# Challenge June-2017
## DMN Section 11 Loan Origination Example

## A solution with DT5GL by Jack Jansonius – 20 may 2020

2 decision tables to demonstrate the difference in notation between DMN 1.1 and DT5GL.

DMN: data-driven, procedural (and rules as rows)
DT5GL: goal-driven, declarative (and rules as columns)

Decision table 1:

DMN1.1:

**Eligibility rules**

| P | Pre-Bureau Risk Category | Pre-Bureau Affordability | Age | Eligibility |
|---|---|---|---|---|
| | | | | *INELIGIBLE, ELIGIBLE* |
| 1 | *DECLINE* | - | - | *INELIGIBLE* |
| 2 | - | false | - | *INELIGIBLE* |
| 3 | - | - | < 18 | *INELIGIBLE* |
| 4 | - | - | - | *ELIGIBLE* |

**Figure 11.12: Eligibility rules decision logic**

DT5GL:

```
rTable 6: Eligibility
If:                                        | 0|
Pre_Bureau_Risk_Category is Decline        | N|
Pre_Bureau_Affordability is True           | Y|
Age < 18                                   | N|
Then:
Eligibility is Eligible                    | X|
# .......
```

```
(but previously designed:

Table 6: Eligibility
If:                                        | 0| 1| 2| 3|
Pre_Bureau_Risk_Category is Decline        | Y| N| N| N|
Pre_Bureau_Affordability is True           | -| Y| Y| N|
Age < 18                                   | -| Y| N| -|
Then:
Eligibility is Eligible                    |  |  | X|  |
Eligibility is Ineligible                  | X| X|  | X|
# .......

the second conclusion did not appear to be necessary on further examination).
```

Decision table 2:

DMN1.1:

**Routing rules**

| P | Post-Bureau Risk Category | Post-Bureau Affordability | Bankrupt | Credit Score | Routing |
|---|---|---|---|---|---|
| | | | | null, [0..999] | *DECLINE, REFER, ACCEPT* |
| 1 | - | false | - | - | *DECLINE* |
| 2 | - | - | true | - | *DECLINE* |
| 3 | *HIGH* | - | - | - | *REFER* |
| 4 | - | - | - | < 580 | *REFER* |
| 5 | - | - | - | - | *ACCEPT* |

**Figure 11.18: Routing rules decision logic**

DT5GL:

```
Table 1: Routing - Strategy = Bureau
If:                                          | 0| 1| 2| 3| 4| 5|
Strategy is Bureau                           | Y| Y| Y| Y| Y| N|
Post_Bureau_Risk_Category is High            | Y| N| N| N| N| -|
Post_Bureau_Affordability is True            | -| Y| Y| Y| N| -|
Banktrupt is True                            | -| Y| N| N| -| -|
Credit_Score < 580                           | -| -| Y| N| -| -|
Then:
Routing is Decline                           |  | X|  |  | X|  |
Routing is Refer                             | X|  | X|  |  |  |
Routing is Accept                            |  |  |  | X|  |  |
# .......


Table 2: Routing - Strategy <> Bureau
If:                                          | 0| 1| 2|
Strategy is Decline                          | Y| N| N|
Strategy is Through                          | -| Y| N|
Then:
Routing is Decline                           | X|  |  |
Routing is Accept                            |  | X|  |
# ......
```

## Decision overview:

```
Loan_Origination_Result
    Adjudication
    Routing
        Strategy
            Eligibility
                Pre_Bureau_Risk_Category
                    Existing_Customer
                    Application_Risk_Score
                        Age_Risk_Score
                            Age
                        Marital_Risk_Score
                            Marital_Status
                        Employment_Risk_Score
                            Employment_Status

                Pre_Bureau_Affordability
                    Pre_Bureau_Affordability_Formula
                        Required_Monthly_Installment
                        Disposable_Income
                        Pre_Bureau_Credit_Contingency_Factor
                            > Pre_Bureau_Risk_Category
                Age
            Bureau_Call_Type
                > Pre_Bureau_Risk_Category

        Post_Bureau_Risk_Category
            Existing_Customer
            > Application_Risk_Score
            Credit_Score

        Post_Bureau_Affordability
            Post_Bureau_Affordability_Formula
                > Required_Monthly_Installment
                > Disposable_Income
                Post_Bureau_Credit_Contingency_Factor
                    > Post_Bureau_Risk_Category

        Banktrupt
        Credit_Score
```

