Exercise Guide

Fundamentals of IBM Operational Decision Manager

Course code WB409 / ZB409 ERC 1.0

IBM **Training**

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Exercises description

Exercise objectives

After completing the exercises, students should be able to:

- Design a business rule solution that is based on decision services, including the implementation model (or XOM) for rule execution, and the business version of that model (or BOM) for rule authoring
- Support business rule authors by setting up the rule authoring environment, collaborating on rule vocabulary changes, and maintaining synchronization between the business and development environments

Exercise list

This course includes the following exercises:

- Exercise 1, "Operational Decision Manager in action"
- Exercise 2, "Setting up decision services"

General exercise information

This section provides general information about the exercises in this course. Review this section before starting the exercises.

User IDs and passwords

The following table lists user ID and password information for this course.

Entry point	User ID	Password
VMware image	`administrator`	`passw0rd`
Decision Center administrator	`rtsAdmin`	`rtsAdmin`
Decision Center business user	`rtsUser1`	`rtsUser1`
Decision Server administrator	`resAdmin`	`resAdmin`

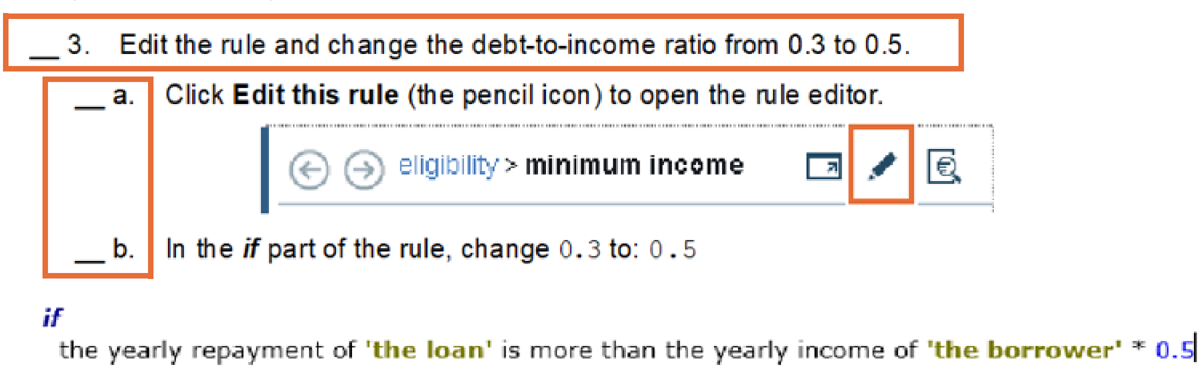
How to follow the exercise instructions

Exercise structure

Each exercise is divided into sections with a series of numbered steps and lettered substeps:

- The numbered steps (1, 2, 3) describe what actions to do.
- The lettered substeps (a, b, c) provide detailed guidance on how to complete the action.

As shown in this example, the numbered step (“3”) tells you to change the value in a rule. Substeps “a” and “b” provide details on how to edit.



If you already know how to edit rules and change values, you can skip the details in substeps 3a and 3b.

Text highlighting in exercises

Different text styles indicate various elements in the exercises.

Words that are highlighted in **bold font** represent GUI items that you interact with, such as:

- Menu items

- Field names
- Icons

Words that are highlighted with a `code font` include the following items:

- Text that you type or enter as a value
- System messages
- Directory paths
- Code

Tracking your progress

As shown in the example step, you can see that an underscore precedes each numbered step and lettered substep.

You are encouraged to use these markers to track your progress by checking off each step as you complete it. Tracking your progress in this manner might be useful if you are interrupted while working on an exercise.

Required exercise sections

Most exercises include required sections that should always be completed. It might be necessary to complete these sections before you can start subsequent exercises.

Dependencies between exercises are listed in the exercise introduction.

Optional exercise sections

Some exercises might also include optional sections that you can complete when you have sufficient time and want an extra challenge.

File references for exercises

Exercise steps contain references to files or projects to open or import. Two directories are used in these references:

- *<InstallDir>*: This directory is the IBM Operational Decision Manager installation directory.
- *<LabfilesDir>*: This directory contains the files that are required during demonstrations, exercises, and the workshop steps, such as samples of code that you can copy and paste.

If you are using the VMware image that is provided with this course:

- *<InstallDir>* is: `C:\IBM\ODM8105`

  This folder is the default IBM Operational Decision Manager installation directory on Windows.
- *<LabfilesDir>* is: `C:\labfiles`

Projects for exercises

Most of the exercises for this course are done in Rule Designer, which uses the Rule perspective of Eclipse.

The exercise projects are provided for you to import into Eclipse by using the Import wizard or the Samples Console perspective. For most of the exercises, you use the Samples console perspective, as described here.

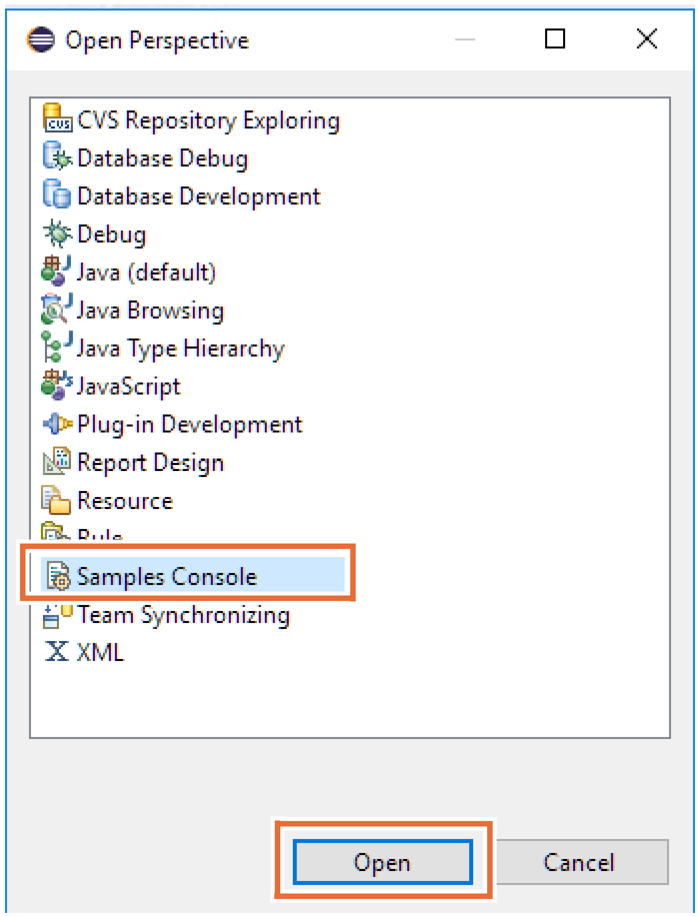
To open Rule Designer, you use the **Rule Designer 8.10.5** shortcut on the Taskbar or on the Windows **Start** menu.

When prompted for a workspace, you can type the path directly in the Workspace Launcher, for example:

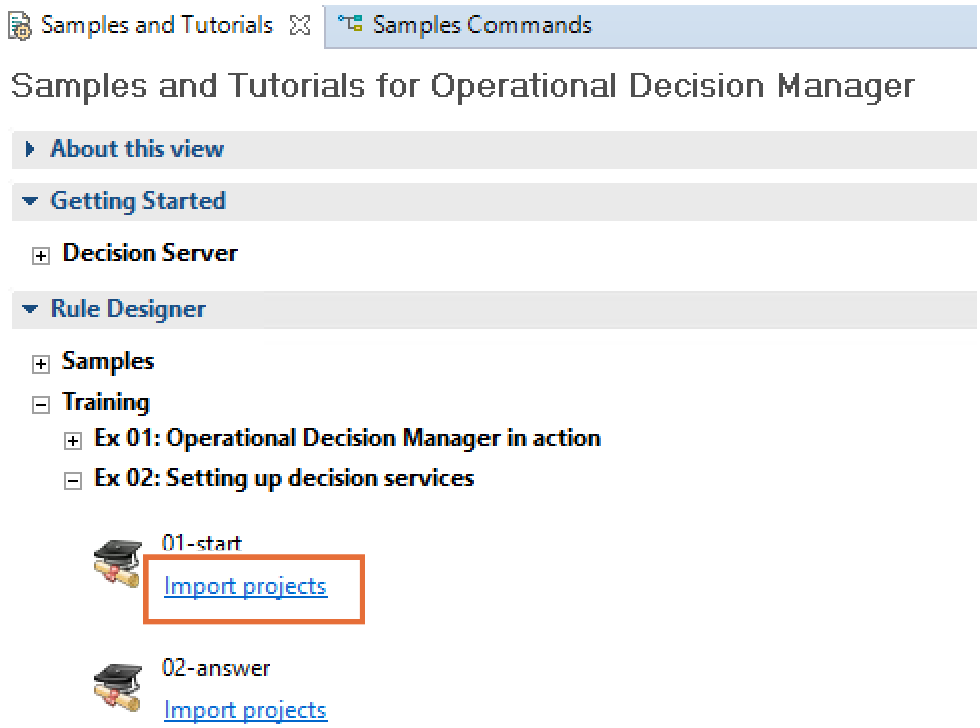
`C:\labfiles\workspaces\myWorkspace`

When you type a path, an empty workspace is created in the Rule perspective.

To start an exercise, you use the Samples Console perspective.



You expand the **Rule Designer > Training** node to see a list of all exercises for this course, and click **Import projects** to import the projects for the exercise.



Both “start” and “solution” projects are provided for most exercises.

When you import the projects, Eclipse automatically switches to the Rule perspective. To give yourself more area to work in, you can close the Help view by clicking the **X** in the upper right.

Sample server port

This course uses the default installation of Operational Decision Manager where Decision Center and Rule Execution Server are hosted on the sample server of Operational Decision Manager.

With the default installation, you use the following URLs to access the console of these two modules through a web browser:

- `http://localhost:`*`PORT`*`/decisioncenter`: to access the Decision Center Business console
- `http://localhost:`*`PORT`*`/teamserver`: to access the Decision Center Enterprise console
- `http://localhost:`*`PORT`*`/res`: to access the Rule Execution Server console

Where port *`PORT`* is the required port.

If **you are using the VMware** image that is provided with this course:

- The value of *`PORT`* is: **9090**

  This value is the default port with the default installation of Operational Decision Manager. This course assumes that this default value of *`PORT`* is used, and uses the following URLs:

- `http://localhost:`**9090**`/decisioncenter`: to access the Decision Center Business console
- `http://localhost:`**9090**`/teamserver`: to access the Decision Center Enterprise console
- `http://localhost:`**9090**`/res`: to access the Rule Execution Server console

Stop

If you are not using the VMware image that is provided with this course, make sure that you identify the value of *`PORT`* before you proceed with the exercises in this course.

Using the product documentation

The product documentation is installed locally on the VMware image that is provided with this course.

To access the local documentation while working in Rule Designer, you must first start it. From the Windows **Start** menu, click the down arrow to get to the **Apps** page, and in the **IBM Operational Decision Manager V8.10.5** section, click **Start Knowledge Center (local)**.

You can also access the product documentation from a web browser at this web address:

www.ibm.com/docs/en/odm/8.10

Information

If you are not using the VMware image that is provided with this course, you must either install the local help as described in the product documentation, or use the online version.

Checking for course corrections

Important

To check whether updates exist for the course material, see http://ibm.biz/CourseInfo.

Click IBM Automation courses.

Find your product in one of the product categories and open that category.

Exercise 1. Operational Decision Manager in action

Estimated time

02:00

Overview

In this exercise, you see how the Operational Decision Manager modules work together to provide comprehensive decision management across the business and development environments.

Objectives

After completing this exercise, you should be able to:

- Explain the general workflow for working with decision services
- Identify the which tasks apply to your role in your organization

Introduction

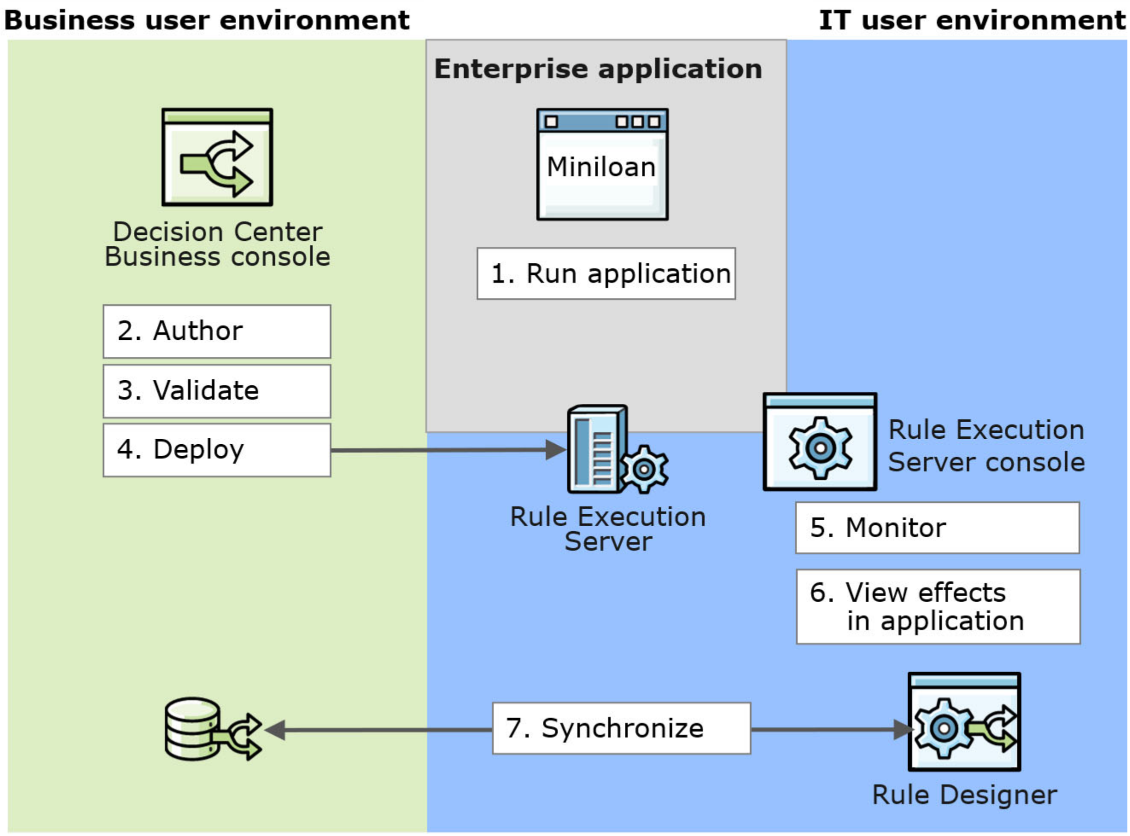
The exercise is based on a fictional financial institution, Miniloan, which provides online quotations for loan requests.

To see how Operational Decision Manager facilitates collaboration between business and IT teams, you take on business and technical roles to perform these tasks:

- Section 1, "Running the Miniloan web application"
- Section 2, "Managing business rules in Decision Center"
- Section 3, "Validating rule changes"
- Section 4, "Deploying updated rules from Decision Center to Rule Execution Server"
- Section 5, "Monitoring the deployed rules in Rule Execution Server"
- Section 6, "Viewing the effects in the Miniloan application"
- Section 7, "Exploring the development environments in Rule Designer"
- Section 8, "Shutting down the modules"

This exercise provides you with an introduction to the different Operational Decision Manager modules, and how they work together. Both IT and business tasks are included in this exercise to demonstrate the collaboration that occurs between the technical and business organizations.

The exercise workflow is shown here.



You start by running the Miniloan enterprise application. Then, you work in the business user environment by using Decision Center to author, validate, and deploy rules. Finally, you move to the IT user environment to monitor the rule changes, see how the changes affect the application. By completing tasks in the business and IT environments, you can see how both business and IT work together within Operational Decision Manager to manage business rules.

Requirements

This exercise has no requirements.

User accounts

Type	User ID	Password
Access to VMware image	administrator	passw0rd
Decision Center administrator	rtsAdmin	rtsAdmin
Business user	rtsUser1	rtsUser1
Rule Execution Server administrator	resAdmin	resAdmin

Important

The exercises in this course use a set of lab files that are installed in the product installation directory:

`C:\IBM\ODM8105\studio\training`

Additional lab support files are stored in the `C:\labfiles` directory.

The exercises point you to the lab files as you need them.

Note

For IBM ODM on Cloud users

This exercise uses some features that are not supported in IBM ODM on Cloud. For ODM on Cloud, follow the instructions that are provided in the IBM ODM on Cloud documentation:

www.ibm.com/support/knowledgecenter/SS7J8H/welcome/kc_welcome_cloud.html

The documentation points you to software downloads and projects that are available on GitHub:

https://github.com/ODMDev/odm-on-cloud-getting-started

Section 1. Running the Miniloan web application

Before you explore the tools, you first look at how rules affect the user application.

Scenario

Joe is planning to buy a house and wants a loan for $500,000. To find out whether he is eligible, he goes to the Miniloan website.

1.1. Setting up your environment

This exercise uses the sample server that is provided with Operational Decision Manager.

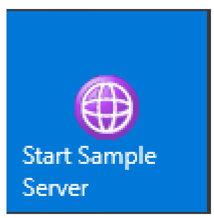
For IBM ODM on Cloud users

To set up your environment in ODM on Cloud, follow the directions in the "First steps in IBM ODM on Cloud" tutorial in the IBM Knowledge Center for IBM ODM on Cloud.

In the "First steps" tutorial, you work with the `Miniloan Service` decision service and install the `miniloan-webapp` web application.

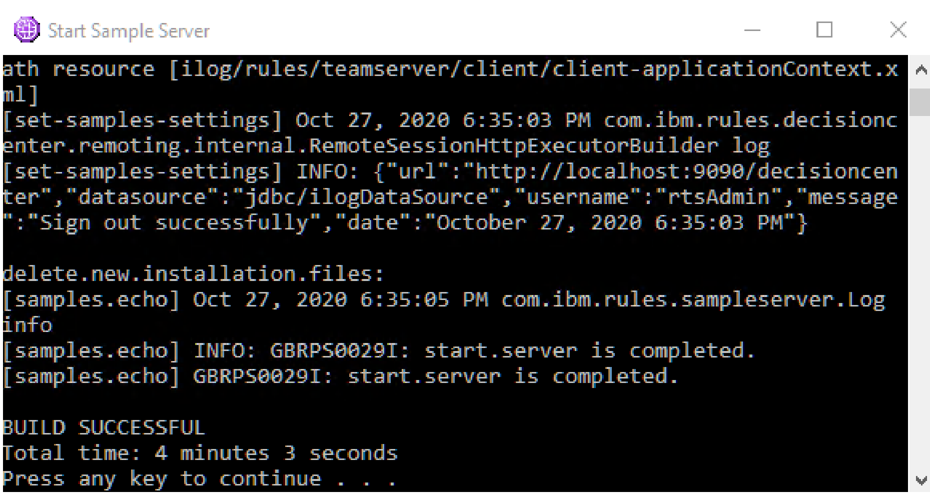
__ 1. Start the sample server.

__ a. Click the **Start** menu, and click the **Start Sample Server** shortcut.



__ b. Wait until the server is started.

The command window shows server trace messages as the server starts. A feedback message indicates when the server start is complete.



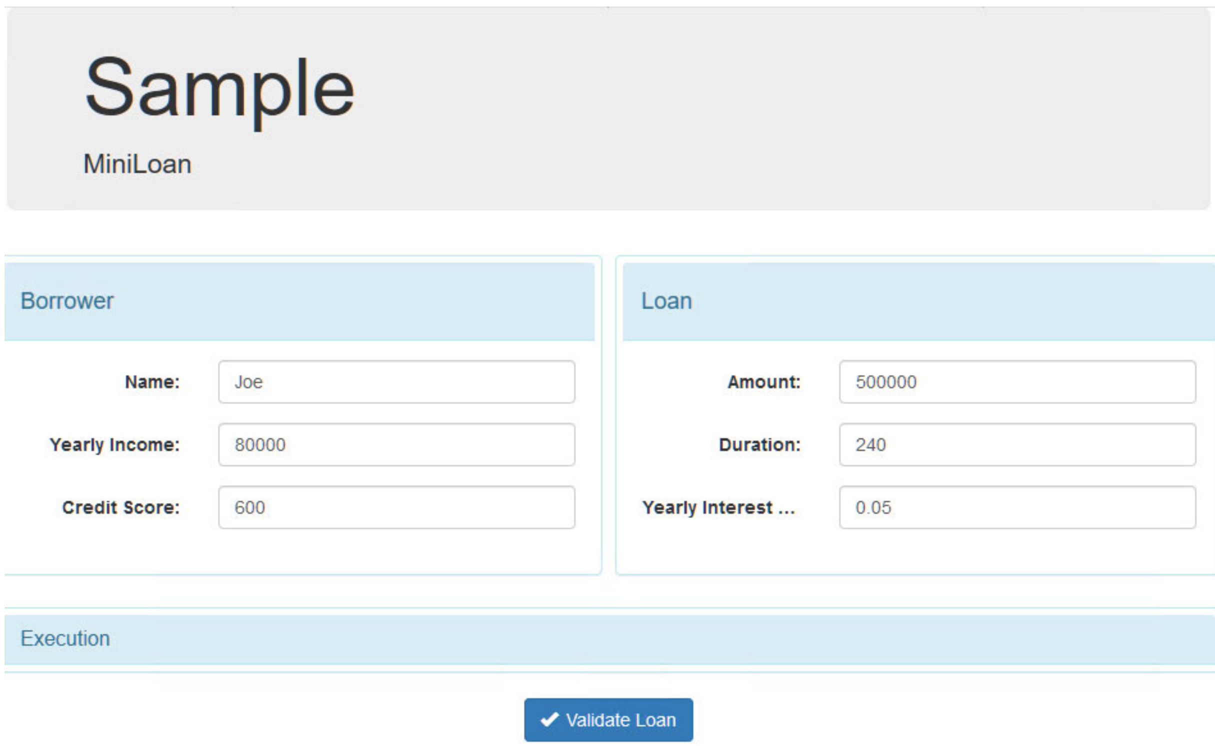
__ c. After the server is started, click in the command window, and press any key on your keyboard to close it.

1.2. Running the application

__ 1. Open a web browser and enter the following URL:

`http://localhost:9090/miniloan-server`

The Miniloan application opens.



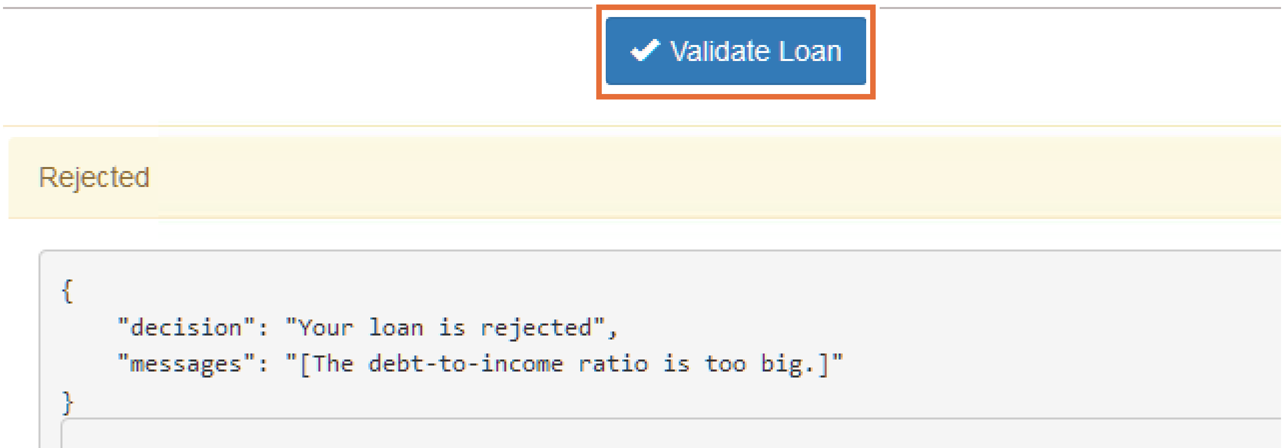
Scenario

Joe earns $80,000 a year, has a credit score of 600, and would like to take a loan for $500,000. He intends to repay the loan over a 20-year period.

Is Joe eligible for this loan?

__ 2. Click **Validate Loan** and scroll down to see view the response.

Based on the information that Joe submitted, the rule engine returns a decision to reject the loan.



Scenario

Joe's loan request is rejected. Miniloan responds by reporting that the ratio of debt to income is too high.

__ 3. You can either close the browser window. Or, if you prefer, you can leave it open because you use this application again later in the exercise.

As you can see, decisions that are made by an application affect both your business and the lives of ordinary people. For that reason, it is important that experts in business policy, not just the IT team, can see and maintain the rules that are implemented. Instead of hardcoding the rules into the application, and requesting technical developers to make rule changes in the code, Operational Decision Manager separates the decision logic from the code. It empowers business users to access and manage the rules through Decision Center. Rules are stored in the Decision Center repository, and can be shared among various users through permission and locking mechanisms.

Next, you see how easily business policies can be updated in Decision Center.

Section 2. Managing business rules in Decision Center

Scenario

Several customers, including Joe, complained about having their loan requests rejected. You do not change the rules merely so that Joe can get a house, but a significant number of loan rejections might be an indication of errors in the rules. Some types of errors can be corrected early on, while in other situations, modifying rules might be a maintenance issue, such as ongoing rule adjustment for promotions or for different types of customers.

Miniloan decided to review its eligibility policies about debt-to-income ratios. Miniloan uses Decision Center to store and manage business rules, so next, you open Decision Center to see which rule to change to solve the loan rejection issue.

Decision Center supports auditability to trace the who, what, where, when, and why of rule updates. The rule administrators define roles and permissions in Decision Center to control access to the rules.

For this step, you sign in with the business user role of Rule Author to review the eligibility rules. You use Decision Center Business console, which is a collaborative rule authoring environment, to edit the rules in this section.

2.1. Editing rules in Decision Center Business console

__ 1. Open the Business console.

__ a. From the **Start** menu, click the **Decision Center Business console** shortcut.

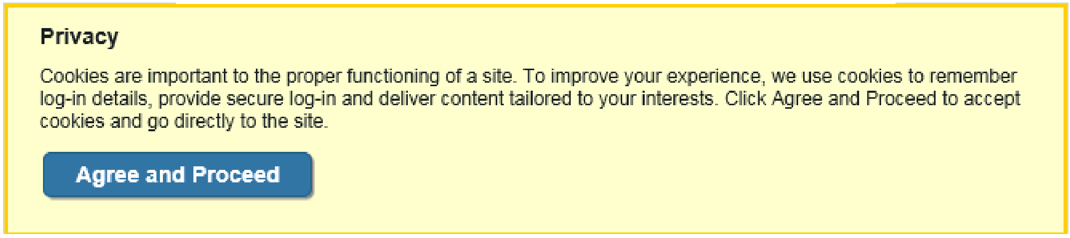
Information

You can also open the Business console by entering the following URL in a browser:

`http://localhost:9090/decisioncenter`

Make sure that you use the correct URL and port for your environment.

__ b. If the Privacy message opens, click **Agree and Proceed**.



Troubleshooting

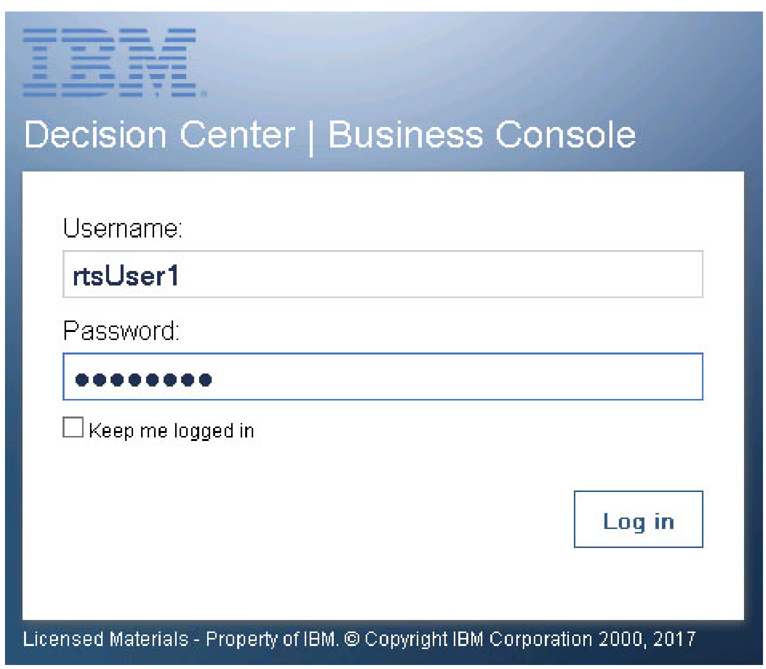
If you receive the Privacy message again, either later in this exercise or in other exercises, you can click **Agree and Proceed**.

