Pairwise. Decision Table

Test Design Techniques

This presentation demonstrates how to use the Pairwise and Decision Table test design techniques to create test cases. It includes the results of working with these techniques and contains examples of test tables created using them.

Here are examples of pair combinations for testing created manually and using special tools such as https://pairwise.yuuniworks.com/ and https://pairwise.teremokgames.com.

Pairwise Testing Technique. Create combinations manually

The Pairwise technique is used to create combinations for testing the Accommodation Search feature on the Agoda website.

1. Identify the parameters.
The parameters are **City**, **Check-in Date**, **Check-out Date**, **Rooms**, **Adults**, **Children**.

2. Determine the values for each parameter.
City: Rome, Barcelona, Paris, London, New York City.
Check-in date: today, today + 1 day, 70 days from today, 364 days from today, 365 days from today.
Check-out date: today + 1 day, 29 days from today, 91 days from today, 365 days from today, 366 days from today.
Rooms: 1, 2, 3, 29, 30.
Adults: 1, 2, 3, 59, 60.
Children: 0, 1, 2, 8, 9.

The table below summarizes the parameters and their corresponding values.

#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
1	Rome	today	today + 1 day	1	1	0
2	Barcelona	today + 1 day	29 days from today	2	2	1
3	Paris	70 days from today	91 days from today	3	3	2
4	London	364 days from today	365 days from today	29	59	8
5	New York City	365 days from today	366 days from today	30	60	9

Pairwise Testing Technique. Create combinations manually

3. Locate a suitable orthogonal array.

Here is the L25 orthogonal array (six five-level factors):

#	X1	X2	X3	X4	X5	X6
1	1	1	1	1	1	1
2	1	2	2	2	2	2
3	1	3	3	3	3	3
4	1	4	4	4	4	4
5	1	5	5	5	5	5
6	2	1	2	3	4	5
7	2	2	3	4	5	1
8	2	3	4	5	1	2
9	2	4	5	1	2	3
10	2	5	1	2	3	4
11	3	1	3	5	2	4
12	3	2	4	1	3	5
13	3	3	5	2	4	1
14	3	4	1	3	5	2
15	3	5	2	4	1	3
16	4	1	4	2	5	3
17	4	2	5	3	1	4
18	4	3	1	4	2	5
19	4	4	2	5	3	1
20	4	5	3	1	4	2
21	5	1	5	4	3	2
22	5	2	1	5	4	3
23	5	3	2	1	5	4
24	5	4	3	2	1	5
25	5	5	4	3	2	1

Pairwise Testing Technique. Create combinations manually

3. Match the parameter values with the array values.

#	City		Check-in Date		Check-out Date		Rooms		Adults		Children	
	array value	parameter value	array value	parameter value	array value	parameter value	array value	parameter value	array value	parameter value	array value	parameter value
1	1	Rome	1	today	1	today + 1 day	1	1	1	1	1	0
2	2	Barcelona	2	today + 1 day	2	29 days from today	2	2	2	2	2	1
3	3	Paris	3	70 days from today	3	91 days from today	3	3	3	3	3	2
4	4	London	4	364 days from today	4	365 days from today	4	29	4	59	4	8
5	5	New York City	5	365 days from today	5	366 days from today	5	30	5	60	5	9