## Implementation of the decision tables in DT5GL:

```
Table 0: Loan Origination Result
If:                                      | 0| 1| 2| 3| 4| 5|
Routing is Decline                       | Y| N| N| N| N| N|
Routing is Refer                         | -| Y| Y| Y| N| N|
Routing is Accept                        | -| -| -| -| Y| N|
Adjudication is Decline                  | -| Y| N| N| -| -|
Adjudication is Accept                   | -| -| Y| N| -| -|
Then:
Loan_Origination_Result is Decline       | X| X|  |  |  |  |
Loan_Origination_Result is Accept        |  |  | X|  | X|  |
Loan_Origination_Result is Undecided     |  |  |  | X|  |  |
'Additional info'                        | X| X| X| X| X|  |
# .......

GoalAttribute: Loan_Origination_Result
Case: Decline
Print: "Loan Origination Result is: Decline"

Case: Accept
Print: "Loan Origination Result is: Accept"

Case: Undecided
Print: "Loan Origination Result is: Undecided"


Attribute: Adjudication
Askable_using: "What is the final adjudication?"


Table 1: Routing - Strategy = Bureau
If:                                       | 0| 1| 2| 3| 4| 5|
Strategy is Bureau                        | Y| Y| Y| Y| Y| N|
Post_Bureau_Risk_Category is High         | Y| N| N| N| N| -|
Post_Bureau_Affordability is True         | -| Y| Y| Y| N| -|
Banktrupt is True                         | -| Y| N| N| -| -|
Credit_Score < 580                        | -| -| Y| N| -| -|
Then:
Routing is Decline                        |  | X|  |  | X|  |
Routing is Refer                          | X|  | X|  |  |  |
Routing is Accept                         |  |  |  | X|  |  |
# .......


Table 2: Routing - Strategy <> Bureau
If:                                       | 0| 1| 2|
Strategy is Decline                       | Y| N| N|
Strategy is Through                       | -| Y| N|
Then:
Routing is Decline                        | X|  |  |
Routing is Accept                         |  | X|  |
# .......
```

rTable 3: Post Bureau Affordability

| If: | 0 |
|---|---|
| Post_Bureau_Affordability_Formula = 1.0 | Y |
| Then: | |
| Post_Bureau_Affordability is True | X |

# .......

NB: based on pythonic logic: float(7<8) = 1.0 ; float(7<6) = 0.0

Attribute: Post_Bureau_Affordability_Formula
Derived_from_formula: Required_Monthly_Installment < Disposable_Income * Post_Bureau_Credit_Contingency_Factor

Table 4: Post Bureau Credit Contingency Factor

| If: | 0 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Post_Bureau_Risk_Category is High | Y | N | N | N | N |
| Post_Bureau_Risk_Category is Medium | - | Y | N | N | N |
| Post_Bureau_Risk_Category is Low | - | - | Y | N | N |
| Post_Bureau_Risk_Category is Very-Low | - | - | - | Y | N |
| Then: | | | | | |
| Post_Bureau_Credit_Contingency_Factor = 0.6 | X | | | | |
| Post_Bureau_Credit_Contingency_Factor = 0.7 | | X | | | |
| Post_Bureau_Credit_Contingency_Factor = 0.8 | | | X | X | |

# .......

Attribute: Banktrupt
Askable_using: "Is this a case of bankruptcy?"

Attribute: Credit_Score
Askable_using: "What is the Credit Score (>=580 is Accept)"

Table 5: Strategy

| If: | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Eligibility is Eligible | Y | Y | Y | Y | N |
| Bureau_Call_Type is FULL | Y | N | N | N | - |
| Bureau_Call_Type is MINI | - | Y | N | N | - |
| Bureau_Call_Type is NONE | - | - | Y | N | - |
| Then: | | | | | |
| Strategy is Bureau | X | X | | | |
| Strategy is Through | | | X | | |
| Strategy is Decline | | | | | X |

# .......

rTable 6: Eligibility

| If: | 0 |
|---|---|
| Pre_Bureau_Risk_Category is Decline | N |
| Pre_Bureau_Affordability is True | Y |
| Age < 18 | N |
| Then: | |
| Eligibility is Eligible | X |

# .......

rTable 7: Pre Bureau Affordability

| If: | 0 |
|---|---|
| Pre_Bureau_Affordability_Formula = 1.0 | Y |
| Then: | |
| Pre_Bureau_Affordability is True | X |