__ c. Sign in as a business user with the following values for the **Username** and **Password** fields.

- **Username**: `rtsUser1`
- **Password**: `rtsUser1`

Note

These values are case-sensitive.



__ d. Click **Log in**.

For IBM ODM on Cloud users

You start the Business console by logging in to the ODM on Cloud User Portal, and clicking **Launch** under **Decision Center Business console**. The Business console is configured to open to the URL of your ODM on Cloud instance, so you do not need to enter a URL or port number.

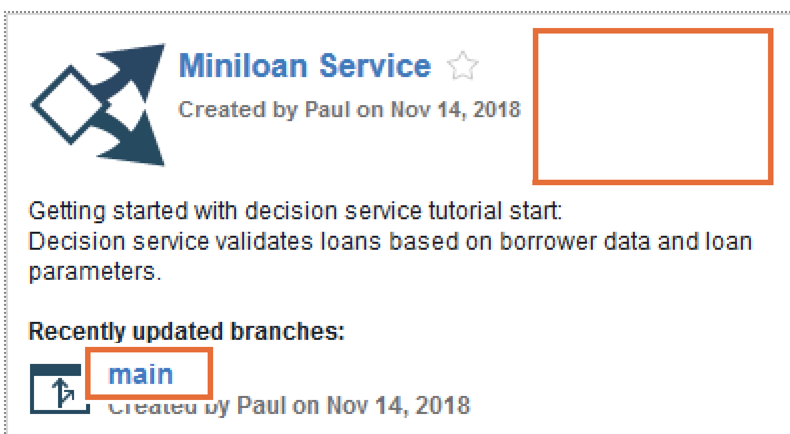
Note

If you see a message to store your password, you can click **Not for this site**.

__ 2. On the Decision Center menu, click **Library**.

On the Decision Services page, you see the list of decision services that you can work on in Decision Center.

__ 3. Click the **Miniloan Service** box (in the empty white space) to expand the box, and then click **main**.



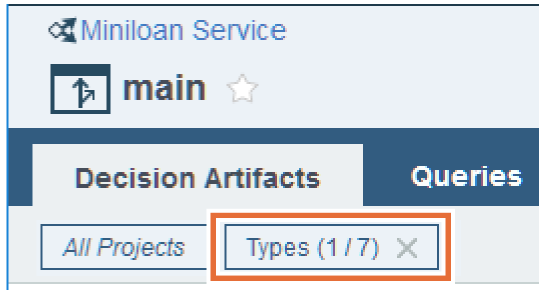
The **Decision Artifacts** tab opens, and in the navigator pane, you see two rule folders: **eligibility** and **validation**. These folders contain the rule artifacts for Miniloan Service.

Information

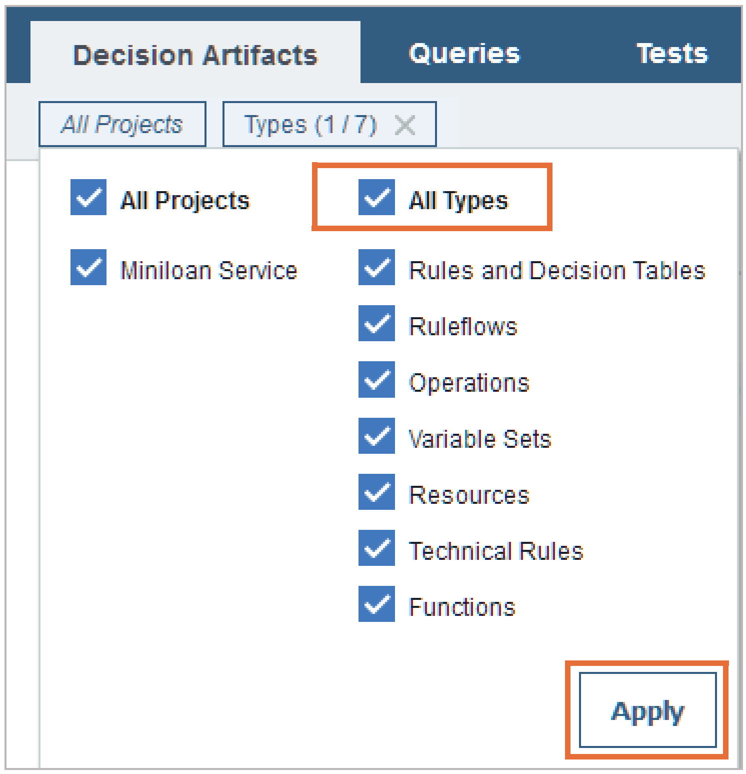
By default, the Business console shows only rule artifacts, such as rules and decision tables. However, you can select various decision artifact types for display in the navigator pane.

__ 4. View all of the decision artifacts that are associated with Miniloan Service.

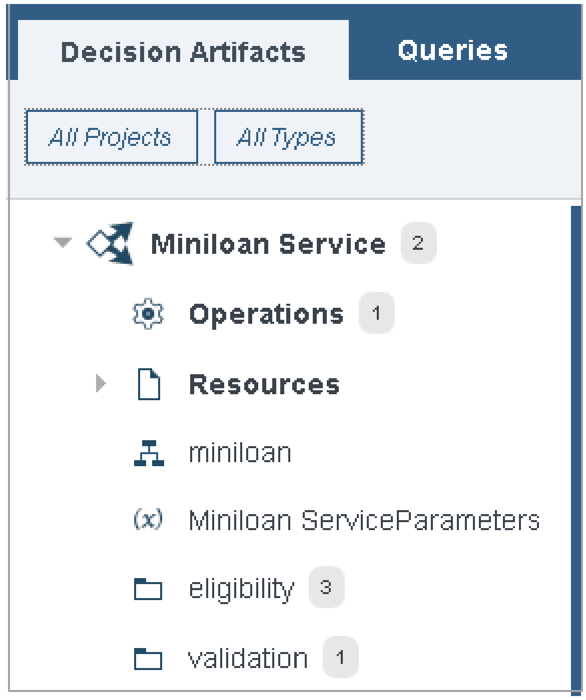
__ a. On the **Decision Artifacts** tab, click **Types**.



__ b. In the Types menu, select **All Types**, and then click **Apply**.



__ c. The navigator pane now shows all decision artifact types of Miniloan Service.



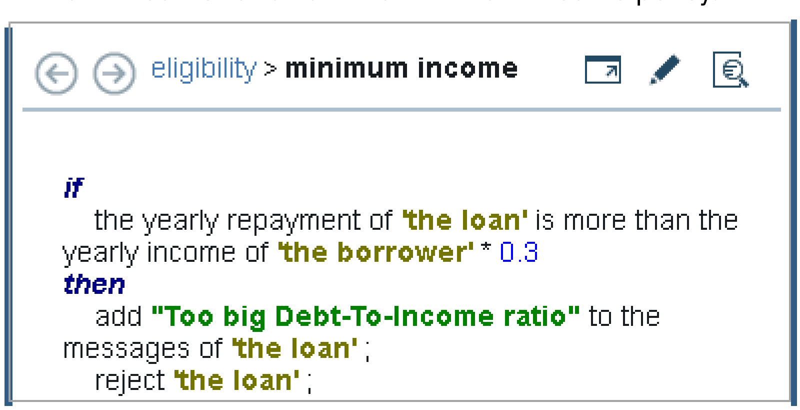
The decision artifacts in Miniloan Service include:

- **Operations** (artifact that defines input and output parameters for decision services)
- **Resources** (artifact that stores decision service resources, such as the execution object model, or XOM)
- **miniloan** (ruleflow)
- **Miniloan ServiceParameters** (artifact that defines the input and output parameters for a decision service)
- **eligibility** (folder that contains rules)
- **validation** (folder that contains rules

__ 5. View the **minimum income** rule in the **eligibility** folder.

__ a. Click the **eligibility** folder to see the rules that it contains.

__ b. Click **minimum income** to review the minimum income policy.



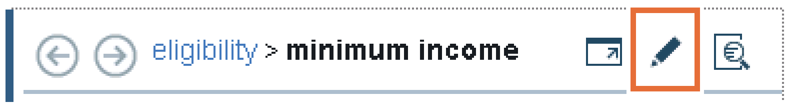
Scenario

The `minimum income` rule implements the debt-to-income ratio policy that caused the loan rejection for Joe. Currently, if the debt is more than 30% of the borrower's income, the loan cannot be approved.

Miniloan business analysts decided to update their policy and change the ratio from 30% to 50%. Now, if the loan causes the borrower's debt to be up to 50% of the borrower's income, the loan can be approved.

__ 6. Edit the rule and change the debt-to-income ratio from 0.3 to 0.5.

__ a. Click **Edit this rule** (the pencil icon) to open the rule editor.



The rule opens in the Rule View.

__ b. In the ***if*** part of the rule, change `0.3` to: `0.5`

```
if
  the yearly repayment of 'the loan' is more than the yearly income of 'the borrower' * 0.5
```

__ 7. Add a condition to the rule that tests whether the yearly income of the borrower is less than 500,000.

__ a. Place the cursor after `0.5`, and press Enter to create a line.

```
if
  the yearly repayment of 'the loan' is more than the yearly income of 'the borrower' * 0.5

then
```

__ b. Enter the following condition text into the editor:

```
and the yearly income of 'the borrower' is less than 500000
```

Note

As you type, the automatic completion menu might suggest terms that you can use to build your rule. You can also click these completion menu items to build the condition.

```
if
  the yearly repayment of 'the loan' is more than the yearly income of 'the borrower' * 0.5
and the yearly income of 'the borrower' is less than 500000
then
```

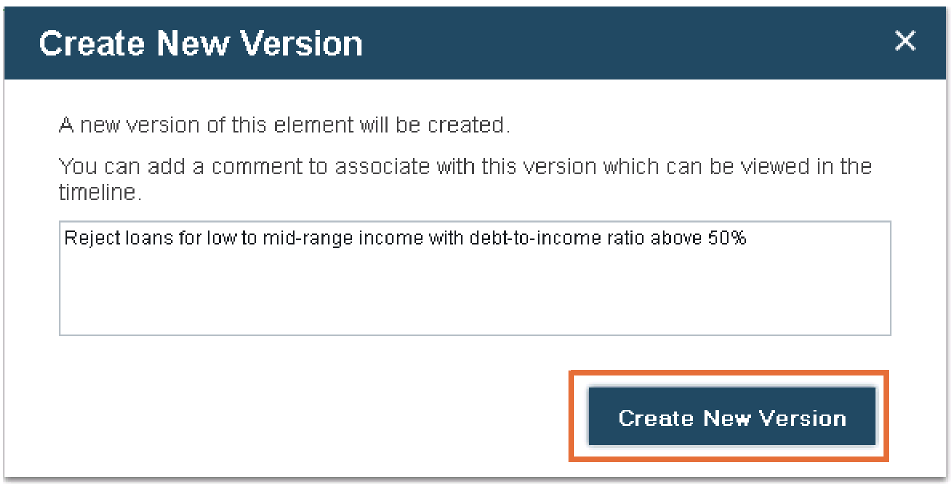
__ 8. When you are finished with your changes, save your work and add a comment to provide version information for your changes.

__ a. Click **Save**.

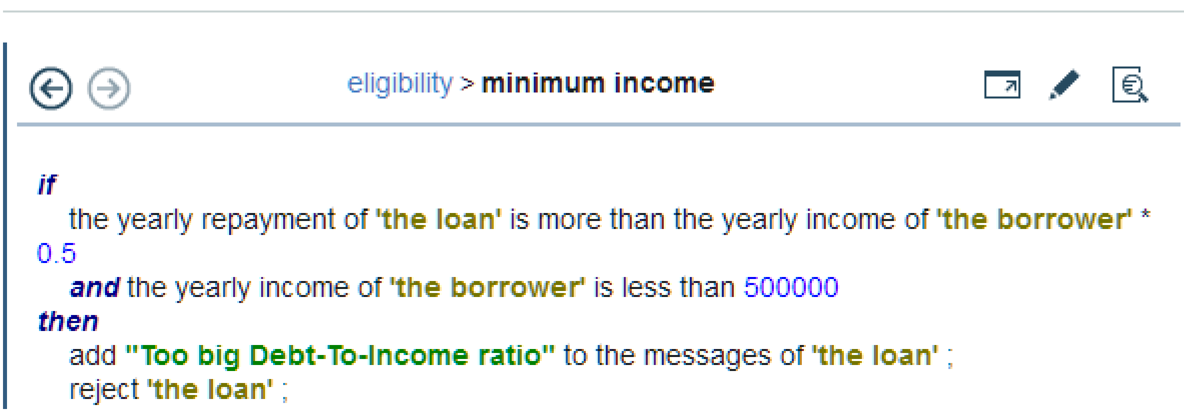
__ b. In the **Create New Version** field, type a comment, such as:

```
Reject loans for low to mid-range income with debt-to-income ratio above 50%
```

__ c. Click **Create New Version**.



You can review the updated rule.

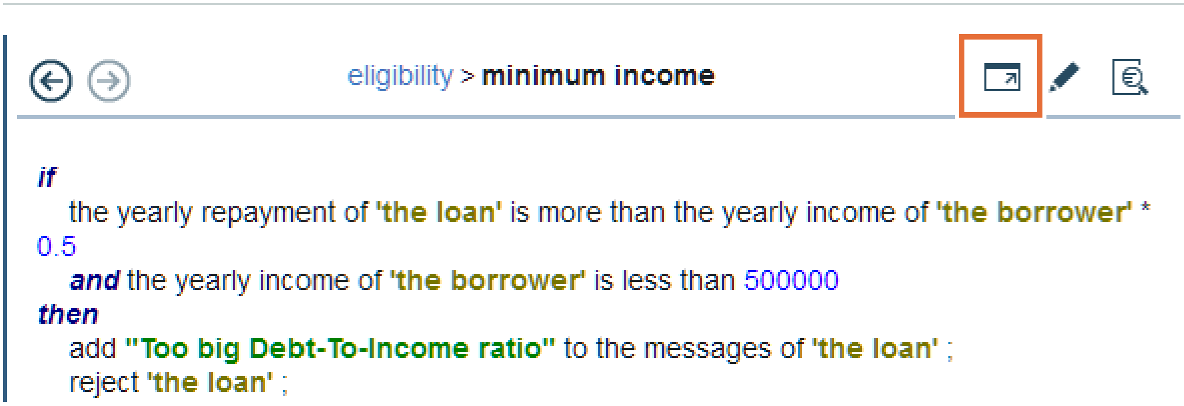


You can now check the history of the rule that you modified, and compare the differences between the two versions.

2.2. Reviewing the rule history

__ 1. Compare versions 1.0 and 1.1 of the `minimum income` rule.

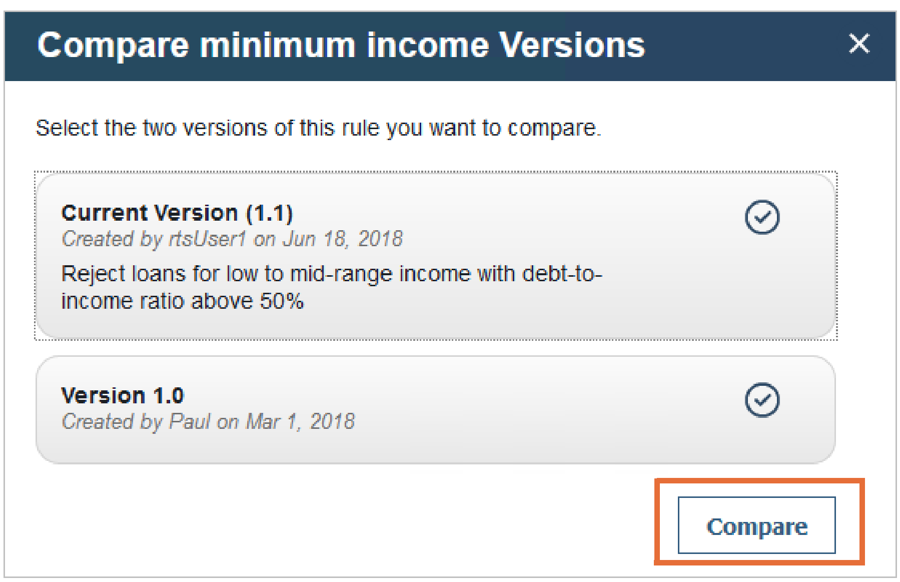
__ a. Click the **Open Rule View** icon.



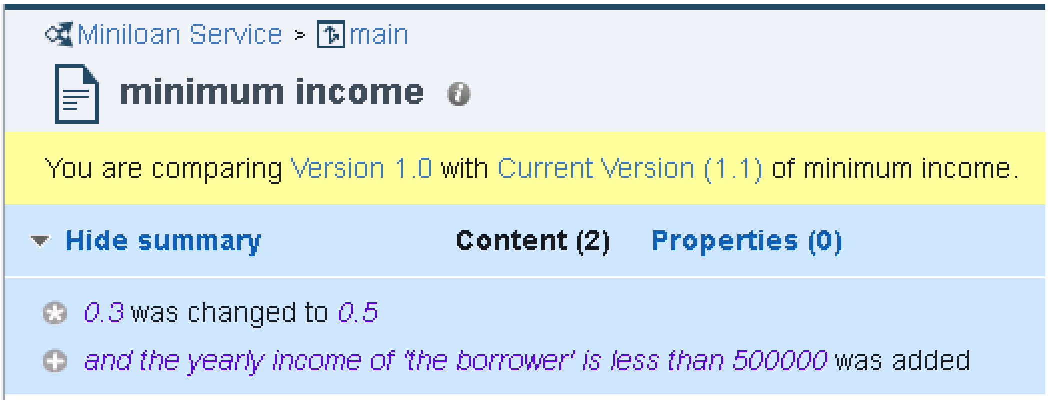
__ b. On the toolbar in the Rule View, click **Compare**.

The “Compare minimum income Versions” window lists all versions of the rule. Since the rule has only two versions, both versions are selected by default.

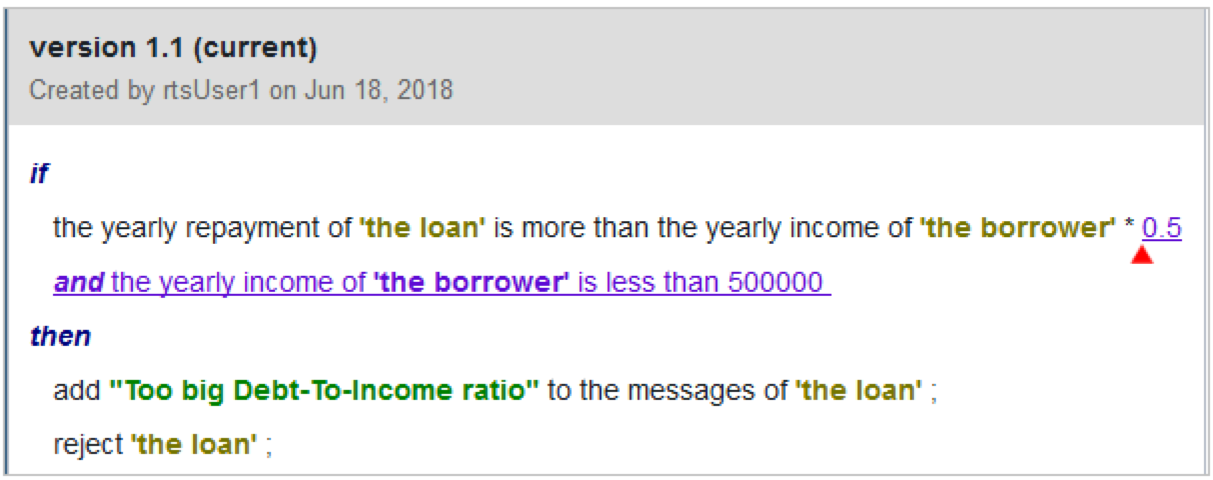
__ 2. Click **Compare**.



The two rule versions are shown side by side, with the newer version on the right. The summary lists the differences between the two versions.

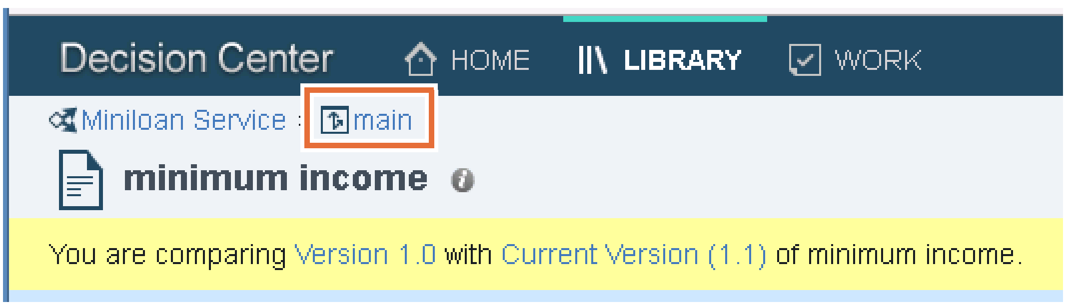


You might need to maximize your browser to see the red triangle that indicates modified values. Additions to the rule are shown in purple, underlined text.



__ 3. Return to the `Miniloan Service` decision service and open the **eligibility** folder.

__ a. In the upper-right corner of the browser window, click the **main** breadcrumb.



__ b. In the left pane, click the **eligibility** folder to list its contents.

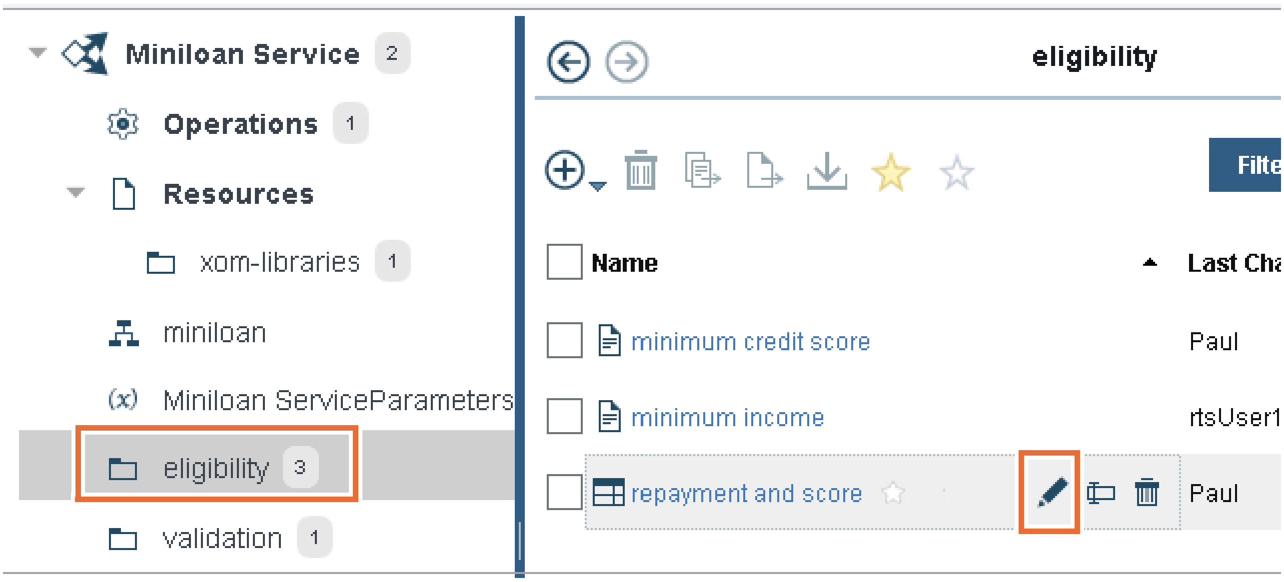
2.3. Changing the credit score requirements

Scenario

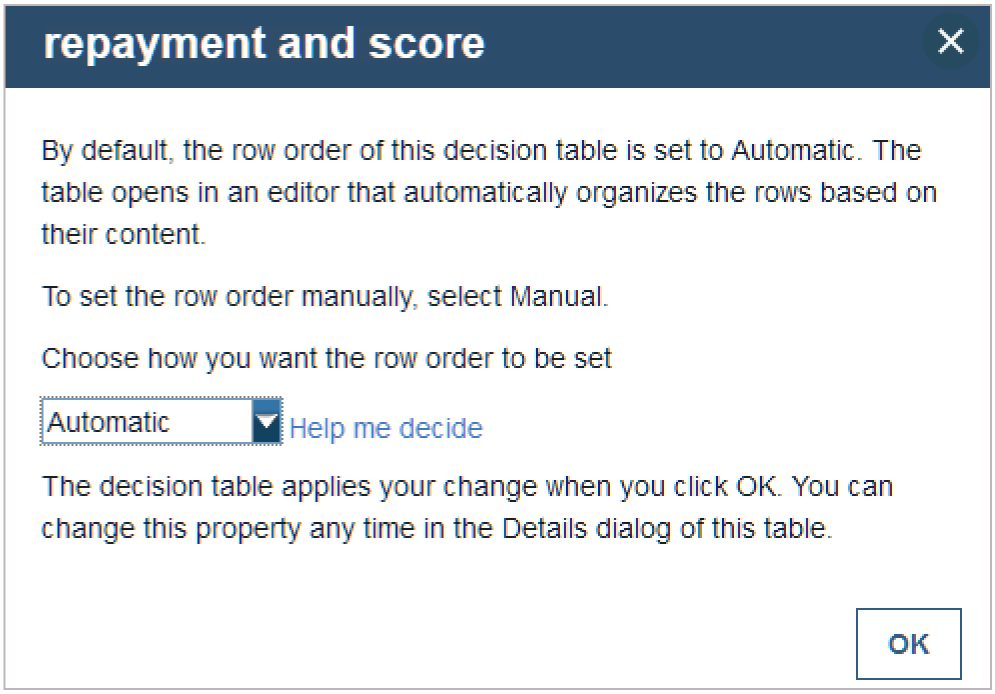
After reviewing the eligibility business policies, Miniloan decided to adjust its credit score requirements. Borrowers with a debt-to-income ratio that falls within the range of 45 and 50 are rejected when their credit score is less than 500. The credit score policies are implemented in a decision table.

__ 1. Edit the `repayment and score` decision table to modify the credit score values in row 5 to become: `[0; 500[`

__ a. Click the **eligibility** folder, hover your mouse on **repayment and score** and click the **Edit this decision table** icon to open the `repayment and score` decision table.

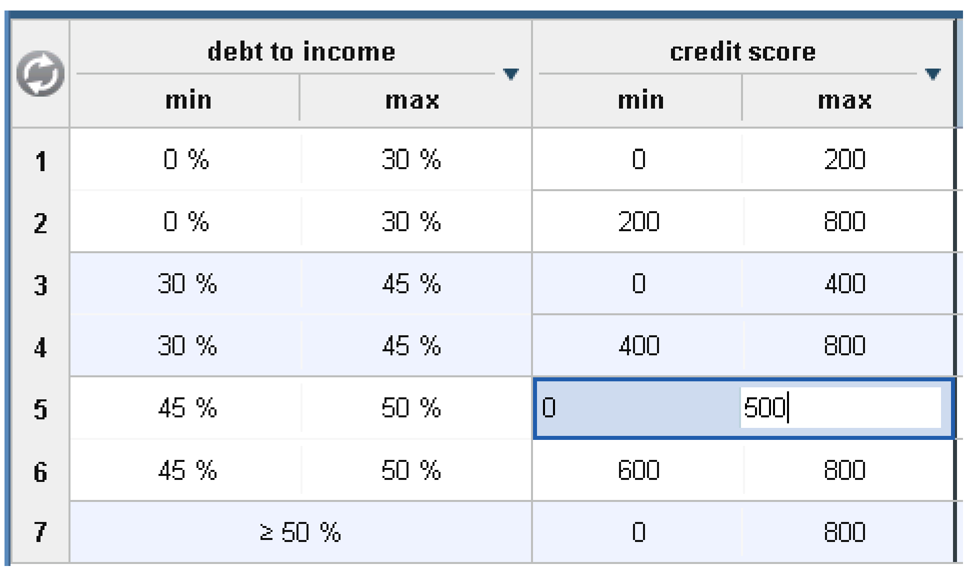


__ b. In the “repayment and score” window, leave the default row order set to **Automatic** and click **OK**.



__ c. In row 5, double-click the cell in the credit score column with the value: `600`

__ d. Change `600` to `500` and press Enter.



	debt to income		credit score	
	min	max	min	max
1	0 %	30 %	0	200
2	0 %	30 %	200	800
3	30 %	45 %	0	400
4	30 %	45 %	400	800
5	45 %	50 %	0	500
6	45 %	50 %	600	800
7	≥ 50 %		0	800

__ 2. Save your edits.

__ a. Click **Save**.

__ b. In the Create New Version window, add a comment about the update that you made, such as:

```
Row 5 value changed from 600 to 500
```

__ c. Click **Create New Version**.

__ d. If the rule closed, click it to reopen and view it.

After gap error is detected in the table. The problem cells are highlighted with a gold triangle in the lower-left corner.

eligibility > **repayment and score**

Preconditions

	debt to		credit score		message
	min	max	min	max	
1	0 %	30 %	0	200	debt-to-income too high compared to credit score
2	0 %	30 %	200	800	
3	30 %	45 %	0	400	debt-to-income too high compared to credit score
4	30 %	45 %	400	800	
5	45 %	50 %	0	500	debt-to-income too high compared to credit score
6	45 %	50 %	600	800	
7	≥ 50 %		0	800	debt-to-income too high compared to credit score

__ 3. Edit the table to resolve the gap error.

__ a. Click the **Edit** icon to reopen the editor.

__ b. In row 6, select the cell in the credit score column with the value: `600`

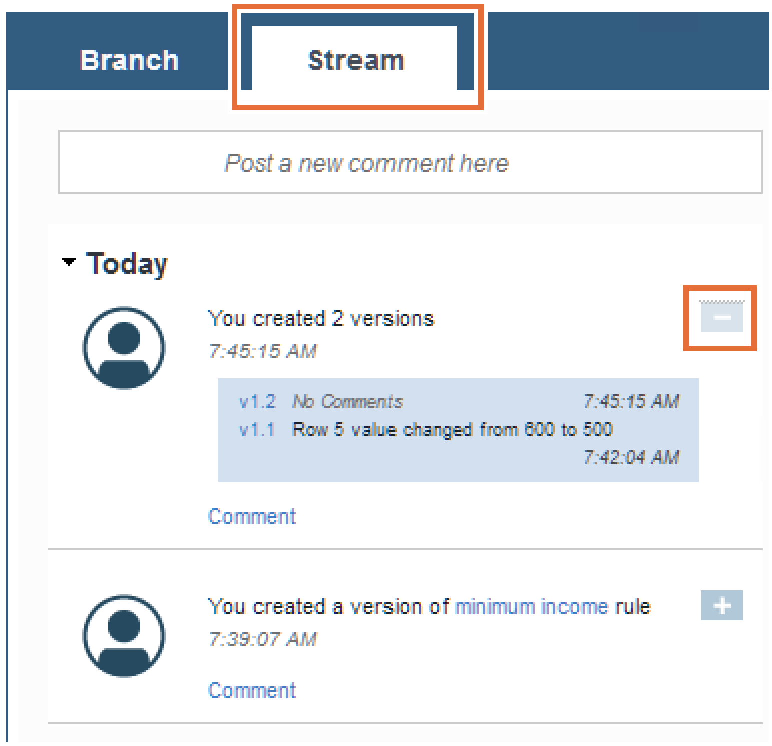
__ c. Change the value from `600` to `500`, and press Enter.