4. Fill the array table with the parameter values.

#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
1	Rome	today	today + 1 day	1	1	0
2	Rome	today + 1 day	29 days from today	2	2	1
3	Rome	70 days from today	91 days from today	3	3	2
4	Rome	364 days from today	365 days from today	29	59	8
5	Rome	365 days from today	366 days from today	30	60	9
6	Barcelona	today	29 days from today	3	59	9
7	Barcelona	today + 1 day	91 days from today	29	60	0
8	Barcelona	70 days from today	365 days from today	30	1	1
9	Barcelona	364 days from today	366 days from today	1	2	2
10	Barcelona	365 days from today	today + 1 day	2	3	8
11	Paris	today	91 days from today	30	2	8
12	Paris	today + 1 day	365 days from today	1	3	9
13	Paris	70 days from today	366 days from today	2	59	0
14	Paris	364 days from today	today + 1 day	3	60	1
15	Paris	365 days from today	29 days from today	29	1	2
16	London	today	365 days from today	2	60	2
17	London	today + 1 day	366 days from today	3	1	8
18	London	70 days from today	today + 1 day	29	2	9
19	London	364 days from today	29 days from today	30	3	0
20	London	365 days from today	91 days from today	1	59	1
21	New York City	today	366 days from today	29	3	1
22	New York City	today + 1 day	today + 1 day	30	59	2
23	New York City	70 days from today	29 days from today	1	60	8
24	New York City	364 days from today	91 days from today	2	1	9
25	New York City	365 days from today	365 days from today	3	2	0

Pairwise Testing Technique. Create combinations manually

5. Replace invalid values with valid ones.

#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
1	Rome	today	today + 1 day	1	1	0
2	Rome	today + 1 day	29 days from today	2	2	1
3	Rome	70 days from today	91 days from today	3	3	2
4	Rome	364 days from today	365 days from today	29	59	8
5	Rome	365 days from today	366 days from today	30	60	9
6	Barcelona	today	29 days from today	3	59	9
7	Barcelona	today + 1 day	91 days from today	29	60	0
8	Barcelona	70 days from today	365 days from today	30	1	1
9	Barcelona	364 days from today	366 days from today	1	2	2
10	Barcelona	365 days from today	today + 1 day	2	3	8
11	Paris	today	91 days from today	30	2	8
12	Paris	today + 1 day	365 days from today	1	3	9
13	Paris	70 days from today	366 days from today	2	59	0
14	Paris	364 days from today	today + 1 day	3	60	1
15	Paris	365 days from today	29 days from today	29	1	2
16	London	today	365 days from today	2	60	2
17	London	today + 1 day	366 days from today	3	1	8
18	London	70 days from today	today + 1 day	29	2	9
19	London	364 days from today	29 days from today	30	3	0
20	London	365 days from today	91 days from today	1	59	1
21	New York City	today	366 days from today	29	3	1
22	New York City	today + 1 day	today + 1 day	30	59	2
23	New York City	70 days from today	29 days from today	1	60	8
24	New York City	364 days from today	91 days from today	2	1	9
25	New York City	365 days from today	365 days from today	3	2	0

#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
1	Rome	today	today + 1 day	1	1	0
2	Rome	today + 1 day	29 days from today	2	2	1
3	Rome	70 days from today	91 days from today	3	3	2
4	Rome	364 days from today	365 days from today	29	59	8
5	Rome	365 days from today	366 days from today	30	60	9
6	Barcelona	today	29 days from today	3	59	9
7	Barcelona	today + 1 day	91 days from today	29	60	0
8	Barcelona	70 days from today	**91 days from today**	**1**	1	1
9	Barcelona	364 days from today	**365 days from today**	1	2	2
10	Barcelona	365 days from today	**366 days from today**	2	3	8
11	Paris	today	91 days from today	**2**	2	8
12	Paris	today + 1 day	**29 days from today**	1	3	9
13	Paris	70 days from today	**91 days from today**	2	59	0
14	Paris	364 days from today	**365 days from today**	3	60	1
15	Paris	365 days from today	**366 days from today**	29	1	2
16	London	today	**today + 1 day**	2	60	2
17	London	today + 1 day	**91 days from today**	**1**	1	8
18	London	70 days from today	**91 days from today**	**2**	2	9
19	London	364 days from today	**365 days from today**	**3**	3	0
20	London	365 days from today	**366 days from today**	1	59	1
21	New York City	today	**29 days from today**	**1**	3	1
22	New York City	today + 1 day	**29 days from today**	30	59	2
23	New York City	70 days from today	**91 days from today**	1	60	8
24	New York City	364 days from today	**365 days from today**	**1**	1	9
25	New York City	365 days from today	**366 days from today**	**2**	2	0

Pairwise Testing Technique. Create combinations using special tools

Here is an example of pairwise combinations created using Pairwise Pict Online tool.

