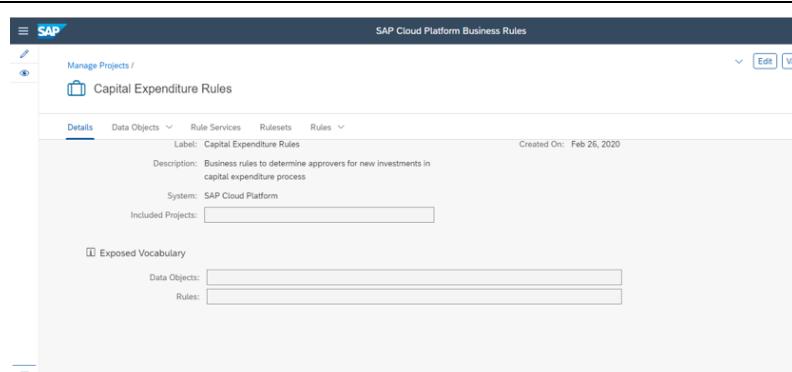
Exercise Description:

In this exercise you will do the following:

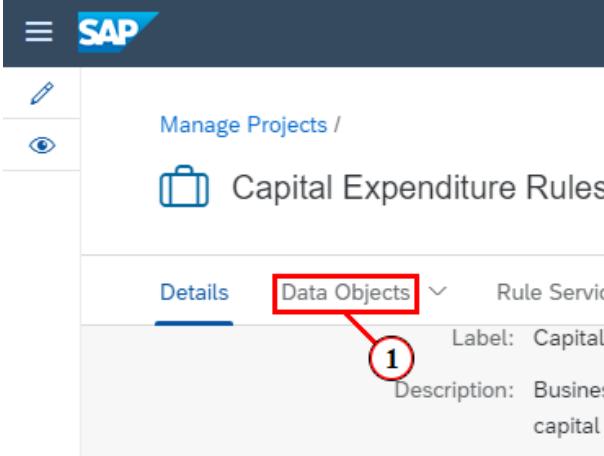
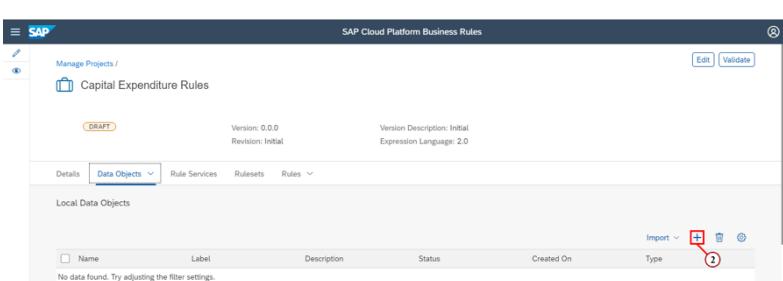
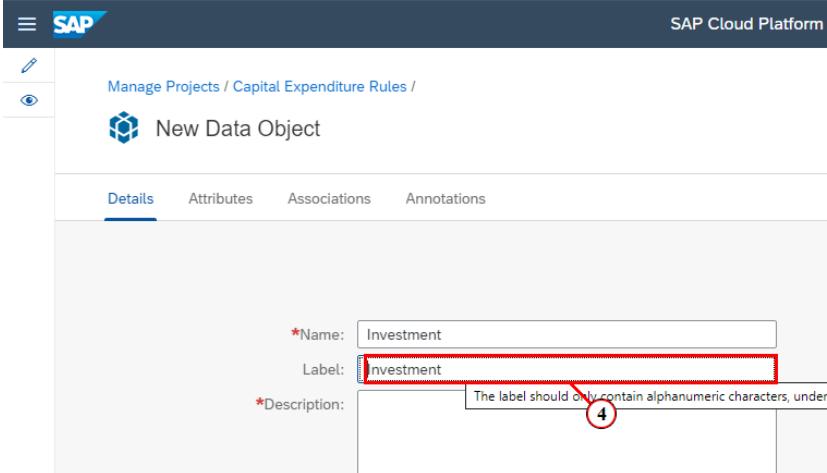
- *Create and Configure Project*
- *Create Data Objects*
- *Configure Data Object with Value Help*
- *Create Ruleservice*
- *Create Decision Table*
- *Create Ruleset*
- *Activate Projects and other Models*
- *Deploy Ruleservice in Cloud Platform*
- *Create Rule Version*
- *Test Business Rules*

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>	

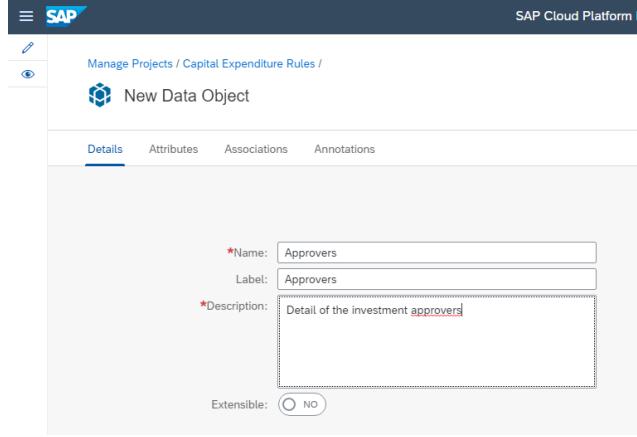
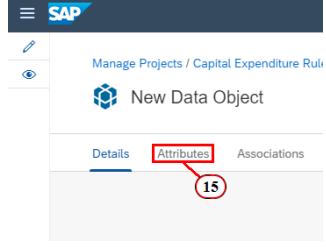
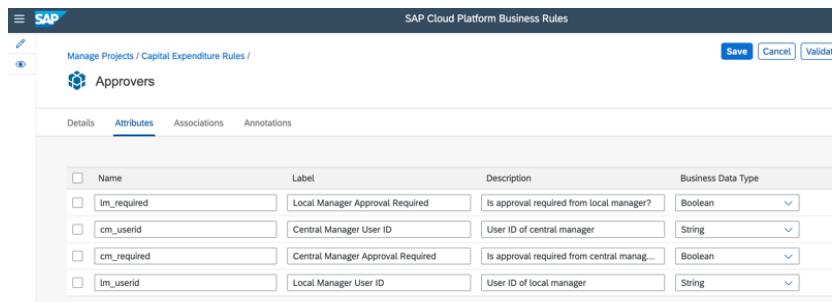
Explanation	Screenshot
<p>5. Enter Business rules to determine approvers for new investments in capital expenditure process in Description box.</p>	
<p>6. Click to select 2.0 as the Expression Language.</p>	
<p>7. Click Save.</p>	
<p>Your business rules project is created with the needed configurations.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

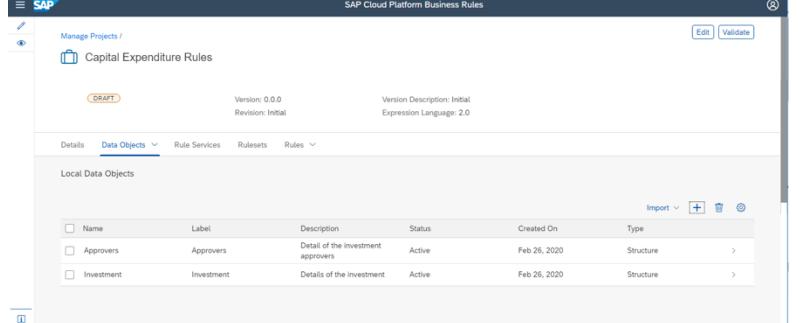
CREATE DATA OBJECTS

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>	

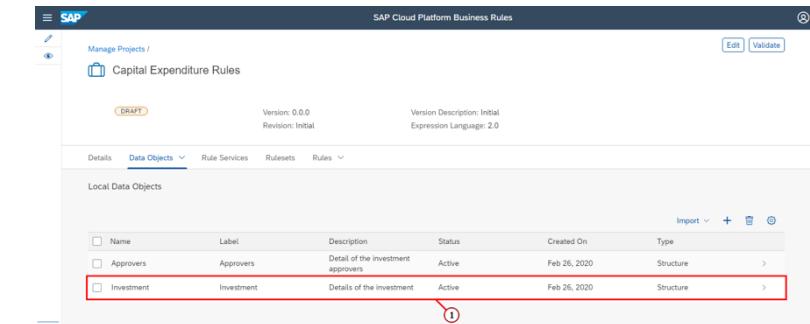
Explanation	Screenshot
<p>11. Enter Details of the investment in the Description box.</p>	
<p>12. Click Attributes.</p>	
<p>13. Click + to add new attributes</p>	
<p>14. Enter Type in the Name and Label box. 15. Enter Type of investment in the Description box.</p>	
<p>16. Click + to add attribute.</p>	

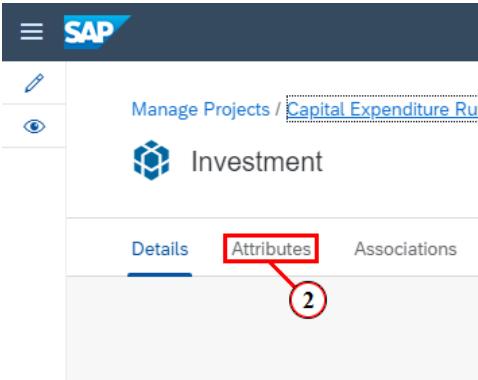
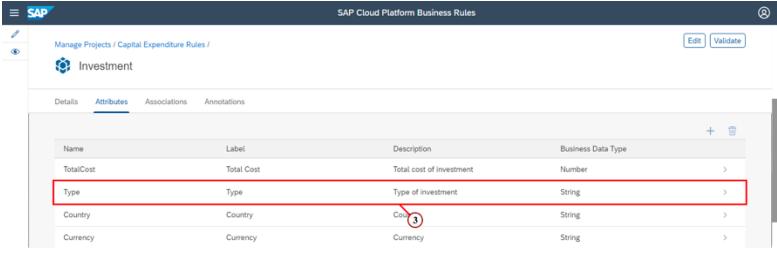
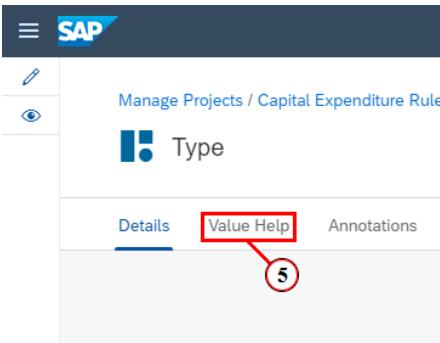
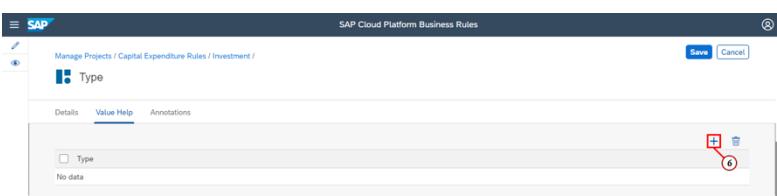
Explanation	Screenshot
<p>17. Repeat the steps to create more data object attributes with following details:</p> <p>Name: Currency Label: Currency Description: Currency Type: String</p> <p>Name: Country Label: Country Description: Country Type: String</p> <p>Name: TotalCost Label: Total Cost Description: Total cost of investment Type: String</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>	

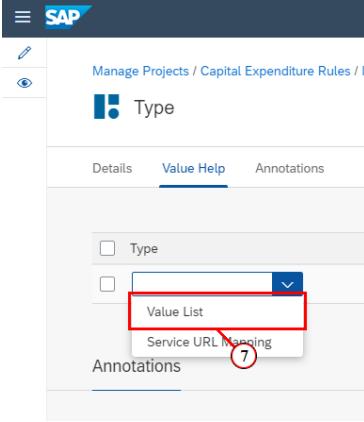
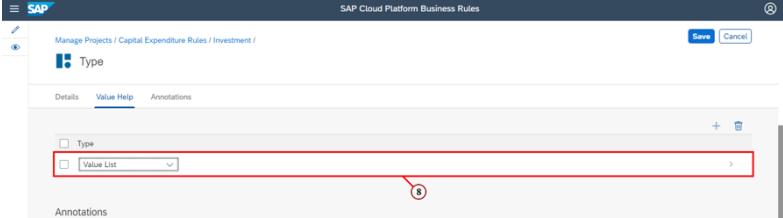
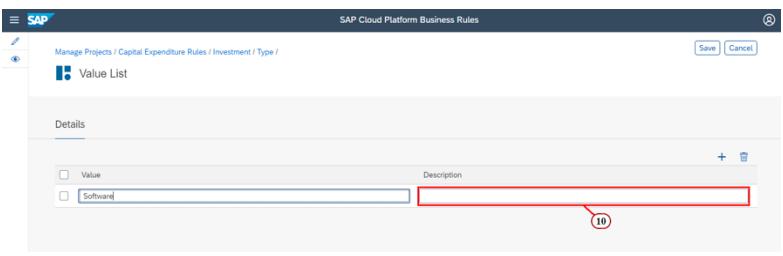
Explanation	Screenshot
<p>21. Enter Approvers in Name box.</p> <p>22. Enter Approvers in Label box.</p> <p>23. Enter Detail of investment approvers in Description box.</p>	 <p>The screenshot shows the SAP Cloud Platform interface for creating a new data object. The 'Details' tab is selected. The 'Name' field contains 'Approvers', the 'Label' field also contains 'Approvers', and the 'Description' field contains 'Detail of the investment approvers'. The 'Extensible' option is set to 'NO'.</p>
<p>24. Click Attributes.</p>	 <p>The screenshot shows the SAP Cloud Platform interface for creating a new data object. The 'Attributes' tab is highlighted with a red box and circled with the number 15. The other tabs ('Details', 'Associations', 'Annotations') are visible below it.</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>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface for the 'Approvers' data object. The 'Attributes' tab is selected. A table lists four attributes: 'lm_required' (Local Manager Approval Required), 'cm_userid' (Central Manager User ID), 'cm_required' (Central Manager Approval Required), and 'lm_userid' (Local Manager User ID). Each attribute has its name, label, description, and business data type (Boolean or String) specified.</p>