__ d. Click **Save**.

__ e. In the Create New Version window, click **Create New Version**.

The table no longer shows any errors.

__ 4. Click the **Stream** tab on the right pane and click the **plus** icon  to see the change details. You can use Stream to notify others or be notified of an updates.



Section 3. Validating rule changes

Scenario

Before making the updated business rules available to the Miniloan web application, the policy manager wants to make sure that the rules behave as expected in a test environment.

The business analyst works with the development team to identify what must be tested and to create the test scenarios. The scenarios are stored, along with their expected results, in a Microsoft Excel spreadsheet.

In this section, you run tests and simulations from the Decision Center Business console.

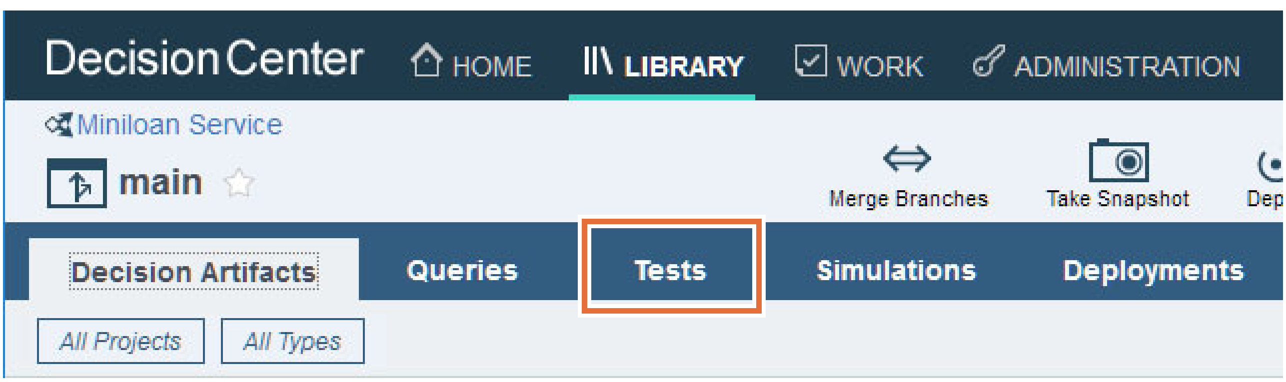
To run a scenario in Decision Center, you must create a test suite. For this exercise, the scenario file for the test suite is already created for you. The `miniloan.xlsx` scenario file is in this directory:

`<InstallDir>\gettingstarted\BusinessConsole`

The scenario file contains two scenarios with their corresponding expected results. The scenarios are listed on the **Scenarios** tab, and the anticipated results on the **Expected Results** tab.

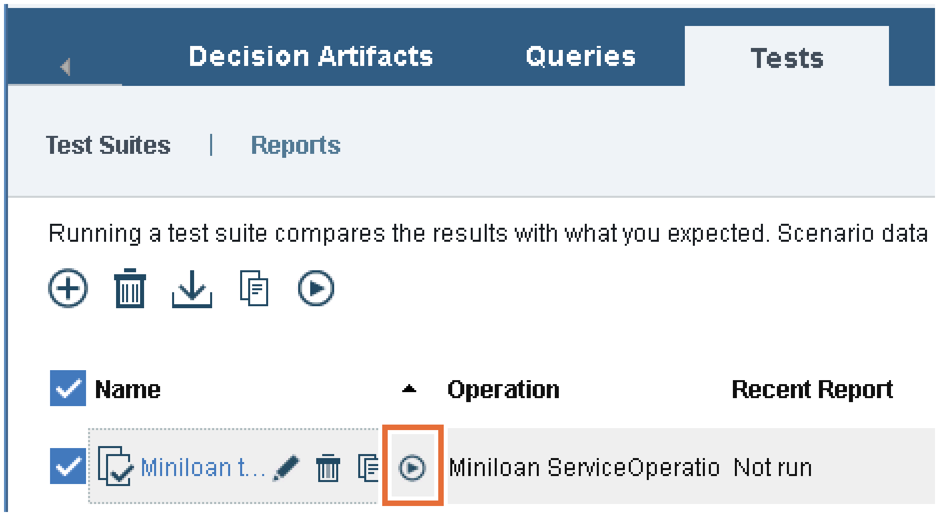
Running the test

__ 1. Click the **Tests** tab.



A prepared test suite, `Miniloan test suite`, is available to test all the rules in the decision service. You can run this test to see whether your changes affect the outcome.

__ 2. Hover your mouse over **Miniloan test suite**, and click the **Run this test suite** icon.



__ 3. In the Run Test Suite window, click **OK** to close the window.

__ 4. Wait for the test to complete and then click the report link to open the report.

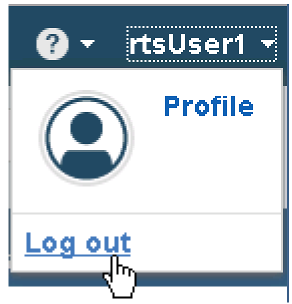
Because you changed the rules, you should not expect a 100% success rate. The results show that 1 test failed.

__ 5. In the upper right, click **Close** to close the report.

__ 6. Log out of the Business console.

__ a. Click the down arrow next to your user name in the upper-right corner of the browser window.

__ b. Click **Log out**.



Section 4. Deploying updated rules from Decision Center to Rule Execution Server

Scenario

The tested rules are now ready to be deployed to the Miniloan web application.

Users with the appropriate access rights can deploy rulesets directly from the Decision Center. You can also deploy rulesets from Rule Designer.

In this task, you take the role of rule administrator to define and deploy the updated rules. The rules are packaged as a RuleApp.

For IBM ODM on Cloud users

For this section, make sure that you run the steps on a Development Rule Execution Server. For information about the ODM on Cloud roles and environment, see:

www.ibm.com/support/knowledgecenter/SS7J8H/com.ibm.odm.cloud.admin/topics/con_work_env.html

Information

A RuleApp is a container for rulesets. The RuleApp is deployed to Rule Execution Server, making the rulesets available for execution.

4.1. Preparing the decision operation for deployment

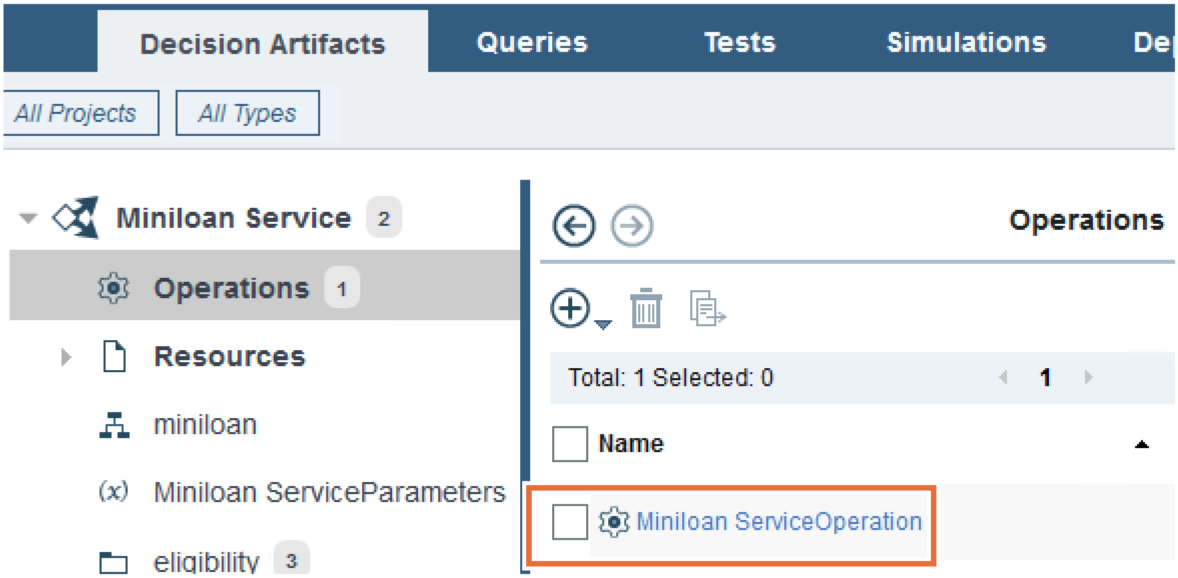
__ 1. Sign in to the Business console as a user with administrative privileges:

- **User name**: `rtsAdmin`
- **Password**: `rtsAdmin`

__ 2. Click **Library** and reopen the **main** branch of the Miniloan Service decision service.

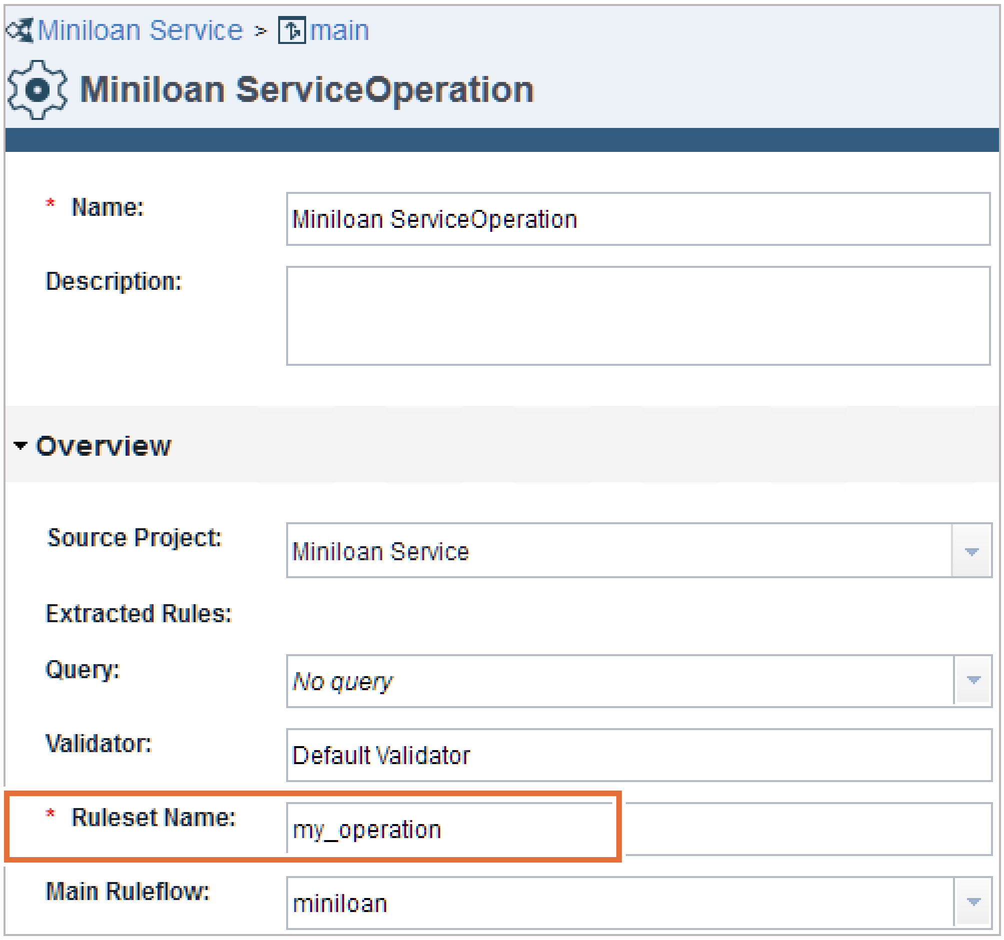
__ 3. On the **Decision Artifacts** tab, enable all types of decision artifacts for display in the navigation pane by clicking the **Types** tab, selecting **All Types**, and clicking **Apply**.

__ 4. In the navigation pane, click **Operations**, and click **Miniloan ServiceOperation**.



__ 5. In the upper right, click **Edit** (the pencil icon).

__ 6. Change the value in the **Ruleset name** field to: `my_operation`



__ 7. Save your changes.

__ a. Click **Save** to exit the editor.

__ b. In the Create New Version window, click **Create New Version**.

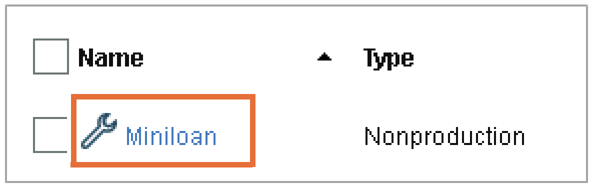
4.2. Deploying the decision service

__ 1. Click the **Deployments** tab and make sure that you are on the Configurations page.

For IBM ODM on Cloud users

For this section, you use the Development configuration with the Development Environment server as the target.

__ 2. Click the **Miniloan** deployment configuration.



__ 3. In the upper-right area of the page, click the **Edit** icon.

__ 4. On the **General** tab, change the **RuleApp name** to: `my_deployment`

__ 5. Click the **Targets** tab and make sure that **Decision Service Execution** is selected.

__ 6. Click **Save** and click **Create New Version**.

__ 7. Deploy the updated decision service.

__ a. In the toolbar, click the **Deploy** icon.

__ b. In the “Deploy: main” window, click **Deploy**.

__ c. In the “Deployment status” window, click **OK**.

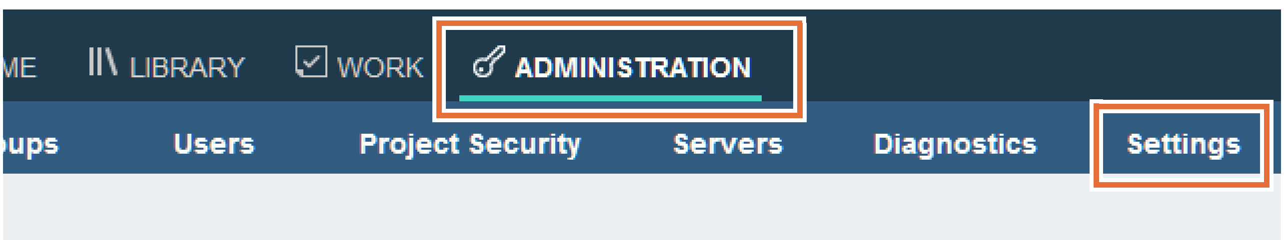
__ 8. After deployment is finished, click the **Report** link.

__ 9. View the report details, and when you are finished, click **Close**.

4.3. Customizing Decision Center settings

Before leaving the Business console, note that as an administrator (rtsAdmin) you can customize some environment settings.

__ 1. Click the **Administration** menu and click the **Settings** tab.

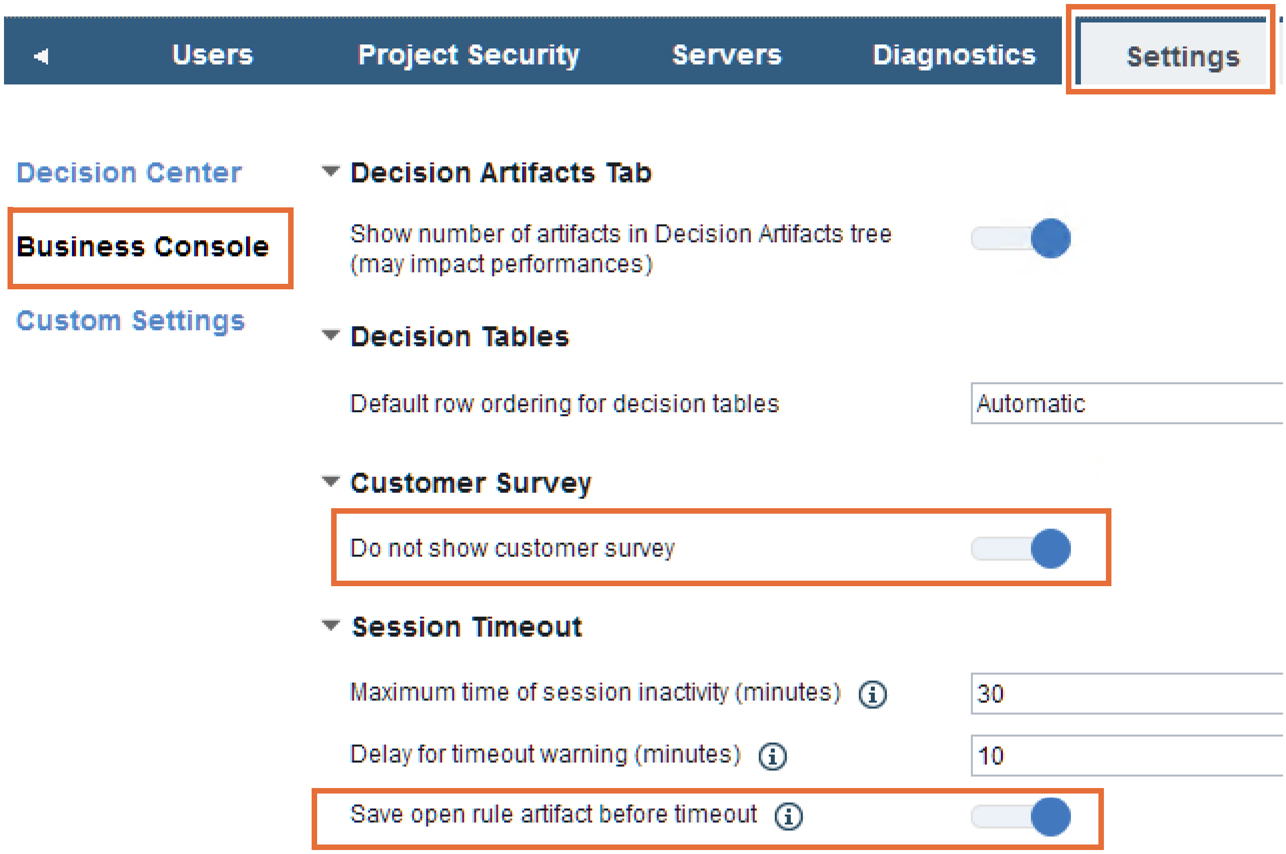


__ 2. In the navigation pane, click **Business Console**.

__ 3. In the **Customer Survey** section, enable **Do not show customer survey**.

This setting disables the survey popup.

__ 4. In the **Session Timeout** section, enable **Save edited artifact before timeout** to avoid losing work.



__ 5. Sign out of the console.

Section 5. Monitoring the deployed rules in Rule Execution Server

You can now go to the Rule Execution Server console and see whether the RuleApp was properly deployed.

Rule Execution Server is an execution environment for rules (Java SE and Java EE) that interacts with the rule engine. Rule Execution Server handles the management, performance, security, and logging capabilities that are associated with the execution of your rules.

Viewing the deployed RuleApp

__ 1. Open Rule Execution Server by clicking the Rule Execution Server shortcut on the Windwos Start menu or by entering the following URL in a browser:

`http://localhost:9090/res`

Information

You can also open the Rule Execution Server by using the **Start** menu shortcut.

For IBM ODM on Cloud users

Instead of going through your operating system, you start the Rule Execution Server console by logging in to the User Portal, then in the Development Environment, clicking **Launch** under **Rule Execution Server console**.

The Rule Execution Server console is configured to open to the URL of your ODM on Cloud instance, so you do not need to enter a URL or port number.

__ 2. Sign in to the Rule Execution Server console with the following credentials.

- **User name**: `resAdmin`
- **Password**: `resAdmin`

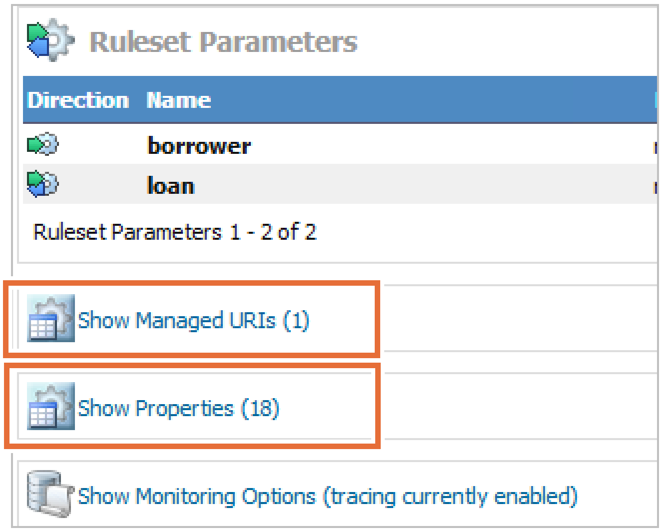
__ 3. Click the **Explorer** tab.

__ 4. In the **Navigator** pane, expand **RuleApps >** click **my_deployment** to see the details in the RuleApp view

__ 5. In the list of rulesets, click **my_operation** to open it in the Ruleset view.

Notice that the status of the ruleset is **enabled**, which means that your newly deployed ruleset can be executed. The next time that the application calls for a decision, this ruleset is considered the most recent version, and will be used.

__ 6. Scroll down and click the various options, such as Show Managed URIs and **Show Properties**.



These properties are just some of the details that are available in Rule Execution Server.

__ 7. Sign out and close the Rule Execution Server console window.

Section 6. Viewing the effects in the Miniloan application

Scenario

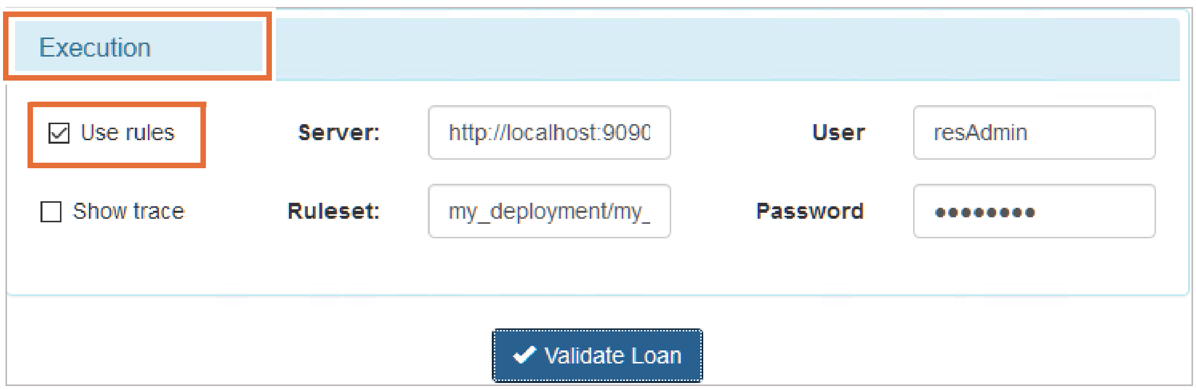
After testing and deploying the updated business rules to the Miniloan application, you can now see how the business policy changes that you made are reflected in the Miniloan application. You can also see how they affect the original request from Joe.

To run the Miniloan application with the updated ruleset:

__ 1. Reopen the Miniloan application in a web browser window.

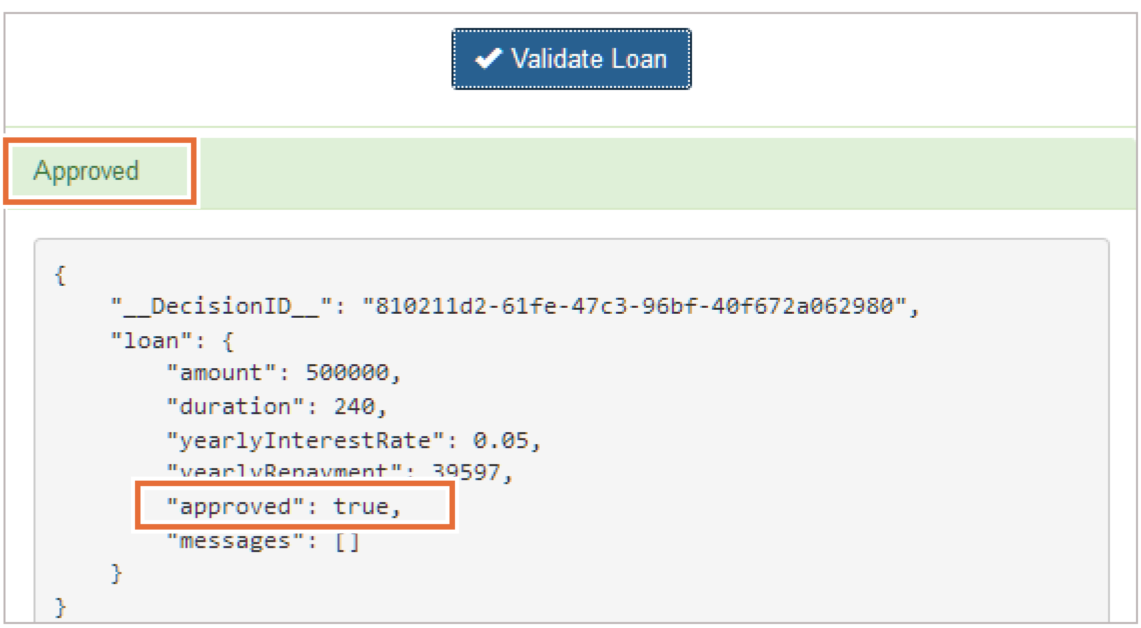
`http://localhost:9090/miniloan-server`

__ 2. Click **Execution** to expand it and select **Use rules**.



__ 3. Click **Validate Loan**.

The loan is now approved because of the deployed rule changes.



__ 4. Close the browser.

Section 7. Exploring the development environments in Rule Designer

For IBM ODM on Cloud users

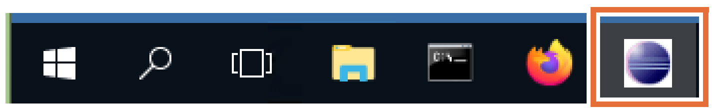
The steps in this section do not apply to ODM on Cloud.

For more information about installing and using Rule Designer with ODM on Cloud, see the documentation.

www.ibm.com/support/knowledgecenter/SS7J8H/welcome/kc_welcome_cloud.html

7.1. Opening Rule Designer

__ 1. On the taskbar, click the **Rule Designer** shortcut**.**



You can also click the **Rule Designer 8.10.5** shortcut on the **Start** menu.