1. Identify the parameters.
The parameters are **City**, **Check-in Date**, **Check-out Date**, **Rooms**, **Adults**, **Children**.

2. Determine the values for each parameter.
City: Rome, Barcelona, Paris, London, New York City.
Check-in date: today, today + 1 day, 70 days from today, 364 days from today, 365 days from today.
Check-out date: today + 1 day, 29 days from today, 91 days from today, 365 days from today, 366 days from today.
Rooms: 1, 2, 3, 29, 30.
Adults: 1, 2, 3, 59, 60.
Children: 0, 1, 2, 8, 9.

The table below summarizes the parameters and their corresponding values.

#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
1	Rome	today	today + 1 day	1	1	0
2	Barcelona	today + 1 day	29 days from today	2	2	1
3	Paris	70 days from today	91 days from today	3	3	2
4	London	364 days from today	365 days from today	29	59	8
5	New York City	365 days from today	366 days from today	30	60	9

Pairwise Testing Technique. Create combinations using special tools

3. Generate combinations using the Pairwise Pict Online tool.

Pairwise Pict Online

An online service that easily generates pair-wise test cases.

It's powered by Microsoft Pict under the hood.

```
############################################################
# Paste test factors here.
# Check the documents for more details.
# https://github.com/Microsoft/pict/blob/master/doc/pict.md
############################################################

City: Rome, Barcelona, Paris, London, New York City

Check-in date: today, today + 1 day, 70 days from today, 364 days from today, 365 days
from today

Check-out date: today + 1 day, 29 days from today, 91 days from today, 365 days from
today, 366 days from today

Rooms: 1, 2, 3, 29, 30

Adults:  1, 2, 3, 59, 60

Children:  0, 1, 2, 8, 9

if [Check-in date] = "today" then [Check-out date] = "today + 1 day" or [Check-out
date] = "29 days from today" or [Check-out date] = "91 days from today";

if [Check-in date] = "today + 1 day" then [Check-out date] = "29 days from today" or
[Check-out date] = "91 days from today";

if [Check-in date] = "70 days from today" then [Check-out date] = "91 days from
today";

if [Check-in date] = "364 days from today" then [Check-out date] = "365 days from
today";

if [Check-in date] = "365 days from today" then [Check-out date] = "366 days from
today";

if [Rooms] = 1 then [Adults] = 1 or [Adults] = 2 or [Adults] = 3 or [Adults] = 59 or
[Adults] = 60;

if [Rooms] = 2 then [Adults] = 2 or [Adults] = 3 or [Adults] = 59 or [Adults] = 60;

if [Rooms] = 3 then [Adults] = 3 or [Adults] = 59 or [Adults] = 60;

if [Rooms] = 29 then [Adults] = 59 or [Adults] = 60;

if [Rooms] = 30 then [Adults] = 59 or [Adults] = 60;
```