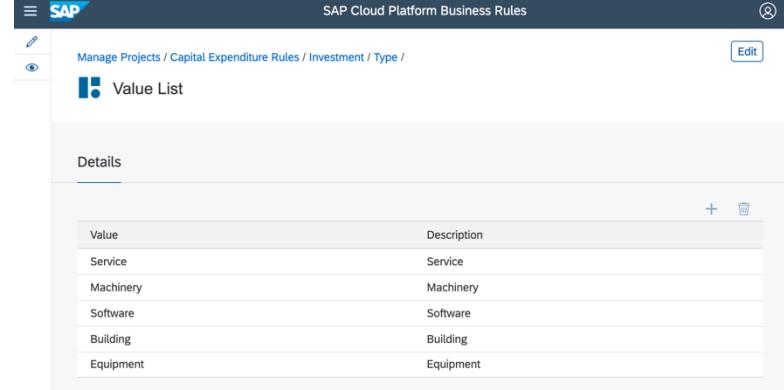
Explanation	Screenshot
26. Click Activate .	
27. Click Capital Expenditure Rules .	
<p>You have created and configured data objects in business rules project.</p> <p>Investment data object will be used as <i>Input</i> and Approver data object will be used as <i>Output</i> in the rule service.</p> <p>These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

CONFIGURE VALUE HELP IN DATA OBJECT

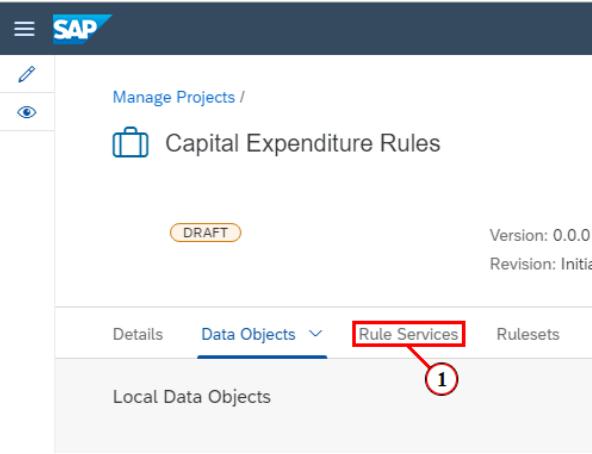
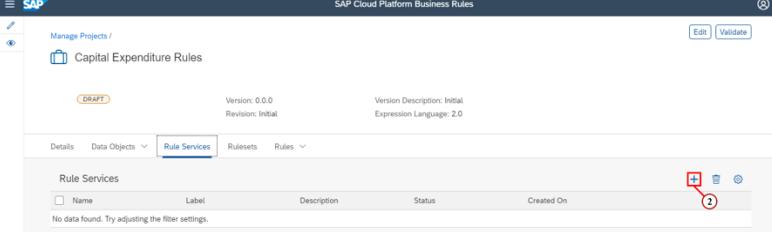
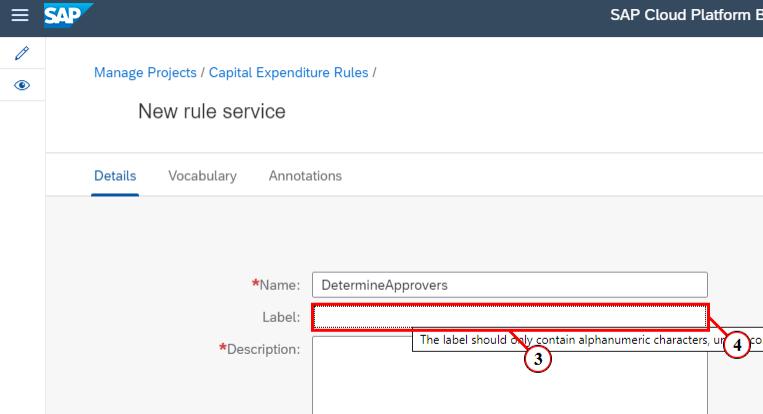
Explanation	Screenshot
28. Click to open Investment data object.	

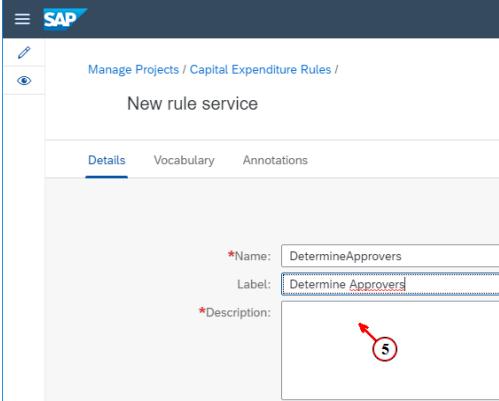
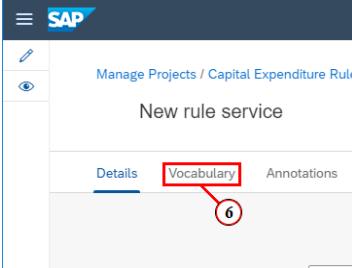
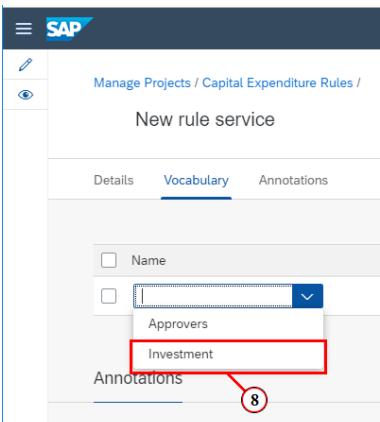
Explanation	Screenshot
29. Click Attributes to add attributes to the data object.	
30. Click to open Type attribute.	
31. Click Edit .	
32. Click Value Help .	
33. Click + to add value help	

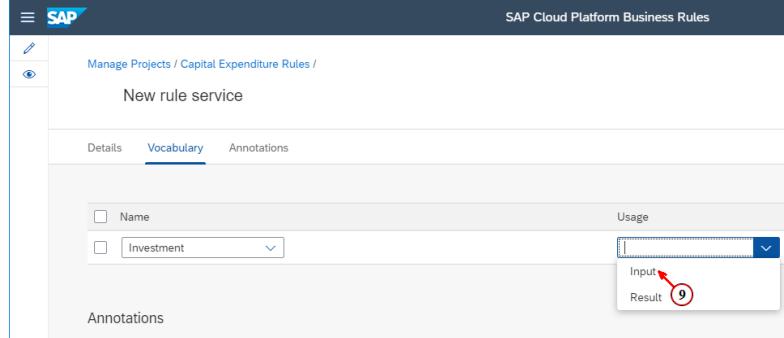
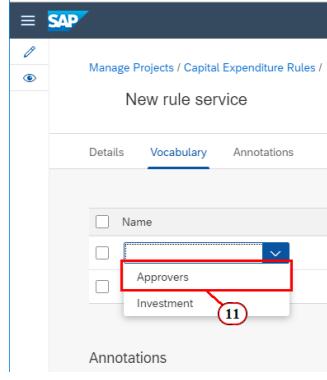
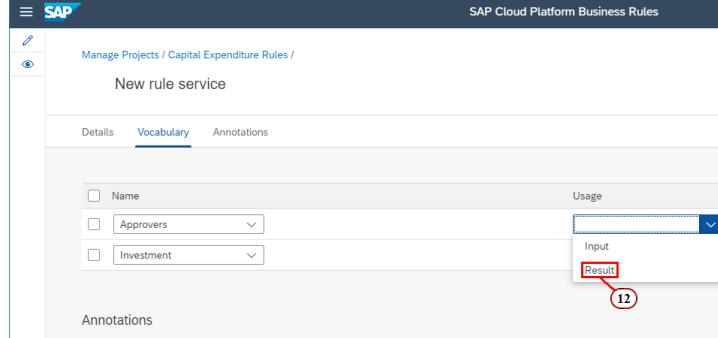
Explanation	Screenshot
<p>34. Click Value List from Type.</p>	
<p>Note: there are two kinds of value help (a) Static and (b) Dynamic. Dynamic value help can be created with Service URL Mapping and Static can be created with Value List type. In dynamic value you can connect any backend system and make 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>	

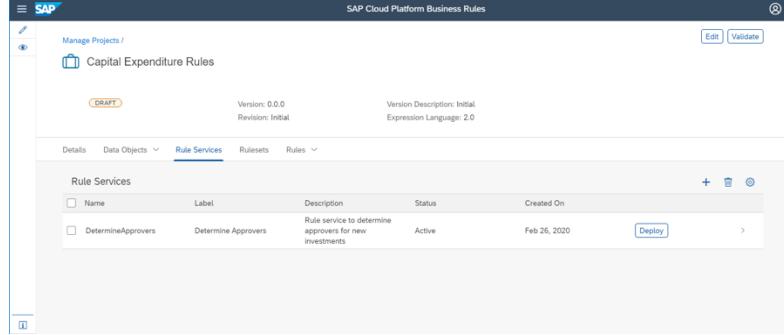
Explanation	Screenshot																						
<p>38. Repeat the steps above to add few more values:</p> <table border="1"> <thead> <tr> <th>Value</th><th>Description</th></tr> </thead> <tbody> <tr> <td>Machinery</td><td>Machinery</td></tr> <tr> <td>Building</td><td>Building</td></tr> <tr> <td>Equipment</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	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface for managing capital expenditure rules. The current view is the 'Value List' for the 'Investment / Type' category. The table displays the following data:</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Service</td> <td>Service</td> </tr> <tr> <td>Machinery</td> <td>Machinery</td> </tr> <tr> <td>Software</td> <td>Software</td> </tr> <tr> <td>Building</td> <td>Building</td> </tr> <tr> <td>Equipment</td> <td>Equipment</td> </tr> </tbody> </table>	Value	Description	Service	Service	Machinery	Machinery	Software	Software	Building	Building	Equipment	Equipment
Value	Description																						
Machinery	Machinery																						
Building	Building																						
Equipment	Equipment																						
Service	Service																						
Value	Description																						
Service	Service																						
Machinery	Machinery																						
Software	Software																						
Building	Building																						
Equipment	Equipment																						
<p>39. Click Save.</p>	 <p>The screenshot shows the same interface as the previous step, but the 'Save' button in the top right corner is highlighted with a red box and circled with a red marker.</p>																						
<p>40. Click Investment.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface for managing capital expenditure rules. The current view is the 'Investment' screen. The 'Investment' link in the left sidebar is highlighted with a red box and circled with a red marker.</p>																						
<p>41. Click Edit.</p>	 <p>The screenshot shows the 'Investment' screen. The 'Edit' button in the top right corner is highlighted with a red box and circled with a red marker.</p>																						
<p>42. Click Activate.</p>	 <p>The screenshot shows the 'Investment' screen. The 'Activate' button in the top right corner is highlighted with a red box and circled with a red marker.</p>																						
<p>43. Click Capital Expenditure Rules.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface for managing capital expenditure rules. The current view is the 'Capital Expenditure Rules' screen. The 'Capital Expenditure Rules' link in the left sidebar is highlighted with a red box and circled with a red marker.</p>																						

CREATE RULE SERVICE

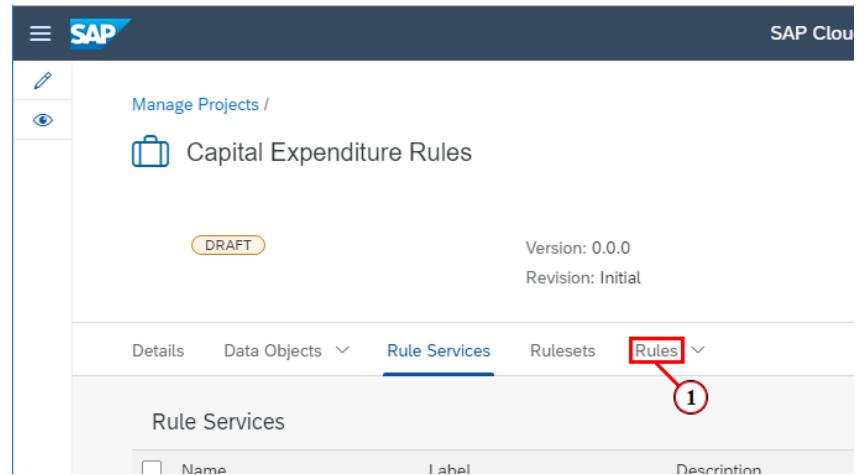
Explanation	Screenshot
<p>44. Click Rule Services.</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface. The title bar says "Manage Projects / Capital Expenditure Rules". Below it, there's a "DRAFT" status indicator, a version number "Version: 0.0.0", and a revision status "Revision: Initial". A navigation bar at the top includes tabs for "Details", "Data Objects", "Rule Services" (which is highlighted with a red box and has a red circle with the number 1 below it), and "Rulesets". Below the navigation bar, the text "Local Data Objects" is visible.</p>
<p>45. Click + to add new rule service</p>	 <p>The screenshot shows the SAP Cloud Platform Business Rules interface with the "Rule Services" tab selected. The table header includes columns for Name, Label, Description, Status, and Created On. A blue plus sign icon in the first column of the table is highlighted with a red box and has a red circle with the number 2 below it.</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 hyphens." is displayed next to the "Label" field, with a red box and a red circle with the number 3 below it. The "Description" field is empty.</p>