__ 2. When prompted for a workspace, use the following path and click **Launch**:

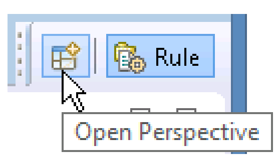
`C:\labfiles\workspaces\intro`

__ 3. Close the Welcome view.

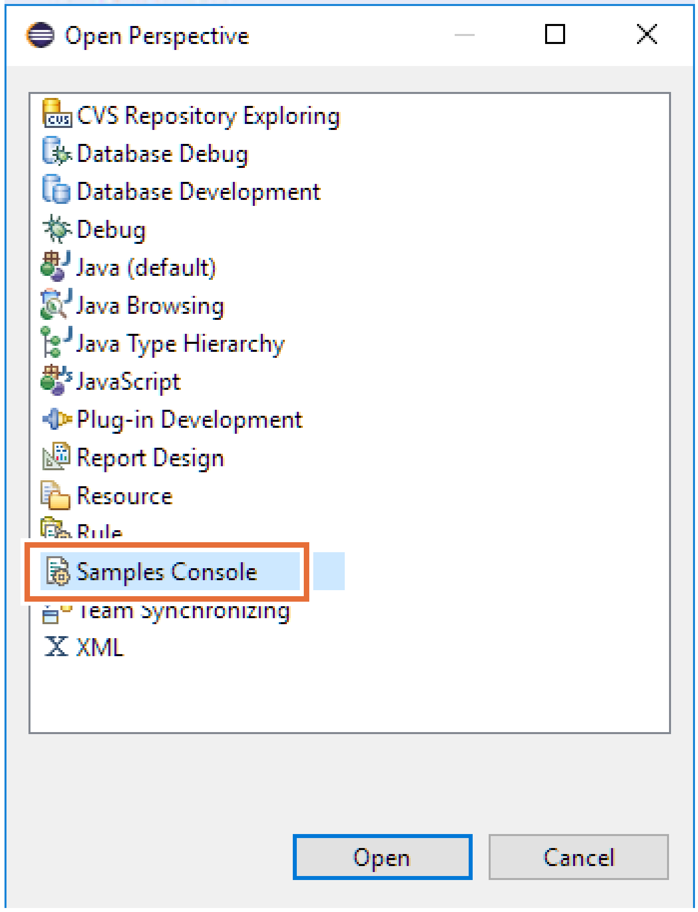
By default, the Rule Designer perspective opens in Eclipse.

__ 4. Switch to the Samples Console and import the project for this exercise.

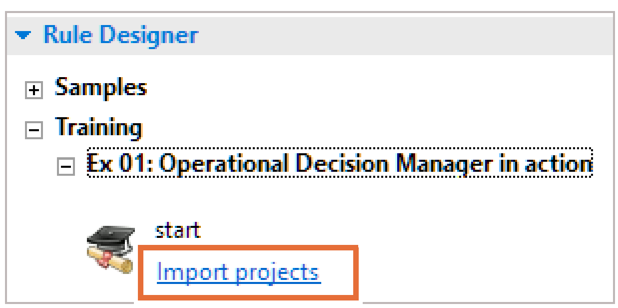
__ a. In the upper-right area of the window, click the **Open Perspective** icon to switch from the Rule perspective.



__ b. In the Open Perspective list, select **Samples Console**, and click **Open**.



__ c. In the **Rule Designer** section, expand **Training > Ex 01: Operational Decision Manager in action > start**, and click **Import projects**.



The Eclipse perspective automatically switches back to the Rule perspective.

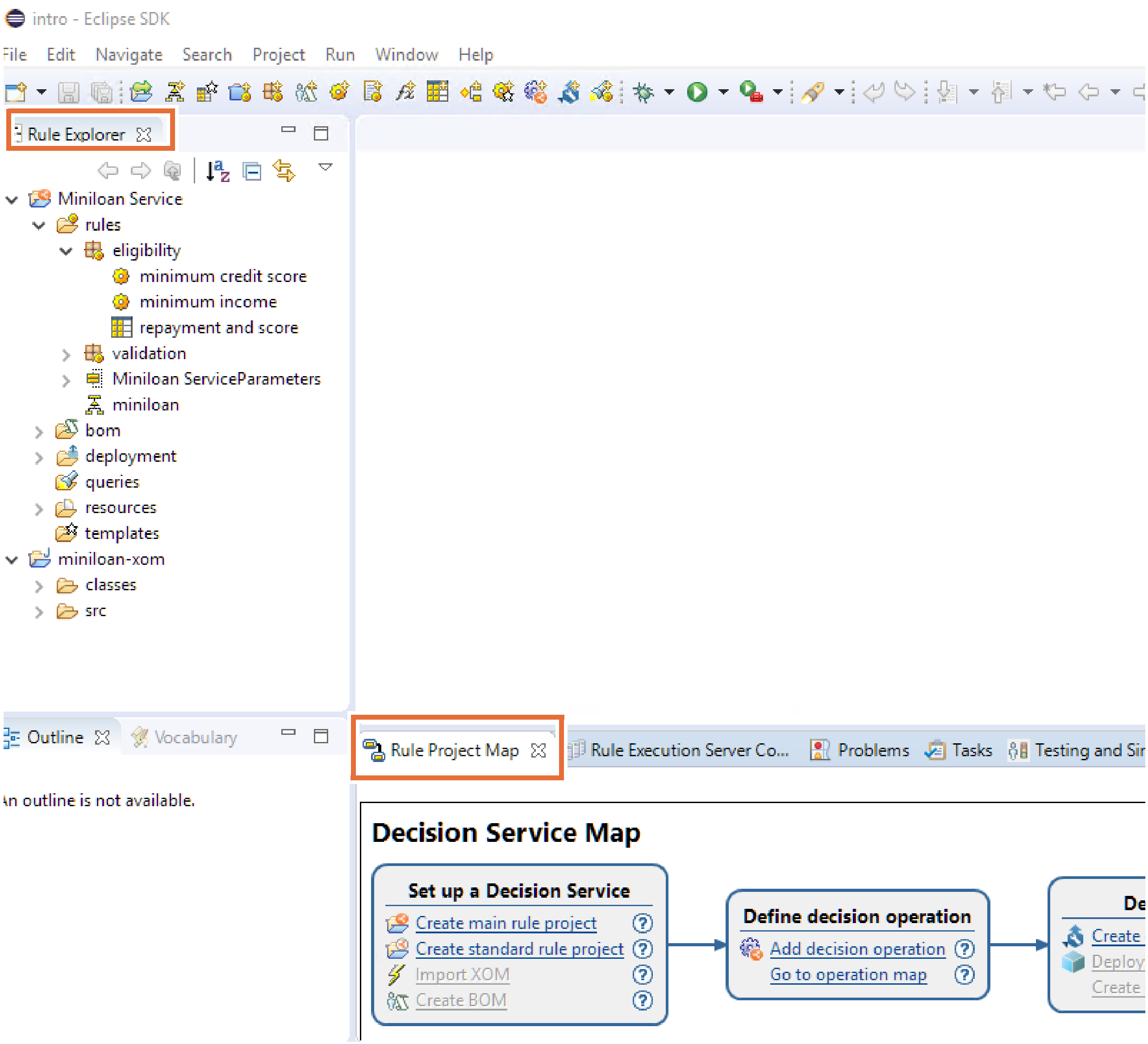
__ d. Close the Help view by clicking the **X** to give yourself more working area.

7.2. Taking a quick tour of Rule Designer

In Eclipse, the window for the Rule Designer development environment is called the *Rule perspective*.

__ 1. Look at the various windows and panes that are open in the Rule perspective, including these views:

- **Rule Explorer**: Expand and view the contents of the projects
- **Rule Project Map**: Notice the various links that guide you through development of a decision service



The Rule Explorer contains these projects:

- **Miniloan Service**: The main rule project that contains Miniloan business rules.
- **miniloan-xom**: The Java project of the Miniloan application that is composed of the **borrower** and the **loan** Java classes.

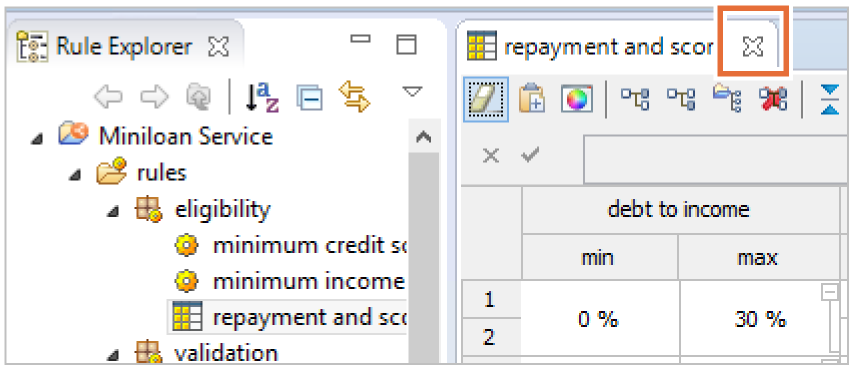
__ 2. In Rule Explorer, expand **Miniloan Service > rules** to see the rule artifacts.

__ a. Expand the **eligibility** and **validation** folders to see the rules that they contain, and notice that these folders are the same folders that you saw in Decision Center.

__ b. In the **eligibility** folder, double-click **repayment and score** to open the decision table.

__ c. Notice that the values in the **credit score** columns for row 5 and 6 ***do not*** reflect the changes that you made in Decision Center, where you changed 600 to 500.

__ d. Close the decision table.

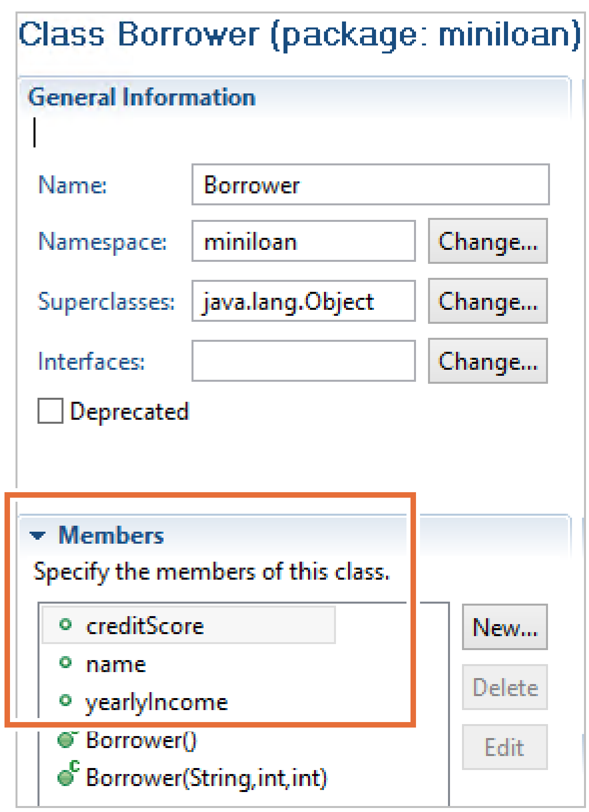


__ 3. Expand the **bom > miniloan > miniloan** folder to see **Borrower** and **Loan**.

The **bom** folder contains all the vocabulary that is used in the rules.

__ a. Expand **Borrower** and **Loan** to see their members in Rule Explorer.

__ b. Double-click **Borrower** to open it in the BOM editor and view its properties and members. For example, here you see that the Borrower class has a name, a credit score and a yearly income.

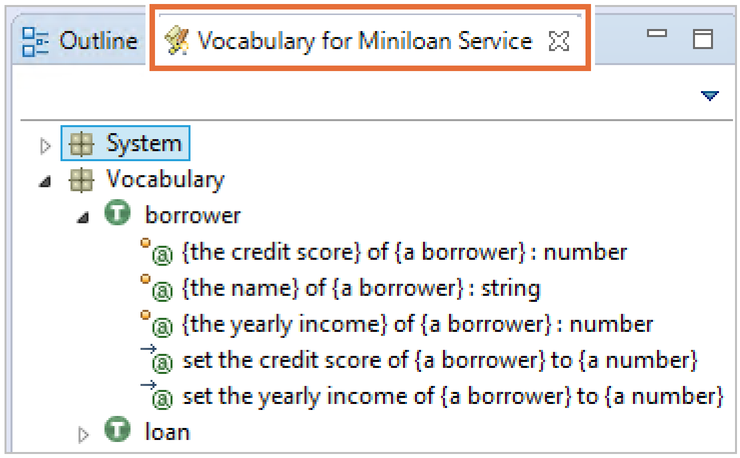


__ 4. Open the **Outline** view (under Rule Explorer), and note the connection between this view and the contents of the **bom** folder.

The **Outline** view lists all the members of the BOM.

__ a. In the Outline view, expand **Borrower** and **Loan** to see their members.

__ b. Click the **Vocabulary** tab and expand **borrower** to see the vocabulary expressions that are assigned to the BOM members.



__ c. Notice the similarities and differences between the expressions that are listed in the **Vocabulary** view and the **Outline** view.

__ 5. In Rule Explorer, go back to the **rules** folder to see how the rules use the vocabulary.

__ a. Go back to the **eligibility** folder and double-click **minimum income** to open this rule in the rule editor.

Questions

Does the wording in the rule seem to match the **Outline** view or the **Vocabulary** view?

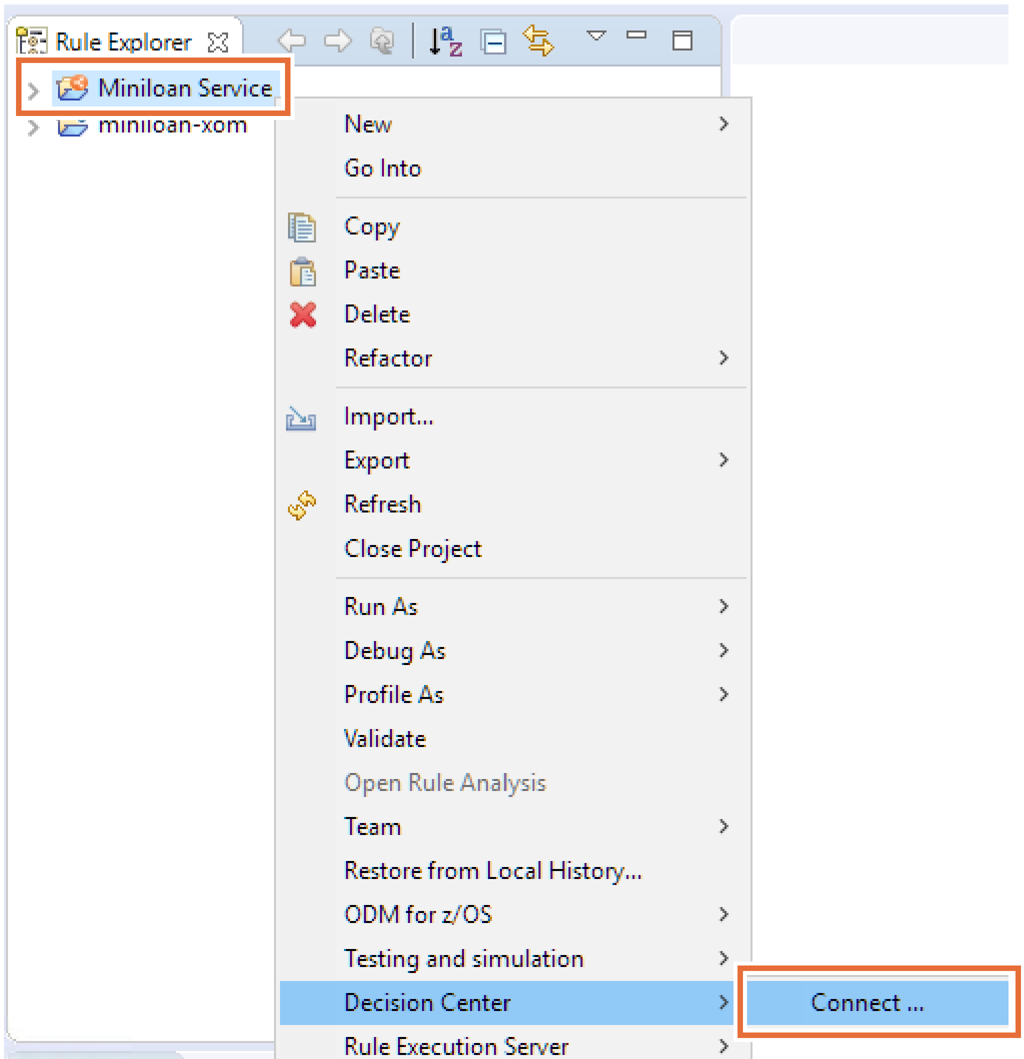
Remember this comparison as a first look at the connection between rules and vocabulary.

__ b. Notice the rule statement. This rule also does not include your edits from Decision Center.

To get the most recent version of the rules from Decision Center, you must synchronize the Rule Designer and Decision Center environments.

7.3. Synchronizing Rule Designer and Decision Center environments

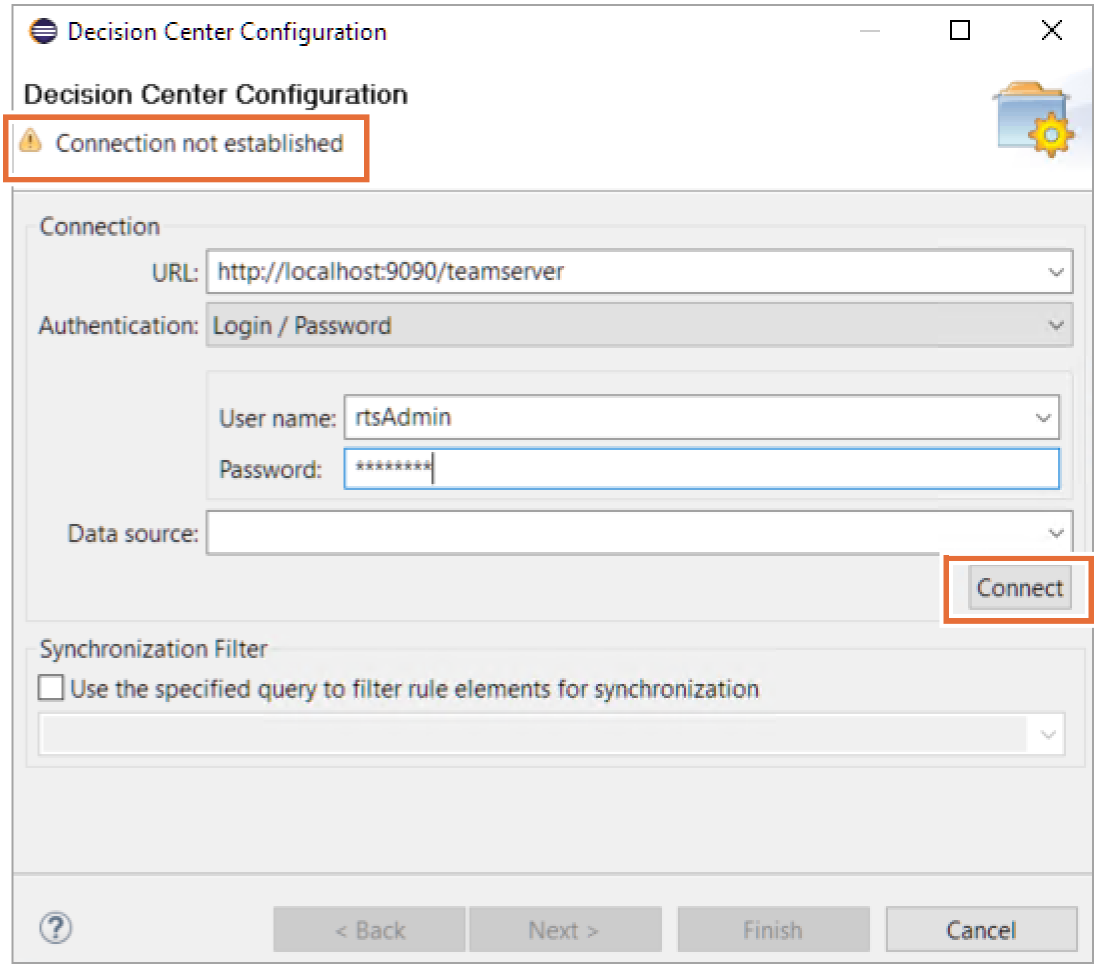
__ 1. In Rule Explorer, right-click **Miniloan Service**, and click **Decision Center > Connect**.



__ 2. Enter the following values in the Decision Center Configuration window fields.

- **URL**: `http://localhost:9090/teamserver`
- **User name**: `rtsAdmin`
- **Password**: `rtsAdmin`
- **Data source**: (Leave the field empty)

__ 3. Click **Connect**.

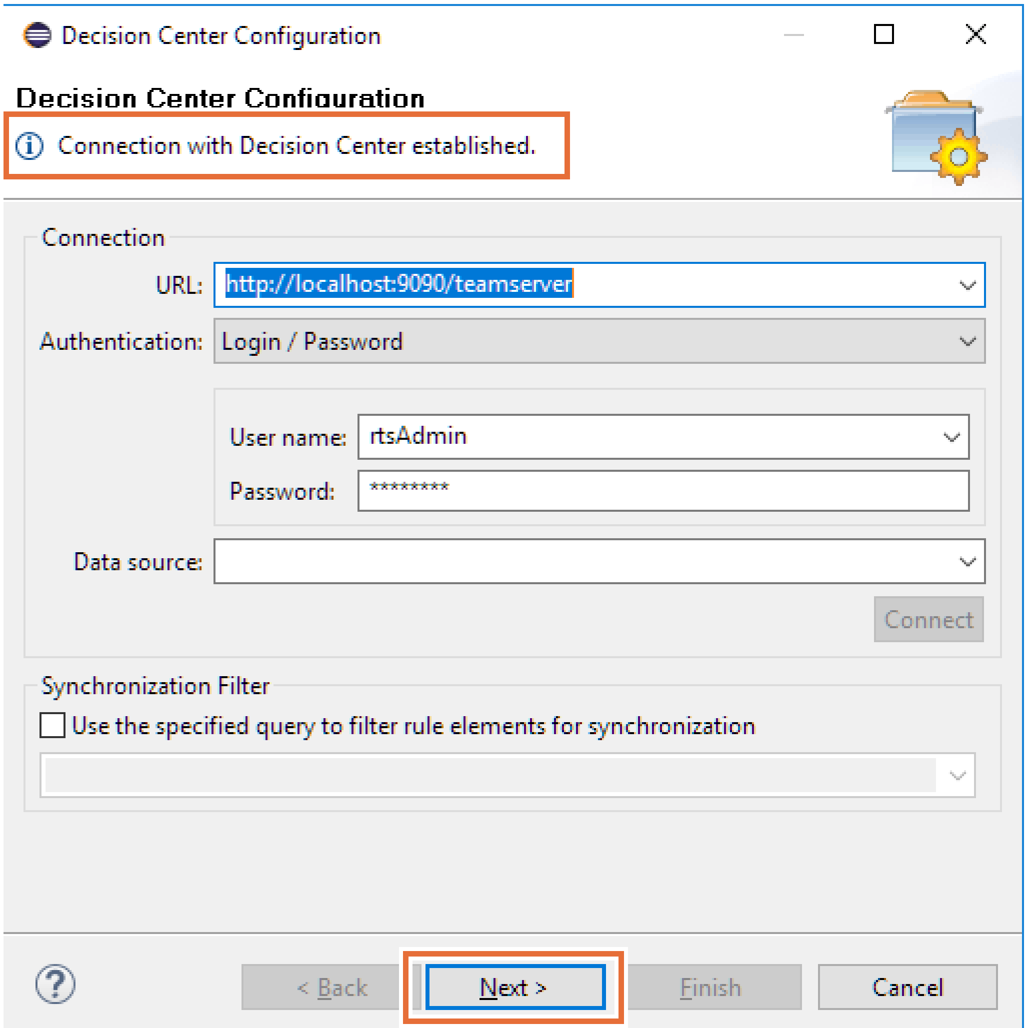


When the connection is established, the warning message disappears and the Project configuration area becomes active.

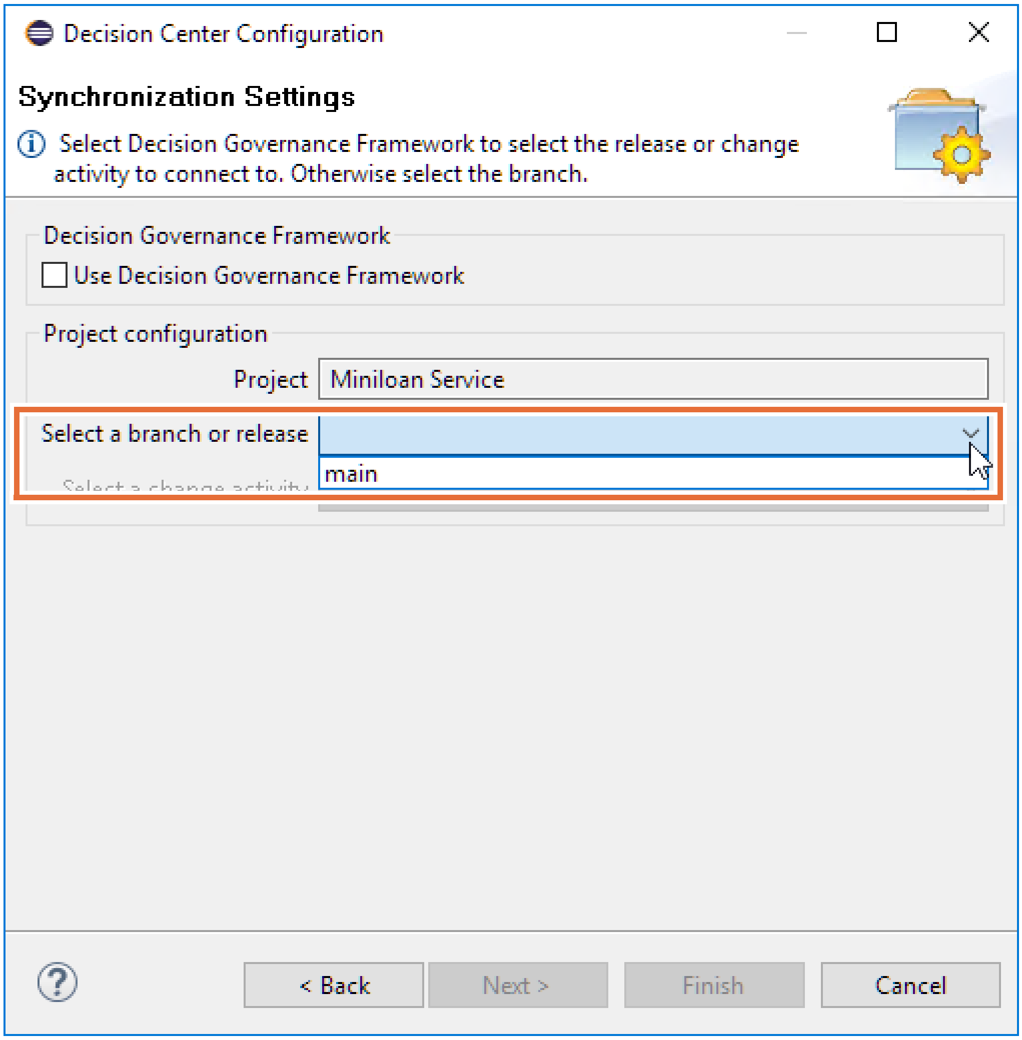
Troubleshooting

Sometimes the connection window disappears to the background of your desktop. Click the Rule Designer window to bring the connection wizard back into focus.

__ 4. After the connection is established, click **Next**.



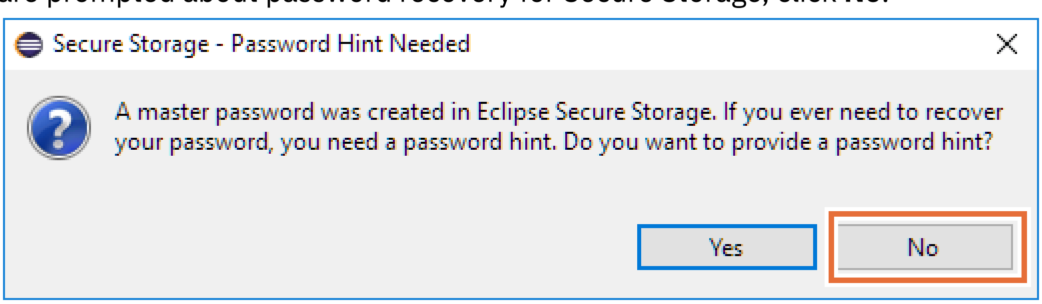
__ 5. In the **Select a branch or release** field, choose **main**.



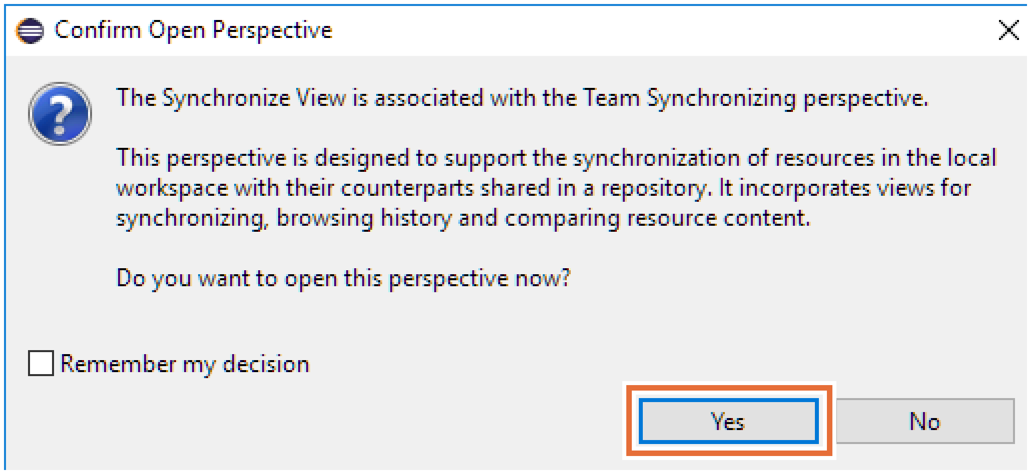
__ 6. Click **Finish**.