# .......

```
Attribute: Pre_Bureau_Affordability_Formula
Derived_from_formula: Required_Monthly_Installment < Disposable_Income *
Pre_Bureau_Credit_Contingency_Factor

Attribute: Required_Monthly_Installment Type: Real
Derived_from_formula: PMT + Monthly_Fee

Attribute: PMT   Type: Real
Derived_from_formula: (Amount*Rate/12)/(1-(1+Rate/12)**-Term)


# alternative (same result): abs(pmt(Rate/12, Term, Amount))
# NB: Function pmt imported from numpy.
# NB2: backslash (\) is a continuation character for formulas.

Attribute: Rate    Type: Real
Askable_using: "What is the Rate (notation 0.0000) of the requested product?"
Attribute: Term    Type: Integer
Askable_using: "What is the Term (in months) of the requested product?"
Attribute: Amount  Type: Real
Askable_using: "What is the Amount of the requested product?"

Attribute: Disposable_Income Type: Real
Derived_from_formula: Monthly_Income - (Monthly_Repayments + Monthly_Expenses)

Attribute: Monthly_Income Type: Real
Askable_using: "What is the Monthly_Income?"
Attribute: Monthly_Repayments Type: Real
Askable_using: "What is the Monthly_Repayments?"
Attribute: Monthly_Expenses Type: Real
Askable_using: "What is the Monthly_Expenses?"


rTable 8: Product Type
If:                                        | 0| 1|
Product_Type is Standard_Loan              | Y| N|
Product_Type is Special_Loan               | -| Y|
Then:
Monthly_Fee = 20.00                        | X|  |
Monthly_Fee = 25.00                        |  | X|
# .......


Attribute: Product_Type
Askable_using: "What is the product type of the requested product?"


Table 9: Pre Bureau Credit Contingency Factor
If:                                        | 0| 1| 2| 3| 4| 5|
Pre_Bureau_Risk_Category is High           | Y| N| N| N| N| N|
Pre_Bureau_Risk_Category is Decline        | -| Y| N| N| N| N|
Pre_Bureau_Risk_Category is Medium         | -| -| Y| N| N| N|
Pre_Bureau_Risk_Category is Low            | -| -| -| Y| N| N|
Pre_Bureau_Risk_Category is Very-Low       | -| -| -| -| Y| N|
Then:
Pre_Bureau_Credit_Contingency_Factor = 0.6 | X| X|  |  |  |  |
Pre_Bureau_Credit_Contingency_Factor = 0.7 |  |  | X|  |  |  |
Pre_Bureau_Credit_Contingency_Factor = 0.8 |  |  |  | X| X|  |
# .......
```

Table 10: Bureau Call Type

| If: | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Pre_Bureau_Risk_Category is High | Y | N | N | N | N | N |
| Pre_Bureau_Risk_Category is Medium | - | Y | N | N | N | N |
| Pre_Bureau_Risk_Category is Low | - | - | Y | N | N | N |
| Pre_Bureau_Risk_Category is Very-Low | - | - | - | Y | N | N |
| Pre_Bureau_Risk_Category is Decline | - | - | - | - | Y | N |
| Then: | | | | | | |
| Bureau_Call_Type is FULL | X | X | | | | |
| Bureau_Call_Type is MINI | | | X | | | |
| Bureau_Call_Type is NONE | | | | X | X | |

# .......

rTable 11: Post Bureau Risk Category: existing customer.

| If: | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Existing_Customer is True | Y | Y | Y | Y | Y | Y |
| Application_Risk_Score <= 100 | Y | Y | Y | N | N | N |
| Credit_Score < 580 | Y | N | N | - | - | - |
| Credit_Score <= 600 | - | Y | N | - | - | - |
| Credit_Score < 590 | - | - | - | Y | N | N |
| Credit_Score <= 615 | - | - | - | - | Y | N |
| Then: | | | | | | |
| Post_Bureau_Risk_Category is High | X | | | X | | |
| Post_Bureau_Risk_Category is Medium | | X | | | X | |
| Post_Bureau_Risk_Category is Low | | | X | | | X |

# .......

rTable 12: Post Bureau Risk Category: no existing customer.

