

## DMCommunity.org Challenge Mar-2023 "Permit Eligibility"

Generated by ChatGPT-4 on March 26, 2023

Build a decision model for this problem. 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. Here is an example of input data:

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



To build a decision model for this problem, we can follow the following steps:

1. Extract relevant data points from the input:
  - a. From the applicant's list of periods living at an address, extract the start and end dates of each period, as well as the address.
  - b. From the spouse's list of periods living at an address, extract the start and end dates of each period, as well as the address.
  - c. From the list of applicant and spouse marriage periods, extract the start and end dates of each period.
2. Create a function to check if the applicant and the spouse have lived at the same address for at least 7 of the last 10 years during any of their marriage periods:
  - a. For each marriage period, calculate the intersection of the periods when the applicant and the spouse lived at the same address.
  - b. For each intersection, calculate the duration of the period.
  - c. If the duration of any intersection is greater than or equal to 7 years, return True. Otherwise, return False.
3. Apply the function to all the marriage periods:
  - a. For each marriage period, apply the function to check if the applicant and the spouse have lived at the same address for at least 7 of the last 10 years.
  - b. If the function returns True for any marriage period, the applicant is eligible for a resident permit. Otherwise, the applicant is not eligible.
4. Output the decision:
  - a. If the applicant is eligible for a resident permit, output "Eligible".
  - b. If the applicant is not eligible for a resident permit, output "Not eligible".

Note: The solution assumes that the input data is correct and complete. Also, the solution does not take into account any other criteria for determining eligibility for a resident permit. The solution only considers the simple rule provided in the problem statement.

The second attempt building another decision model for the same question using a new chat:



To build a decision model for this problem, we need to define the rules and conditions that determine whether an applicant is eligible for a resident permit or not based on the input data provided. Here is one possible decision model:

1. Collect the list of periods living at an address for the applicant and the spouse, as well as the list of marriage periods.
2. For each marriage period, find the address that the applicant and the spouse shared during that time.
3. For each period that the applicant lived at an address during a marriage period, check if the applicant and the spouse shared the same address for at least 7 of the last 10 years.
4. If the applicant meets the condition in step 3 for any of the marriage periods, they are eligible for a resident permit.
5. If the applicant does not meet the condition in step 3 for any of the marriage periods, they are not eligible for a resident permit.

Here is a pseudocode implementation of the decision model:

```
csharp Copy code

eligible = false
for each marriage period (from_m, to_m) in the list of marriage periods:
    shared_address = null
    for each address (from_a, to_a, addr) in the list of addresses for applicant:
        if from_a <= from_m and to_a >= to_m:
            for each address (from_s, to_s, addr_s) in the list of addresses for spouse:
                if from_s <= from_m and to_s >= to_m and addr == addr_s:
                    shared_address = addr
                    break
            if shared_address is not null:
                shared_years = 0
                for each address (from_s, to_s, addr_s) in the list of addresses for spouse:
                    if from_s <= to_a and to_s >= from_a and addr_s == shared_address:
                        shared_years += (min(to_s, to_a) - max(from_s, from_a)).days
                if shared_years >= 7:
                    eligible = true
                    break
if eligible:
    output "The applicant is eligible for a resident permit."
else:
    output "The applicant is not eligible for a resident permit."
```

Note that this is just one possible implementation of the decision model, and there may be other ways to represent the rules and conditions.

Here is the extended code:

```
eligible = false
```

```
for each marriage period (from_m, to_m) in the list of marriage periods:
```

```
    shared_address = null
```

```
    for each address (from_a, to_a, addr) in the list of addresses for applicant:
```

```
        if from_a <= from_m and to_a >= to_m:
```

```
            for each address (from_s, to_s, addr_s) in the list of addresses for spouse:
```

```
                if from_s <= from_m and to_s >= to_m and addr == addr_s:
```

```
                    shared_address = addr
```

```
                    break
```

```
        if shared_address is not null:
```

```
            shared_years = 0
```

```
            for each address (from_s, to_s, addr_s) in the list of addresses for spouse:
```

```
                if from_s <= to_a and to_s >= from_a and addr_s == shared_address:
```

```
                    shared_years += (min(to_s, to_a) - max(from_s, from_a)).days / 365.25
```

```
            if shared_years >= 7:
```

```
                eligible = true
```

```
                break
```

```
if eligible:
```

```
    output "The applicant is eligible for a resident permit."
```

```
else:
```

```
    output "The applicant is not eligible for a resident permit."
```