Troubleshooting

If you are prompted about password recovery for Secure Storage, click **No**.



__ 7. When the window prompts you to change to Team Synchronizing perspective, click **Yes**.



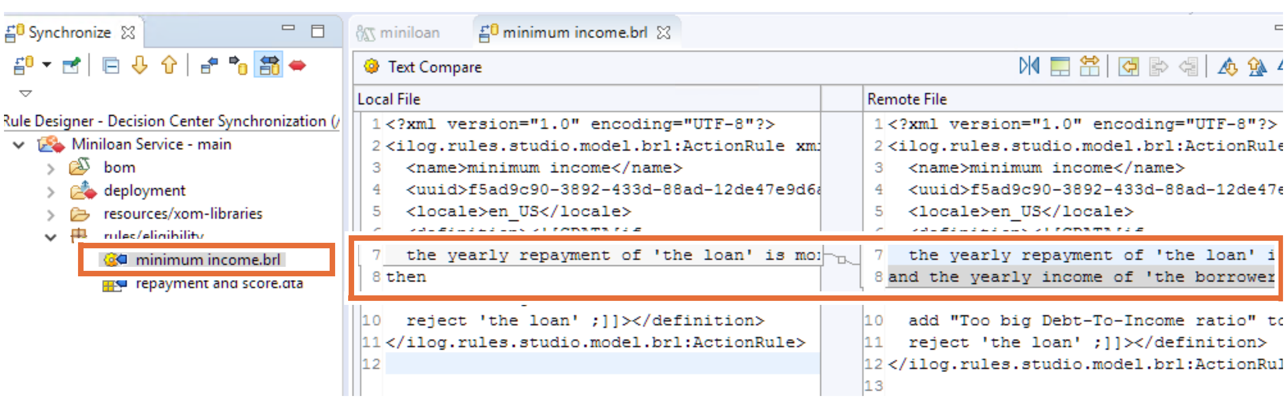
After synchronization is complete, the Synchronize view shows the `miniloan-rules` rule project, and indicates that changes were made to rules in that rule project.

__ 8. In the Synchronize view, expand **`Miniloan Service - main`** and the **rules/eligibility** folder to see which rules need to be updated.

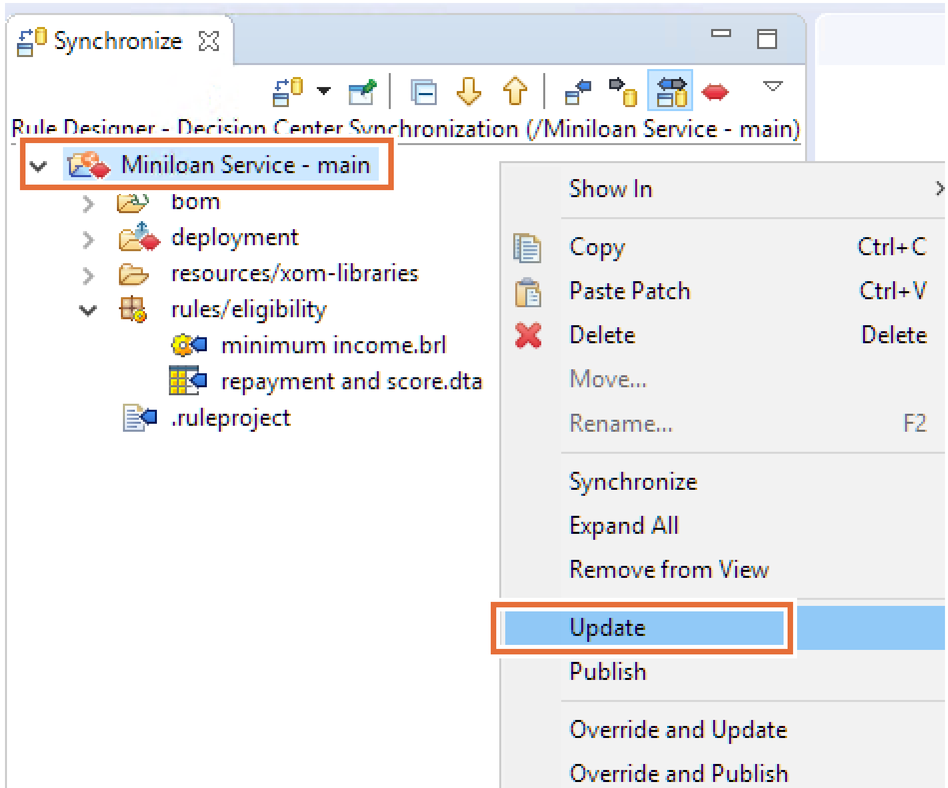
__ a. Expand the **rules/eligibility** folder to see the rules that you updated in Decision Center.

- `minimum income.brl`
- `repayment and score.dta`

__ b. Double-click **`minimum income.brl`** to open it in the **Text Compare** view and see the differences that now require synchronization.



__ c. Right-click **Miniloan Service - main** and click **Update**.

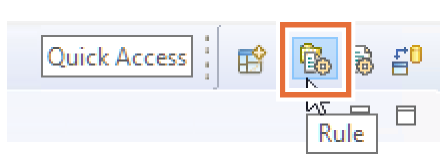


After the update is complete, the out-of-sync rules in the **rules/eligibility** folder are removed from the Synchronize view, which means that your local Rule Designer workspace is correctly updated with the edited rules from Decision Center.

__ 9. Return to the Rule perspective.

Hint

To return to the Rule perspective, click **Rule** at the upper-right corner of the perspective.



__ 10. If the minimum income rule is closed, reopen it by expanding the **Miniloan Service > rules > eligibility** folder in Rule Explorer, and double-clicking **minimum income**.

The condition statement should now match your edits in Decision Center and state:

```
if
  the yearly repayment of 'the loan' is more than the yearly income of 'the
borrower' * 0.5
  and the yearly income of 'the borrower' is less than 500000
```

__ 11. Close Rule Designer, and confirm closing when prompted to confirm.

Section 8. Shutting down the modules

For IBM ODM on Cloud users

The steps in this section do not apply to ODM on Cloud.

These steps describe how to shut down the sample server and modules.

__ 1. Close any open browsers.

__ 2. Close Rule Designer and click **Exit** when prompted to confirm your exit from Eclipse.

__ 3. Stop the sample server.

  __ a. From the Windows **Start** menu, click the **Stop Sample Server** shortcut.

  __ b. After the sample server is stopped, press any key to close the terminal window.

End of exercise

Exercise review and wrap-up

This exercise showed the general workflow of Operational Decision Manager for business rules.

Exercise 2. Setting up decision services

Estimated time

01:45

Overview

In this exercise, you learn how to set up decision services in Rule Designer.

Objectives

After completing this exercise, you should be able to:

- Create main and standard decision service projects
- Set up the decision service to reference the execution object model (XOM)
- Generate a business object model (BOM) and a default vocabulary
- Create a decision operation
- Define ruleset variables and ruleset parameters
- Create rule packages
- Synchronize decision services with Decision Center

Introduction

In this exercise, you use Rule Designer to create the initial elements that are required to set up a business rule application. You set up the decision service structure, define the business and execution object models, and create a decision operation, which includes variables and parameters. Parameters are used to pass objects between the external application and the rule engine.

You also outline the basic structure for organizing rule artifacts by creating rule packages, which are also called folders in the business user environment.

This exercise includes the following sections:

- Section 1, "Creating a standard rule project"
- Section 2, "Importing the XOM and setting up the BOM"
- Section 3, "Creating the main rule project for the decision service"
- Section 4, "Creating and defining the decision operation"
- Section 5, "Creating rule packages"
- Section 6, "Publishing from Rule Designer to Decision Center"
- Section 7, "Deleting a decision service from Decision Center"
- Section 8, "Importing a decision service from Decision Center"

Requirements

This exercise uses the following support files, which are installed in the `<InstallDir>\studio\training` directory:

- Start project: `Dev 02 - Decision services\start`

Section 1. Creating a standard rule project

In this section of the exercise, you set up the environment for the exercise and create a standard rule project for the decision service.

1.1. Setting up your environment for this exercise

__ 1. Open Rule Designer by clicking the **Rule Designer** shortcut on the taskbar**.**

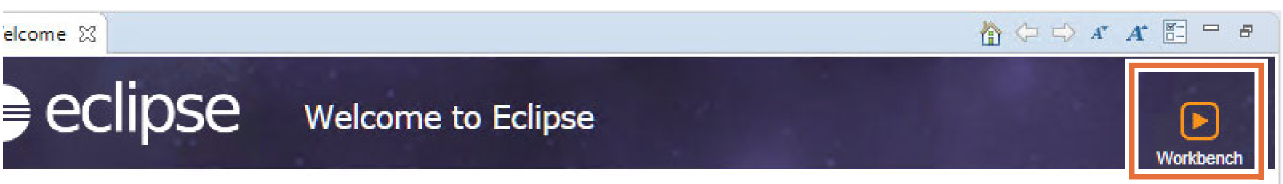
__ 2. In the Workspace Launcher window, create a workspace.

__ a. In the **Workspace** field, type a workspace path and name:
`C:\labfiles\workspaces\decision_service`

__ b. Make sure that **Use this as the default and do not ask again** is *not* selected.

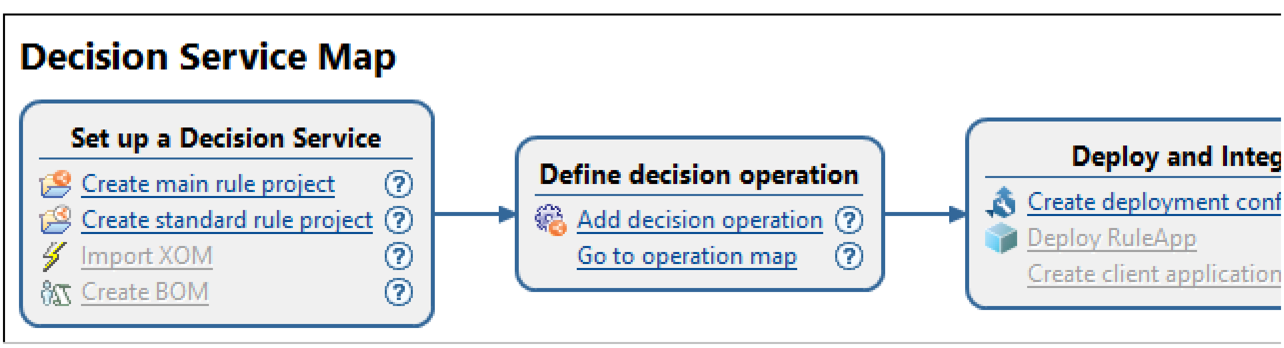
__ c. Click **Launch**.

__ 3. Click **Workbench**.



The Rule Designer workspace opens and you see the Decision Service Map in the lower part of the workspace, in the Rule Project Map view. The steps for setting up a decision service are outlined in the Decision Service Map tasks.

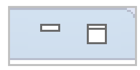
- **Set up a Decision Service**
- **Define decision operation**
- **Deploy and Integrate**



In this exercise, you go through these steps to create and deploy a decision service.

Hint

You can maximize the view and reset it to the default size and location by using the icons in the upper-right corner of the view.



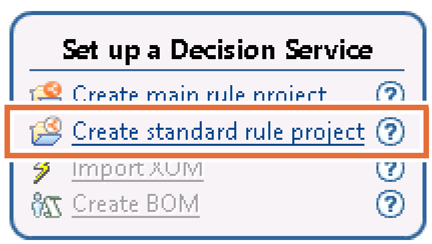
If you close the Rule Project Map view, you can open it by clicking **Window > Show View > Rule Project Map**.

1.2. Creating a standard rule project with a BOM

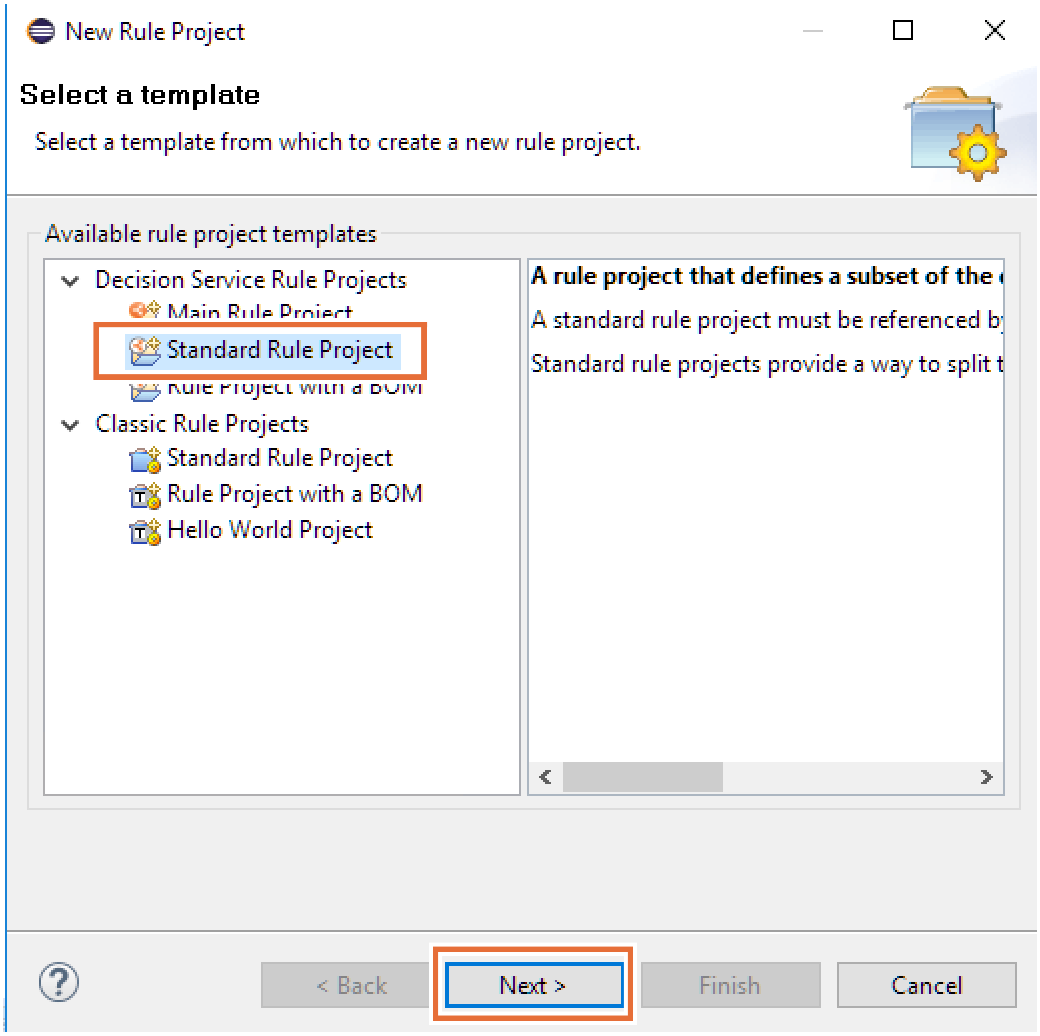
In this section of the exercise, you create an empty standard rule project with a BOM in preparation for the next section of the exercise, where you import the XOM and create the BOM.

The rule project that you create in this section eventually stores the BOM for the decision service.

__ 1. Go to the **Set up a Decision Service** part of the Decision Service Map, and click **Create standard rule project**.



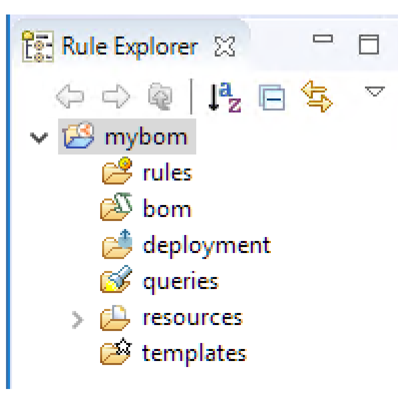
__ 2. In the **Decision Service Rule Projects** section of the New Rule Project window, click **Standard Rule Project** and click **Next**.



__ 3. In the **Project name** field, type a name such as: `mybom`

__ 4. Click **Finish**.

The **mybom** folder is now in the Rule Explorer pane.



Section 2. Importing the XOM and setting up the BOM

2.1. Importing the execution object model (XOM)

One of the first tasks when designing your decision service is to import a XOM into your project.

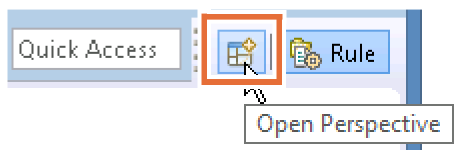
By importing a XOM, you create a reference between your rule project and a XOM project in your workspace. To be able to create such a reference, you must first have the XOM in your Rule Designer workspace.

Information

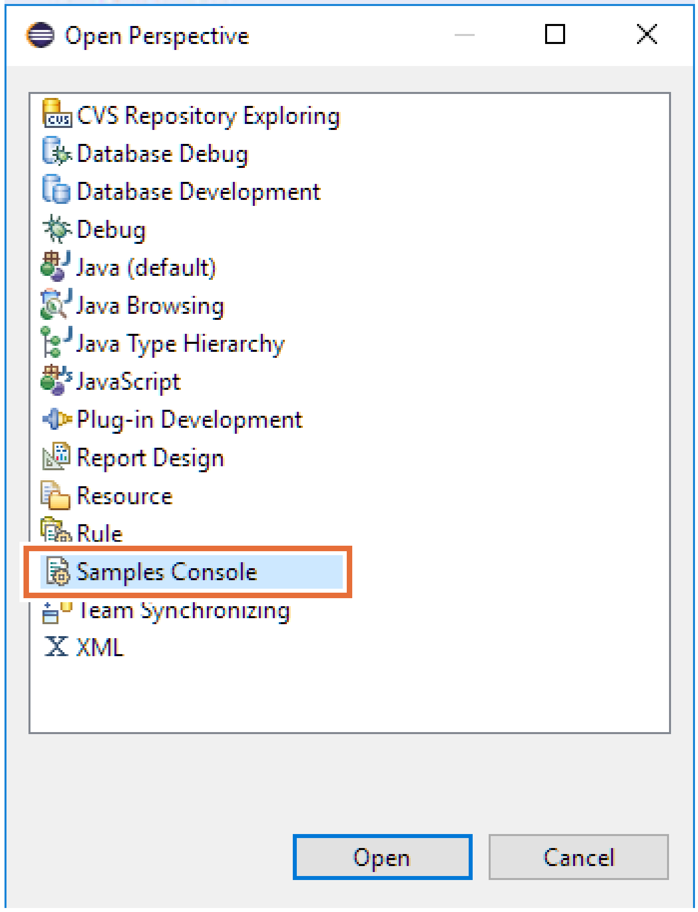
The XOM is the code implementation of the model against which your business rules are executed. For this exercise, the XOM is provided for you.

For this exercise, the required XOM is the `loan-xom` Java project and is provided for you.

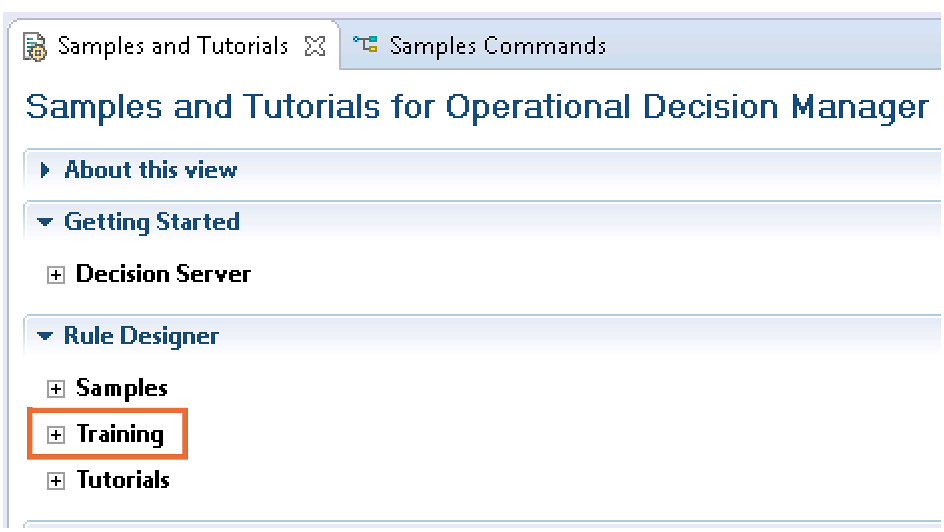
__ 1. In the upper-right area of the Rule perspective, click the **Open Perspective** icon.



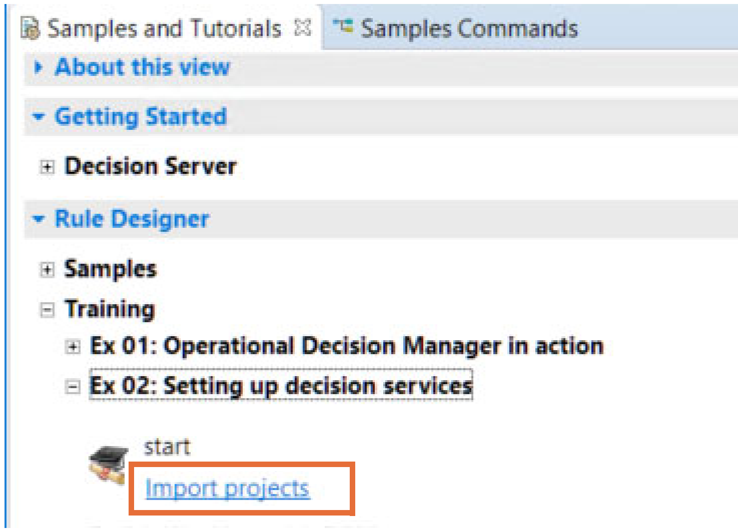
__ 2. Click **Samples Console** and then click **Open**.



__ 3. In the “Samples and Tutorials” page, go to the Rule Designer section and expand **Training**.

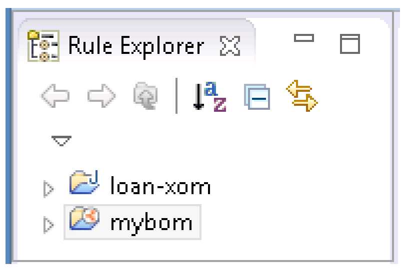


__ 4. Expand **Ex 02: Setting up decision services**, and under **start**, click **Import projects**.



Rule Designer automatically imports the content of the selected project into your workspace. In this case, Rule Designer imports the `loan-xom` Java project.

The `loan-xom` Java project is now available in Rule Explorer.



__ 5. After the workspace builds, close the Help view.

Important

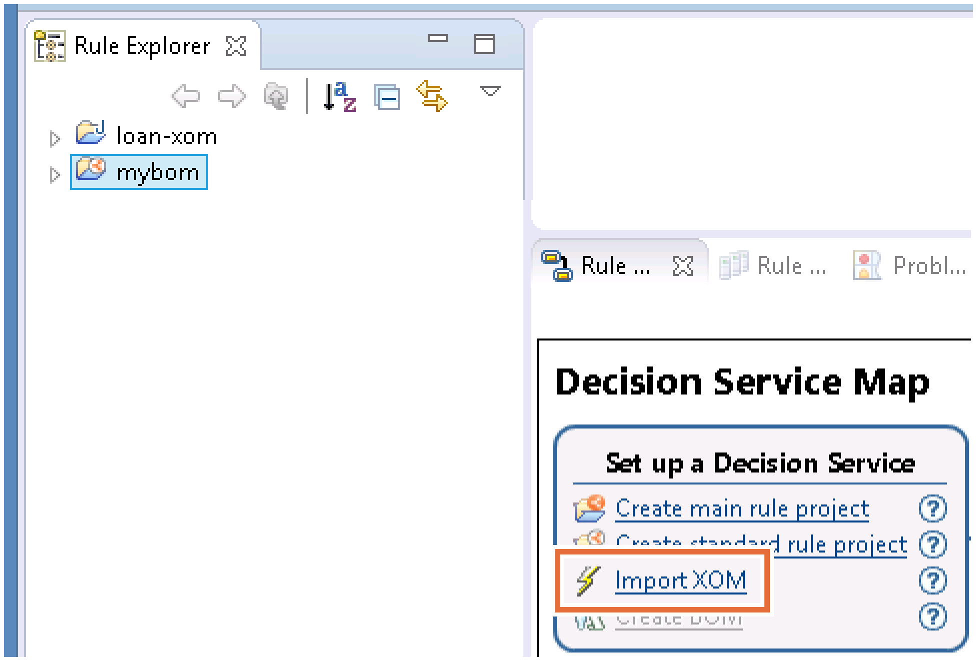
For each exercise, you import projects into your workspace. The procedure for importing is also available at the beginning of this document, in "Projects for exercises" on page ix.

2.2. Creating a reference to the XOM in the rule project

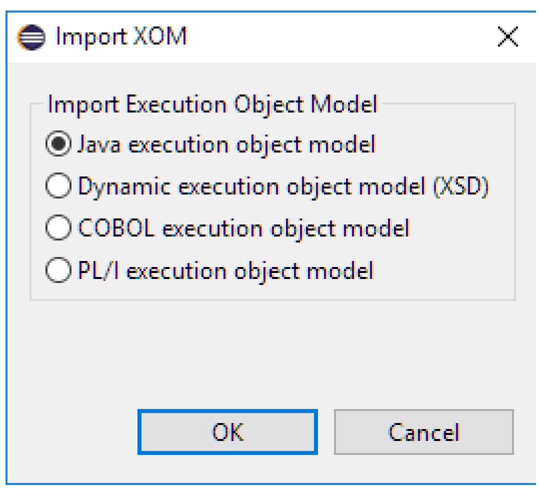
Now that you have a XOM in your workspace, use the Decision Service Map to import it into your decision service.

__ 1. Click the `mybom` project in the Rule Explorer.

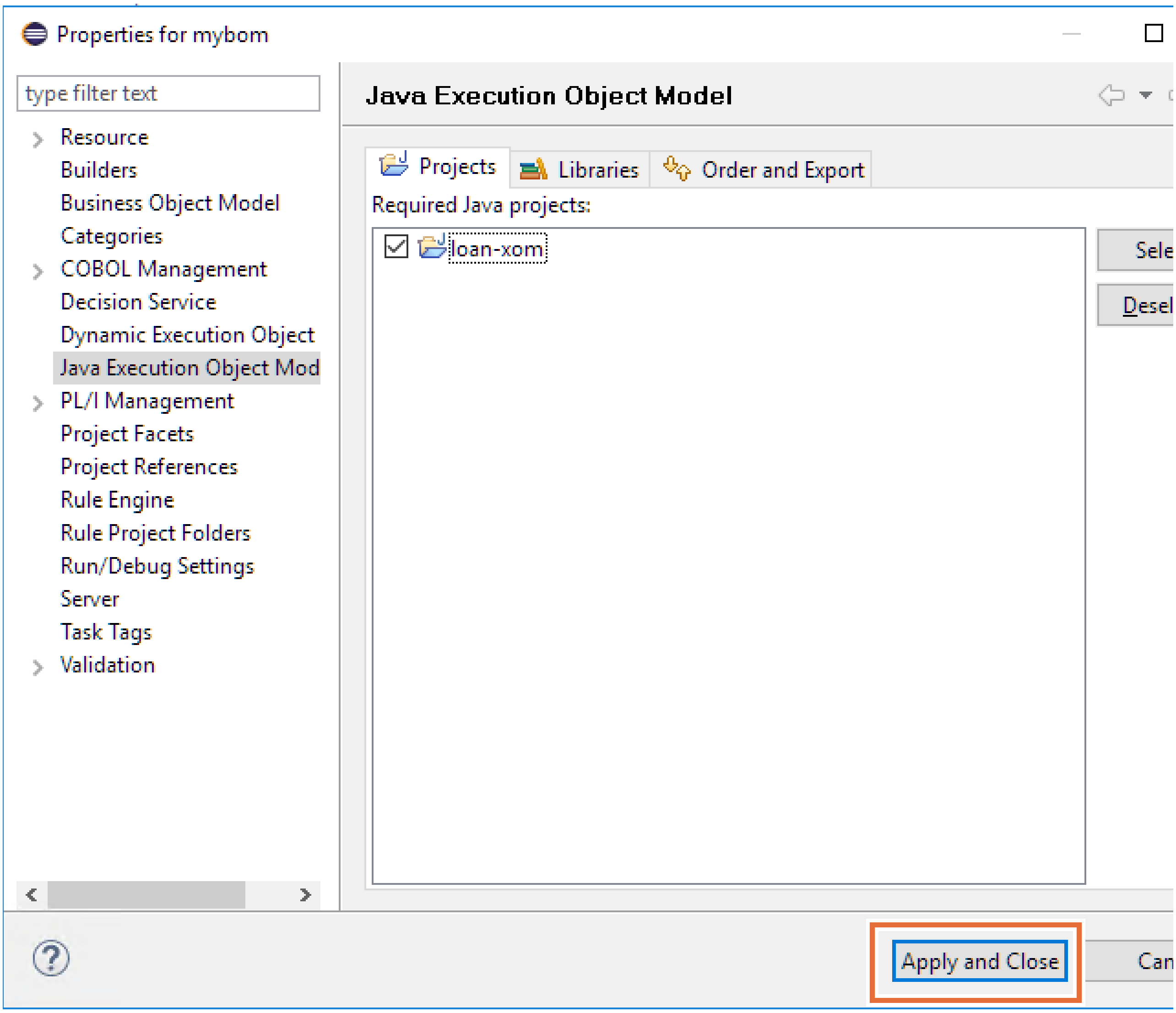
__ 2. In the **Set up a Decision Service** part of the Decision Service Map, click the **Import XOM** link to import the XOM into your decision service.