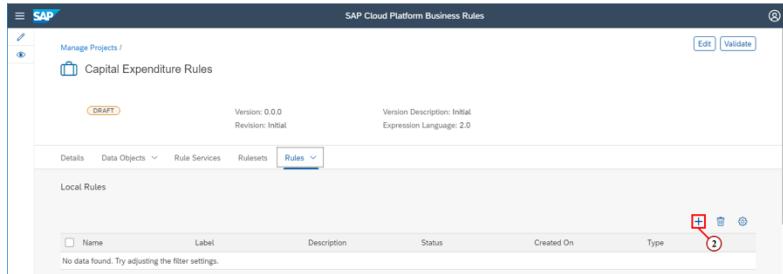
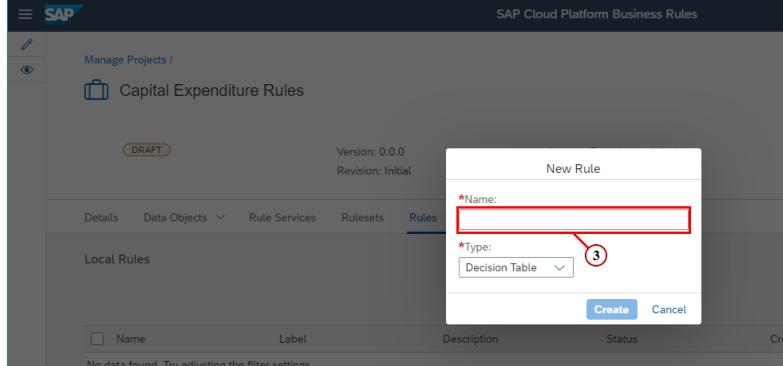
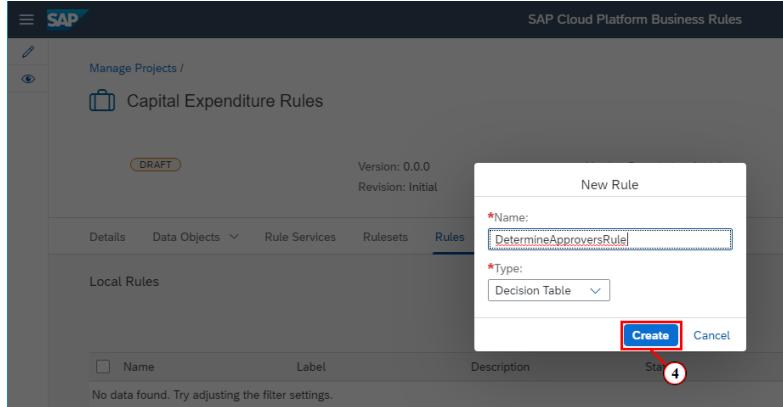
Explanation	Screenshot
<p>55. Click to enter Rule service to determine approvers for new investment in Description box.</p>	
<p>56. Click Vocabulary.</p>	
<p>57. Click  to add rule service vocabulary.</p>	
<p>58. Click to select Investment.</p>	

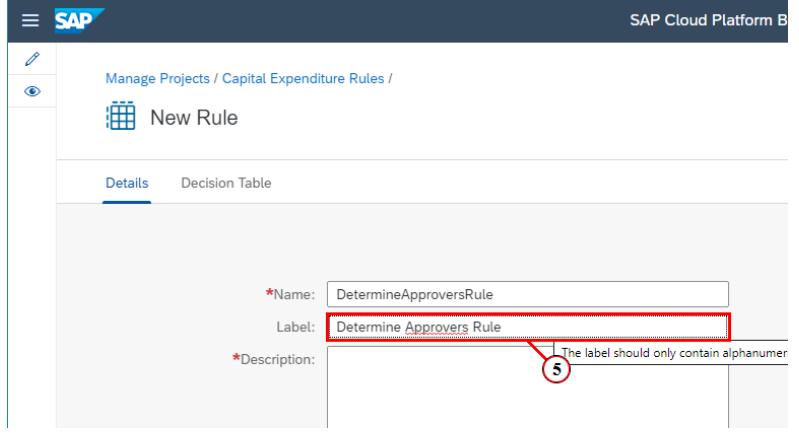
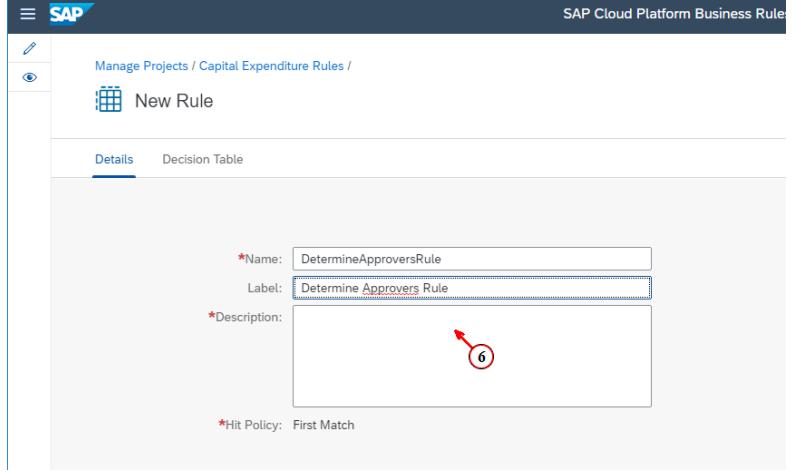
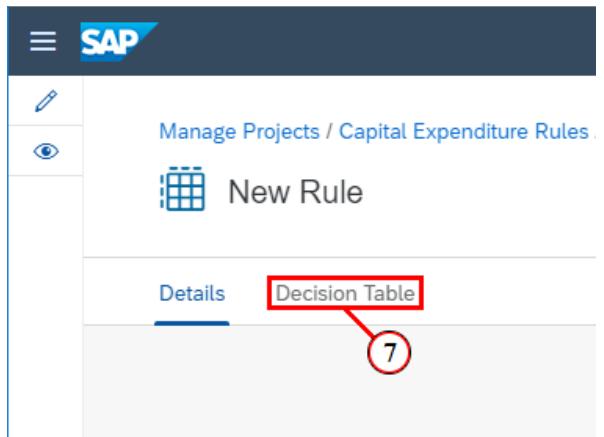
Explanation	Screenshot
<p>59. From Usage, select Input.</p>	
<p>60. Click  to add another rule service vocabulary.</p>	
<p>61. Click to select Approvers.</p>	
<p>62. From Usage, select Result</p>	
<p>63. Click .</p>	

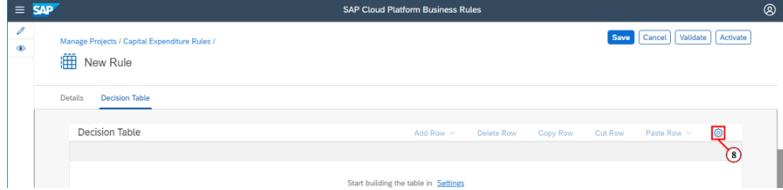
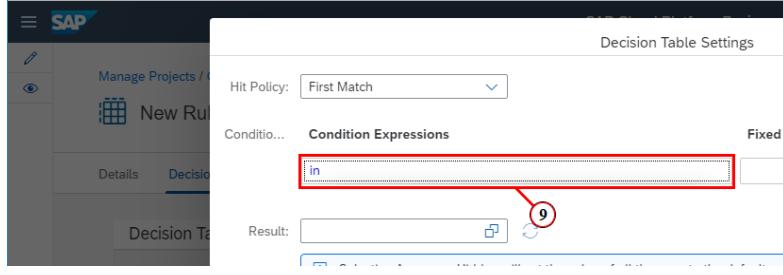
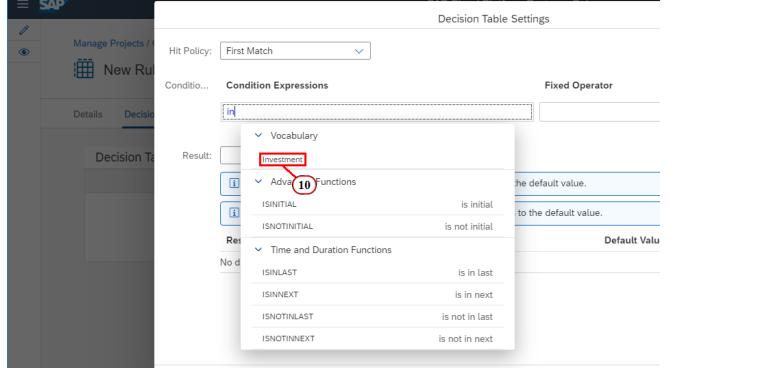
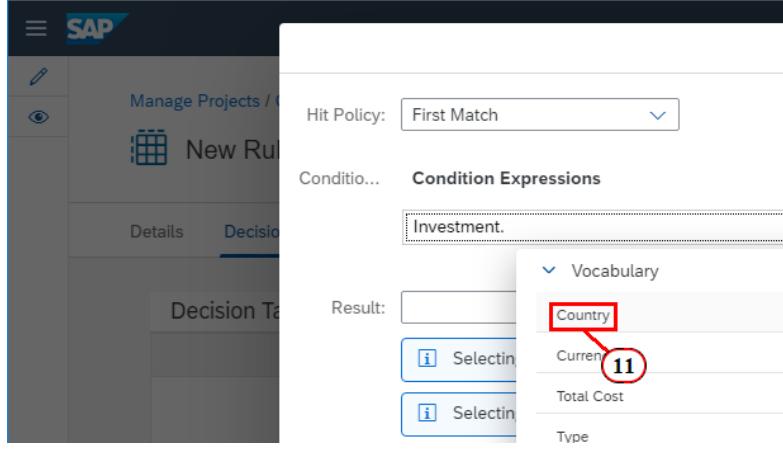
Explanation	Screenshot
<p>64. Click Capital Expenditure Rules</p>	
<p>You have created and configured Rule Service which will be finally deployed once we have configured all the rule entity models.</p>	

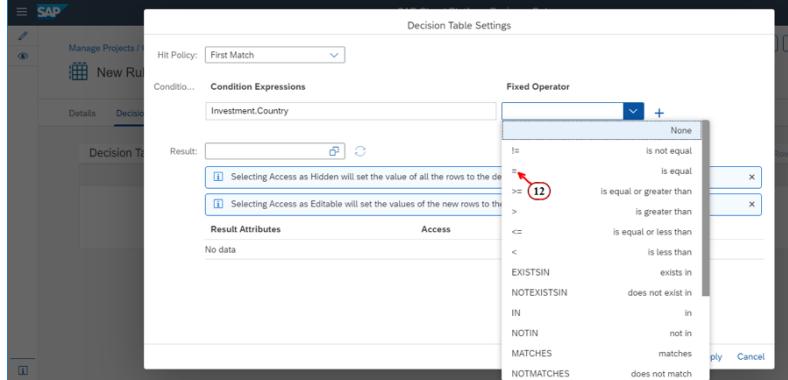
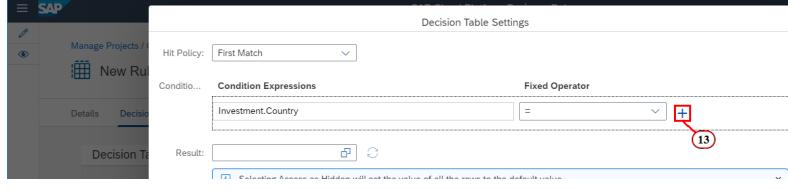
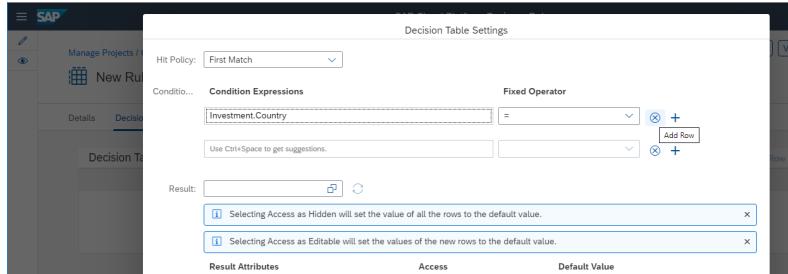
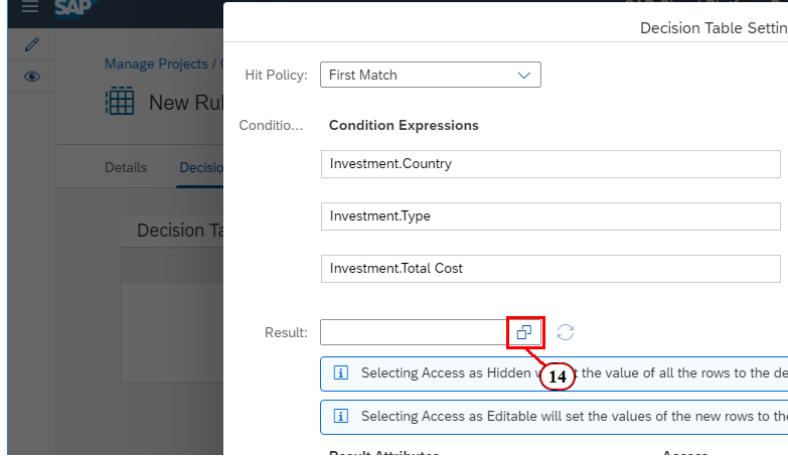
CREATE DECISION TABLE RULE

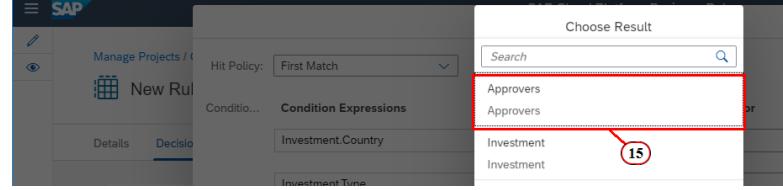
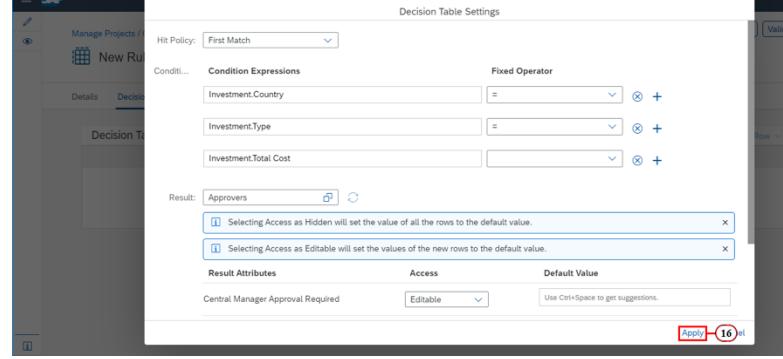
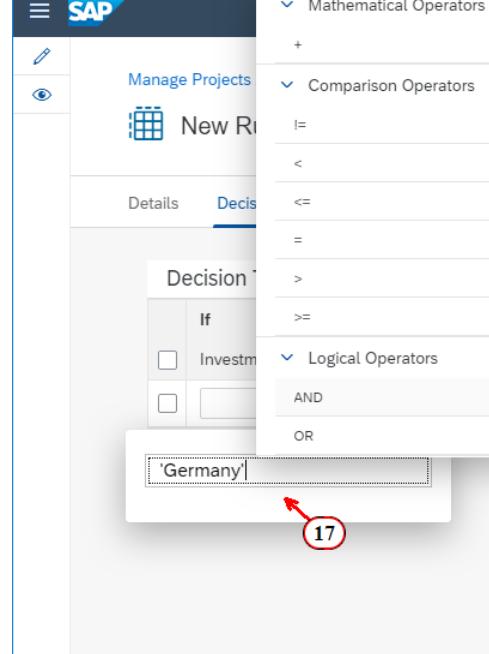
Explanation	Screenshot
<p>65. Click Rules.</p>	