#	City	Check-in date	Check-out date	Rooms	Adults	Children
1	Rome	today	today + 1 day	1	1	0
2	Rome	today	today + 1 day	2	2	2
3	Rome	today	91 days from today	3	60	8
4	Rome	today + 1 day	29 days from today	2	2	2
5	Rome	today + 1 day	91 days from today	29	59	8
6	Rome	70 days from today	91 days from today	1	60	8
7	Rome	70 days from today	91 days from today	30	60	1
8	Rome	364 days from today	365 days from today	1	3	0
9	Rome	365 days from today	366 days from today	1	59	8
10	Rome	365 days from today	366 days from today	29	59	9
11	Barcelona	today	today + 1 day	30	59	1
12	Barcelona	today + 1 day	29 days from today	1	1	9
13	Barcelona	today + 1 day	29 days from today	2	59	0
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17	Barcelona	364 days from today	365 days from today	30	60	1
18	Barcelona	365 days from today	366 days from today	2	2	9
19	Barcelona	365 days from today	366 days from today	3	3	2
20	Paris	today	29 days from today	2	2	1
21	Paris	today	29 days from today	29	60	8
22	Paris	today	today + 1 day	1	60	8
23	Paris	today + 1 day	29 days from today	30	60	2
24	Paris	70 days from today	91 days from today	2	3	9
25	Paris	70 days from today	91 days from today	3	59	0
26	Paris	364 days from today	365 days from today	1	1	1
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29	London	today	today + 1 day	29	60	0
30	London	today + 1 day	29 days from today	1	2	0
31	London	today + 1 day	91 days from today	2	60	2
32	London	70 days from today	91 days from today	29	60	1
33	London	364 days from today	365 days from today	3	60	9
34	London	365 days from today	366 days from today	3	3	8
35	London	365 days from today	366 days from today	30	59	8
36	New York City	today	today + 1 day	3	3	8
37	New York City	today	today + 1 day	30	59	9
38	New York City	today + 1 day	29 days from today	3	3	1
39	New York City	70 days from today	91 days from today	1	1	2
40	New York City	364 days from today	365 days from today	2	2	9
41	New York City	364 days from today	365 days from today	29	59	8
42	New York City	365 days from today	366 days from today	30	60	0

Pairwise Testing Technique. Create combinations using special tools

Here is an example of pairwise combinations created using Pairwise Online Tool.

1. Identify the parameters.
The parameters are **City**, **Check-in Date**, **Check-out Date**, **Rooms**, **Adults**, **Children**.

2. Determine the values for each parameter.
City: Rome, Barcelona, Paris, London, New York City.
Check-in date: today, today + 1 day, 70 days from today, 364 days from today, 365 days from today.
Check-out date: today + 1 day, 29 days from today, 91 days from today, 365 days from today, 366 days from today.
Rooms: 1, 2, 3, 29, 30.
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The table below summarizes the parameters and their corresponding values.

#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
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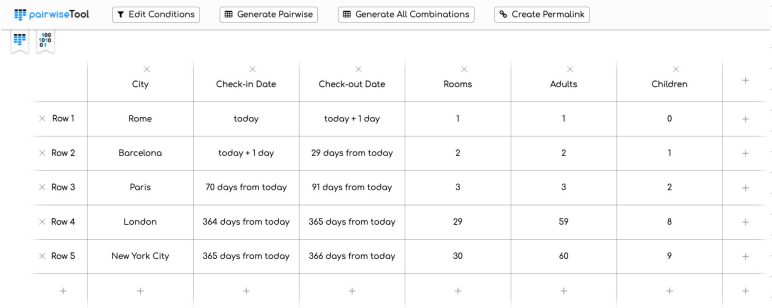
4	London	364 days from today	365 days from today	29	59	8
5	New York City	365 days from today	366 days from today	30	60	9

Pairwise Testing Technique. Create combinations using special tools

3. Generate combinations using the Pairwise Online Tool.



	City	Check-in Date	Check-out Date	Rooms	Adults	Children
Row 1	Rome	today	today + 1 day	1	1	0
Row 2	Barcelona	today + 1 day	29 days from today	2	2	1
Row 3	Paris	70 days from today	91 days from today	3	3	2
Row 4	London	364 days from today	365 days from today	29	59	8
Row 5	New York City	365 days from today	366 days from today	30	60	9

