

Monkey Business Decision Modeling Challenge Nov 2015

The Problem

Question: Can you determine the name of each monkey, what kind of fruit each monkey ate, and where their favorite resting place was?

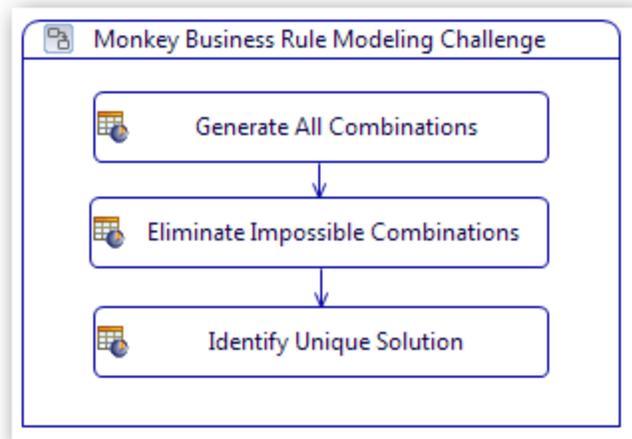
1. Sam, who doesn't like bananas, likes sitting on the grass
2. The monkey who sat on the rock ate the apple.
3. The monkey who ate the pear didn't sit on the tree branch
4. Anna sat by the stream but she didn't eat the pear
5. Harriet didn't sit on the tree branch.
6. Mike doesn't like oranges.

A Simple Solution in Corticon

Although this is not typical of real world business problems, it can be solved very easily.

We simply generate every possible combination of monkey, fruit and resting place and then eliminate anything that breaks the rules.

Whatever is left must be a solution.



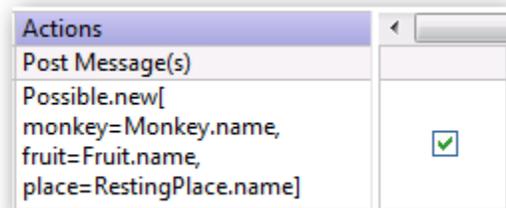
Since there are 4 monkeys, 4 places and 4 fruits there are 64 possible arrangements.

This decision table (which requires no conditions) can be used to generate them all. We could add conditions to reduce the number of combinations but it's quicker, easier and less error-prone to generate them all in this case.

We just need to supply Corticon with lists of the available monkeys, fruits and places and all combinations will be generated automatically.

This is a natural behavior for the Corticon decision table. In traditional programming languages (and even some rule engines) you would need to write loops to accomplish this.

A similar approach was used in the "Healthy" Burger Challenge



Now we can use the rules to examine each of the 64 combinations and eliminate those that are not allowed. Again no loops are required in Corticon. It naturally considers all objects in a collection. We just have to reverse the logic to eliminate what is NOT allowed.

Conditions		1	2	3	4	5	6	7	8
a	Monkey	'Sam'	'Sam'	-	-	-	-	'Harriet'	'Mike'
b	Place	not 'grass'	'banana'	'rock'	not 'rock'	'branch'	'stream'	'branch'	-
c	Fruit	-	-	not 'apple'	'apple'	'pear'	'pear'	-	'orange'
Actions		<input type="checkbox"/>							
Post Message(s)		<input type="checkbox"/>							
A	Eliminate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B									
C									
Overrides									

Ref	ID	Text
1		Sam likes sitting on the grass
2		Sam doesn't like bananas
3;4		The monkey who sat on the rock ate the apple.
5		The monkey who ate the pear didn't sit on the tree branch
6		Anna sat by the stream but she didn't eat the pear
7		Harriet didn't sit on the tree branch.
8		Mike doesn't like oranges.

Finally we just need to make sure that every monkey does indeed have a different fruit and resting place:

Mike.fruit<>Sam.fruit	T
Mike.fruit<>Harriet.fruit	T
Mike.fruit<>Anna.fruit	T
Sam.fruit<>Harriet.fruit	T
Sam.fruit<>Anna.fruit	T
Harriet.fruit<>Anna.fruit	T

Mike.place<>Sam.place	T
Mike.place<>Harriet.place	T
Mike.place<>Anna.place	T
Sam.place<>Harriet.place	T
Sam.place<>Anna.place	T
Harriet.place<>Anna.place	T

Some constraint engines have a convenient “allDifferent” operator that does the same thing.

We make use of aliases in the decision table scope section to identify the four monkeys.

Filters	
1	Mike.monkey='Mike'
2	Anna.monkey='Anna'
3	Harriet.monkey='Harriet'
4	Sam.monkey='Sam'

Corticon then produces the unique solution

Info	[Review_Possibles,1] Mike, banana, branch, Sam, pear, grass, Harriet, apple, rock,Anna, orange, stream
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