

# How to make decision tables

## Table of Contents

Copyright of this document.....	1
Conventions .....	2
How to create rules .....	3
All parts of a decision table .....	4
Nodes.....	4
Rules.....	5
Decisions.....	5
Important hints how to use the software JDecisiontable.....	6

## Copyright of this document

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## Conventions

The author assumes that you're creating rules from top to bottom and from left to right. Therefore "next node" means the node below the actual node. "search next node" means "search nodes from top to bottom". "Next rule" rule means the rule right from the actual rule. "Search for next rule" means "search from left to right". In source code position 0 in all arrays means the element on top or the most left element.

I knew that people from other cultures prefer other directions.

All information in this file match to a specific kind of decision table. There are other kinds of decision tables also. However, you can use this kind of decision table for everything you can do with a decision table.

## How to create rules

0) Always start the first rule with "Yes"-decision.

1) Check if the rule is valid

2A) If this rule is in valid fill every cell below the last decision you have set with "don't care" (but keep the last decision you have set), then go to "Create a new rule "

2B) If this rule is valid set the next cell with a "Yes"-decision; the go to (1)

3) If there is no cell below because you already reached the end of the rule -> create a new rule

4) If you follow this process you will be eventually get a rule which contains no "Yes"-decision. If this happens your decision table is complete.

Create a new rule (despite the very first rule):

- copy the last created rule
- search for the last "Yes"-decision in the copy
- replace this decision with a "No"-decision

If you follow this process it is impossible to get a incomplete or invalid decision table (in other words: a decision table which lacks of rules, has too much rules or has rule which are not unique).

# All parts of a decision table

## Nodes

A node has at least a description and a comparison, for example

<b>description</b>	<b>comparison</b>
age of patient	$\geq$
	80

Nodes are either conditions or actions. It is a condition if you can express the description as "If ... (comes true)". Otherwise it is an action (try to express it as "Do <something>" - if this works it is an action for sure). For example

"DO compare x with y" => action

"IF  $x \geq y$ " => condition

"IF  $x < y$ " => condition

"DO print ' $x \geq y$ '" => action

"DO print ' $x < y$ '" => action

Nodes are represented by the rows of a decision table. They don't contain any test data. The comparison is needed to split -> rules after the decision table is complete.

## Rules

A rule has at least a list of -> decisions and a flag which tells if this rule is valid. For example

<b>decisions</b>	Y
	Y
	N
<b>isValid</b>	true

Rules are represented by the columns of a decision table. A rule can be valid or invalid. Every valid rule will be a testcase. A rule is invalid if:

- An action which should not performed under this conditions got a "Yes"-decision
- An action which should performed under this conditions got a "No"-decision
- We got a combination of conditions which can not occur. This is quite rare - usually any combination of conditions may occur. Better double-check if this combination can really not occur. An example would be the colour of a wire: Assumed that the colour is either black, blue or green-yellow then any combination of this conditions are invalid.

## Decisions

A Decision is a three-state flag. It can be "Yes", "No" or "don't care" (usually written as "-").

Yes:            This condition is true / This action should performed

No:            This condition is false / This action should not performed

don't care:    The process will not reach this node. I.e. (1) If you're dyeing a piece of silk purple (im whole) it can not be yellow or green at same time. Thus "yellow" and "green" are irrelevant in this rule - just "don't care" about. (2) When creating a rule you may come to a point that you realize that this rule is invalid. Then every node below the last decision (= this one who rendered this rule from valid to invalid state) is also "don't care" in this rule.

(See "Nodes").

## Important hints how to use the software JDecisiontable

1. All fields except Description, Probability and Successor change their values only if you type certain keys:

Field	Keys to type												
Cond?	'x' to mark the node as condition  DEL or BACKSPACE [ ← ] to remove the mark  If some nodes are marked as conditions and some not the unmarked nodes are considered to be actions.												
Comparison	<p>You need to type either 1, 2, 3, 4 or 5 (as you would type a number) to get the Comparison you want displayed.</p> <table><tr><th>Key</th><th>Comparison</th></tr><tr><td>1</td><td>&gt;=</td></tr><tr><td>2</td><td>&lt;=</td></tr><tr><td>3</td><td>=</td></tr><tr><td>4</td><td>&gt;</td></tr><tr><td>5</td><td>&lt;</td></tr></table> <p>Do you see the pattern? '=' is in the middle while '&gt;=' and '&lt;=' are left from it and '&gt;' and '&lt;' stay to the right.</p>	Key	Comparison	1	>=	2	<=	3	=	4	>	5	<
Key	Comparison												
1	>=												
2	<=												
3	=												
4	>												
5	<												
Decision	<p>Please type either 'y', 'n' or '-':</p> <table><tr><th>Key</th><th>Decision</th></tr><tr><td>y</td><td>Yes</td></tr><tr><td>n</td><td>No</td></tr><tr><td>-</td><td>Don't Care</td></tr></table>	Key	Decision	y	Yes	n	No	-	Don't Care				
Key	Decision												
y	Yes												
n	No												
-	Don't Care												
isValid	'x' to mark the node as condition  DEL or BACKSPACE [ ← ] to remove the mark												

2. The field Successor is the last field in any rule. It is meant to leave the name of another decision table here to say: "If you're finished with this rule please continue with this <field content> decision table.
3. The fields Description, Probability and Successor start to take your text just when you start to type. As another option you may double click

or type F2 and then start to type. This is same behaviour as spreadsheet applications usually have.

4. There is intentionally no decision table shown after launch. Please use Decisiontable -> New to get one.
5. You may use Ctrl + # to switch between both tables. Then use Tab, Enter or arrow keys to switch from cell to cell.
6. Copy-and-Paste works if you put the cell in edit mode before i.e. by double clicking or typing F2. Copy-and-Paste works not for the fields named at point 1.