#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
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5	Rome	365 days from today	366 days from today	30	60	9
6	Barcelona	today	29 days from today	3	59	9
7	Barcelona	today + 1 day	91 days from today	29	60	0
8	Barcelona	70 days from today	365 days from today	30	1	1
9	Barcelona	364 days from today	366 days from today	1	2	2
10	Barcelona	365 days from today	today + 1 day	2	3	8
11	Paris	today	91 days from today	30	2	8
12	Paris	today + 1 day	365 days from today	1	3	9
13	Paris	70 days from today	366 days from today	2	59	0
14	Paris	364 days from today	today + 1 day	3	60	1
15	Paris	365 days from today	29 days from today	29	1	2
16	London	today	365 days from today	2	60	2
17	London	today + 1 day	366 days from today	3	1	8
18	London	70 days from today	today + 1 day	29	2	9
19	London	364 days from today	29 days from today	30	3	0
20	London	365 days from today	91 days from today	1	59	1
21	New York City	today	366 days from today	29	3	1
22	New York City	today + 1 day	today + 1 day	30	59	2
23	New York City	70 days from today	29 days from today	1	60	8
24	New York City	364 days from today	91 days from today	2	1	9
25	New York City	365 days from today	365 days from today	3	2	0

Pairwise Testing Technique. Create combinations using special tools

5. Replace invalid values with valid ones.

#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
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2	Rome	today + 1 day	29 days from today	2	2	1
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4	Rome	364 days from today	365 days from today	29	59	8
5	Rome	365 days from today	366 days from today	30	60	9
6	Barcelona	today	29 days from today	3	59	9
7	Barcelona	today + 1 day	91 days from today	29	60	0
8	Barcelona	70 days from today	365 days from today	30	1	1
9	Barcelona	364 days from today	366 days from today	1	2	2
10	Barcelona	365 days from today	today + 1 day	2	3	8
11	Paris	today	91 days from today	30	2	8
12	Paris	today + 1 day	365 days from today	1	3	9
13	Paris	70 days from today	366 days from today	2	59	0
14	Paris	364 days from today	today + 1 day	3	60	1
15	Paris	365 days from today	29 days from today	29	1	2
16	London	today	365 days from today	2	60	2
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21	New York City	today	366 days from today	29	3	1
22	New York City	today + 1 day	today + 1 day	30	59	2
23	New York City	70 days from today	29 days from today	1	60	8
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#	City	Check-in Date	Check-out Date	Rooms	Adults	Children
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2	Rome	today + 1 day	29 days from today	2	2	1
3	Rome	70 days from today	91 days from today	3	3	2
4	Rome	364 days from today	365 days from today	29	59	8
5	Rome	365 days from today	366 days from today	30	60	9
6	Barcelona	today	29 days from today	3	59	9
7	Barcelona	today + 1 day	91 days from today	29	60	0
8	Barcelona	70 days from today	**91 days from today**	**1**	1	1
9	Barcelona	364 days from today	**365 days from today**	1	2	2
10	Barcelona	365 days from today	**366 days from today**	2	3	8
11	Paris	today	91 days from today	**2**	2	8
12	Paris	today + 1 day	**29 days from today**	1	3	9
13	Paris	70 days from today	**91 days from today**	2	59	0
14	Paris	364 days from today	**365 days from today**	3	60	1
15	Paris	365 days from today	**366 days from today**	29	1	2
16	London	today	**today + 1 day**	2	60	2
17	London	today + 1 day	**91 days from today**	**1**	1	8
18	London	70 days from today	**91 days from today**	**2**	2	9
19	London	364 days from today	**365 days from today**	**3**	3	0
20	London	365 days from today	**366 days from today**	1	59	1
21	New York City	today	**29 days from today**	**1**	3	1
22	New York City	today + 1 day	**29 days from today**	30	59	2
23	New York City	70 days from today	**91 days from today**	1	60	8
24	New York City	364 days from today	**365 days from today**	**1**	1	9
25	New York City	365 days from today	**366 days from today**	**2**	2	0

Decision Table Technique

The Decision Table technique is used to create test cases for the Airport Transfer Search feature on the Agoda website.

