

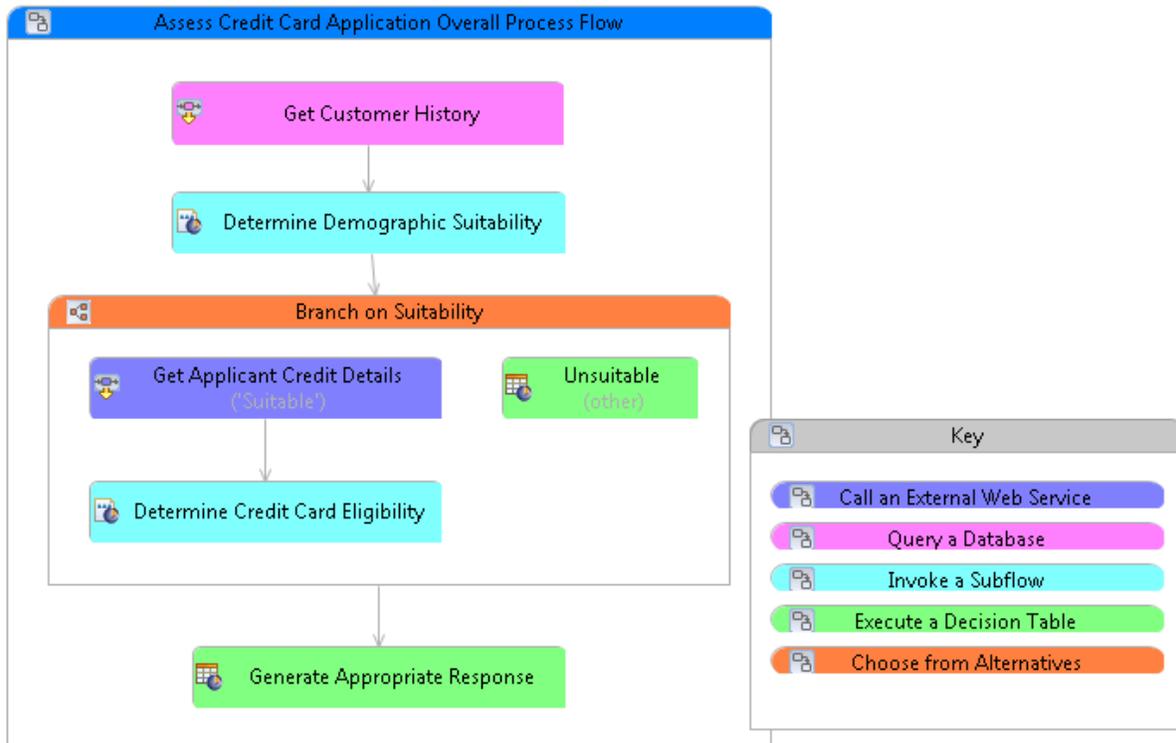
Credit Application Rule Modeling Challenge – Corticon Solution 2

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This is an alternative approach to the original which may be found in Solution 1.

This solution separates the logic for Student, Private and Balance Transfer to make it easier to follow and maintain. It also eliminates several unneeded attributes and redundant conditions that are in the original

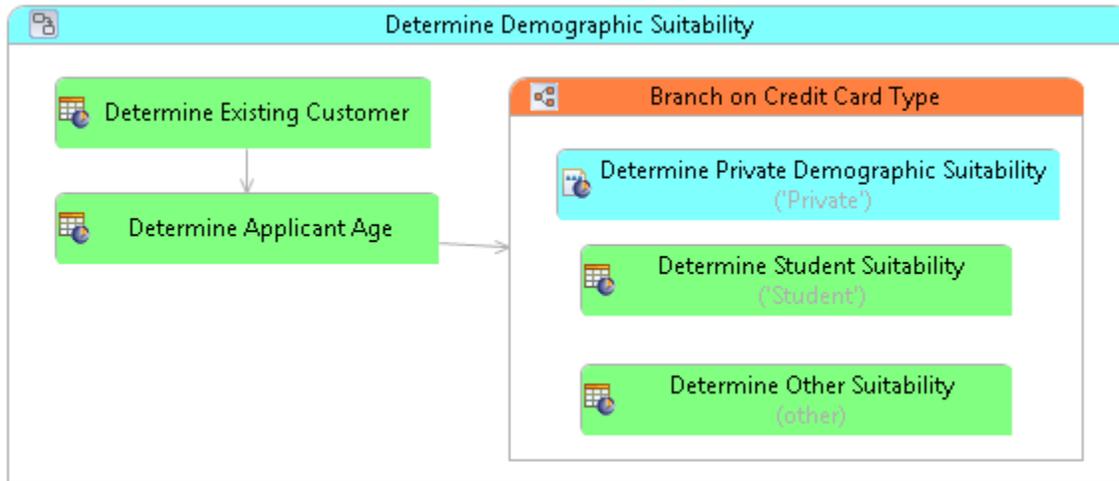
Decision Structure



A project in Corticon comprises rule sheets (decision tables), rule flows (organized collections of rule sheets that together make a decision), test cases (inputs and expected results) and a vocabulary that defines the entities, the relationships between them and the attributes they contain.