| If: | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Existing_Customer is True | N | N | N | N | N | N | N |
| Application_Risk_Score < 120 | Y | Y | Y | N | N | N | N |
| Application_Risk_Score <= 130 | - | - | - | Y | Y | Y | N |
| Credit_Score < 590 | Y | N | N | - | - | - | - |
| Credit_Score <= 610 | - | Y | N | - | - | - | - |
| Credit_Score < 600 | - | - | - | Y | N | N | - |
| Credit_Score <= 625 | - | - | - | - | Y | N | - |
| Then: | | | | | | | |
| Post_Bureau_Risk_Category is High | X | | | X | | | |
| Post_Bureau_Risk_Category is Medium | | X | | | X | | |
| Post_Bureau_Risk_Category is Low | | | X | | | X | |
| Post_Bureau_Risk_Category is Very-Low | | | | | | | X |

# .......

rTable 13: Pre Bureau Risk Category: existing customer.

| If: | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Existing_Customer is True | Y | Y | Y | Y |
| Application_Risk_Score < 80 | Y | N | N | N |
| Application_Risk_Score < 90 | - | Y | N | N |
| Application_Risk_Score <= 110 | - | - | Y | N |
| Then: | | | | |
| Pre_Bureau_Risk_Category is Decline | X | | | |
| Pre_Bureau_Risk_Category is High | | X | | |
| Pre_Bureau_Risk_Category is Medium | | | X | |
| Pre_Bureau_Risk_Category is Low | | | | X |

# .......

rTable 14: Pre Bureau Risk Category: no existing customer.

| If: | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Existing_Customer is True | N | N | N | N |
| Application_Risk_Score < 100 | Y | N | N | N |
| Application_Risk_Score < 120 | - | Y | N | N |
| Application_Risk_Score <= 130 | - | - | Y | N |
| Then: | | | | |
| Pre_Bureau_Risk_Category is High | X | | | |
| Pre_Bureau_Risk_Category is Medium | | X | | |
| Pre_Bureau_Risk_Category is Low | | | X | |
| Pre_Bureau_Risk_Category is Very-Low | | | | X |

# .......

Attribute: Existing_Customer
Askable_using: "Applicant is an existing customer?"

Attribute: Application_Risk_Score
Summation_of: Age_Risk_Score + Marital_Risk_Score + Employment_Risk_Score

Table 15: Age Risk

| If: | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Age < 18 | Y | N | N | N | N | N |
| Age <= 21 | - | Y | N | N | N | N |
| Age <= 25 | - | - | Y | N | N | N |
| Age <= 35 | - | - | - | Y | N | N |
| Age <= 49 | - | - | - | - | Y | N |
| Then: | | | | | | |
| Age_Risk_Score = 0 | X | | | | | |
| Age_Risk_Score = 32 | | X | | | | |
| Age_Risk_Score = 35 | | | X | | | |
| Age_Risk_Score = 40 | | | | X | | |
| Age_Risk_Score = 43 | | | | | X | |
| Age_Risk_Score = 48 | | | | | | X |

# .......

Attribute: Age
Askable_using: "What is the age of the applicant?"

rTable 16: Marital Risk

| If: | 0 | 1 |
|---|---|---|
| Marital_Status is S | Y | N |
| Marital_Status is M | - | Y |
| Then: | | |
| Marital_Risk_Score = 25 | X | |
| Marital_Risk_Score = 45 | | X |