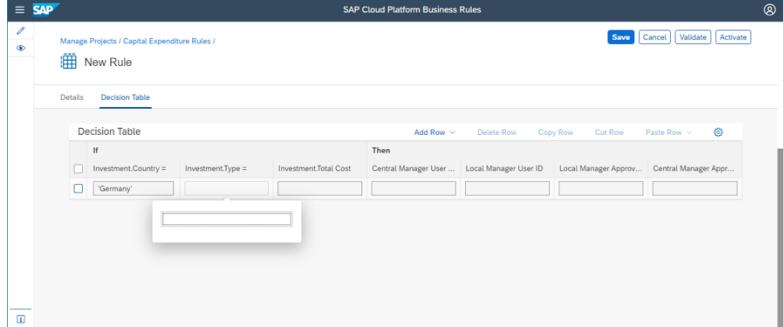
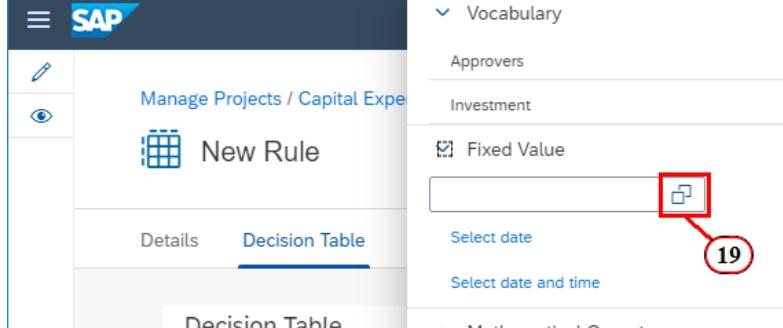
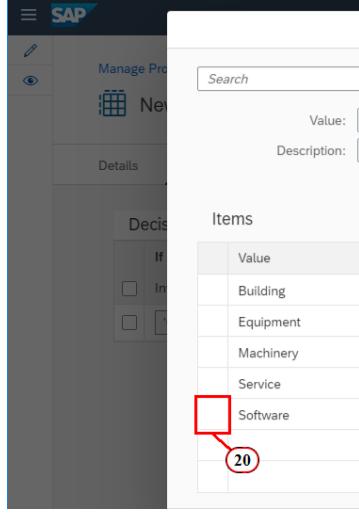
Explanation	Screenshot
<p>66. Click  to create rule.</p>	
<p>67. Click to enter DetermineApproversRule in Name box.</p>	
<p>68. Click .</p>	

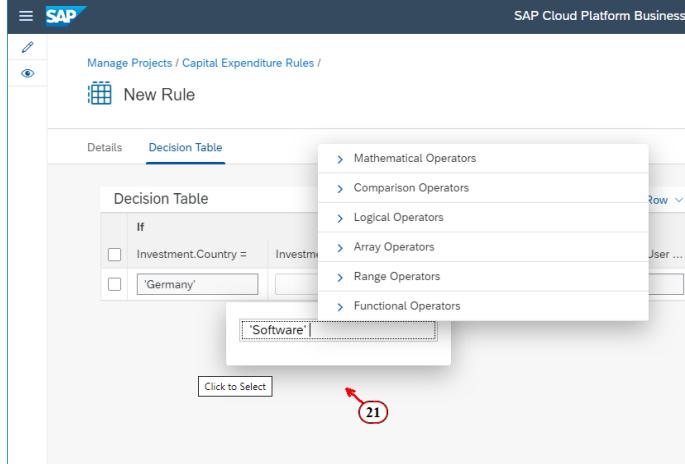
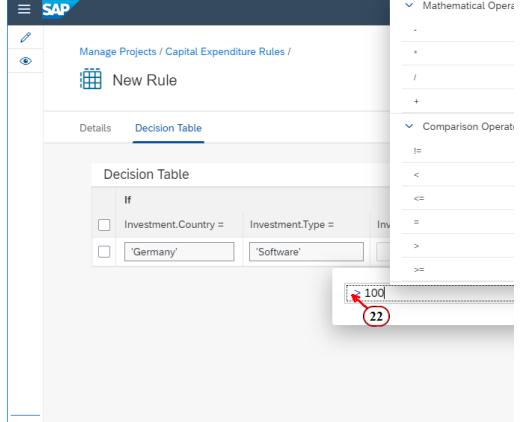
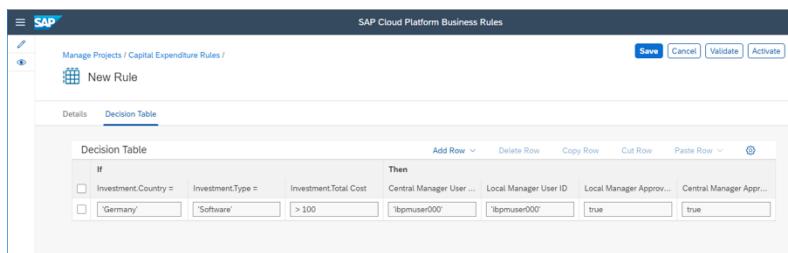
Explanation	Screenshot
<p>69. Click and enter Determine Approvers Rule in Label box.</p>	 <p>SAP Cloud Platform B</p> <p>Manage Projects / Capital Expenditure Rules / New Rule</p> <p>Details Decision Table</p> <p>*Name: DetermineApproversRule</p> <p>Label: Determine Approvers Rule 5 The label should only contain alphanumeric</p> <p>*Description:</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>SAP Cloud Platform Business Rule</p> <p>Manage Projects / Capital Expenditure Rules / New Rule</p> <p>Details Decision Table</p> <p>*Name: DetermineApproversRule</p> <p>Label: Determine Approvers Rule 6</p> <p>*Description: *Hit Policy: First Match</p>
<p>71. Click Decision Table.</p>	 <p>Manage Projects / Capital Expenditure Rules .</p> <p>New Rule</p> <p>Details Decision Table 7</p>

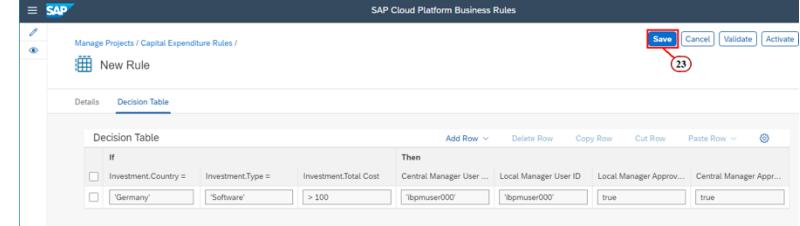
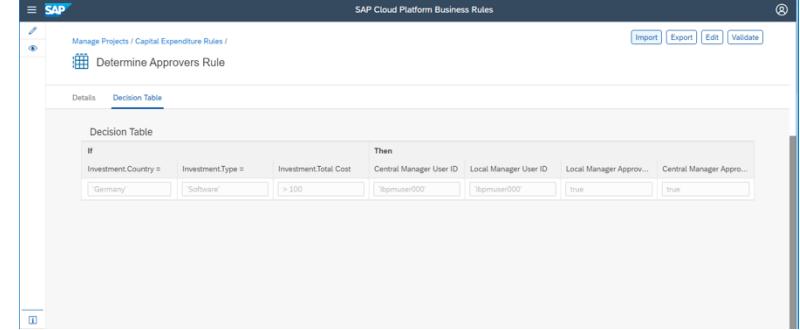
Explanation	Screenshot
<p>72. Click  to configure condition and result of the rule.</p>	
<p>Note: As you start typing in the Condition Expression box, you will get in-place context help with the list of Vocabulary, Operators and Functions.</p> <p>73. Click and enter in the condition expression box.</p> <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							
<p>80. Click □ to select Result data object.</p>							

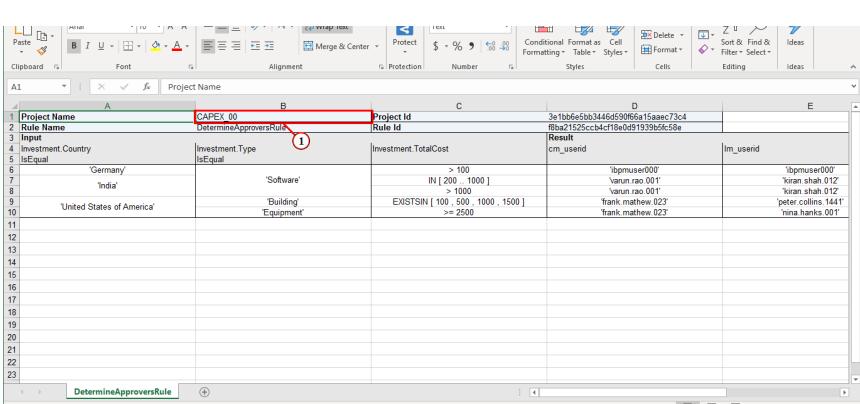
Explanation	Screenshot
<p>81. Select or Double-click on Approvers.</p>	
<p>Note: You will notice Access column as the result properties. When you set access as hidden, the respective column will not be seen during rule authoring in decision table.</p> <p>82. Click Apply</p>	
<p>83. Click on the input 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>	

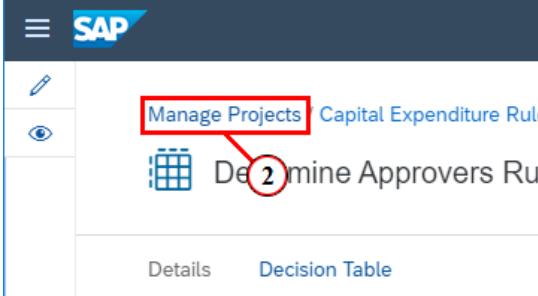
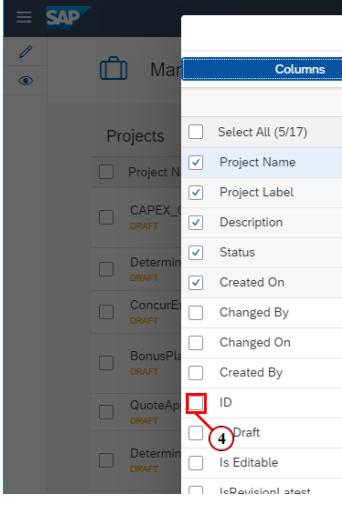
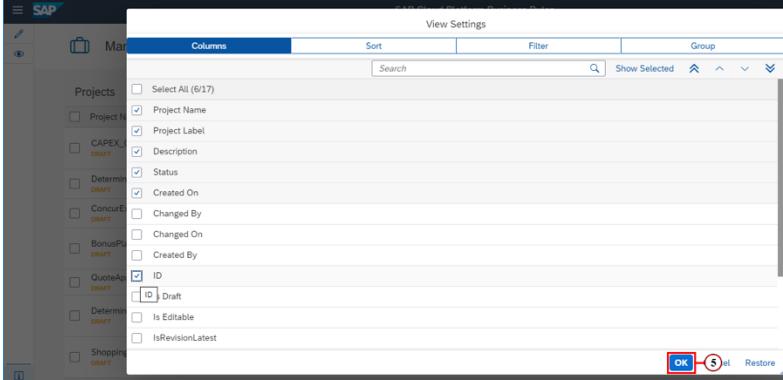
Explanation	Screenshot
<p>Note: In this expression, you will choose the value from the value help defined for this attribute.</p> <p>84. Please press Ctrl+ Space or press any key.</p>	
<p>85. Expand Fixed Value and click  to select value help.</p>	
<p>86. Click to select Software from the value help.</p>	