__ 3. On the Import XOM page, select **Java execution object model**, and click **OK**.



__ 4. In the “Properties for mybom” window, under **Java Execution Object Model**, select the **loan-xom** check box, and click **Apply and Close**.

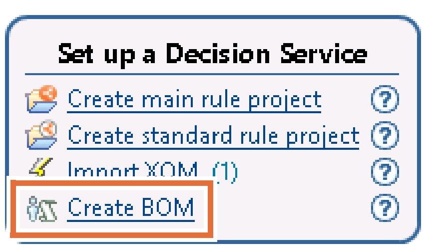


By selecting **loan-xom**, the `mybom` project now references the `loan-xom` Java project.

You can expand the `loan-xom` project to view the Java code implementation.

2.3. Creating the BOM

In the **Set up a Decision Service** part of the Decision Service Map, the **Create BOM** link is enabled.



This link indicates that the next required task in designing your ruleset is to define the BOM and the vocabulary that you and business users need to author the business rules.

You now use this link to set up the BOM in your rule project.

__ 1. In the Rule Explorer, make sure that the **mybom** project is selected.

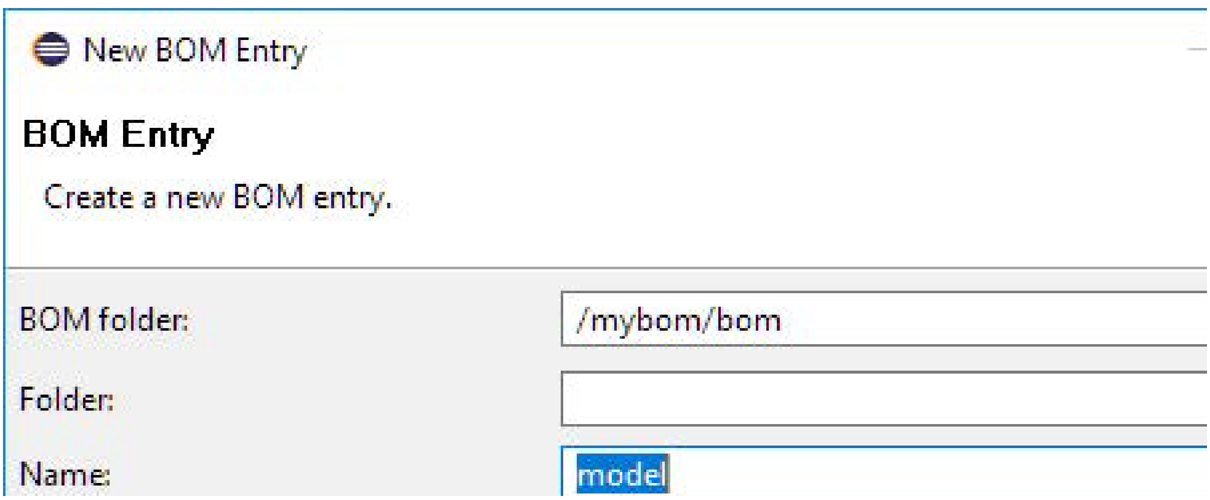
__ 2. In the **Set up a Decision Service** task, click the **Create BOM** link to create a BOM entry.

The **New BOM Entry** wizard opens.

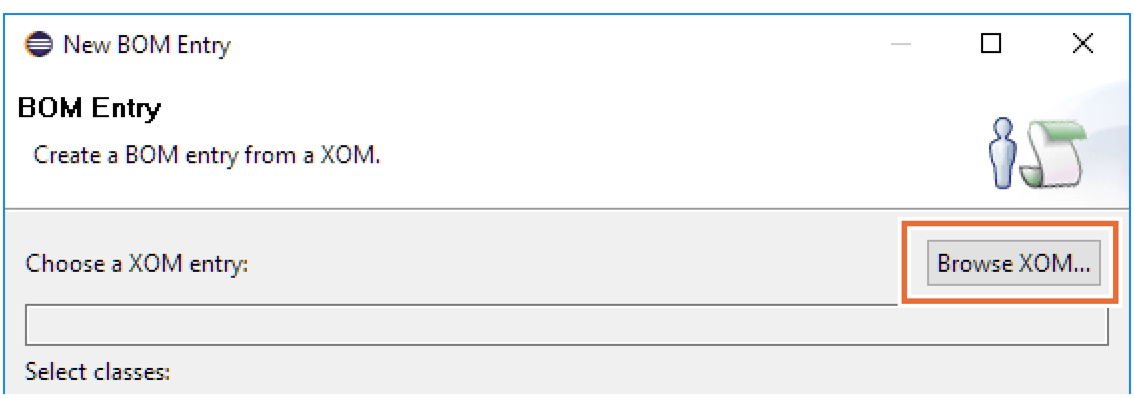
Information

BOM entries are the building blocks of the BOM. Each BOM entry defines a set of business elements in the BOM.

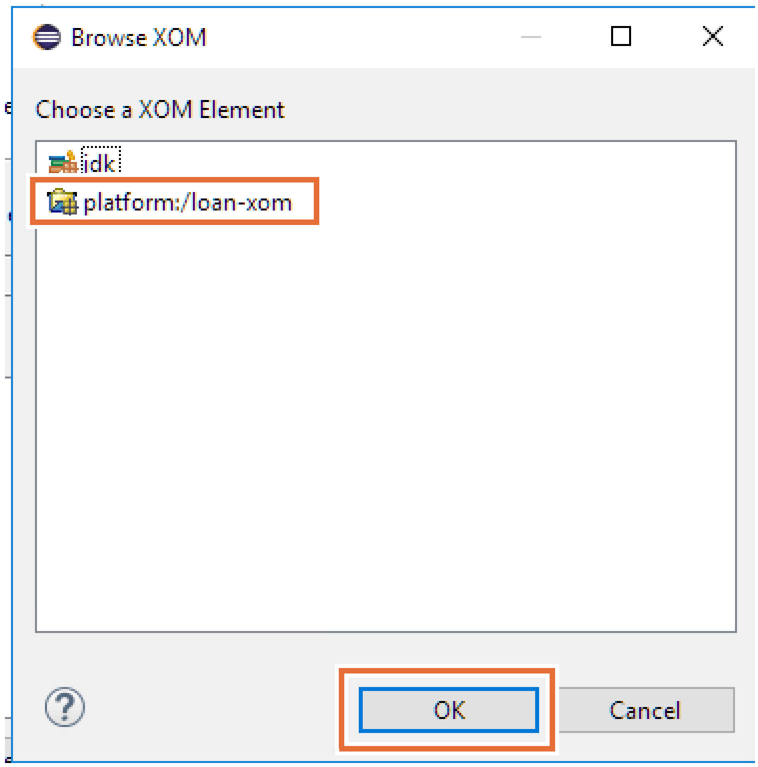
__ 3. Make sure that the **Create a BOM entry from a XOM** option is selected, keep the default values for the other fields, and click **Next**.



__ 4. On the BOM Entry page, click **Browse XOM**.



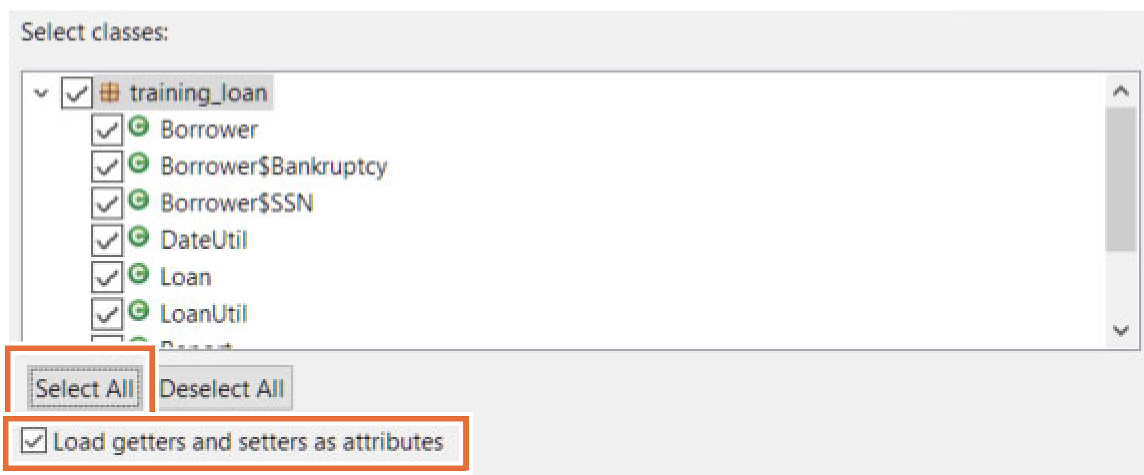
__ 5. In the Browse XOM window, select **platform:/loan-xom**, and click **OK**.



__ 6. Make sure that your BOM entry fully reflects the classes and methods in the XOM as follows:

__ a. Expand **training_loan** and select all classes by clicking **Select All**.

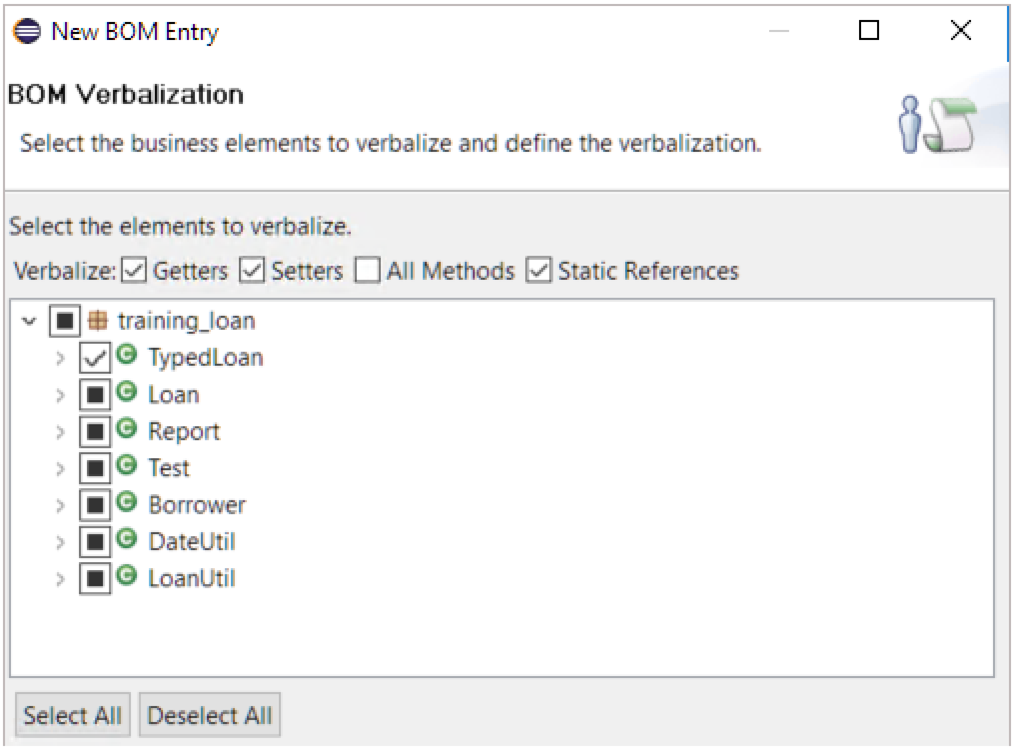
__ b. Make sure that the **Load getters and setters as attributes** check box is selected.



This step ensures that all Java classes, attributes, and methods in the XOM are mapped to or have a corresponding BOM member.

__ c. Click **Next**.

The BOM Verbalization page opens.



__ 7. Click **Finish** to accept the default verbalization.

Information

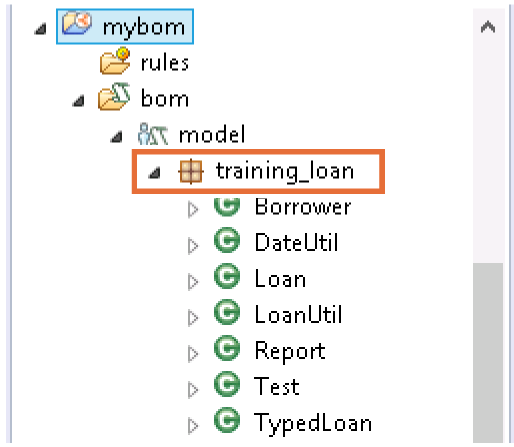
Verbalization attaches natural-language terms to the BOM elements to create the vocabulary for your business rules.

In your **mybom** project, the BOM entry that is called `model` is now available with a default vocabulary. You can view it in the Rule Explorer by going to **mybom > bom > model**.

2.4. Exploring the BOM

Next, you explore your BOM entry to see how the XOM elements are translated into the BOM entry.

__ 1. In the `mybom` project, expand **bom > model > training_loan**.



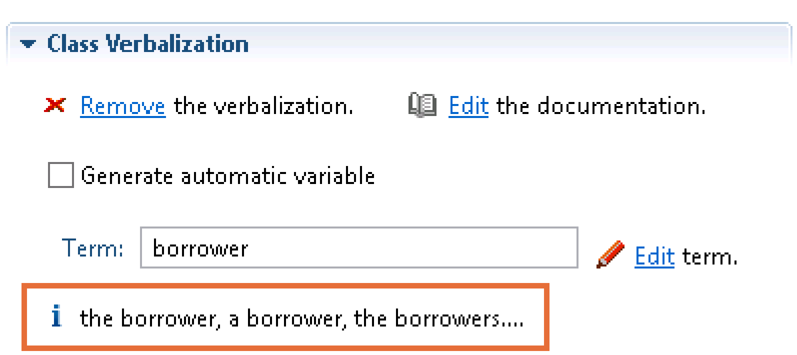
The BOM entry contains a series of classes, including the `Borrower` class.

__ 2. Double-click the **Borrower** class in the Rule Explorer to open it in the BOM editor.

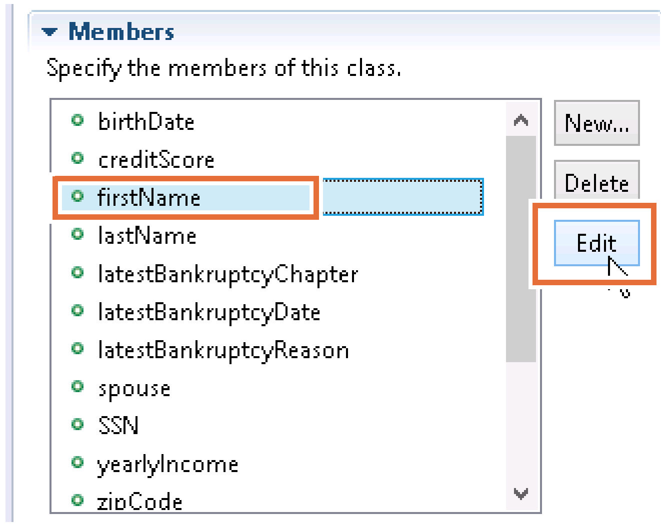
Hint

You can also right-click the **Borrower** class in the Rule Explorer, and click **Open With > BOM Editor**.

__ 3. In the **Class Verbalization** section, review the default verbalization of the `Borrower` class.

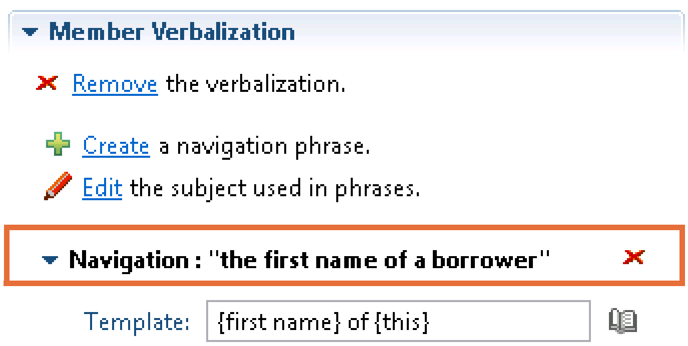


__ 4. In the **Members** section, select the **firstName** member of the **Borrower** class, and click **Edit** to open it.



__ 5. In the **Member Verbalization** section, note the verbalization for `firstName` that is used in the **Navigation** section:

```
the first name of a borrower
```



__ 6. Compare the navigation phrase to the **Template** field, and try to understand the use of braces.

```
{first name} of {this}
```

__ 7. Close the BOM editor.

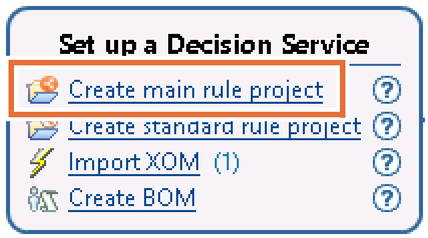
Section 3. Creating the main rule project for the decision service

The main decision service project serves as the entry point to the decision service, and it references all of the other rule projects that are in the decision service.

3.1. Create the main rule project

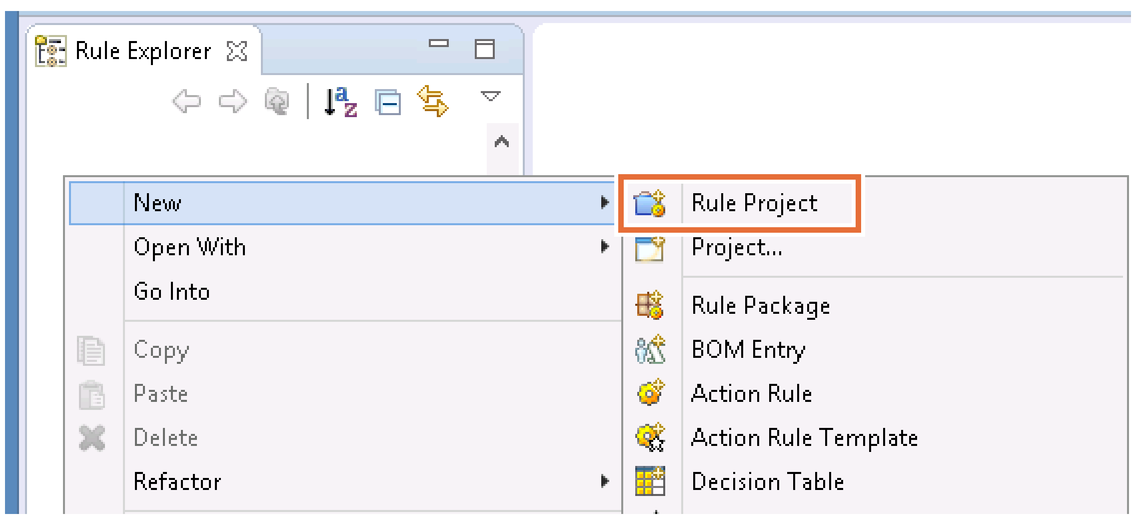
In this section of the exercise, you create a main rule project for the decision service.

__ 1. In the “Set up a Decision Service” task in the Decision Service Map pane, click **Create main rule project**.



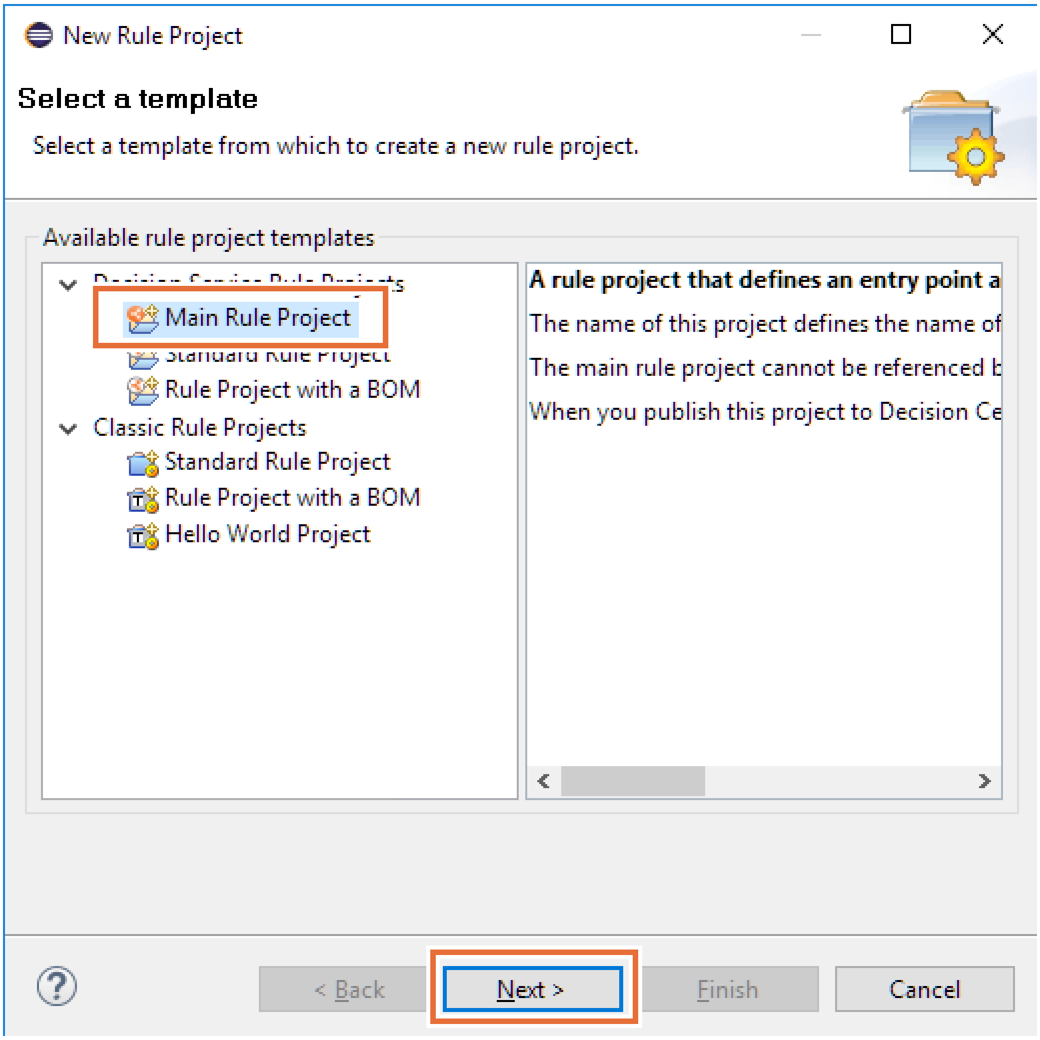
Note

You can also open the New Rule Project window by going to **File** > **New > Rule Project** or by right-clicking anywhere in the Rule Explorer to open the menu and clicking **New > Rule Project**.



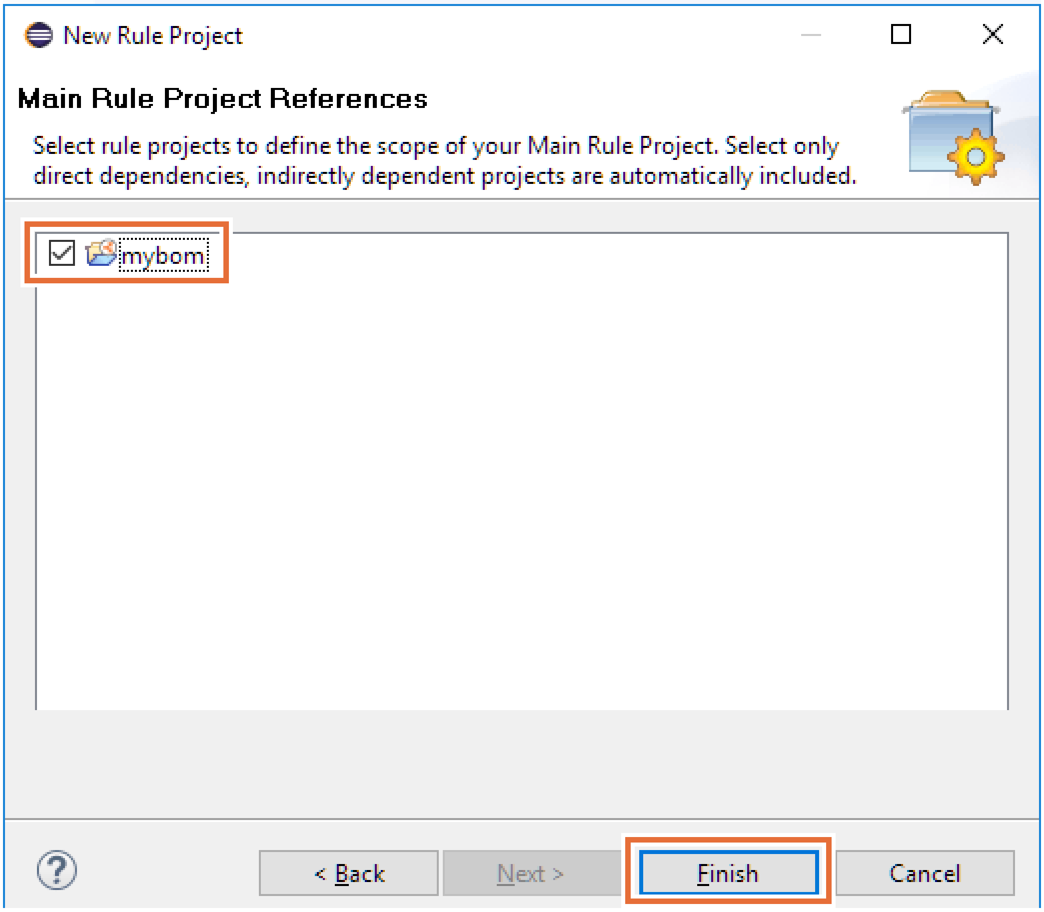
__ 2. In the New Rule Project window, create a main rule project for a decision service.

__ a. Select **Decision Service Rule Projects > Main Rule Project**, and click **Next**.

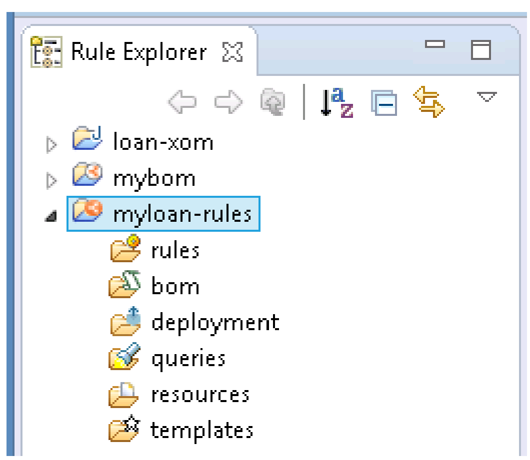


__ b. In the **Project name** field, type `myloan-rules` and click **Next**.

__ c. On the Main Rule Project References page, select **mybom**, and click **Finish**.



The `myloan-rules` project is now visible in the Rule Explorer.