# .......

Attribute: Marital_Status
Askable_using: "What is the marital status of the applicant?"

```
Table 17: Employment Risk
If:                                  | 0| 1| 2| 3| 4|
Employment_Status is Unemployed      | Y| N| N| N| N|
Employment_Status is Student         | -| Y| N| N| N|
Employment_Status is Employed        | -| -| Y| N| N|
Employment_Status is Self-Employed   | -| -| -| Y| N|
Then:
Employment_Risk_Score = 15           | X|  |  |  |  |
Employment_Risk_Score = 18           |  | X|  |  |  |
Employment_Risk_Score = 45           |  |  | X|  |  |
Employment_Risk_Score = 36           |  |  |  | X|  |
# .......

Attribute: Employment_Status
Askable_using: "What is the employment status of the applicant?"


GoalProposition: 'Additional info'
Print: "************************************************************************"
Print: "Adjudication is: %s" Adjudication
Print: "Routing is: %s" Routing
Print: "Strategy is: %s" Strategy
Print: "Bureau Call Type: %s" Bureau_Call_Type
Print: "Eligibility: %s" Eligibility
Print: "Pre Bureau Affordability: %s" Pre_Bureau_Affordability
Print: "Pre Bureau Risk Category: %s" Pre_Bureau_Risk_Category
Print: "Existing Customer: %s" Existing_Customer
Print: "Application Risk Score: %s" Application_Risk_Score
Print: "= Age_Risk_Score(%s)+ Marital_Risk_Score(%s)+ Employment_Risk_Score(%s)"
Age_Risk_Score Marital_Risk_Score Employment_Risk_Score
Print: "Based on Age (%s), Marital Status (%s) and Employment Status (%s)" Age
Marital_Status Employment_Status
Print: "Pre Bureau Affordability Formula: %s" Pre_Bureau_Affordability_Formula
Print: "Required Monthly Installment: %s"  Required_Monthly_Installment
Print: "PMT: %s ; based on Amount: %s, Rate: %s, Term (in months): %s" PMT Amount
Rate Term
Print: "Monthly Fee = %s, because Product Type is: %s" Monthly_Fee Product_Type
Print: "Disposable Income: %s" Disposable_Income
Print: ".. is Monthly Income: %s - (Monthly Repayments: %s + Monthly Expenses: %s)"
Monthly_Income Monthly_Repayments Monthly_Expenses
Print: "Pre Bureau Credit Contingency Factor: %s"
Pre_Bureau_Credit_Contingency_Factor
Print: "Post Bureau Affordability: %s" Post_Bureau_Affordability
Print: "Post Bureau Risk Category: %s" Post_Bureau_Risk_Category
Print: "Post Bureau Affordability Formula: %s" Post_Bureau_Affordability_Formula
Print: "Post Bureau Credit Contingency Factor: %s"
Post_Bureau_Credit_Contingency_Factor
Print: "Bureau data: Banktrupt: %s" Banktrupt
Print: "Bureau data: Credit Score: %s" Credit_Score
Print: "************************************************************************"
```

## Various test runs

Route 1: Strategy = Bureau; Routing = Accept
Route 2: Strategy = Bureau; Routing = Refer; Adjudication = Accept
Route 3: Strategy = Bureau; Routing = Decline
Route 4: Strategy = Through → Routing = Accept
Route 5: Strategy = Decline → Routing = Decline

Route 1: Strategy = Bureau; Routing = Accept

```
Loan Origination Result is: Accept
********************************************************************************
Adjudication is: None
Routing is: Accept
Strategy is: Bureau
Bureau Call Type: MINI
Eligibility: Eligible
Pre Bureau Affordability: True
Pre Bureau Risk Category: Low
Existing Customer: True
Application Risk Score: 133
= Age_Risk_Score(43)+ Marital_Risk_Score(45)+ Employment_Risk_Score(45)
Based on Age (44), Marital Status (M) and Employment Status (Employed)
Pre Bureau Affordability Formula: 1.0
Required Monthly Installment: 379.7891841382876
PMT: 359.7891841382876 ; based on Amount: 10000.0, Rate: 0.06, Term (in months): 30
Monthly Fee = 20.0, because Product Type is: Standard_Loan
Disposable Income: 1500.0
.. is Monthly Income: 2500.0 - (Monthly Repayments: 500.0 + Monthly Expenses:
500.0)
Pre Bureau Credit Contingency Factor: 0.8
Post Bureau Affordability: True
Post Bureau Risk Category: Medium
Post Bureau Affordability Formula: 1.0
Post Bureau Credit Contingency Factor: 0.7
Bureau data: Banktrupt: False
Bureau data: Credit Score: 600
********************************************************************************
```

## Route 2: Strategy = Bureau; Routing = Refer;  Adjudication = Accept

```
Loan Origination Result is: Accept
********************************************************************************
Adjudication is: Accept
Routing is: Refer
Strategy is: Bureau
Bureau Call Type: FULL
Eligibility: Eligible
Pre Bureau Affordability: True
Pre Bureau Risk Category: Medium
Existing Customer: False
Application Risk Score: 105
= Age_Risk_Score(35)+ Marital_Risk_Score(25)+ Employment_Risk_Score(45)
Based on Age (22), Marital Status (S) and Employment Status (Employed)
Pre Bureau Affordability Formula: 1.0
Required Monthly Installment: 384.7891841382876
PMT: 359.7891841382876 ; based on Amount: 10000.0, Rate: 0.06, Term (in months): 30
Monthly Fee = 25.0, because Product Type is: Special_Loan
Disposable Income: 600.0
.. is Monthly Income: 1000.0 - (Monthly Repayments: 200.0 + Monthly Expenses:
200.0)
Pre Bureau Credit Contingency Factor: 0.7
Post Bureau Affordability: None
Post Bureau Risk Category: High
Post Bureau Affordability Formula: 0.0
Post Bureau Credit Contingency Factor: 0.6
Bureau data: Banktrupt: None
Bureau data: Credit Score: 570
********************************************************************************
```