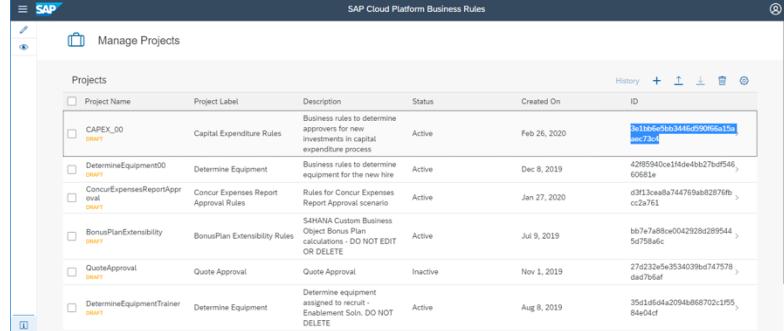
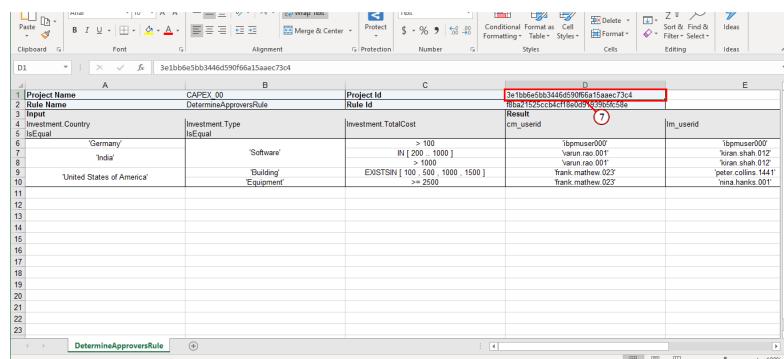
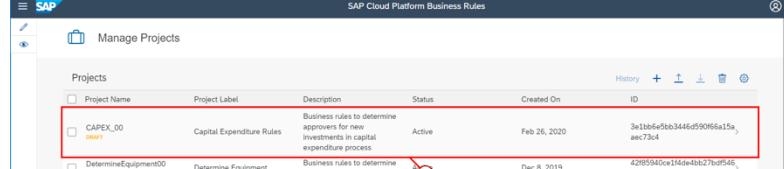
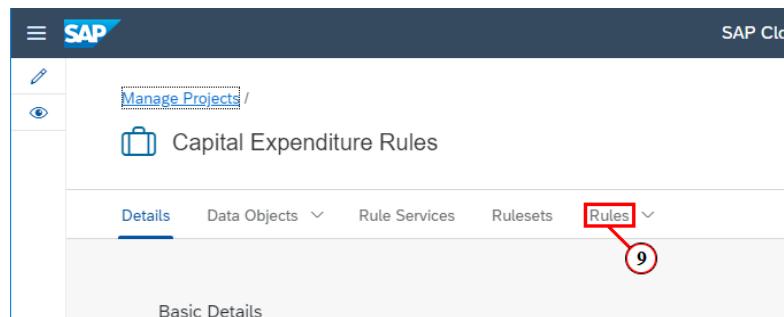
Explanation	Screenshot										
<p>87. Click Enter to confirm or click outside the input field.</p>											
<p>88. Click to enter > 100 89. Press Enter to confirm.</p>											
<p>90. Similarly, enter the following expression values for the respective result column:</p> <table border="1"> <thead> <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										

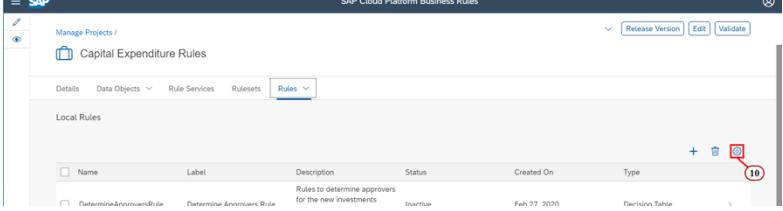
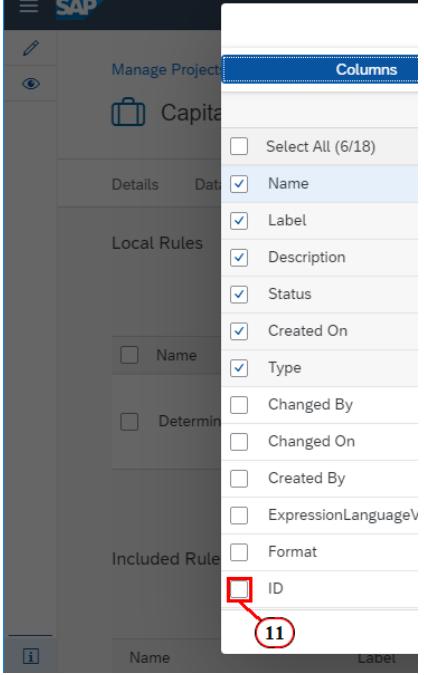
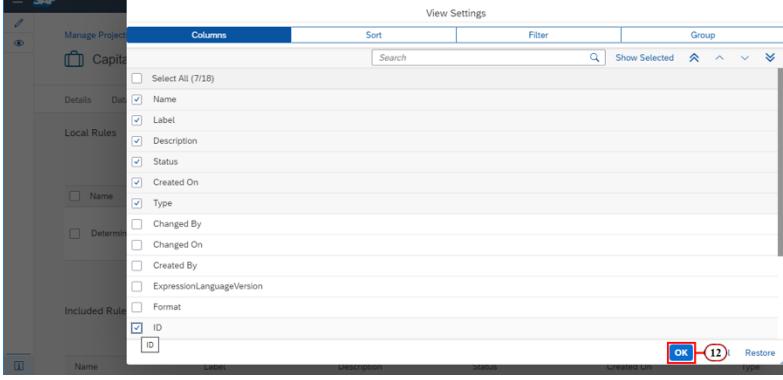
Explanation	Screenshot
<p>23. Click Save.</p>	
<p>You have created a decision table-based rule with condition and result columns. You have added a row to the decision table and used in-place context sensitive help to add expressions to the cell values. Now, in next chapter you will use Microsoft Excel to import the data in the decision table.</p>	

IMPORT DECISION TABLE FROM MICROSOFT EXCEL

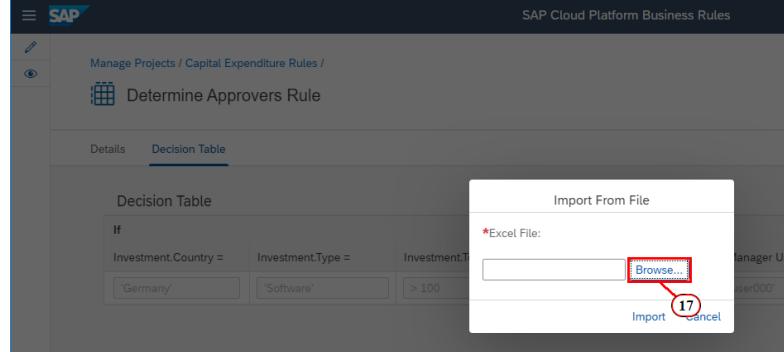
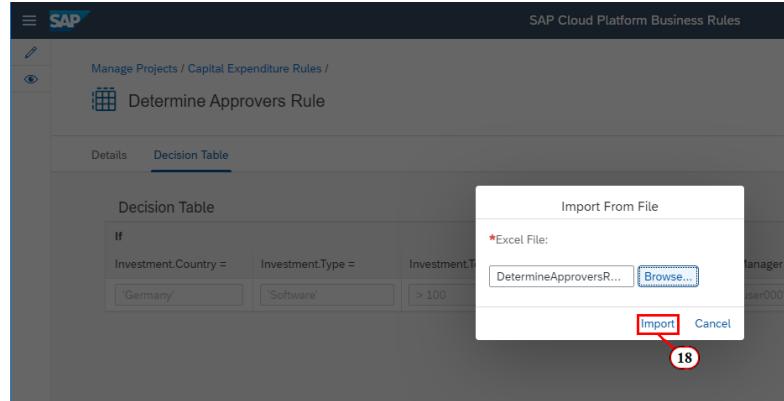
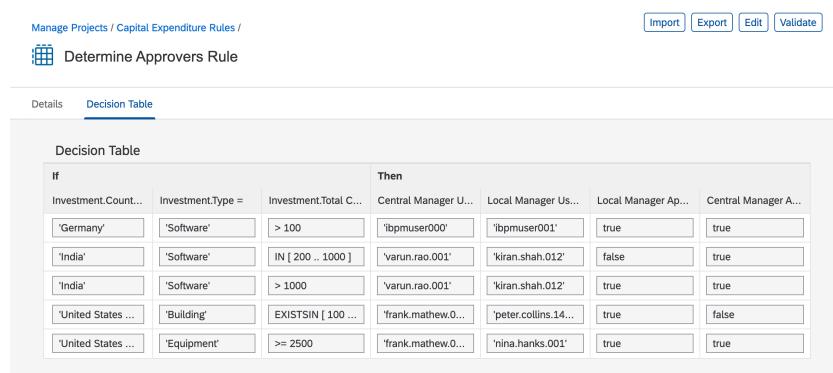
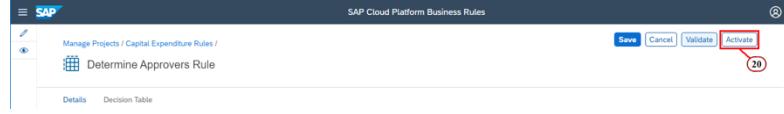
Explanation	Screenshot																																				
<p>91. Download the DetermineApproversRule excel in the same folder in GitHub.</p> <p>92. Open the excel and update Project Name, Project ID and Rule ID in the available excel sheet as shown in steps below.</p> <p>93. Update project name with your rules project name like CAPEX_00.</p>	 <table border="1"> <thead> <tr> <th>Project Name</th> <th>Rule Id</th> <th>Project Id</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>CAPEX_00</td> <td>DetermineApproversRule</td> <td>3e10be6cbb3446d590f6a15aaec73c4</td> <td>cm_userid</td> </tr> <tr> <td>Input</td> <td>Rule Id</td> <td>8bb27152ccbd-f18e0d9193965c59e</td> <td>lm_userid</td> </tr> <tr> <td>Investment.Country</td> <td>Investment.Type</td> <td>Investment.TotalCost</td> <td></td> </tr> <tr> <td>IsEqual</td> <td>IsEqual</td> <td>> 100</td> <td>Varun.rao.000</td> </tr> <tr> <td>'Germany'</td> <td>'Software'</td> <td>IN [200 , 1000]</td> <td>Varun.rao.001</td> </tr> <tr> <td>'India'</td> <td>'Building'</td> <td>> 1000</td> <td>Varun.rao.001</td> </tr> <tr> <td>'United States of America'</td> <td>'Equipment'</td> <td>EXISTSSIN [100 , 500 , 1000 , 1500]</td> <td>Frank.mathew.023</td> </tr> <tr> <td></td> <td></td> <td>>= 2500</td> <td>Frank.mathew.023</td> </tr> </tbody> </table>	Project Name	Rule Id	Project Id	Result	CAPEX_00	DetermineApproversRule	3e10be6cbb3446d590f6a15aaec73c4	cm_userid	Input	Rule Id	8bb27152ccbd-f18e0d9193965c59e	lm_userid	Investment.Country	Investment.Type	Investment.TotalCost		IsEqual	IsEqual	> 100	Varun.rao.000	'Germany'	'Software'	IN [200 , 1000]	Varun.rao.001	'India'	'Building'	> 1000	Varun.rao.001	'United States of America'	'Equipment'	EXISTSSIN [100 , 500 , 1000 , 1500]	Frank.mathew.023			>= 2500	Frank.mathew.023
Project Name	Rule Id	Project Id	Result																																		
CAPEX_00	DetermineApproversRule	3e10be6cbb3446d590f6a15aaec73c4	cm_userid																																		
Input	Rule Id	8bb27152ccbd-f18e0d9193965c59e	lm_userid																																		
Investment.Country	Investment.Type	Investment.TotalCost																																			
IsEqual	IsEqual	> 100	Varun.rao.000																																		
'Germany'	'Software'	IN [200 , 1000]	Varun.rao.001																																		
'India'	'Building'	> 1000	Varun.rao.001																																		
'United States of America'	'Equipment'	EXISTSSIN [100 , 500 , 1000 , 1500]	Frank.mathew.023																																		
		>= 2500	Frank.mathew.023																																		

Explanation	Screenshot
<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>	
<p>97. Click  to select ID column.</p>	
<p>98. Click .</p>	

Explanation	Screenshot
<p>99. Select and press Ctrl+C or Command+C to copy.</p>	
<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>	

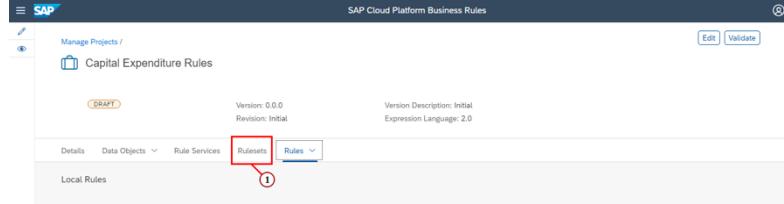
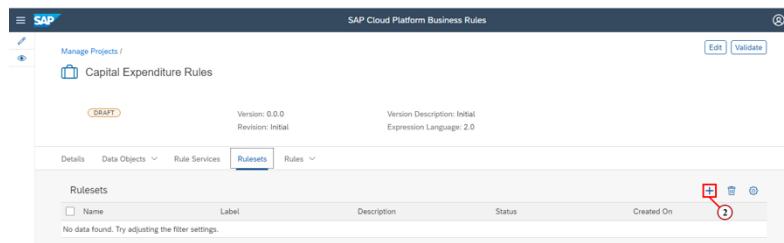
Explanation	Screenshot
<p>103. Click  to add new display column to get ID of the rule.</p>	
<p>104. Click  of ID option.</p>	
<p>105. Click .</p>	

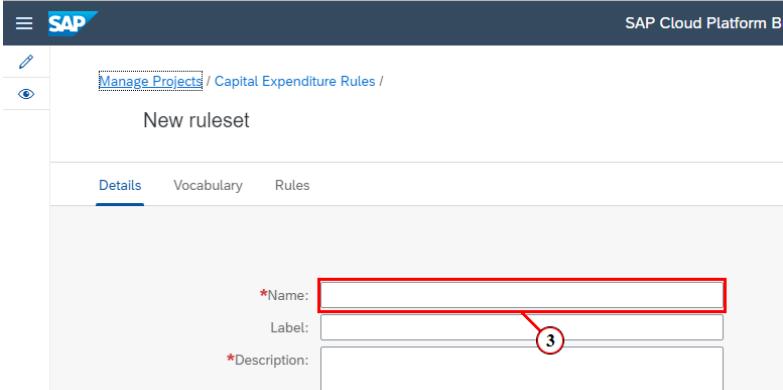
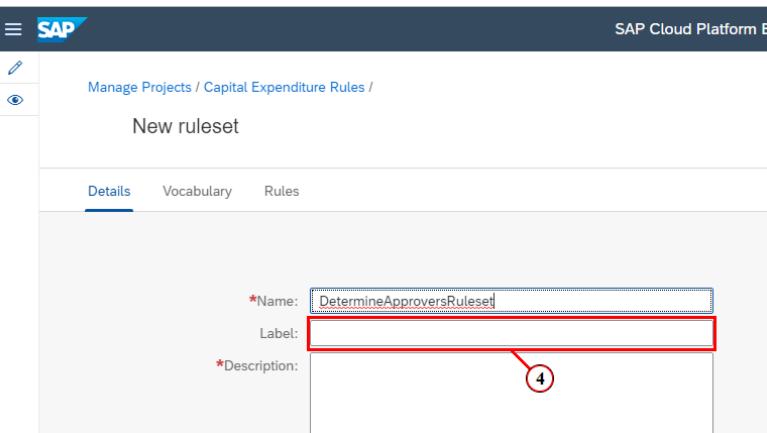
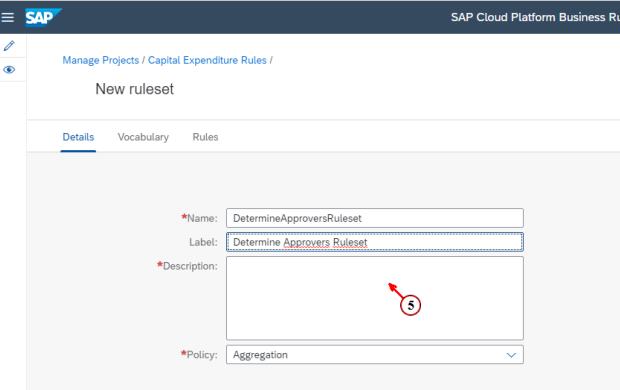
Explanation	Screenshot
<p>106. Select and press Ctrl+C or Command+C to copy.</p>	
<p>107. Paste the Rule ID</p> <p>Note: ensure that there are no leading or trailing spaces while you do the copy paste</p> <p>108. Also, change the <i>cm_userid</i> and <i>lm_userid</i> of the first row (line number 6) to your trial username.</p>	
<p>109. Click to open the rule.</p>	
<p>110. Click Import.</p>	

