

# Pairwise Testing

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# Testing A simple Find Dialog

A screenshot of a 'Find in this Page' dialog box. The dialog has a red title bar with the text 'Find in this Page' and a close button (X) in the top right corner. The main area is light gray. It contains a label 'Find text:' followed by a text input field containing the word 'lowercase'. Below the input field are two checkboxes: the first is checked and labeled 'Match upper/lower case', and the second is unchecked and labeled 'Search backwards'. At the bottom are two buttons: 'Find' and 'Cancel'.

**Find in this Page**

Find text:

☒ Match upper/lower case

☐ Search backwards

# Input

- ☐ Text: Lower / Upper / Mixed
- ☐ Match: Yes / No
- ☐ Direction: Normal / Backward
- ☐ Searched Text is found / is not found

$$\Rightarrow 3 \times 2 \times 2 \times 2 = 24 \text{ TCs}$$



# Pairwise Testing

- A **black-box** test design technique
- Test cases are designed to execute **all possible discrete combinations of each pair of input** parameters
- Helpful for applications with **multiple input parameters**



# Arrange variables and values

- Order the variables with the most number of values is first and the least is last.

Text	Match	Direction	Searched Text
Lower	Yes	Normal	Found
Upper	No	Backward	Not found
Mixed			

# Create a test suite

- The three values of **Text** should be written two times each which is the number of values of the next variable i.e. **Match**

Text	Match	Direction	Searched Text
Lower	Yes		
Lower	No		
Upper	Yes		
Upper	No		
Mixed	Yes		
Mixed	No		

# Create a test suite (cont.)

- Repeat the same for column 3
- Problem: There is no Yes-Backward and No-Normal → swap around the values in the second set in the third column.

Text	Match	Direction	Searched Text
Lower	Yes	Normal	
Lower	No	Backward	
Upper	Yes	Normal	
Upper	No	Backward	
Mixed	Yes	Normal	
Mixed	No	Backward	



# Create a test suite (cont.)

- Repeat the same for column 4
- Problem: There is no Yes-Not found and No-Found → swap around the values in the third set in the fourth column.

Text	Match	Direction	Searched Text
Lower	Yes	Normal	Found
Lower	No	Backward	Not found
Upper	Yes	Backward	Found
Upper	No	Normal	Not found
Mixed	Yes	Normal	Found
Mixed	No	Backward	Not found



# Create a test suite (cont.)

□ All pairs in 6 cases vs. 24 cases in total

Text	Match	Direction	Searched Text
Lower	Yes	Normal	Found
Lower	No	Backward	Not found
Upper	Yes	Backward	Found
Upper	No	Normal	Not found
Mixed	Yes	Normal	Not found
Mixed	No	Backward	Found

# Pairwise Testing Tools

- [PICT](#) – ‘Pairwise Independent Combinatorial Testing’, provided by Microsoft Corp.
- [ACTS](#) – ‘Advanced Combinatorial Testing System’, provided by NIST, an agency of the US Government.
- [Pairwise](#) by Inductive AS
- [VPtag](#) free All-Pair Testing Tool
- [CAgen](#) Fast combinatorial test set generation