1. Create a decision table with rules.

	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8	Rule 9	Rule 10	Rule 11	Rule 12	Rule 13	Rule 14	Rule 15	Rule 16
Conditions																
Is the Pick Up point selected?	yes	yes	yes	yes	yes	yes	yes	yes	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**
Is the Drop Off point selected?	yes	yes	yes	yes	**no**	**no**	**no**	**no**	yes	yes	yes	yes	**no**	**no**	**no**	**no**
Is the Pickup Date selected?	yes	yes	**no**	**no**	yes	yes	**no**	**no**	yes	yes	**no**	**no**	yes	yes	**no**	**no**
Is the Pickup Time selected?	yes	**no**	yes	**no**	yes	**no**	yes	**no**	yes	**no**	yes	**no**	yes	**no**	yes	**no**
Actions																
The search is performed	+															
The message "Please select a Pick Up point" is displayed									+	+	+	+	+	+	+	+
The message "Please select a Drop Off point" is displayed					+	+	+	+					+	+	+	+
The message "Please select a Pickup Date" is displayed			+	+			+	+			+	+			+	+
The message "Please select a Pickup Time" is displayed		+		+		+		+		+		+		+		+

2. Analyze the decision table and mark the conditions that do not affect the actions. All the conditions are mandatory. And if one of the conditions is not valid, no other condition matters.

	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8	Rule 9	Rule 10	Rule 11	Rule 12	Rule 13	Rule 14	Rule 15	Rule 16
Conditions																
Is the Pick Up point selected?	yes	yes	yes	yes	yes	yes	yes	yes	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**
Is the Drop Off point selected?	yes	yes	yes	yes	**no**	**no**	**no**	**no**	yes	yes	yes	yes	**no**	**no**	**no**	**no**
Is the Pickup Date selected?	yes	yes	**no**	**no**	yes	yes	**no**	**no**	yes	yes	**no**	**no**	yes	yes	**no**	**no**
Is the Pickup Time selected?	yes	**no**	yes	**no**	yes	**no**	yes	**no**	yes	**no**	yes	**no**	yes	**no**	yes	**no**
Actions																
The search is performed	+															
The message "Please select a Pick Up point" is displayed									+	+	+	+	+	+	+	+
The message "Please select a Drop Off point" is displayed					+	+	+	+					+	+	+	+
The message "Please select a Pickup Date" is displayed			+	+			+	+			+	+			+	+
The message "Please select a Pickup Time" is displayed		+		+		+		+		+		+		+		+

Decision Table Technique

3. Remove the conditions that do not affect the actions.

	Rule 1	Rule 2	Rule 3	Rule 5	Rule 9
Conditions					
Is the Pick Up point selected?	yes	yes	yes	yes	**no**
Is the Drop Off point selected?	yes	yes	yes	**no**	yes
Is the Pickup Date selected?	yes	yes	**no**	yes	yes
Is the Pickup Time selected?	yes	**no**	yes	yes	yes
Actions					
The search is performed	+				
The message "Please select a Pick Up point" is displayed					+
The message "Please select a Drop Off point" is displayed				+	
The message "Please select a Pickup Date" is displayed			+		
The message "Please select a Pickup Time" is displayed		+			

4. Create a test case table by changing the row and column headings.

	Test Case 1	Test Case 2	Test Case 3	Test Case 4	Test Case 5
Inputs					
Is the Pick Up point selected?	yes	yes	yes	yes	**no**
Is the Drop Off point selected?	yes	yes	yes	**no**	yes
Is the Pickup Date selected?	yes	yes	**no**	yes	yes
Is the Pickup Time selected?	yes	**no**	yes	yes	yes
Expected Results					
The search is performed	+				
The message "Please select a Pick Up point" is displayed					+
The message "Please select a Drop Off point" is displayed				+	
The message "Please select a Pickup Date" is displayed			+		
The message "Please select a Pickup Time" is displayed		+			