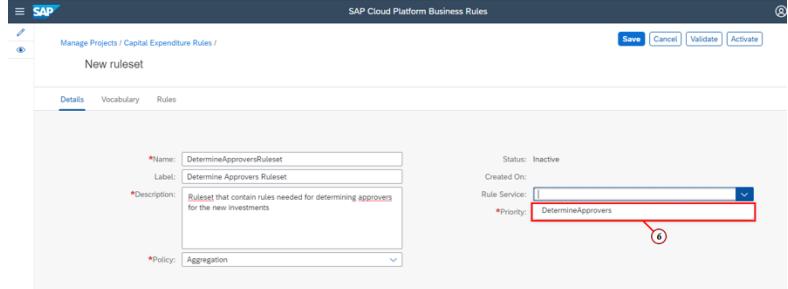
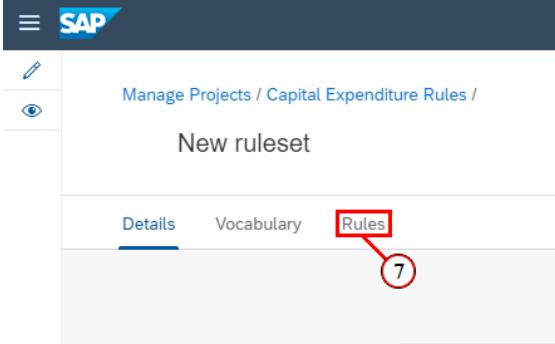
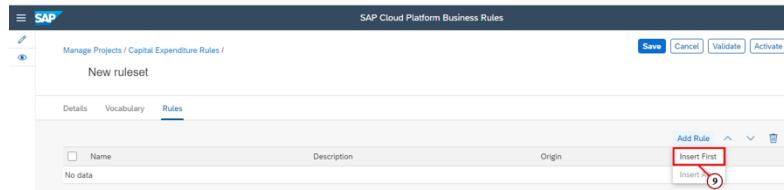
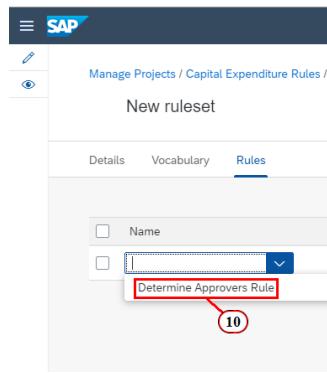
Explanation	Screenshot
111. Click Browse... and select the excel sheet updated in steps above.	
112. Click Import .	
You will have the rows imported in your decision table.	
113. Click Edit .	
114. Click Activate .	

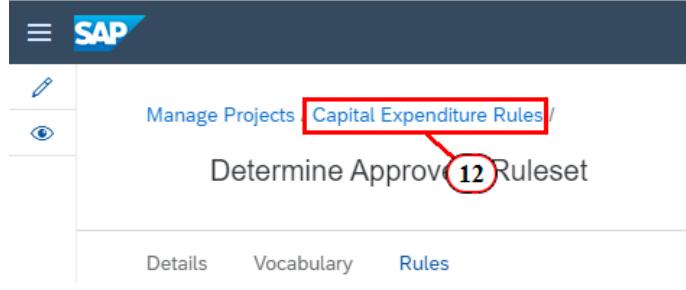
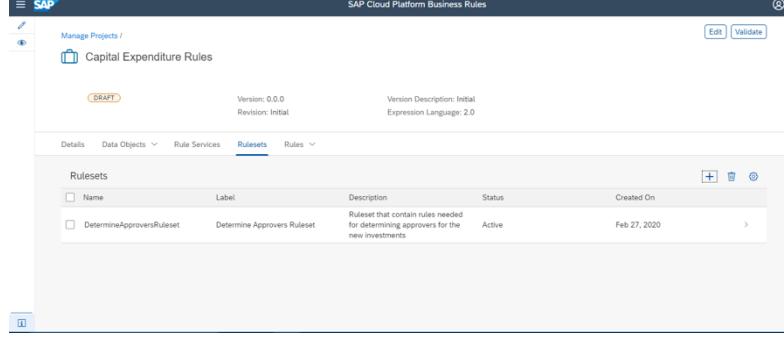
Explanation	Screenshot
<p>115. Click Capital Expenditure Rules.</p>	

CREATE RULESET

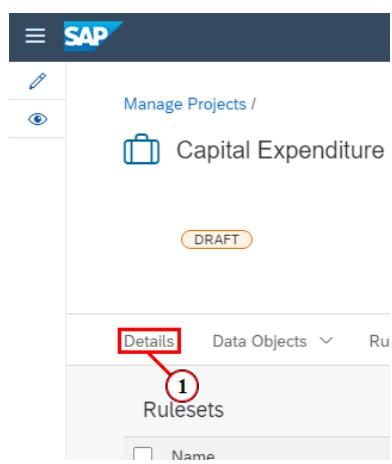
Explanation	Screenshot
<p>116. Click Rulesets.</p>	
<p>117. Click  to create ruleset.</p>	

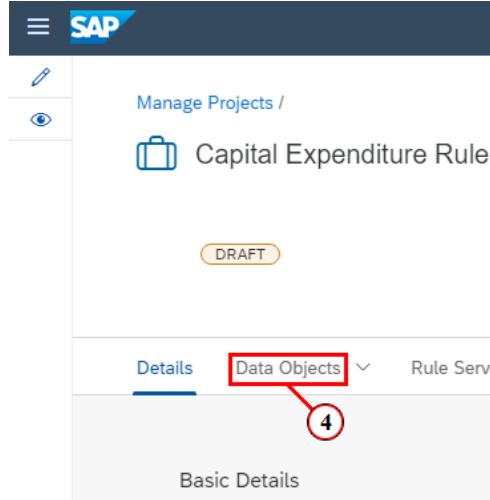
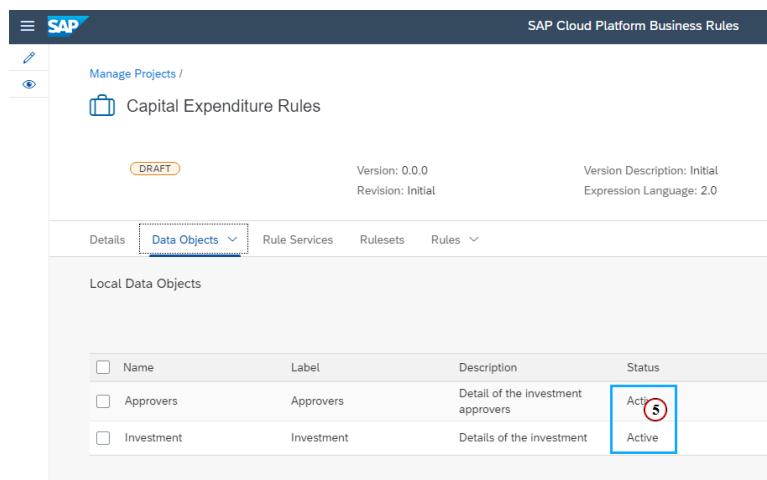
Explanation	Screenshot
<p>118. Click to enter DetermineApproversRuleset in Name box.</p>	
<p>119. Click to enter Determine Approvers Ruleset in Label box.</p>	
<p>120. Click to enter Ruleset that contain rules needed for determining approvers for the new investments in Description box.</p>	

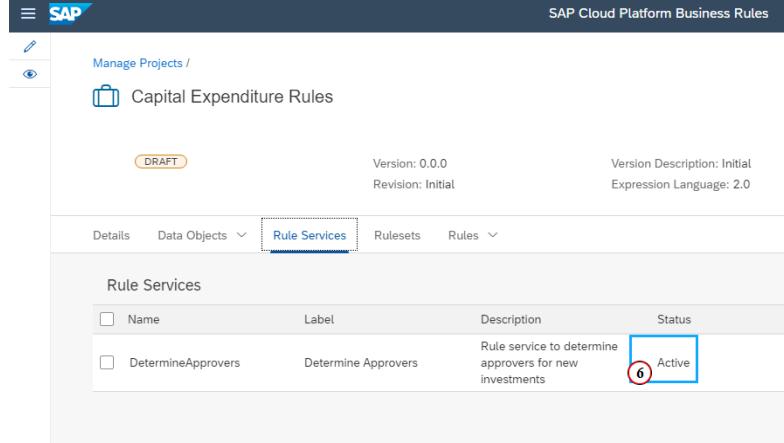
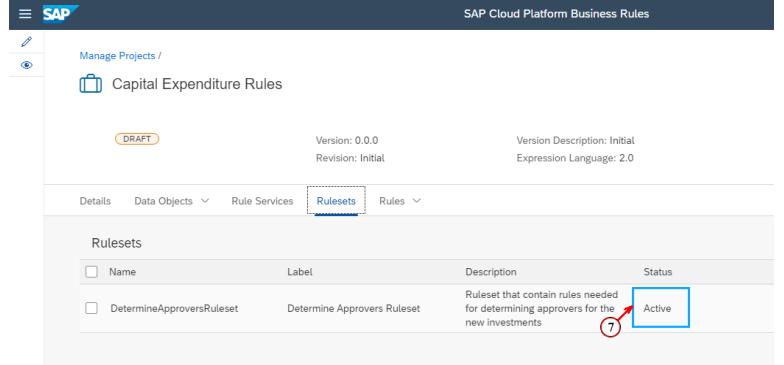
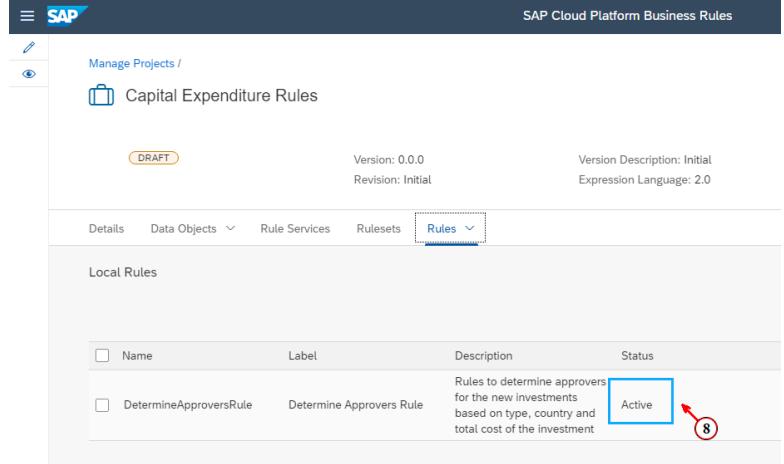
Explanation	Screenshot
<p>121. Click to select DetermineApprovers as Rule Service.</p>	
<p>122. Click Rules.</p>	
<p>123. Click Add Rule.</p>	
<p>124. Click Insert First.</p>	
<p>125. Click to select Determine Approvers Rule.</p>	

Explanation	Screenshot
126. Click Activate .	
127. Click Capital Expenditure Rules .	
<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>	

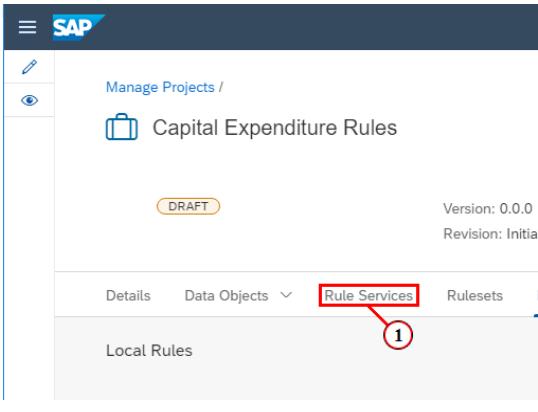
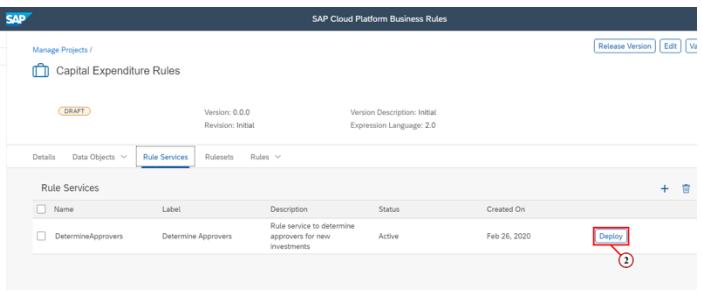
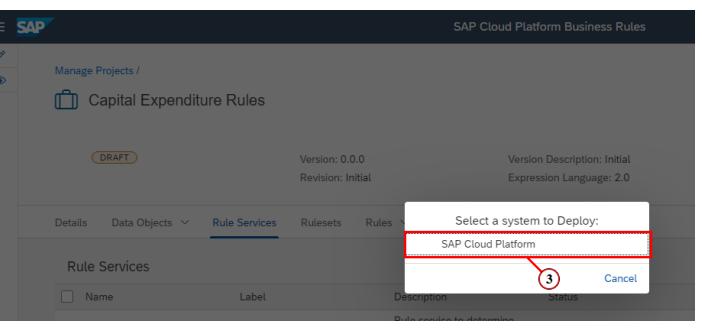
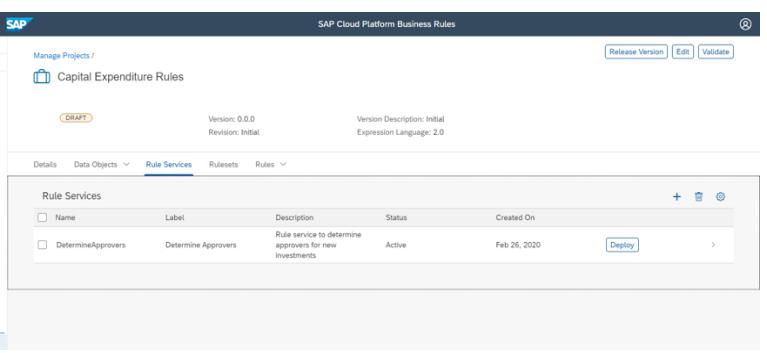
ACTIVATE RULES PROJECT