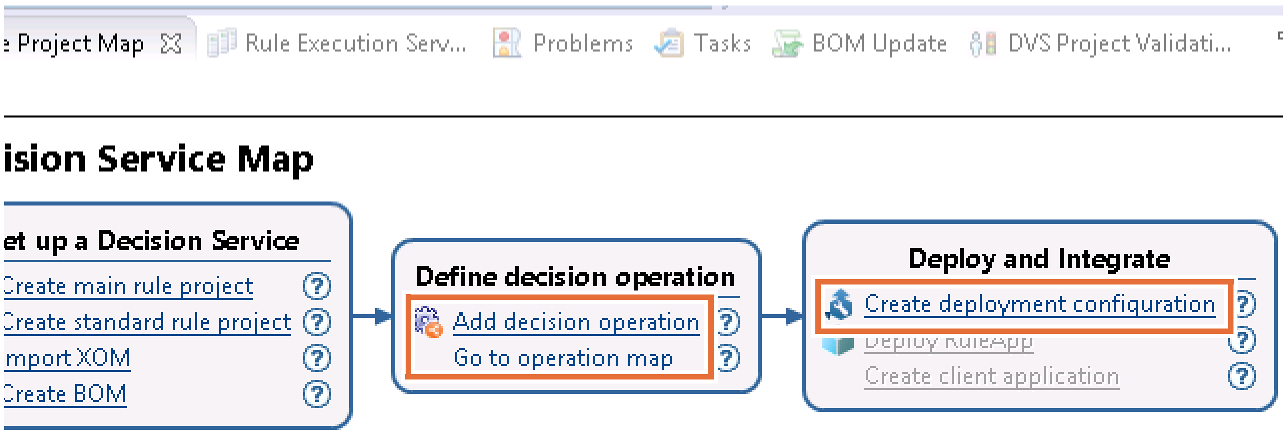
3.2. Identify the next tasks in decision service development

The decision service is the starting point of your business rule application development. Consider the next tasks of developing the application.

__ 1. In Rule Explorer, select the `myloan-rules` decision service, and notice the newly enabled links:

- In the **Define decision operation** part: **Add decision operation** and **Go to operation map**

- In the **Deploy and Integrate** part: **Create deployment configuration**



Section 4. Creating and defining the decision operation

In this section, you work with the “Define decision operation” part of the Decision Service Map.

A *decision operation* defines the decision-making logic and the input and output data (or parameters) for a decision. The parameters of the decision service function as the interface between your decision service and the calling application.

Requirements

Discussions with the business analysts confirm that the business decision should be based on borrower and loan information. The decision output should update the loan information and provide a report.

You are to implement the following parameters to pass the data between the calling application and the rule engine:

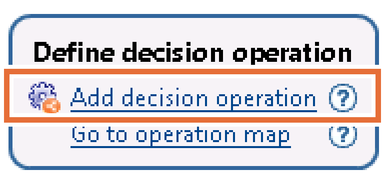
Name	Type	Direction	Verbalization
borrower	training_loan.Borrower	IN	the borrower
loan	training_loan.Loan	IN_OUT	the loan
report	training_loan.Report	OUT	the loan report

These parameters do not have default values.

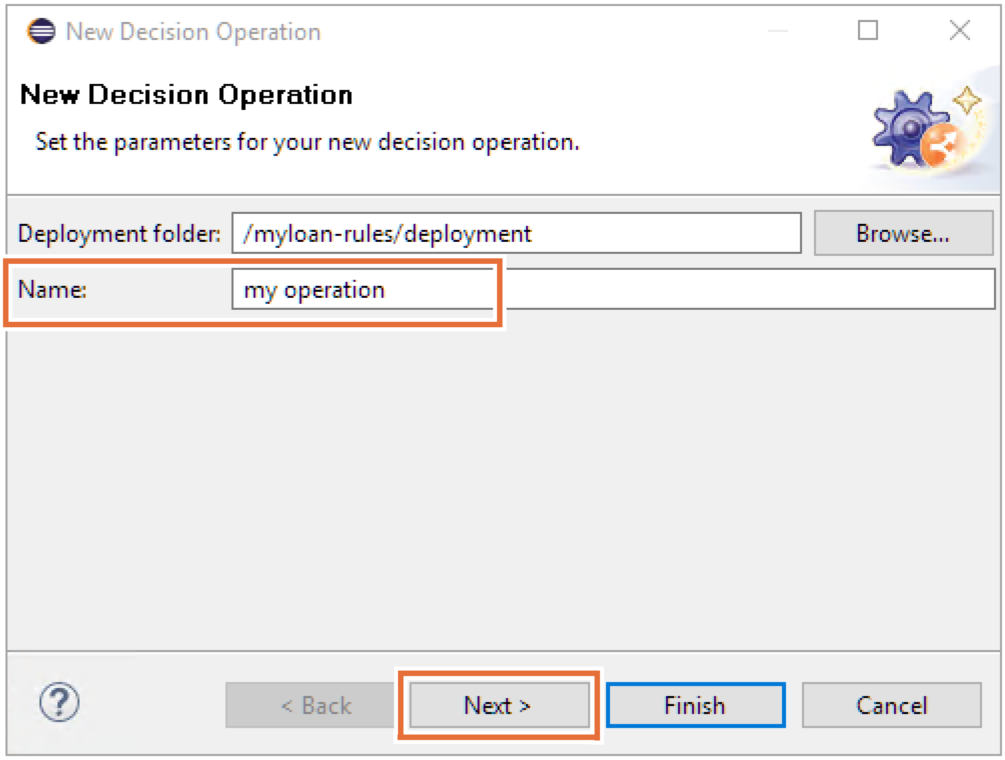
4.1. Creating the decision operation

__ 1. Make sure that the `myloan-rules` folder is selected.

__ 2. In the “Define decision operation” part of the Decision Service Map, click **Add decision operation**.



__ 3. In the New Decision Operation wizard, in the **Name** field, type `my operation` and click **Next**.

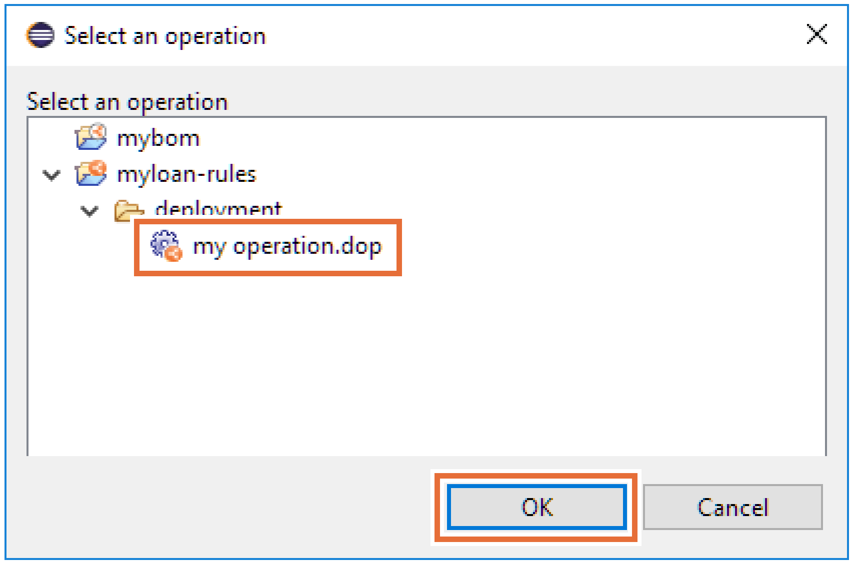


__ 4. In the Source Rule Project window, ensure that **myloan-rules** is selected, and then click **Finish**.

You can see the **my operation** decision operation in the **myloan-rules > deployment** folder.

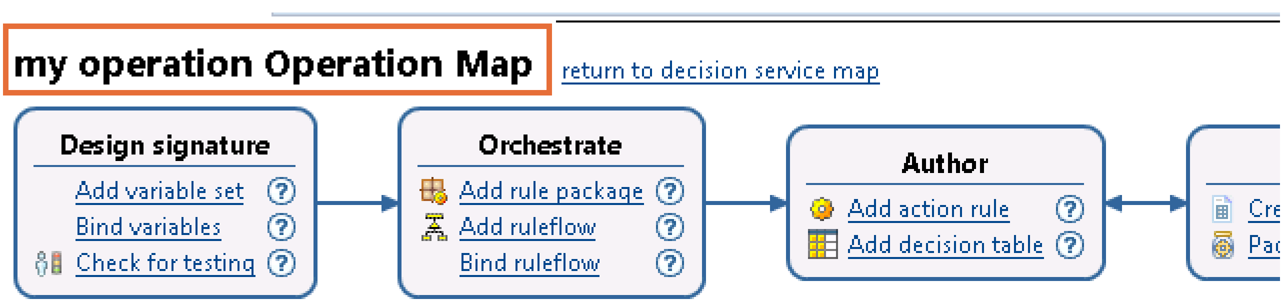
__ 5. In the "Define decision operation" part of the Decision Service Map view, click **Go to operation map**.

__ 6. Select **myloan-rules > deployment > my operation.dop** and click **OK**.



The Decision Service Map switches to the Operation Map. The Operation Map has the following parts:

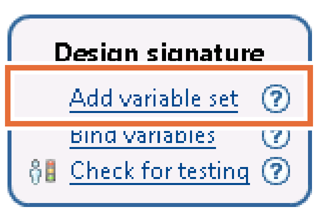
- **Design signature**
- **Orchestrate**
- **Author**
- **Test**



4.2. Creating variables for parameters

In this section of the exercise, you create variables for the decision service. You map these variables to parameters later in this exercise.

__ 1. In the “Design signature” part of the Operation Map, click **Add variable set**.



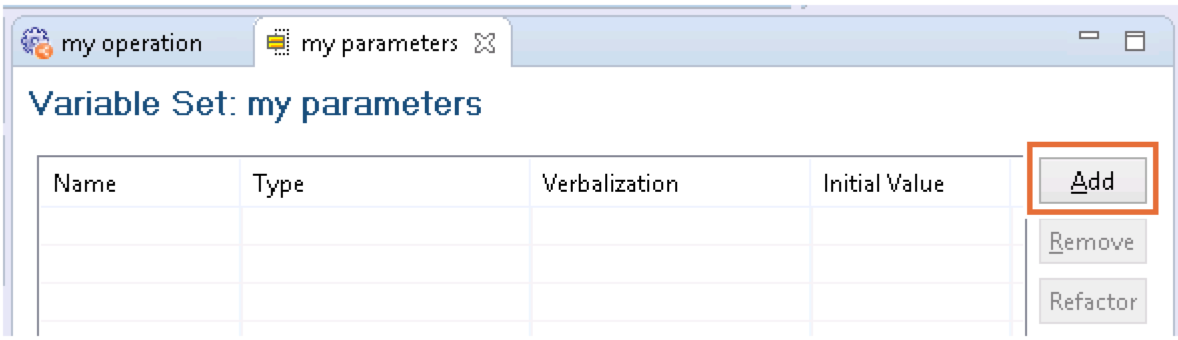
__ 2. In the New Variable Set wizard, in the **Name** field, type: `my parameters`

__ 3. Click **Finish**.

The Variable Set editor opens.

__ 4. In the Variable Set editor, define the `borrower` parameter.

__ a. Click **Add**.

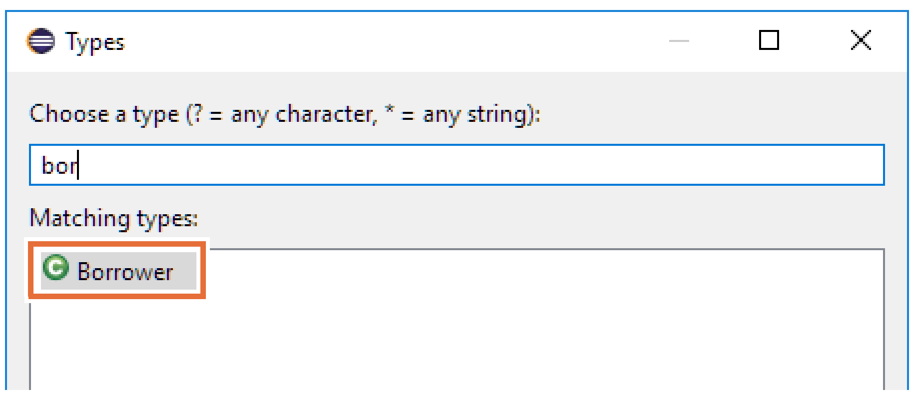


A new row is displayed with default values. You can type over the values as described next.

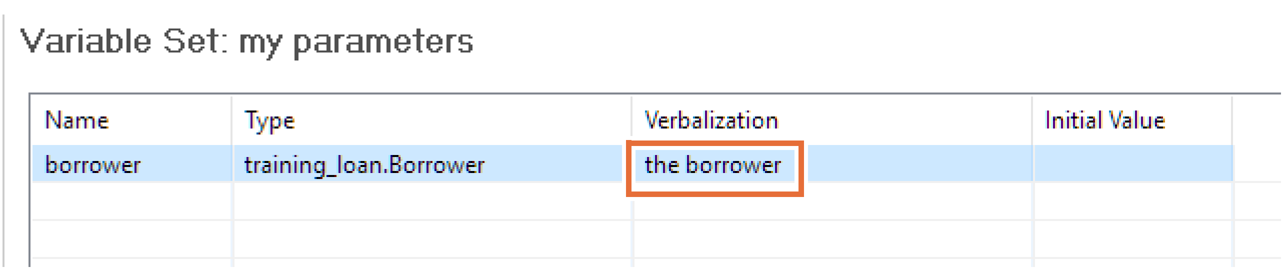
__ b. In the **Name** column, overwrite the value (`myVar`) by typing: `borrower`

__ c. In the **Type** column, click the cell, and then click the ellipsis (**...**) to open the Types window.

__ d. Start typing `borrower` to find the Borrower type in the Matching Types list, and then double-click **Borrower** to select it and click **OK**.



__ e. In the **Verbalization** field, overwrite the value by typing: `the borrower`



__ 5. Define the `loan` parameter.

__ a. Click **Add**.

__ b. Change the variable values to:

- **Name**: `loan`
- **Type**: `Loan`
- **Verbalization**: `the loan`

Hint

When you set the **Type** value, you can start typing `Loan` and Rule Designer finds the `training_loan.Loan` type for you.

__ 6. Define the `report` parameter.

__ a. Click **Add**.

__ b. Change the variable values to:

- **Name**: `report`
- **Type**: `Report`
- **Verbalization**: `the report`

Hint

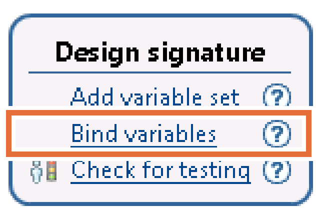
When you set the **Type** value, you can start typing `Report` and Rule Designer finds the `training_loan.Report` type for you.

__ 7. Save your work by pressing Ctrl+S.

4.3. Binding the variables to parameters

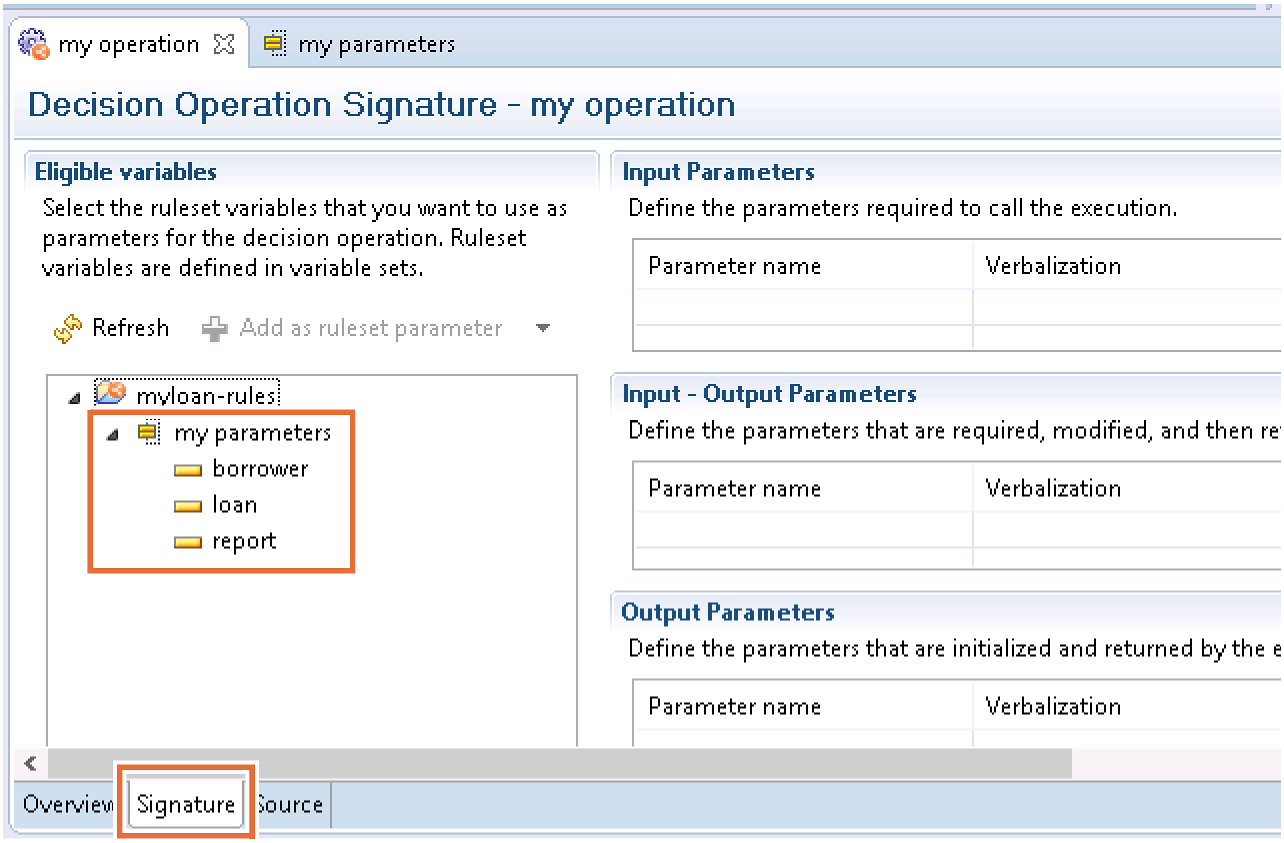
In this section, you bind the variables that you defined to parameters.

__ 1. In the “Design signature” part of the Operation Map, click **Bind variables**.



The **Signature** tab of the Decision Operation editor opens.

__ 2. Expand **my parameters** in the **Eligible variables** section of the Decision Operation Signature editor to see the `borrower`, `loan`, and `report` variables.



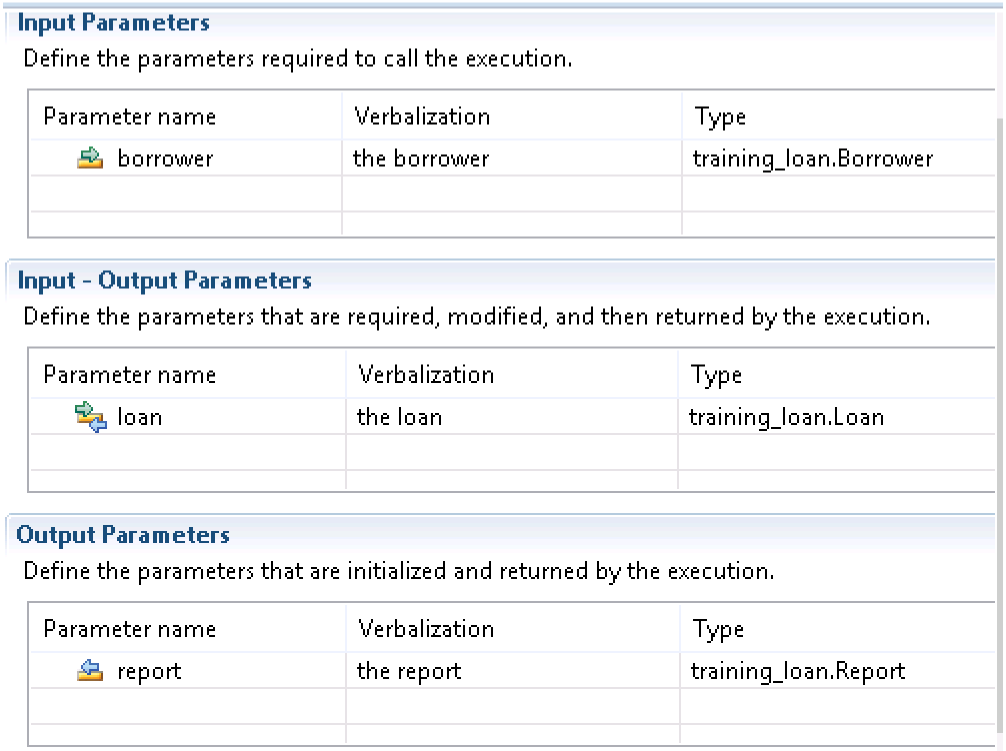
__ 3. Map the variables to the input and output parameters.

__ a. Drag `borrower` to the **Input Parameters** table.

__ b. Drag `loan` to the **Input-Output** Parameters table.

__ c. Drag `report` to the **Output Parameters** table.

The decision operation signature now has `borrower` in the Input Parameters table, `loan` in the Input-Output Parameters table, and `report` in the Output Parameters table.



Input Parameters

Define the parameters required to call the execution.

Parameter name	Verbalization	Type
borrower	the borrower	training_loan.Borrower

Input - Output Parameters

Define the parameters that are required, modified, and then returned by the execution.

Parameter name	Verbalization	Type
loan	the loan	training_loan.Loan

Output Parameters

Define the parameters that are initialized and returned by the execution.

Parameter name	Verbalization	Type
report	the report	training_loan.Report

__ 4. Save your work (Ctrl+S).

4.4. Creating a ruleset variable

Parameters carry the objects that are passed between the calling application and the rule engine. The rules evaluate these objects during rule execution.

To avoid directly handling these objects, you can define variables to manipulate the objects during rule execution. When rule execution is complete, the final value of the variable can be assigned back to an output parameter and returned to the external application.

Requirements

In discussion with the business analysts, they clarify that the decision results should be returned in the `training_loan.Report` parameter (which is defined as an OUT parameter).

Rather than manipulating this parameter directly during rule execution, you implement the business request by creating a variable that is called `loanApproved` that can be updated during rule evaluation. When rule execution is complete, the value that is stored in `loanApproved` can be transferred to the `Report` parameter and passed back to the calling application.

To meet these requirements, you create a ruleset variable that is called `loanApproved`, which has the following attributes:

- **Name**: `loanApproved`
- **Type**: `boolean`
- **Verbalization**: `the loan is approved`
- **Initial Value**: `true`

Note

To define the `loanApproved` variable, you add the variable to the `my parameters` variable set.

However, you do not bind `loanApproved` to a parameter.

__ 1. In Rule Explorer, in **myloan-rules > rules** folder, double-click **my parameters** to open the variable set.

__ 2. Add the `loanApproved` variable.

   __ a. In the Variable Set editor, click **Add**.

   __ b. In the **Name** column, type over `myVar` to enter: `loanApproved`

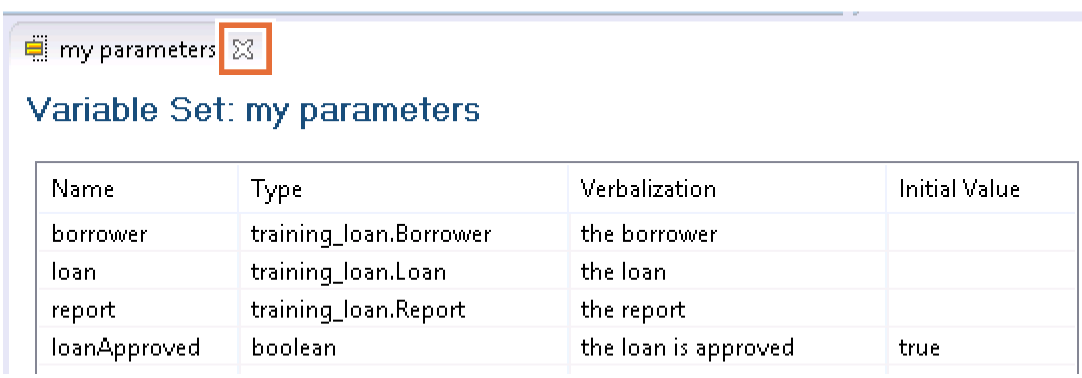
   __ c. Set the **Type** to `boolean` (lowercase) by clicking the ellipsis (...) and in the Types window, typing: `boolean`.

   __ d. In the **Verbalization** column, type over **myVar** to enter: `the loan is approved`

   __ e. In the **Initial Value** column, type: `true`

__ 3. Save your work (Ctrl+S).

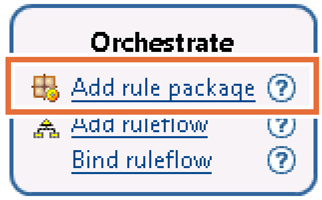
__ 4. Close the variable set editor by clicking the **X** for that window.



Name	Type	Verbalization	Initial Value
borrower	training_loan.Borrower	the borrower	
loan	training_loan.Loan	the loan	
report	training_loan.Report	the report	
loanApproved	boolean	the loan is approved	true

Section 5. Creating rule packages

Recall in the Operation Map, the Orchestrate part has a link that is called **Add rule package**.



Your next step is to add rule packages to the `myloan-rules` project.

Requirements

The business analysts provide you with an initial outline of how the rules can be organized and the naming conventions to use. Based on these requirements, the rule artifacts should be logically managed within the following packages and subpackages:

- `computation`
- `eligibility`
- `insurance`
- `validation`
  - `validation.borrower`
  - `validation.loan`

These rule packages also outline the smaller decisions that must be taken before determining whether to approve the loan.

You can add packages by using the Operation Map link or by clicking the **New > Rule Package** menu item.

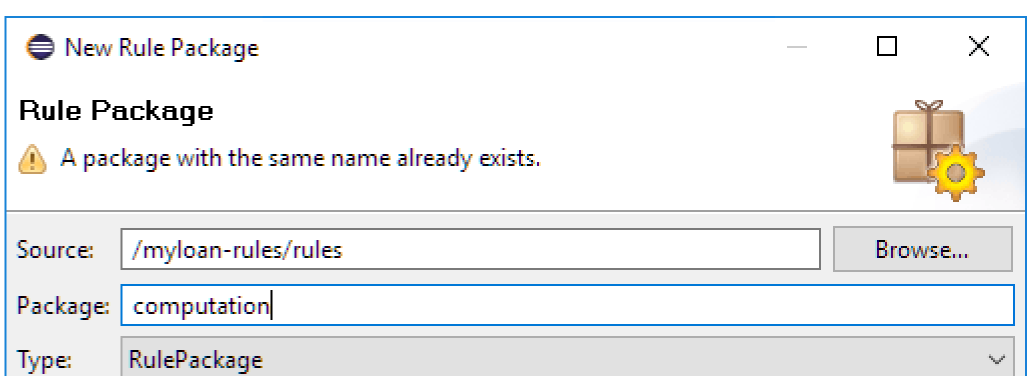
__ 1. Click the **myloan-rules** project and make sure that the Operation Map is open.

__ 2. Create the **computation** package.

__ a. In the Orchestrate part of the Operation Map, click the **Add rule package** link.

The New Rule Package window opens.

__ b. In the **Package** field of the Rule Package window, enter `computation` and click **Finish** (or press Enter).



The `computation` package is created in your rule project.

__ 3. Add the remaining packages by using the instructions in Step 2:

- `eligibility`
- `insurance`
- `validation`

__ 4. Create the `borrower` and `loan` subpackages of the `validation` package.

__ a. In the Orchestrate part of the Operation Map, click the **Add rule package** link.

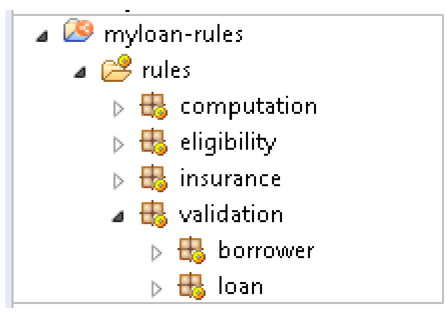
__ b. In the **Package** field, type `validation.borrower` and click **Finish**.

__ c. Add another package, type `validation.loan` in the **Package** field, and click **Finish**.

Note

Adding a **period** (.) to the package name creates subpackages.

The rule project now contains all the required rule packages.



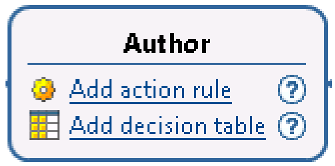
Notice the next link in the Orchestrate part of the Rule Project Map: **Add ruleflow**.

Section 6. Publishing from Rule Designer to Decision Center

In this part of the exercise, you publish the decision service from Rule Designer to Decision Center.

Notice the links in the Author part of the Operation Map.

- **Add action rule**
- **Add decision table**



The decision service is now ready for the rule authors to start working with rules for this project.

By making the decision service available to business users through the Decision Center consoles, rule authors can begin their work on the rules, and thus start the feedback loop on your implementation.

6.1. Publishing the rule project to Decision Center

In this section, you publish the `myloan-rules` decision service to Decision Center to create the corresponding project in Decision Center.

__ 1. Start the sample server by clicking the **Start Sample Server** shortcut in the Windows **Start** menu.

Reminder

Decision Center Business console runs on the sample application server that is provided for this course. The sample server must be running before you can access Decision Center.

You can check whether the sample server is running by trying to open the Business console in a browser, for example: `http://localhost:9090/teamserver`

If the console page opens correctly, the server is running and you can close the browser.