Demographic Suitability

In the refactored model we make use of the branching feature to choose the appropriate rule sheet for Private, Student or other card type (Balance Transfer is not called out specifically in demographic suitability).



Determine Existing Customer

Determine Existing Customer.ers			
Conditions		1	2
a	Does the applicant have a matching customer record?	F	T
b			
Actions			
Post Message(s)			
A	Existing customer is	F	T

Implementation (just one way of accomplishing the specification)

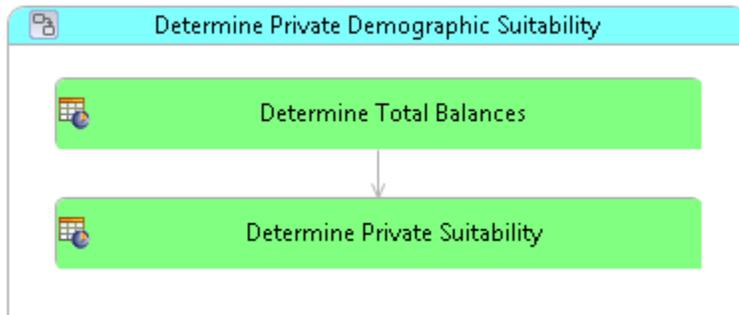
Determine Existing Customer.ers					
Scope		Conditions	1	2	
<ul style="list-style-type: none"> Applicant <ul style="list-style-type: none"> existingCustomer <ul style="list-style-type: none"> customerDetails (Customer) [customerDetail] 		a	customerDetail->notEmpty	F	T
		b			
Actions					
Post Message(s)					
A	Applicant.existingCustomer	F	T		

Determine Applicant Age

Since the age is used in all the suitability rule sheets it occurs before the branching

Actions		
Post Message(s)		
Applicant.age=Applicant.dob.yearsBetween(today)		<input checked="" type="checkbox"/>

Determine Private Suitability



Determine Total Savings and Investments.ers

Scope	Conditions	0
a		
b		
c		
d		
e		
f		
g		
h		
i		
j		
k		

Filters	Actions
1 investments.type='Investments'	Post Message(s)
2 savings.type='Savings'	A cust.savingsAndInvestmentsBalance = investments.balance->sum +savings.balance->sum
3 mortgage.type='Mortgage'	B cust.outstandingMortgage=mortgage.balance->sum
4	

By defining aliases 'investments', 'mortgage' and 'savings' to the collections of customer products we can make use of the built in operator -> sum to calculate totals.

Notice that all the rules for private suitability are now in one place.

Determine Private Suitability.ers

Conditions	1	2	3	4	5	6
a Is the applicant an existing customer?	F	-	T	T	T	T
b What is the applicant age?	-	< 18	>= 18	>= 18	>= 18	-
c What is the customer annual income?	-	-	>= 100000	-	-	other
d What is the customer outstanding mortgage?	-	-	-	>= 300000	-	other
e What is the customer savings and investments balance?	-	-	-	-	>= 100000	other
f						

Actions	1	2	3	4	5	6
Post Message(s)	✉	✉	✉	✉	✉	✉
A Suitable	✓		✓	✓	✓	✓
B Not Suitable	✓	✓				✓

Currently all the card types have the same age requirement. But this might not always be the case. By testing age in each of the three rule sheets we have made it much easier to change the acceptable age for the different card types. Perhaps student cards might in the future be made available to anyone 16 or older.

Determine Student Suitability

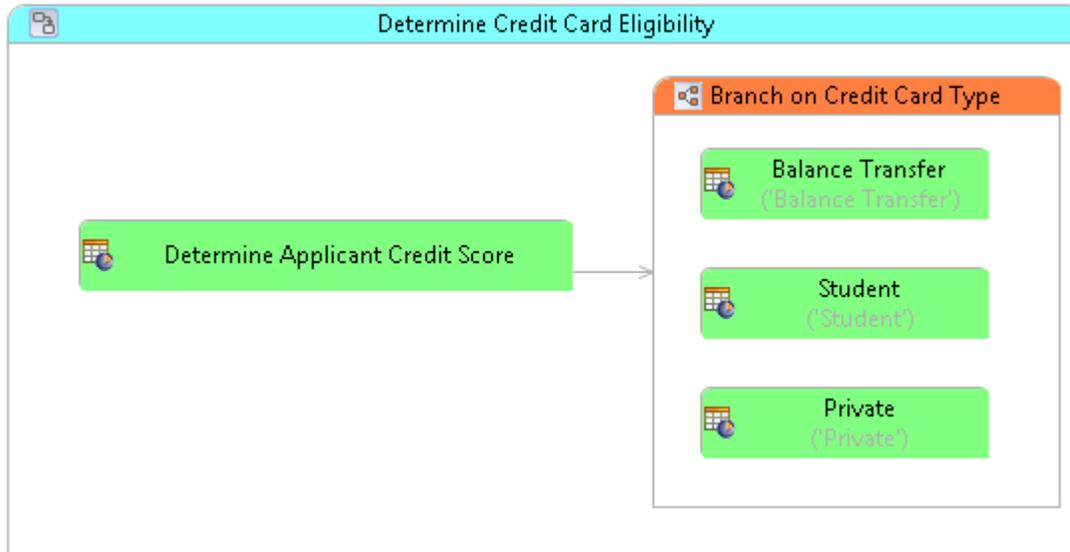
Determine Student Suitability.ers					
Conditions		1	2	3	4
a	Is the applicant an existing customer?	F	-	T	T
b	What is the applicant age?	-	< 18	>= 18	-
c	What is the customer current account type?	-	-	'Student'	other
Actions		'''			
Post Message(s)		✉	✉	✉	✉
A	Student Suitability is	'Unsuitable'	'Unsuitable'	'Suitable'	'Unsuitable'
B					
Overrides					
Rule Statements					
Ref	Post	Alias	Text		
1	Info	Applicant	Must be an existing customer for a Student card		
2	Info	Applicant	Must be 18 or over for a Student card		
3	Info	Applicant	Existing customers with a Student account who are 18 or over are suitable for a Student card		
4	Info	Applicant	Existing customers with a non Student account are unsuitable for a Student card		