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>	

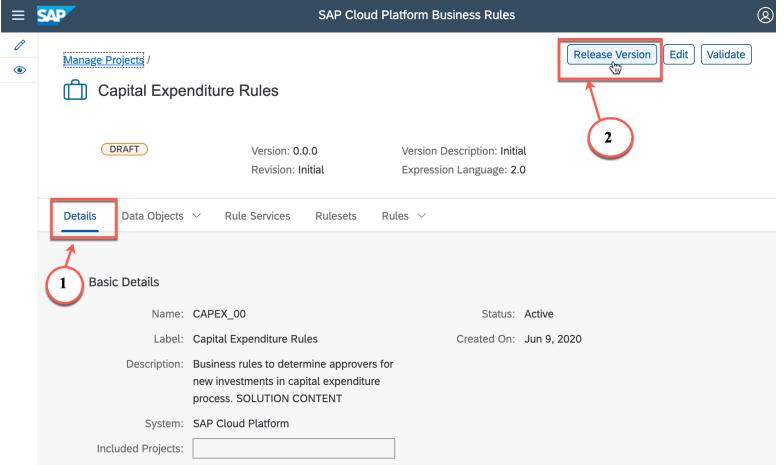
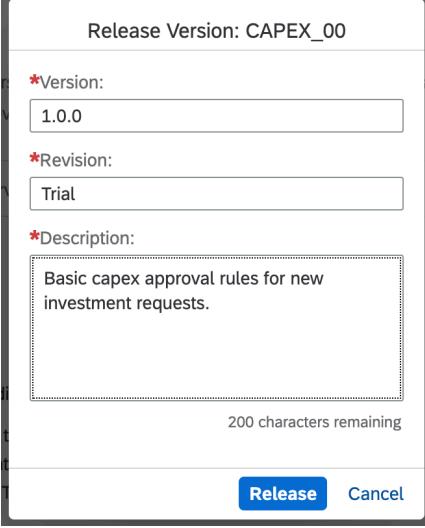
Explanation	Screenshot												
129. Click Edit .													
130. Click Activate .													
131. Click Data Objects .													
132. Check if all the data objects are in Active state.	 <table border="1"> <thead> <tr> <th>Name</th> <th>Label</th> <th>Description</th> <th>Status</th> </tr> </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										

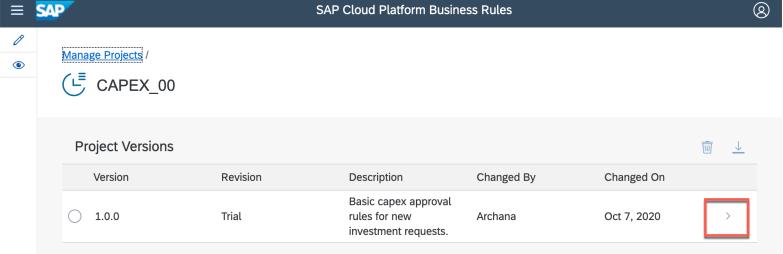
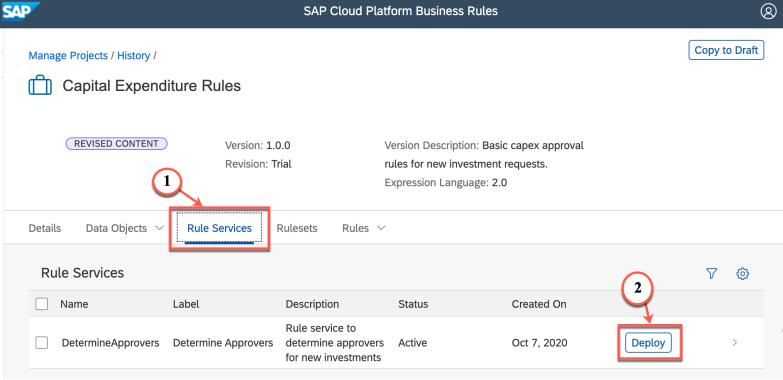
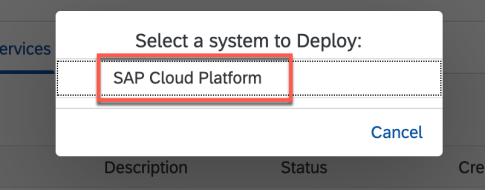
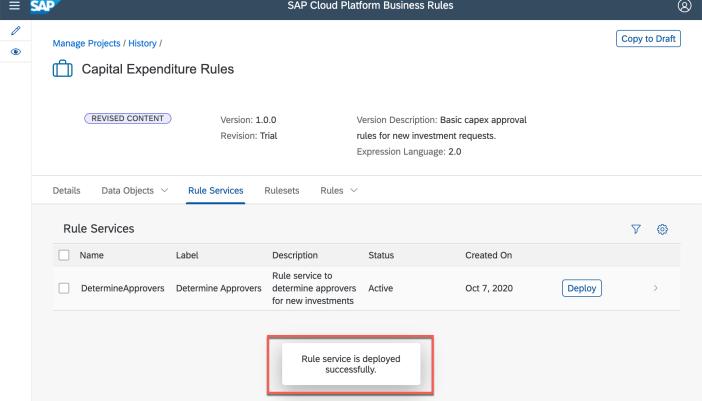
Explanation	Screenshot								
<p>133. Check if all the rule services are in Active state.</p>	 <table border="1"> <thead> <tr> <th>Name</th> <th>Label</th> <th>Description</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>DetermineApprovers</td> <td>Determine Approvers</td> <td>Rule service to determine 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>137. Click Deploy.</p>	
<p>138. Click SAP Cloud Platform to deploy the rule service.</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>	

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. The 'Details' tab is selected. In the top right, there is a 'Release Version' button with a red box around it and a circled '2' above it, indicating the next step. Other buttons like 'Edit' and 'Validate' are also visible.</p>
<p>142. Enter the following in the Release Version pup-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 three fields: 'Version' (1.0.0), 'Revision' (Trial), and 'Description' (Basic capex approval rules for new investment requests). Below the description field is a note '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 row for the 'CAPEX_00' project has a red box around its checkbox and a circled '1' below it. In the top right, there is a 'History' button with a red box around it and a circled '2' above it, indicating the next step. Other buttons like '+', '^', 'v', and trash can are also visible.</p>

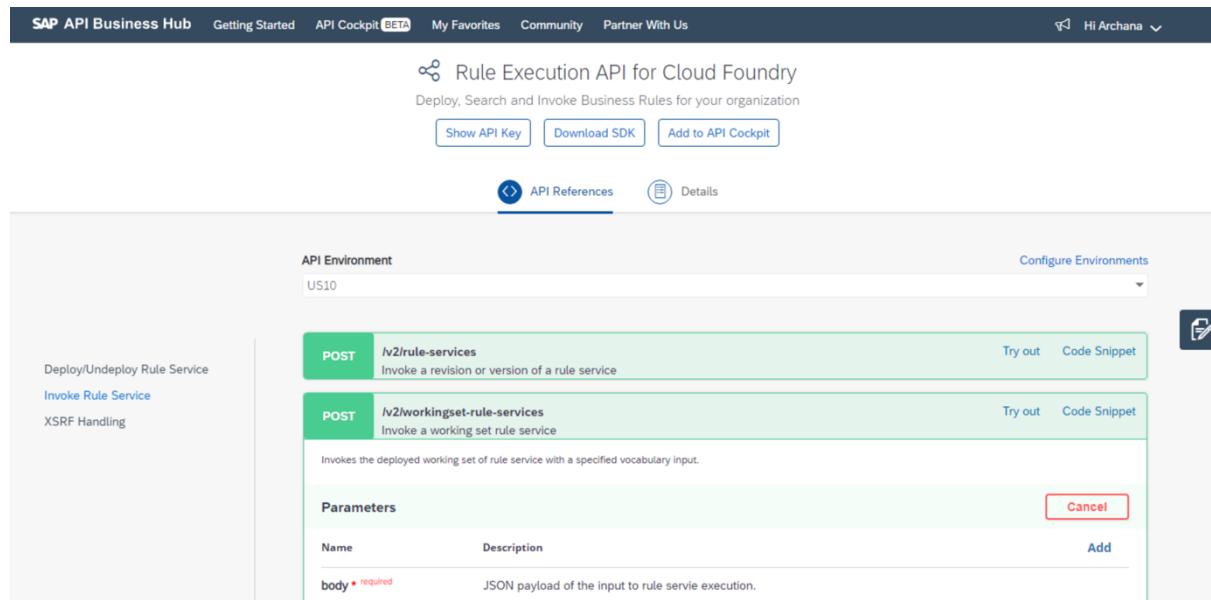
Explanation	Screenshot										
<p>You will see all the versions of the rule Project created here.</p> <p>147. Click to navigate into version 1.0.0</p>	 <table border="1"> <thead> <tr> <th>Version</th> <th>Revision</th> <th>Description</th> <th>Changed By</th> <th>Changed On</th> </tr> </thead> <tbody> <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 SAP Cloud Platform 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.



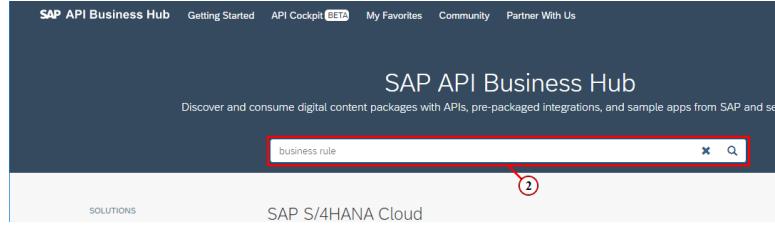
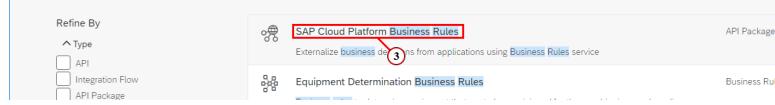
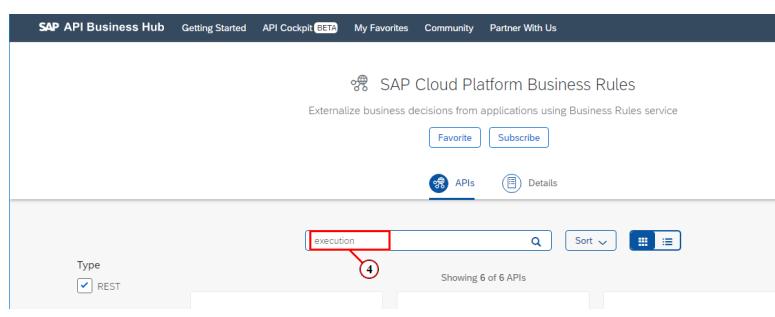
The screenshot shows the SAP API Business Hub interface. At the top, there is a navigation bar with links for SAP API Business Hub, Getting Started, API Cockpit (BETA), My Favorites, Community, and Partner With Us. On the right, it says "Hi Archana". Below the navigation bar, there is a banner for the "Rule Execution API for Cloud Foundry" which includes options to "Show API Key", "Download SDK", and "Add to API Cockpit". The main content area is titled "API References" and shows two API endpoints under "API Environment": "US10". The first endpoint is "POST /v2/rule-services" with a description "Invoke a revision or version of a rule service". The second endpoint is "POST /v2/workingset-rule-services" with a description "Invoke a working set rule service". Both endpoints have "Try out" and "Code Snippet" buttons. A sidebar on the left lists "Deploy/Undeploy Rule Service", "Invoke Rule Service", and "XSRF Handling".

