

Dear DMCommunity,

The OIA rule modelers from Rabobank Nederland are hereby submitting this solution to the DMCommunity Challenge of March 2023 'Permit Eligibility'.

The decision logic is modelled in Oracle Policy Modeling (the modeling tool within the Oracle Intelligent Advisor OIA solution):

As part of a regulatory process, a government agency wants to determine if an applicant is eligible for a resident permit using a simple rule:

*an applicant is eligible for a resident permit if the applicant has lived at an address while married and in that time period, they have shared the same address at least 7 of the last 10 years.*

A list of periods living at an address for applicant (From, To, Address):

2010-01-01,2015-05-31,"123 Main St, Anytown, USA"

2015-06-01,2020-08-31,"456 Oak St, Anytown, USA"

2021-08-31,2023-03-04,"789 Elm St, Anytown, USA"

A list of periods living at an address for spouse (From, To, Address):

2010-01-01,2015-05-20,"123 Main St, Anytown, USA"

2015-05-20,2017-08-31,"120 Maple St, Anytown, USA"

2017-08-31,2023-03-04,"789 Elm St, Anytown, USA"

A list of applicant and spouse marriage periods (From, To):

2010-01-01,2015-05-20

2017-08-20,2023-03-04

*An observation about the end dates in the periods given above: assuming that in this domain a person can not live at two addresses at the same date we consider the end dates as exclusive (given start and end dates for spouse's addresses).*

## Eligibility rules

**the applicant is eligible for a resident permit if**

the applicant has lived at the same address as her spouse while married for at least 7 of the last 10 years

**the applicant has lived at the same address as her spouse while married for at least 7 of the last 10 years if**

IntervalAtLeastDays(the start date of the assessment period; the end date of the assessment period; seven years in days; the applicant shares an address while married with her spouse)

**seven years in days = (7\*365)+1**

*IntervalAtLeastDays(<start date>, <end date>, <number of days>, <condition>)*

*Returns true if and only if a Boolean condition is true for at least the specified number of days (not necessarily consecutive) in the interval from the start date (inclusive) to the end date (exclusive).*

## **Assessment period**

'the last 10 years'

not dynamic (derived from current date) but with March 4<sup>th</sup> 2023 as the end date of the assessment period (same as the end dates in the input data)

**the start date of the assessment period = AddYears(the end date of the assessment period; -10)**

**the end date of the assessment period = MakeDate(2023;03;04)**

## **Temporal rules**

**the applicant shares an address while married with her spouse if**

the applicant is married with her spouse  
and  
the applicant and the spouse live at the same address

**the applicant is married with her spouse = TemporalFromRange(all marriage periods; the start date of the marriage period; the end date of the marriage period; true)**

**the applicant and the spouse live at the same address if**

the applicant's temporal address = the spouse's temporal address

**the applicant's temporal address = TemporalFromRange(all addresses of the applicant; the start date of the address of the applicant; the end date of the address of the applicant; the details of the address of the applicant)**

**the spouse's temporal address = TemporalFromRange(all addresses of the spouse; the start date of the address of the spouse; the end date of the address of the spouse; the details of the address of the spouse)**

With this data model:

PermitEligibility - Policy Modeling

Project Rules Data Interview

New Entity New Relationship New Attribute

Edit Attribute Delete Attribute

Mapping settings Hub

Entity Structure Flat View Input Mapping Output Mapping

Model

- Global
  - the address of the applicant
  - the address of the spouse
  - the marriage period

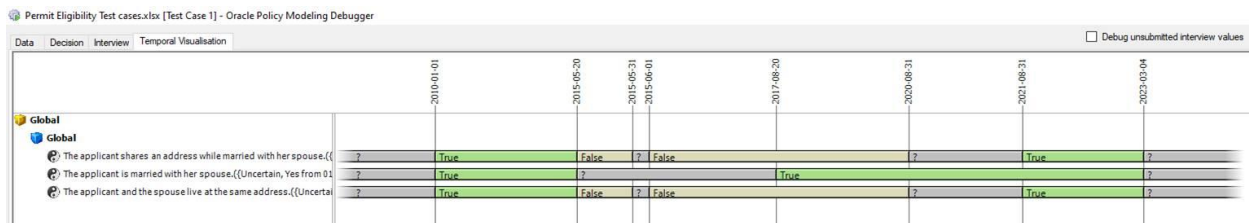
Attribute Text

- the applicant is eligible for a resident permit
- the applicant's temporal address
- the spouse's temporal address
- seven years in days
- the start date of the assessment period
- the end date of the assessment period
- the applicant has lived at the same address as her spouse while married for at least 7 of the last 10 years
- the applicant shares an address while married with her spouse
- the applicant is married with her spouse
- the applicant and the spouse live at the same address

