=== Decision Management Community ===

Challenge May 2025 "Risky Stocks"

Solution with OpenRules Decision Manager

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Problem Statement

The problem was defined at https://dmcommunity.org/challenge-may-2025/:

Challenge May-2025

Risky Stocks   Solutions

You need to create a decision service that decides whether to buy certain stocks or not. Here are examples of the guiding rules:

- Rule 1: Stock in debt is considered risky.
- Rule 2: Stocks in fusion with other stocks may be risky.
- Rule 3: Stock in fusion with a strong stock is not risky.
- Rule 4: Do not buy risky stocks unless they have a good price.

Here are examples of a few stocks with the expected recommendations:

Stock Is In Debt	Stock Is In Fusion With Any Stock	Stock Is In Fusion With Strong Stock	Stock Has Good Price	Stock Is Risky	Buy Stock Shares
No	Yes	Yes	Yes	No	Yes
Yes	Yes	Yes	No	Yes	No
No	Yes	No	No	Yes	No
No	Yes	No	Yes	Yes	Yes
Yes	No	No	No	Yes	No

Keep in mind that in practice these rules can be modified, e.g. Rule 3 can be reformulated as "Stock *not in debt* and in fusion with a strong stock is not risky." More rules that could conflict with some of the above rules can be added later. For example, we may add rules about stocks involved in Scalp and/or Swing trading. How easy or difficult would it be to modify your decision service?

I decided to start with a pure rules-based approach using OpenRules Decision Manager. My implementation contains only 3 tables in Excel. Here is the Glossary:

Glossary glossary				
Decision Variables		**Business Concept**	**Attributes**	**Type**
Stock Is In Debt			stockIsInDebt	String
Stock Is In Fusion With Any Stock			stockIsInFusionWithAnyStock	String
Stock Is In Fusion With Strong Stock		Stocks	stockIsInFusionWithStrongStock	String
Stock Has Good Price			stockHasGoodPrice	String
Stock Is Risky			stockIsRisky	String
Buy Stock Shares			buyStockShares	String

It has 4 input decision variables (in blue) and two output variables (in orange).

The above 4 rules can be presented in one multi-hit decision table:

Decision AnalyzeStock					
Condition	Condition	Condition	Condition	Conclusion	Conclusion
Stock Is In Debt	**Stock Is In Fusion With Any Stock**	**Stock Is In Fusion With Strong Stock**	**Stock Has Good Price**	**Stock Is Risky**	**Buy Stock Shares**
				?	?
Yes				Yes	No
No	Yes	Yes	Yes	No	Yes
No	Yes	Yes	No	Yes	No
No	Yes	No	Yes	Yes	Yes
No	Yes	No	No	Yes	No

It will execute ALL satisfied rules, overriding previous results. Here are my test cases:

DecisionTest testCases						
#	Define	Define	Define	Define	Expect	Expect
Test ID	**Stock Is In Debt**	**Stock Is In Fusion With Any Stock**	**Stock Is In Fusion With Strong Stock**	**Stock Has Good Price**	**Stock Is Risky**	**Buy Stock Shares**
Test1	No	Yes	Yes	Yes	No	Yes
Test2	Yes	Yes	Yes	No	Yes	No
Test3	No	Yes	No	No	Yes	No
Test4	No	Yes	No	Yes	Yes	Yes
Test5	Yes	No	No	No	Yes	No
Test6	Yes	Yes	Yes	Yes	Yes	No
Test7	No	Yes	Yes	Yes	No	Yes

When I executed this decision model, all the produced results corresponded to the expectations.