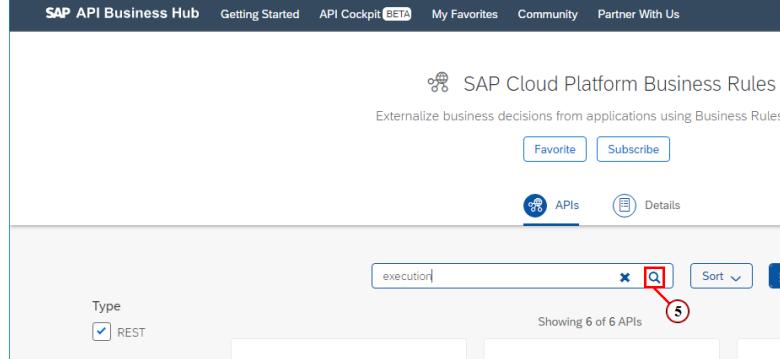
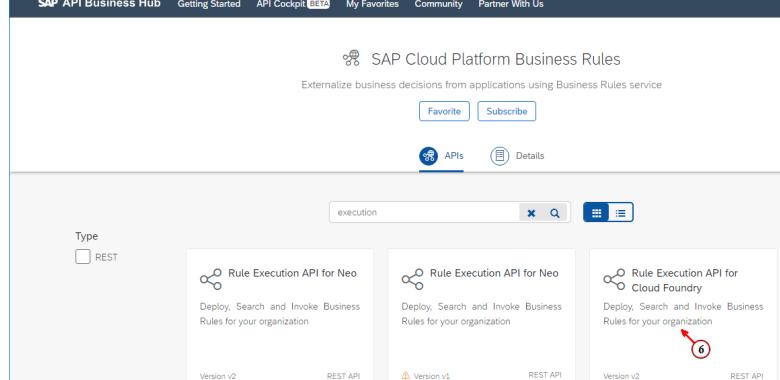
Exercise Description

In this exercise you will do the following:

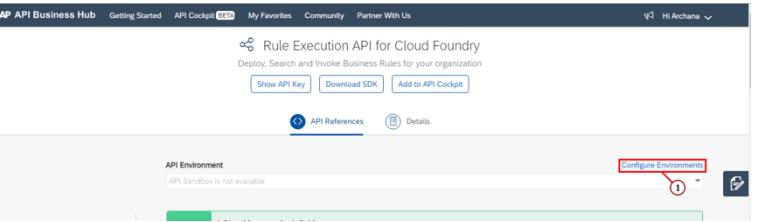
- Discover Business Rules API in SAP API Business Hub
- Configure Cloud Foundry Test Environment
- Invoke Business Rules

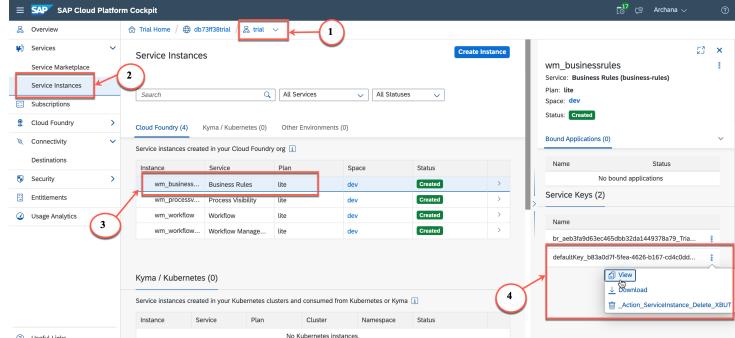
DISCOVER BUSINESS RULES API

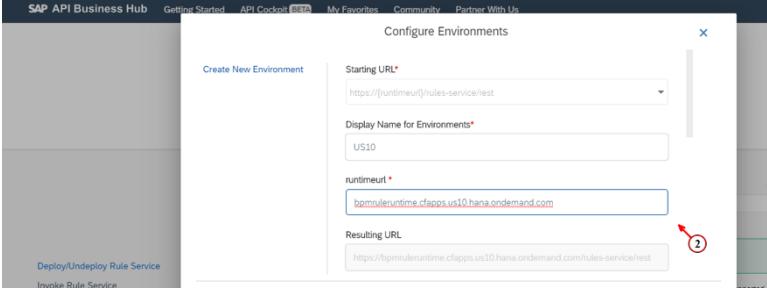
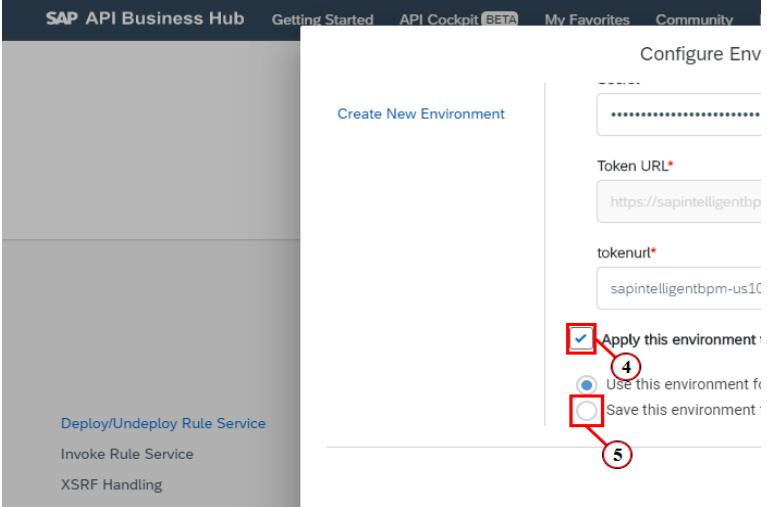
Explanation	Screenshot
<p>152. Open API Business Hub using this URL: https://api.sap.com</p> <p>153. Click Log On →</p>	
<p>154. using your S or P user ID</p>	
<p>155. Search Business Rules API 156. In Search box, enter business rule and press Enter key to search.</p>	
<p>157. Click SAP Cloud Platform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

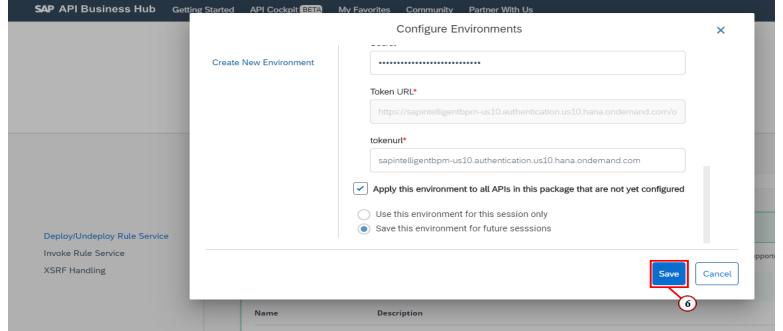
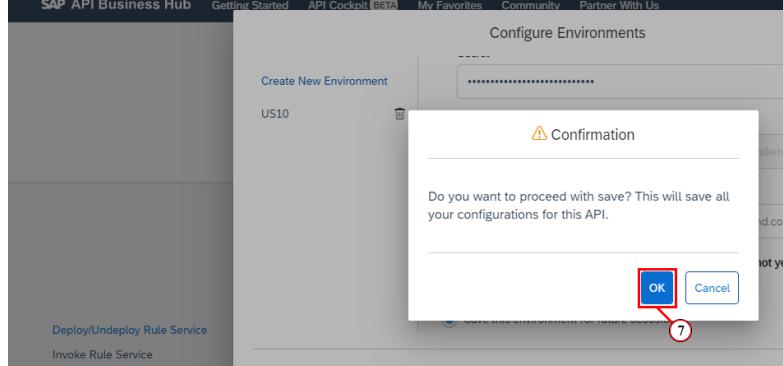
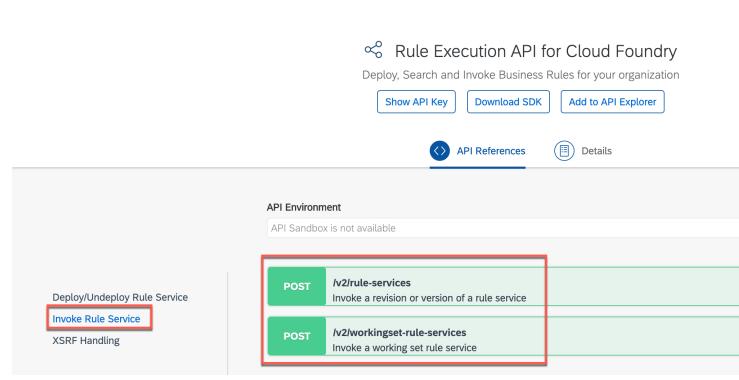
Explanation	Screenshot
<p>Note: Business Rules have two set of APIs: Authoring and Execution. You will also notice two set of versions v1 and v2. Version v1 is currently deprecated and will soon be unsupported.</p> <p>159. Click  to search the execution APIs.</p>	
<p>160. Click on Rule Execution API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

CONFIGURE TEST ENVIRONMENT

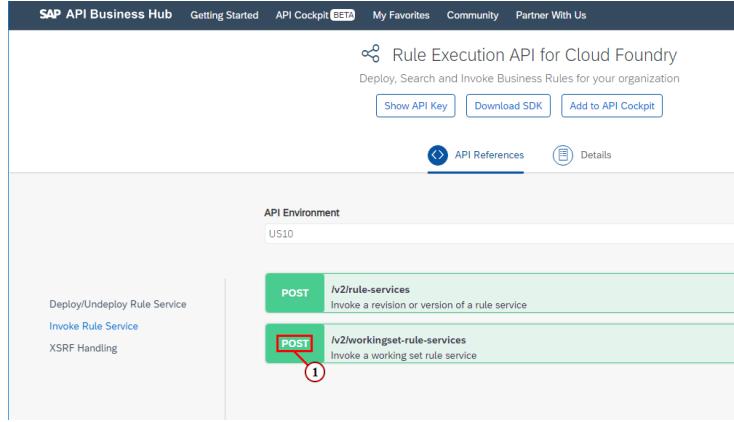
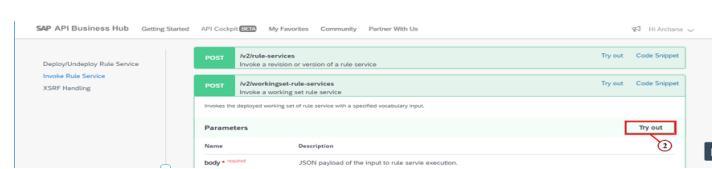
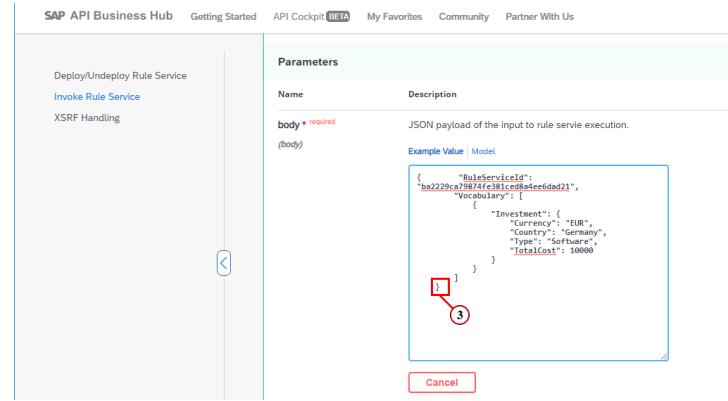
Explanation	Screenshot
<p>161. Click Configure Environments.</p>	

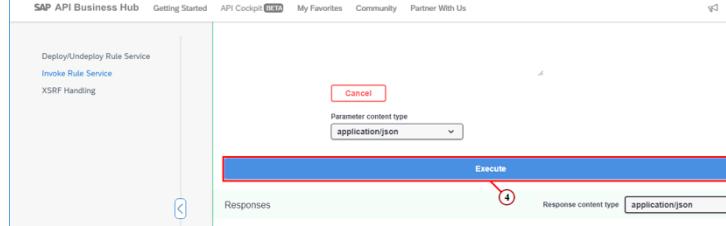
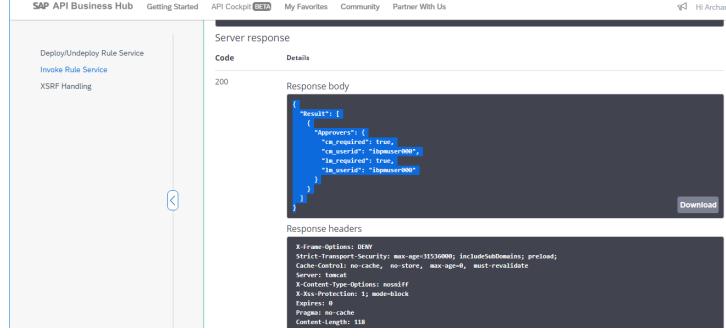
Explanation	Screenshot
<p>Fetch the information from Business Rules service instance key to configure the API Hub environment. To do so,</p>	<p>162. Login to your cloud platform trial account and navigate into your sub-account.</p> <p>163. From left panel, click Service Instances.</p> <p>164. From among the available instances, click on wm_businessrules instance to view service keys.</p> <p>165. From available service keys, click  on any service key and select View.</p> 
<p>166. Copy the</p> <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://bpmrulerepository.cfapps.eu10.hana.ondemand.com", "rule_runtime_url": "https://bpmrulerruntime.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!bpmrulebroker!b2466", "xsappname": "clone-b83a0d7f-5fea-4626-b167-cd4c0dd187b4!bpmrulebroker!b2466" }, "clientsecret": "1YRy...", "url": "https://db73ff38trial.authentication.eu10.hana.ondemand.com", "uaadomain": "authentication.eu10.hana.ondemand.com", "verificationkey": "-----BEGIN PUBLIC KEY-----MIIBjANBkgqhkIG9w0BAQEFAOCAQ8AMIBCgKCAQEArbGdeZwf1odA7JF15mB7dn2w4uLksnwBZspCbFCS7XY09lLPFGE/LBTrdcG6vZu7vpCvbYzCpFnFfsW23SVL6TSMikAMg6icu7XDeAN4Po40HOydCCUiIdJ0HQDUDDyWX9lBTjR4LEy3crYTFHnVqBEB4aJwxwRN/kSiH20ceN8YZFuJ1RbleyOrh4N5Jkjj6QqQigk01wLuiUzms4ZLyxc5i5/eBhSrOFUVGAQm0l70rn0F1gNc5L4XS0dyUDR3zkewQcbUy6HnbjEtM4VuOrhWb1.0Jngk8SVo2dDplOsYY0gr5Hv3vOnnVFK6j829V6sJOH3wXwSwIDAQAB-----END PUBLIC KEY-----", "apiurl": "https://api.authentication.eu10.hana.ondemand.com", "identityzone": "db73ff38trial" } </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>	

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.</p> <p>Try and change the country to “India” in the input body, and you will see a different response.</p>	 <pre> { "Result": [{ "Approver": { "Is_Required": true, "Is_Error": "NoError000", "Is_Override": true, "Is_Error": "NoError000" } }] } </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 SAP Cloud Platform.
- Discover Business Rules API in SAP API Business Hub.
- Configure Test Environment for Cloud Foundry.
- Execute Business Rules Execution API.

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