



DMN Modeler Report

DMCommunity Challenge - March 2017

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# Introduction

This is the proposed solution for the DMCommunity challenge from March 2017: Online Dating Decision services.

In this document, you will find the explanation and documentation of the solution. The source code of this model is available here:

* [DMN model](https://github.com/kiegroup/drools/blob/7.1.0.Final/kie-dmn/kie-dmn-core/src/test/resources/org/kie/dmn/core/dmcommunity_challenge_2017_03.dmn)

This is a standard DMN level 3 solution, and as so, you should beable to execute it using any DMN level 3 compatible engine. In particular, I used [Trisotech’s DMN Modeler](http://www.trisotech.com/) to edit and create the model and [Red Hat’s Drools](http://www.drools.org/) to execute it.

Here is a sample code to execute the model in Drools:

* [Drools runner for the model](https://github.com/kiegroup/drools/blob/7.1.0.Final/kie-dmn/kie-dmn-core/src/test/java/org/kie/dmn/core/OnlineDatingTest.java)

The runner above, produces the following results:

Matches for Bob:

1. Eleonore - Score = 3

2. Isis - Score = 2

3. Alice - Score = -1

4. Grace - Score = -3

# DMCommunity Challenge - Match 2017

## Decision Requirement Diagram



## Elements

**Sorted Souls (Decision)**

**Description**

Sorts and returns the the list of matching souls in decreasing score order.

**Output Data Type**

|  |  |
| --- | --- |
| Type | [tCandidates](#tCandidates) |

**Decision Logic (Literal Expression)**

|  |
| --- |
| **Sorted Souls** |
| sort( **Candidate Souls**, function( c1, c2 ) **c1**.Score >= **c2**.Score ) | |

**absolute (Business Knowledge Model)**

**Description**

Given a number, this BKM returns the absolute value of that number. I.e., if the number is greater or equal to zero, it returns the number itself. If the number is negative, it returns the number multiplied by -1.

This BKM could easily be implemented with a simple "if" statement, but it is here demonstrating how the model can easily integrate with Java functions to provide functionality not available out of the box in FEEL.

**Output Data Type**

|  |  |
| --- | --- |
| Type | Number |

**Decision Logic (Function - Expression)**

|  |  |
| --- | --- |
| **absolute** | |
| J | |  |  |  | | --- | --- | --- | | ( | value  *Number* | ) | | |
| class | | "java.lang.Math" |
| method signature | | "abs(double)" |

**Candidate Souls (Decision)**

**Description**

Iterates the list of ***Potential Soul Mates*** checking for matches with the ***Lonely Soul.*** Returns a list containing only the matching souls with their corresponding scores.

**Output Data Type**

|  |  |
| --- | --- |
| Type | [tCandidates](#tCandidates) |

**Decision Logic (Context)**

|  |
| --- |
| **Candidate Souls** |
| Candidates  [*tCandidates*](#tCandidates) | | for **Soul Mate** in **Potential Soul Mates** return Evaluate Match( **Lonely Soul**, **Soul Mate** ) |
| Candidates[ Is Match = true ] | | |

**Evaluate Match (Business Knowledge Model)**

**Description**

Evaluates the match between the ***Lonely Soul*** and a ***Candidate***, setting the ***Is Match*** attribute as true if it is a match of false otherwise. It also calculates the ***Score*** for the match.

Requirements are not clear on how to calculate the score, so this decision assumes 1 point for each matching interest and -1 for each year of difference in the ages of the loving birds.

