Institute of Systems Science, National University of Singapore

MTECH
INDIVIDUAL PROJECT REPORT

Lee Boon Kien

A0195175W

SECTION 1 : PROJECT TITLE

Enhanced Mortgage Loan Application Process

SECTION 2 : EXECUTIVE SUMMARY / PAPER ABSTRACT

From the course, I have learnt to extract business rule from data using inductive reasoning. I have successfully enhanced the KIE home loan system using the discovered knowledge. The exact detail of the changes I have made is further explained under Section 6.

Towards the end of the project, I have exported my project to github and IVLE system for the individual project submission.

Link to github: https://github.com/leebk93/IRS-MR-2019-01-19-IS1FT-IND-LeeBoonKien-Mortgage_Process

---

SECTION 3 : CREDITS / PROJECT CONTRIBUTION

Official Full Name	Student ID	Work Items	Email
Lee Boon Kien	A0195175W	Extracted business rule, enhanced KIE home loan system Export, enhanced KIE system	e0384806@nus.edu.sg

---

SECTION 4 : VIDEO OF SYSTEM MODELLING & USE CASE DEMO

NA for individual project

SECTION 5 : USER GUIDE

NA for KIE system

SECTION 6 : PROJECT REPORT / PAPER

In addition of following the sample enhanced KIE home loan system, I have tightened the criteria of approval by adding in the evaluation of credit rating. In the case where the applicant own house or has job, the applicant also need to achieve at least 2 in credit rating, which means the credit rating must be average or above.

Besides, for the case of applicant has job but not owning house, the age of applicant must be less than 35 in order to approved for application.

MortgageMachineReasoningDT							
#	Description	ruleflow-group	Applicant Own House	Applicant Age		Applicant Has Job	Credit Rating	application
			$ownHouse	$ageLess	$ageGE	$hasjob	$creditRating	Approval In Limit
1		mortgagemachinereasoningDT	☑			☑	2	☑
2		mortgagemachinereasoningDT	☑			☐	2	☑
3		mortgagemachinereasoningDT	☐	35		☑	2	☑
4		mortgagemachinereasoningDT	☐			☐		☐

The details of the source code of the changes to Guided Decision Table "MortgageMachineReasoningDT" can be found in the Section 7.

SECTION 7 : MISCELLANEOUS

```
1   package com.myspace.mortgage_app;
2
3   //from row number: 1
4   rule "Row 1 MortgageMachineReasoningDT"
5       ruleflow-group "mortgagemachinereasoningDT"
6       dialect "mvel"
7       when
8           application : Application( applicant.ownHouse == true )
9           Application( applicant.hasjob == true )
10          Application( applicant.creditrating >= 2 )
11      then
12          application.setInlimitMR( true );
13  end
14
15  //from row number: 2
16  rule "Row 2 MortgageMachineReasoningDT"
17      ruleflow-group "mortgagemachinereasoningDT"
18      dialect "mvel"
19      when
20          application : Application( applicant.ownHouse == true )
21          Application( applicant.hasjob == false )
22          Application( applicant.creditrating >= 2 )
23      then
24          application.setInlimitMR( true );
25  end
26
27  //from row number: 3
28  rule "Row 3 MortgageMachineReasoningDT"
29      ruleflow-group "mortgagemachinereasoningDT"
30      dialect "mvel"
31      when
32          application : Application( applicant.ownHouse == false )
33          Application( applicant.age < 35 )
34          Application( applicant.hasjob == true )
35          Application( applicant.creditrating >= 2 )
36      then
37          application.setInlimitMR( true );
38  end
39
40  //from row number: 4
41  rule "Row 4 MortgageMachineReasoningDT"
42      ruleflow-group "mortgagemachinereasoningDT"
43      dialect "mvel"
44      when
45          application : Application( applicant.ownHouse == false )
46          Application( applicant.hasjob == false )
47      then
48          application.setInlimitMR( false );
49  end
```