

Topic #4 – Decision Table Testing Method

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TOPIC #4 – DECISION TABLE TESTING METHOD

What is Decision Table Testing Method?

Why Do We Need Decision Table Testing?

How to Use Decision Table Testing?

Decision Table Testing Examples

Decision Table Testing Summary



TOPIC #4 – DECISION TABLE TEST METHOD

What is decision table testing method?

A **decision table** is a good way to deal with combinations of things (e.g. inputs). This technique is sometimes also referred to as a 'cause-effect' table.

Definition:

Decision table testing is black box test design technique to determine the test scenarios for complex business logic. In decision table testing the test cases are designed to execute the combinations of inputs and/or stimuli (causes) from the decision table.

A decision table is a table of rows and columns separated into four quadrants .

Decision Stub

Rules Stub

Action Stub

Entries Stub



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Importance of Decision Table Test Method

- It helps testers to search the effects of combinations of different inputs and other software states that must correctly implement business rules.
- Provides a regular way of stating complex business rules, that's helpful for developers as well as for testers.
- It is a structured exercise to prepare requirements when dealing with complex business rules.



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Number of Rules

- Each condition generally has two possible outcomes either **YES** or **NO**
- Total number of rules is equal to

$$2^{\text{no. of conditions}}$$

- For example, if there are **four** conditions then, there will be **sixteen** possible rules.



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Creating a Decision Table

Steps on how to create a simple decision table using the Triangle Problem.

1. Step One – List All Stub Conditions

In this example we take three inputs, and from those inputs we perform conditional checks to calculate if it's a triangle, if so then what type of triangle it is.

2. Step Two – Calculate the Number of Possible Combinations (Rules)

So in our table we have 4 condition stubs and we are developing a limited entry decision table so we use the following formula:

Number of Rules = 2 (power) Number of Condition stubs, So therefore

$$\text{Number of Rules} = 2^4 = 16$$

So we have 16 possible combinations in our decision table.





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Creating a Decision Table

Place all the combinations in the decision table

Rules

		R1	R1	R1	R1	R1	R1	R1	R1	R1
Conditions :	C1: <a, b,c > forms a triangle?	F	T	T	T	T	T	T	T	T
	C3: a = b?	-	T	T	T	T	F	F	F	F
	C4: a = c?	-	T	T	F	F	T	T	F	F
	C5: b = c?	-	T	F	T	F	T	F	T	F
Actions :	A1: Not a Triangle	X								
	A2: Scalene									X
	A3: Isosceles					X		X	X	
	A4: Equilateral		X							
	A5: Impossible			X	X		X			

Entries



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Few more conditions added to the decision table.

Rules

C1-1: $a < b+c?$	F	T	T	T	T	T	T	T	T	T	T
C1-2: $b < a+c?$	–	F	T	T	T	T	T	T	T	T	T
C1-3: $c < a+b?$	–	–	F	T	T	T	T	T	T	T	T
C2: $a = b?$	–	–	–	T	T	T	T	F	F	F	F
C3: $a = c?$	–	–	–	T	T	F	F	T	T	F	F
C4: $b = c?$	–	–	–	T	F	T	F	T	F	T	F
A1: Not a Triangle	X	X	X								
A2: Scalene											X
A3: Isosceles							X		X	X	
A4: Equilateral				X							
A5: Impossible					X	X		X			

Entries





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Test cases from Decision Table

Case ID	a	b	c	Expected Output
DT1	4	1	2	Not a Triangle
DT2	1	4	2	Not a Triangle
DT3	1	2	4	Not a Triangle
DT4	5	5	5	Equilateral
DT5	???	???	???	Impossible
DT6	???	???	???	Impossible
DT7	2	2	3	Isosceles
DT8	???	???	???	Impossible
DT9	2	3	2	Isosceles
DT10	3	2	2	Isosceles
DT11	3	4	5	Scalene



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Creating a Decision Table

Example 2 : Credit Card

If you are a new customer and you want to open a credit card account then there are three conditions first you will get a 15% discount on all your purchases today, second if you are an existing customer and you hold a loyalty card, you get a 10% discount and third if you have a coupon, you can get 20% off today (but it can't be used with the 'new customer' discount).

Question :

- Create a decision table for the above scenario with the list of possible conditions and actions.
- Calculate the number of possible rules for the decision table.
- Derive test cases from the table constructed.





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Creating a Decision Table

Example 2 : Credit Card

Conditions	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8
<i>New customer (15%)</i>	T	T	T	T	F	F	F	F
<i>Loyalty card (10%)</i>	T	T	F	F	T	T	F	F
<i>Coupon (20%)</i>	T	F	T	F	T	F	T	F
Actions								
<i>Discount (%)</i>	X	X	20	15	30	10	20	0



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Decision Table Testing Summary

Advantage:

- Easy to understand
- Map nicely to a set of business rules
- Applied to real problems
- Able to process both numerical and categorical data

Test Coverage:

- The decision table value method assures the decision table test coverage.
- For each rule in the table, there is a test case derived.

Limitations:

Limited to one output attribute
Decision tree algorithms are unstable
Trees created from numeric datasets can be complex.

Challenges:

- It is difficult to identify all the conditions in a given scenario.