**Output Data Type**

|  |  |
| --- | --- |
| Type | [tCandidate](#tCandidate) |

**Decision Logic (Function - Context)**

|  |
| --- |
| **Evaluate Match** |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | ( | Lonely Soul  [*tProfile*](#tProfile) | , | Candidate  [*tProfile*](#tProfile) | ) | | | |
| Profile1  [*tProfile*](#tProfile) | | Lonely Soul |
| Profile2  [*tProfile*](#tProfile) | | Candidate |
| Is Match  *Boolean* | | Is Soul a Match(Lonely Soul, Candidate) and Is Soul a Match(Candidate, Lonely Soul) |
| Score  *Number* | | Number of Matching Interests(Lonely Soul, Candidate) - absolute( Lonely Soul.Age - Candidate.Age ) |

**Is Soul a Match (Business Knowledge Model)**

**Description**

Returns true if the candidate is a match for the given lonely soul. According to the requirements, a candidate is a match if and only if:

1. Gender of the other person must be one of the acceptable genders
2. Age of the other person must be within the acceptable range
3. City must match exactly
4. Matching interests of the other person must match at least the number specified

**Output Data Type**

|  |  |
| --- | --- |
| Type | Boolean |

**Decision Logic (Function - Expression)**

|  |  |
| --- | --- |
| **Is Soul a Match** | |
| F | |  |  |  |  |  | | --- | --- | --- | --- | --- | | ( | Lonely Soul  [*tProfile*](#tProfile) | , | Candidate  [*tProfile*](#tProfile) | ) | |
| **list contains**(**Lonely Soul**.Acceptable Genders, **Candidate**.Gender)  **and** **Candidate**.Age **between**  **Lonely Soul**.Minimum Acceptable Age **and**  **Lonely Soul**.Maximum Acceptable Age  **and** **Candidate**.City = **Lonely Soul**.City  **and** **Number of Matching Interests**(**Lonely Soul**, **Candidate**) >= **Lonely Soul**.Minimum Matching Interests | |

 **Potential Soul Mates (Input Data)**

**Description**

A list of profiles of the potential soul mates.

**Input Data Type**

|  |  |
| --- | --- |
| Type | [tProfiles](#tProfiles) |

 **Lonely Soul (Input Data)**

**Description**

The profile of the user for which potential soul mates are being looked for.

**Input Data Type**

|  |  |
| --- | --- |
| Type | [tProfile](#tProfile) |

**Number of Matching Interests (Business Knowledge Model)**

**Description**

Returns the number of matching interests between the ***Lonely Soul*** and the ***Candidate Soul Mate***.

**Output Data Type**

|  |  |
| --- | --- |
| Type | Number |

**Decision Logic (Function - Context)**

|  |  |
| --- | --- |
| **Number of Matching Interests** | |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | ( | Lonely Soul  [*tProfile*](#tProfile) | , | Candidate Soul Mate  [*tProfile*](#tProfile) | ) | | | |
| Matching Interests  [*tBooleans*](#tBooleans) | for **Interest** in **Lonely Soul**.List of Interests return  list contains(**Candidate Soul Mate**.List of Interests, **Interest**) | |
| count( **Matching Interests**[item = true] ) | | |

# Data Types

**tProfile**

|  |  |
| --- | --- |
| Name | Text |
| Gender | [tGender](#tGender)  *"Male", "Female"* |
| City | Text |
| Age | Number |
| List of Interests | [tInterests](#tInterests) |
| Minimum Acceptable Age | Number |
| Maximum Acceptable Age | Number |
| Acceptable Genders | [tGenders](#tGenders) |
| Minimum Matching Interests | Number |

**tGender**

|  |
| --- |
| Text  *"Male", "Female"* |

**tGenders**

|  |
| --- |
| [tGender](#tGender)  *"Male", "Female"* |

**tInterests**

|  |
| --- |
| Text |

**tProfiles**

|  |
| --- |
| [tProfile](#tProfile) |

**tCandidate**

|  |  |
| --- | --- |
| Profile1 | [tProfile](#tProfile) |
| Profile2 | [tProfile](#tProfile) |
| Is Match | Boolean |
| Score | Number |

**tCandidates**

|  |
| --- |
| [tCandidate](#tCandidate) |

**tBooleans**

|  |
| --- |
| Boolean |