Determine Other Demographic Suitability

Determine Other Suitability.ers					
Conditions		0	1	2	3
a	What is the applicant's age?		>= 18	< 18	
b					
Actions		'''			
Post Message(s)		✉	✉	✉	
A	Demographic Suitability		'Suitable'	'Unsuitable'	
B					
C					
Overrides					
Rule Statements					
Ref	Post	Alias	Text		
0	Info	app	Card types other than Student and Private		
2	Warning	app	Applicants under 18 are unsuitable		
1	Info	app	Other card types are always suitable even if not an existing customer		

Credit Card Eligibility

Similarly, for eligibility we separate the rule sheets according to the card type (Student, Private or Balance Transfer) since the rules for each case are very different.



Determine Applicant Credit Score

This is common to all suitable applicants

*Determine Applicant Credit Score.ers		0	1	2	3	4	5	6	7	8	9	10	11
a	How many defaults in the past 12 months?		1..3	4..6	0	-	-	-	-	-	-	-	-
b	Declared bankruptcy?		-	-	-	F	-	-	-	-	-	-	-
c	Years with current account?		-	-	-	-	< 1	1..3	> 3	-	-	-	-
d	Credit used percent?		-	-	-	-	-	-	-	0..24	25..49	50..74	75..100
Actions		←											
Post Message(s)		✉	✉	✉	✉	✉	✉	✉	✉	✉	✉	✉	✉
A	Credit score starts at zero	<input checked="" type="checkbox"/>											
B	Add this to the credit score		100	50	250	250	50	150	350	200	249	150	100

This version only shows the rules that affect the credit score.

Determine Balance Transfer Eligibility

Now, in rule 1, we can see all the conditions for balance transfer easily in one place.

Determine Balance Transfer Eligibility.ers						
Conditions	1	2	3	4	5	6
a What is the applicant annual income?	> 10000	<= 10000	-	-	-	-
b What is the applicant residential status?	'UK Resident'	-	other	-	-	-
c Applied in the past six months?	F	-	-	T	-	-
d How many years of address history?	>= 3	-	-	-	< 3	-
e Applicant credit score	> 750	-	-	-	-	<= 750
f						
-						
Actions						
Post Message(s)						
A Eligible	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B Ineligible	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Overrides						

Rule Statements			
Ref	Post	Alias	Text
1	Info	Applicant	Eligible if income >10k, UK Resident, not previously applied in past 6 months, >=3 years address history, credit score >750
2	Warning	Applicant	Not eligible if income <=10k
3	Warning	Applicant	Not eligible if not a UK Resident
4	Warning	Applicant	Not eligible if applied in past 6 months
5	Warning	Applicant	Not eligible if less than 3 years address history
6	Warning	Applicant	Not eligible if credit score <=750

Determine Student Credit Card Eligibility

*Determine Student Credit Card Eligibility.ers		
Conditions	1	2
a Applicant credit score	>= 500	< 500
Actions		
Post Message(s)		
A Credit card eligibility is	'Eligible'	'Ineligible'
-		
Overrides		

Rule Statements			
Ref	Post	Ali...	Text
1	Info	app	If card type is 'Student' and credit score is 500 or more then they are eligible
2	Warning	app	If card type is 'Student' and credit score is under 500 then they are not eligible

Determine Private Credit Card Eligibility

Determine Private Credit Card Eligibility.ers			
Conditions		1	2
a	Applicant credit score	>= 750	< 750
b			
Actions			
Post Message(s)			
A	Credit card eligibility is	☑ 'Eligible'	☑ 'Ineligible'
Overrides			

Rule Statements			
Ref	Post	Alias	Text
1	Info	app	If card type is 'Private' and credit score is 750 or more then they are eligible
2	Warning	app	If card type is 'Private' and credit score is under 750 then they are not eligible

Dependency Diagram

Corticon can automatically determine the correct order of the rule sheets by matching up the outputs of one sheet with the inputs required by other sheets.