Role

- Goal
- Intermediate
- Intermediate
- Intermediate
- Intermediate
- Intermediate
- Intermediate
- Intermediate
- Intermediate
- Intermediate

When running a test case in OPM with the input data as provided in the challenge, this is the Temporal Visualisation:



The test case (per entity):

AutoSave Off Permit Eligibility Test cases Search (Alt+Q)

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E2 FALSE

	A	B	C	D	E	F	G
1	Test Case	all marriage periods	all addresses of the applicant	all addresses of the spouse	the applicant is eligible for a resident permit	the applicant shares an address while married with her spouse	
2		1, 2	1, 2, 3	1, 2, 3	FALSE	{uncertain; true from 2010-01-01; false from 2015-05-20; uncertain from 2015-05-31; false from 2015-06-01; uncertain from 2020-08-31; true from 2021-08-31; uncertain from 2023-03-04}	
3	Use 'Add Row' to add a test case row for this entity						
4							
5							

Test Cases the marriage period the address of the applicant the address of the spouse

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C8

	A	B	C	D	E	F
1	Test Cases	the marriage period	the start date of the marriage period	the end date of the marriage period		
2	all	1	1-1-2010	20-5-2015		
3	all	2	20-8-2017	4-3-2023		
4						
5						
6						
7						
8						
9						
10						
11						
12						

Test Cases the marriage period the address of the applicant the address of the spouse

AutoSave Off | Permit Eligibility Test cases | Search (Alt+Q)

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B1 : the address of the spouse

	A	B	C	D	E	F
1	Test Cases	the address of the spouse	the details of the address of the spouse	the start date of the address of the spouse	the end date of the address of the spouse	
2	all		1 123 Main St, Anytown, USA	1-1-2010	20-5-2015	
3	all		2 120 Maple St, Anytown, USA	20-5-2015	31-8-2017	
4	all		3 789 Elm St, Anytown, USA	31-8-2017	4-3-2023	
5						
6						
7						
8						
9						
10						
11						
12						
13						

Test Cases | the marriage period | the address of the applicant | the address of the spouse

And here is the conclusion:

Permit Eligibility Test cases.xlsx [Test Case 1] - Oracle Policy Modeling Debugger

Data Decision Interview

Global  Relevant only  Base only  Show silent and invisible  Show reference tags

- The applicant is not eligible for a resident permit.
  - The applicant has not lived at the same address as her spouse while married for at least 7 of the last 10 years.
    - The start date of the assessment period is 04-03-2013.
    - The end date of the assessment period is 04-03-2023.
    - The end date of the assessment period is 04-03-2023.
    - Seven years in days is 2.556.
  - The applicant shares an address while married with her spouse.({Uncertain, Yes from 01-01-2010, No from 20-05-2015, Uncertain from 31-05-2015, No from 01-06-2015, U
  - The applicant is married with her spouse.({Uncertain, Yes from 01-01-2010, Uncertain from 20-05-2015, Yes from 20-08-2017, Uncertain from 04-03-2023})
  - The applicant and the spouse live at the same address.({Uncertain, Yes from 01-01-2010, No from 20-05-2015, Uncertain from 31-05-2015, No from 01-06-2015, Uncer
    - The applicant's temporal address is {Uncertain, 123 Main St, Anytown, USA from 01-01-2010, Uncertain from 31-05-2015, 456 Oak St, Anytown, USA from 01-06-2
    - The spouse's temporal address is {Uncertain, 123 Main St, Anytown, USA from 01-01-2010, 120 Maple St, Anytown, USA from 20-05-2015, 789 Elm St, Anytown, U

Best regards,  
Charlotte Bouvy and Martijn Tromm