For IBM ODM on Cloud users

When you synchronize between Rule Designer and the ODM on Cloud environment, enter the URL of your IBM ODM on Cloud instance in the **URL** field instead of `localhost`.

__ 2. In the Rule Designer Rule Explorer view, right-click the **myloan-rules** decision service, and click **Decision Center > Connect**.

The Decision Center configuration wizard opens.

__ 3. Enter the following values in the Decision Center Configuration window fields.

- **URL**: `http://localhost:9090/teamserver`
- **User name**: `rtsAdmin`
- **Password**: `rtsAdmin`
- **Data source**: (Leave the field empty)

Important

Make sure that you use the correct URL and port for your environment.

For IBM ODM on Cloud users

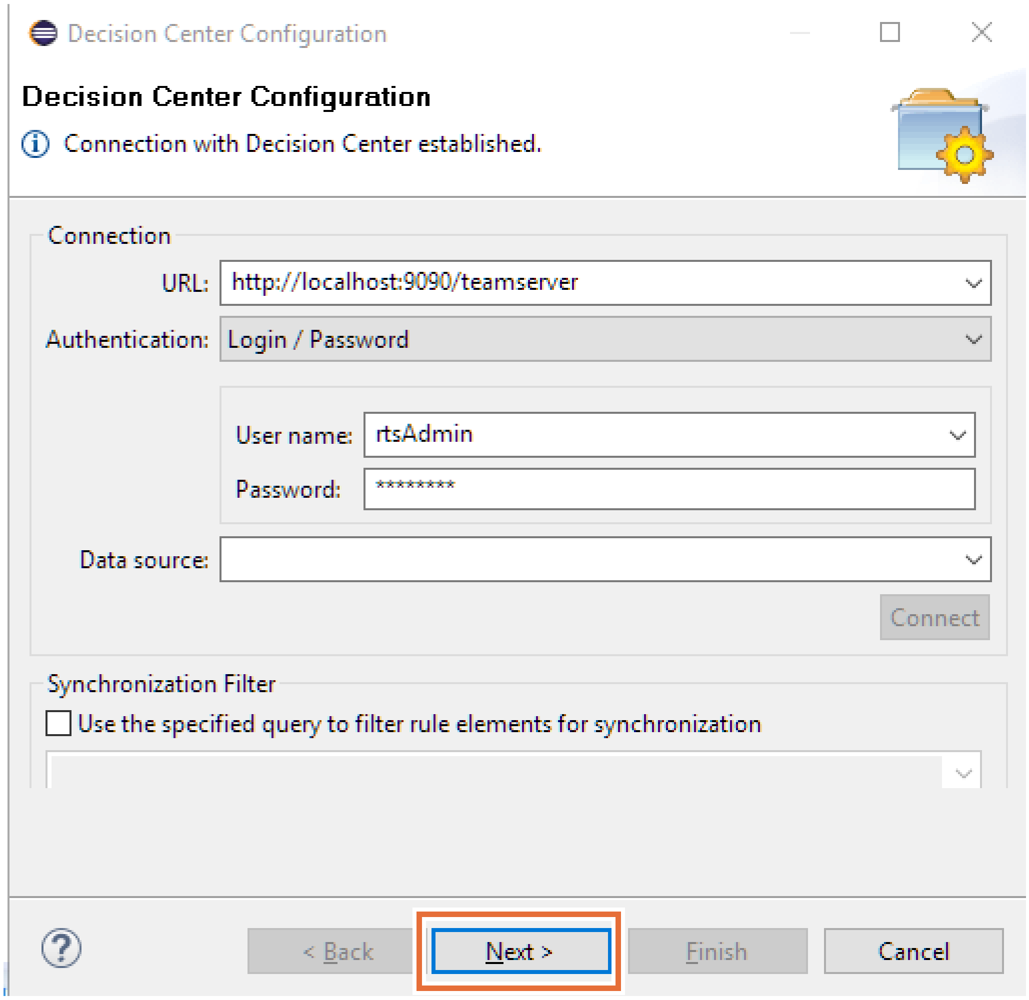
When you synchronize between Rule Designer and the ODM on Cloud environment, enter the URL of your IBM ODM on Cloud instance in the **URL** field instead of `localhost` and make sure to use “`https`”.

You must also specify which environment you are publishing to, either development, test, or production. The URL might look like the following example:

```
https://odmdemo1.bpm.ibmcloud.com/odm/dev/teamserver
```

__ 4. Click **Connect**.

__ 5. After the connection is successfully established, click **Next**.



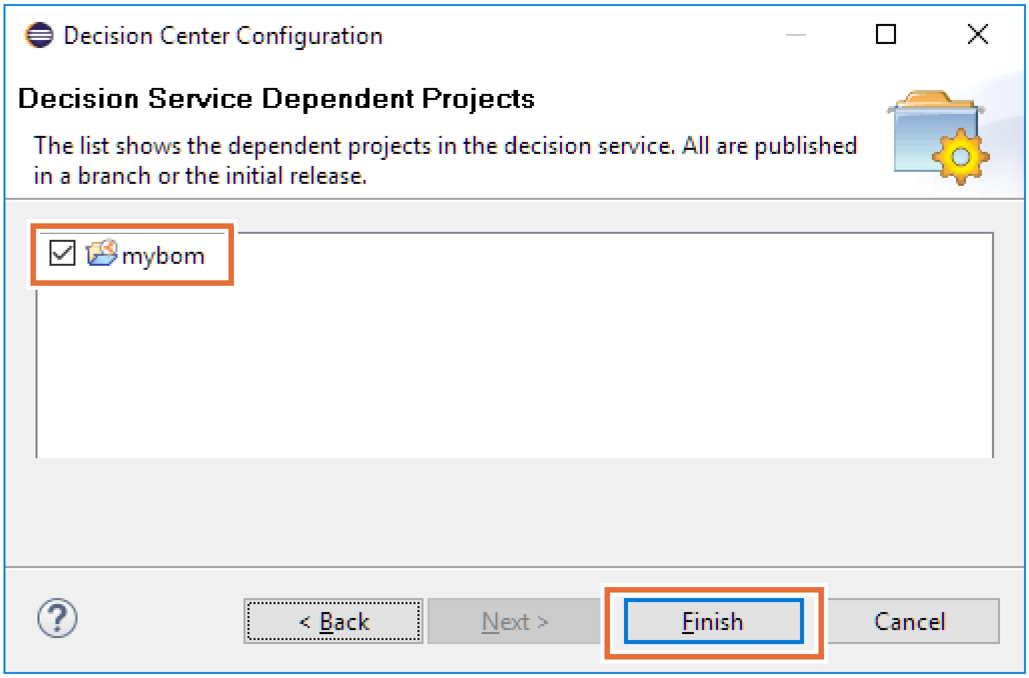
Troubleshooting

Sometimes, when you connect to Decision Center, the Decision Center Configuration window disappears behind other windows. You can click your Rule Designer instance or minimize other windows to see the Decision Center Configuration window.

__ 6. In the Synchronization Settings window, click **Next**.

Note: You do not select the **Use Decision Governance Framework** option for this exercise.

__ 7. In the Decision Service Dependent Projects window, make sure that **mybom** is selected, and click **Finish**.



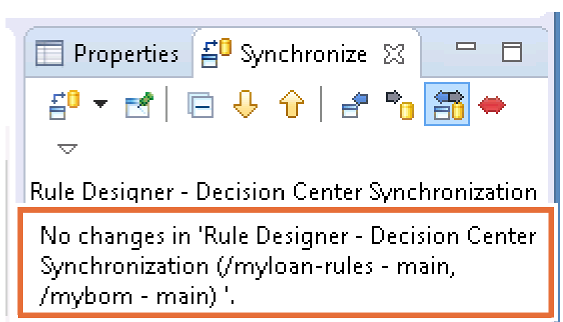
Note

If you see a Secure Storage window, click **No**.

__ 8. When prompted to switch to the Team Synchronizing perspective, click **No**.

After synchronization completes, you are notified that no changes were found.

You do not need to switch to the Team Synchronizing perspective because it is empty. However, you can see the Synchronize view in the lower part of the perspective.



Because you just created this project in Decision Center, no differences exist between the project in Rule Designer and the project in Decision Center.

Important

After you publish the `myloan-rules` decision service to Decision Center, do not disconnect from Decision Center so that you do not have to establish this connection again in later steps.

6.2. Opening the project in the Decision Center Business console

Sign in to the Business console to view the rule artifacts that you published from Rule Designer.

__ 1. Open the Decision Center Business console.

__ a. From the Windows **Start** menu, click the **Decision Center Business console** shortcut.

Information

Alternatively, you can open a web browser at the address that you used to connect Rule Designer and Decision Center:

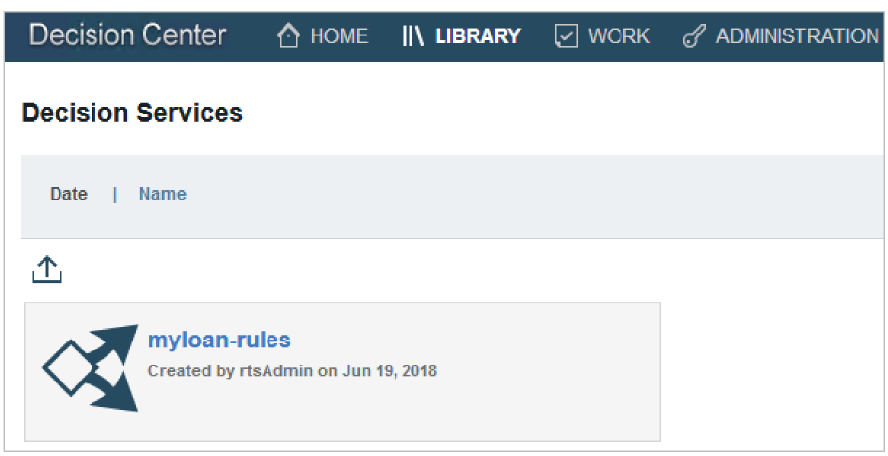
```
http://localhost:9090/decisioncenter
```

Make sure that you use the correct URL and port for your environment.

__ b. Sign in with `rtsAdmin` as both the **User name** and the **Password**.

__ 2. If you are not on the **Library** tab, click the **Library** tab.

__ 3. On the **Library** tab, notice your `myloan-rules` decision service is now listed.



__ 4. Click the **myloan-rules** link.

__ 5. On the **Branches** tab, click **main** to open the main branch of `myloan-rules`.

__ 6. If you are not on the **Decision Artifacts** tab, click **Decision Artifacts**.

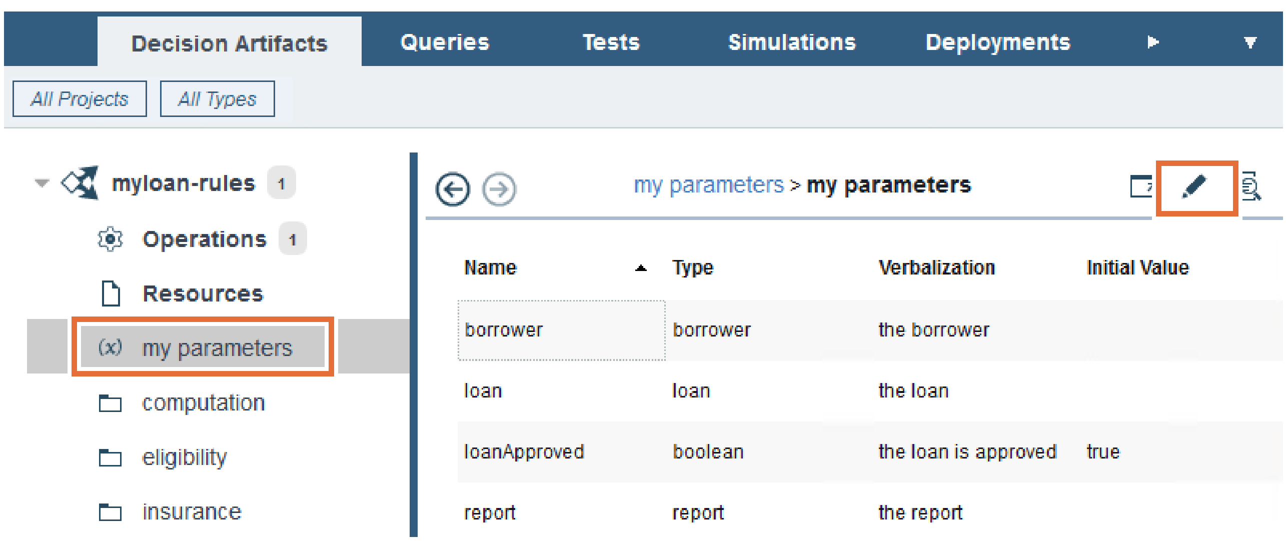
Troubleshooting

You might need to use the scrolling arrows on the toolbar to access different tabs.

__ 7. On the **Decision Artifacts** page, click **Types**, select **All Types**, and click **Apply**.

__ 8. Expand **myloan-rules**.

__ 9. Click **my parameters** and click the **Edit** (pencil) **icon**.



__ 10. Set the value of the **loanApproved** variable to: `false`

__ 11. Click **Save** and **Create new version**.

__ 12. Leave Business console open.

The next task for a rule author is to complete the decision service by adding the rules. However, before doing anything further in this console, you switch to the Enterprise console to see the decision service in that environment.

6.3. Synchronizing Rule Designer with Decision Center

__ 1. Go back to Rule Designer and make sure that you are in the Rule perspective.

__ 2. Synchronize the `myloan-rules` decision service with Decision Center.

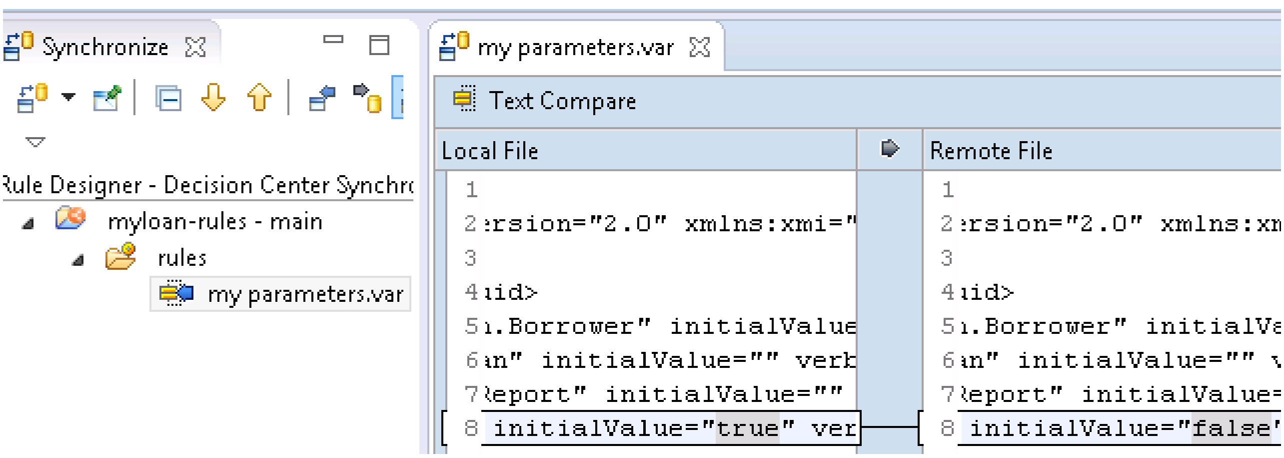
__ a. Right-click `myloan-rules` and click **Decision Center > Synchronize with Decision Center**.

__ b. In the Synchronization Settings window, click **Finish**.

__ c. When prompted to switch to the Team Synchronizing perspective, click **Yes**.

__ 3. In the Synchronize view, expand **myloan-rules - main > rules** to see that your variable set is changed.

__ 4. Double-click **my parameters.var** to open it in the Text Compare view and check your changes.



Information

In the Synchronize view, entries show whether rule artifacts were modified locally, remotely, or both concurrently. The color and direction of the arrow in the entry icon indicates where the modification occurred, and what type of action is possible.

Entry	Modification source	Expected actions
Black entries with an arrow that points to the right	A change occurred in Rule Designer.	Publish to Decision Center what is in Rule Designer: Right-click the rule artifact, and click **Publish**. Select **Override and Update** when you want to override the changes, keep the version from Decision Center, and update Rule Designer.
Blue entries with an arrow that points to the left	A change occurred in Decision Center.	Update Rule Designer with what is in Decision Center: Right-click the rule artifact, and click **Update**. Select **Override and Publish** when you want to override the changes, keep the version from Rule Designer, and publish it again to Decision Center.
Red entries with double arrows	Changes occurred in both Rule Designer and in Decision Center.	Automatic merging is not possible. Decide how to handle this conflict. If you want to update Rule Designer with the changes that are made in Decision Center, select **Override and Update**. If you want to keep the changes from Rule Designer and publish them to Decision Center, select **Override and Publish**.

In this case, after consulting with the rule author to confirm the reasons for this change, you agree that the default value should be `false`.

__ 5. Update your local copy of the project in Rule Designer by right-clicking **my parameters.var** and clicking **Update**.

__ 6. When prompted about conflicts, click **Yes** to confirm that you want to overwrite the changes.

After the publication is finished, no changes are listed in the Synchronize view.

__ 7. Close the Text Compare view.

__ 8. Return to the Rule perspective by clicking **Rule** on the toolbar.

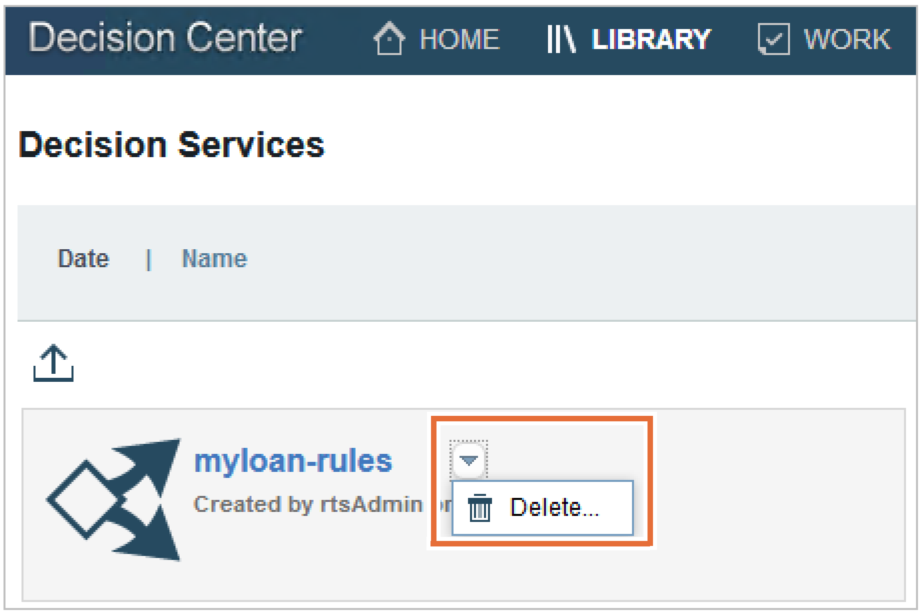
Section 7. Deleting a decision service from Decision Center

When synchronization is not a viable option, or for some reason you must delete an entire decision service, you can erase the decision service from the Decision Center database.

__ 1. Return to the Business console. If you need to sign in again, use `rtsAdmin` as the user name and password.

__ 2. Click the **Library** tab.

__ 3. Click the arrow beside **myloan-rules** and click **Delete**.



__ 4. When prompted to confirm deletion of the decision service, click **Delete**.

__ 5. Sign out and close the Business console.

Section 8. Importing a decision service from Decision Center

In this part of the exercise, you import a decision service in to Rule Designer from an existing decision service in Decision Center.

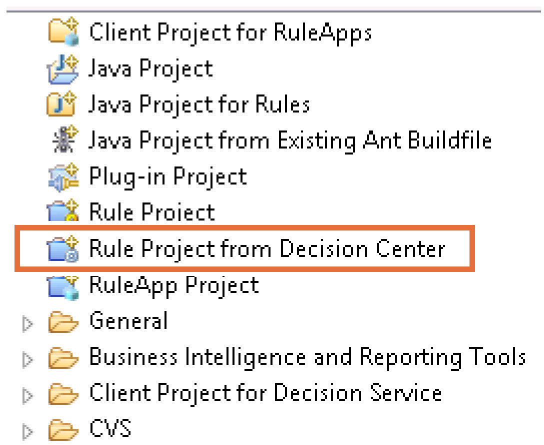
Requirements

Business analysts indicate that they worked with another team and developed a complementary decision service, called Miniloan Service. The most recent version of Miniloan Service is in Decision Center. Business analysts ask you to import this decision service in Rule Designer to look at it.

8.1. Creating a project in Rule Designer from Decision Center

__ 1. Go back to Rule Designer and make sure that you are in the Rule perspective.

__ 2. Click **File > New > Project**, select **Rule Project from Decision Center**, and click **Next**.



The New Rule Project from Decision Center wizard opens.

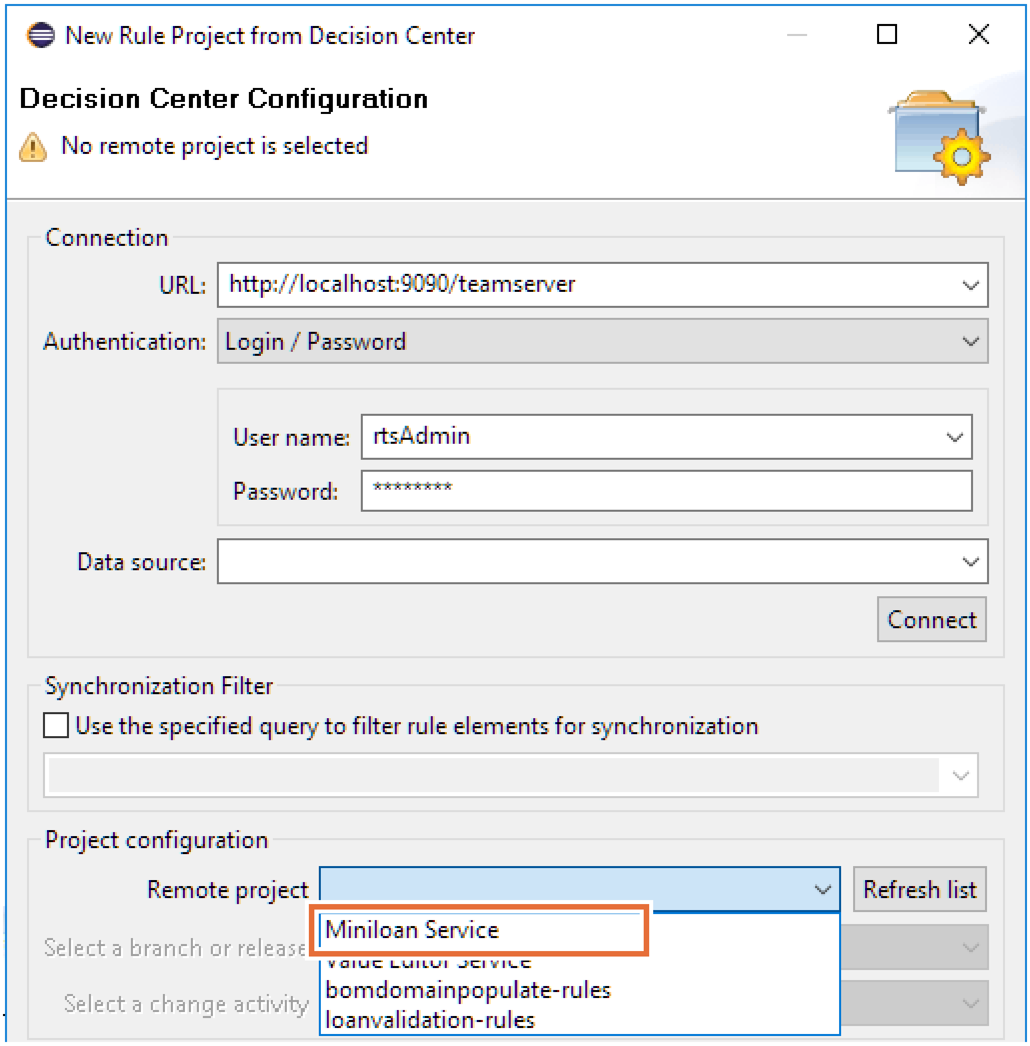
__ 3. Verify the connection entries, which should be prepopulated from the previous exercise.

- **URL**: `http://localhost:9090/teamserver`
- **User name**: `rtsAdmin`
- **Password**: `rtsAdmin`

__ 4. Click **Connect**.

When the connection is established, the list of remote projects becomes available.

__ 5. In the **Project configuration** section, select **Miniloan Service** from the **Remote project** list.



Note

If you cannot see the project in the list, click **Refresh list**.

The **Remote project** list shows all the rule projects in Decision Center for which you have the **View** permission. This permission depends on the **user name** that you used to connect.

Here, because you are connected as `rtsAdmin`, the Decision Center administrator, you can see all the rule projects in Decision Center.

__ 6. In the **Select a branch or release** menu, select the **main** branch.

__ 7. Click **Finish** to import Miniloan Service into Rule Designer.

Rule Designer imports all the items in the rule project into your workspace and creates Miniloan Service in Rule Designer based on its content in Decision Center.

Troubleshooting

You can ignore any errors for now. When you get a synchronization error message, click **OK** to close the window. You see the synchronization error message because of errors in the BOM. You learn about BOM errors in the next section of this exercise.

__ 8. When prompted to switch to the Team Synchronizing perspective, click **No** to remain in the Rule perspective.

The Miniloan Service project is now listed in Rule Explorer.

__ 9. In Miniloan Service, disconnect Rule Designer from Decision Center.

__ a. Right-click **Miniloan Service** and click **Decision Center > Disconnect**.

The “Disconnect from Decision Center” window opens.

__ b. Select the **Keep the Decision Center entries files** option, and click **Yes**.

__ c. Click **OK** to close the Decision Center synchronization error window.

Reminder

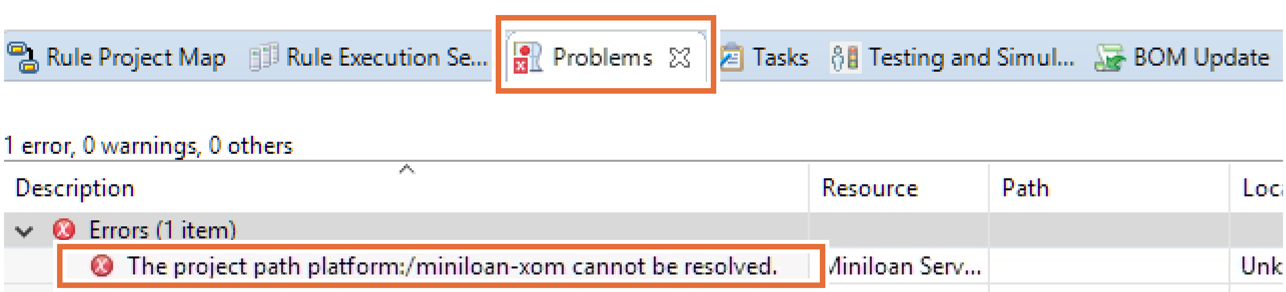
You learn about the BOM errors in the next section of this exercise.

8.2. Finalizing the rule project in Rule Designer

After you successfully retrieve a rule project from Rule Designer, your work is not necessarily complete. In many cases, as you learn now with Miniloan Service, you still have a few steps to follow.

__ 1. In the Rule perspective, click **Problems** to open the Problems view for the Miniloan Service project.

Notice that one of the issues is about the project path for the `miniloan-xom`, which is the XOM project for the Miniloan Service decision service.



__ 2. In Rule Explorer, right-click **Miniloan Service** and click **Properties** from the menu.

__ 3. In the left pane of the Properties window, select **Java Execution Object Model**.

The Java Execution Object Model page opens and you see that `miniloan-xom` is selected.

__ 4. In the left pane of the Properties window, select **Business Object Model**.

__ 5. On the Business Object Model page, expand the list in the Required BOM entries to see the origin or source for the Miniloan Service BOM.

Questions

Why does your new project have XOM errors?

Answer

To build a rule project in Rule Designer that is created from Decision Center, you must also have its referenced projects. These referenced projects also include any executable elements (such as XOMs, `.jar` files, or libraries) that are not in Decision Center.

Questions

Which executable elements are required?

Answer

The Miniloan Service decision service cannot build because it requires the `miniloan-xom` project, which is not present in your Rule Designer workspace.

Stop

For this exercise, you are not required to retrieve the missing XOM.

__ 6. Click **Cancel** to close the Properties window.

__ 7. Close Rule Designer.

You successfully created the initial elements that are required to start developing a business rule application, and learned how the Rule Project Map guides you through development. You also learned how to publish and synchronize the rule authoring environment with Decision Center.

End of exercise

Exercise review and wrap-up

This exercise demonstrated how you start developing a business rule application. You set up a decision service in Rule Designer, and publish it to Decision Center for the business users.