## Route 3: Strategy = Bureau; Routing = Decline

```
Loan Origination Result is: Decline
********************************************************************************
Adjudication is: None
Routing is: Decline
Strategy is: Bureau
Bureau Call Type: MINI
Eligibility: Eligible
Pre Bureau Affordability: True
Pre Bureau Risk Category: Low
Existing Customer: True
Application Risk Score: 113
= Age_Risk_Score(43)+ Marital_Risk_Score(25)+ Employment_Risk_Score(45)
Based on Age (44), Marital Status (S) and Employment Status (Employed)
Pre Bureau Affordability Formula: 1.0
Required Monthly Installment: 384.7891841382876
PMT: 359.7891841382876 ; based on Amount: 10000.0, Rate: 0.06, Term (in months): 30
Monthly Fee = 25.0, because Product Type is: Special_Loan
Disposable Income: 1300.0
.. is Monthly Income: 2000.0 - (Monthly Repayments: 500.0 + Monthly Expenses:
200.0)
Pre Bureau Credit Contingency Factor: 0.8
Post Bureau Affordability: True
Post Bureau Risk Category: Medium
Post Bureau Affordability Formula: 1.0
Post Bureau Credit Contingency Factor: 0.7
Bureau data: Banktrupt: True
Bureau data: Credit Score: 600
********************************************************************************
```

## Route 4: Strategy = Through → Routing = Accept

```
Loan Origination Result is: Accept
**********************************************************************************
Adjudication is: None
Routing is: Accept
Strategy is: Through
Bureau Call Type: NONE
Eligibility: Eligible
Pre Bureau Affordability: True
Pre Bureau Risk Category: Very-Low
Existing Customer: False
Application Risk Score: 138
= Age_Risk_Score(48)+ Marital_Risk_Score(45)+ Employment_Risk_Score(45)
Based on Age (55), Marital Status (M) and Employment Status (Employed)
Pre Bureau Affordability Formula: 1.0
Required Monthly Installment: 379.7891841382876
PMT: 359.7891841382876 ; based on Amount: 10000.0, Rate: 0.06, Term (in months): 30
Monthly Fee = 20.0, because Product Type is: Standard_Loan
Disposable Income: 1800.0
.. is Monthly Income: 2500.0 - (Monthly Repayments: 500.0 + Monthly Expenses:
200.0)
Pre Bureau Credit Contingency Factor: 0.8
Post Bureau Affordability: None
Post Bureau Risk Category: None
Post Bureau Affordability Formula: None
Post Bureau Credit Contingency Factor: None
Bureau data: Banktrupt: None
Bureau data: Credit Score: None
**********************************************************************************
```

## Route 5: Strategy = Decline → Routing = Decline

```
Loan Origination Result is: Decline
**********************************************************************************
Adjudication is: None
Routing is: Decline
Strategy is: Decline
Bureau Call Type: None
Eligibility: None
Pre Bureau Affordability: True
Pre Bureau Risk Category: High
Existing Customer: True
Application Risk Score: 70
= Age_Risk_Score(0)+ Marital_Risk_Score(25)+ Employment_Risk_Score(45)
Based on Age (17), Marital Status (S) and Employment Status (Employed)
Pre Bureau Affordability Formula: 1.0
Required Monthly Installment: 379.7891841382876
PMT: 359.7891841382876 ; based on Amount: 10000.0, Rate: 0.06, Term (in months): 30
Monthly Fee = 20.0, because Product Type is: Standard_Loan
Disposable Income: 1900.0
.. is Monthly Income: 2300.0 - (Monthly Repayments: 200.0 + Monthly Expenses:
200.0)
Pre Bureau Credit Contingency Factor: 0.6
Post Bureau Affordability: None
Post Bureau Risk Category: None
Post Bureau Affordability Formula: None
Post Bureau Credit Contingency Factor: None
Bureau data: Banktrupt: None
Bureau data: Credit Score: None
**********************************************************************************
```

**Demo Goal-driven/Backward-chaining reasoning with condition subtables.**

Welcome at: https://www.dt5gl.com/