Software Testing - Blackbox Testing Summary

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Boundary Value Testing
(4 methods of BB-Testing)

Values required

Use input variable values at

- minimum – *"min"*
- just above minimum – *"min+"*
- normal value – *"nom"*
- just below maximum – *"max-"*
- maximum – *"max"*

Make the single Fault assumption (Reliability theory)

Failures are only rarely the result of the simultaneous occurrence of two (or more) faults.

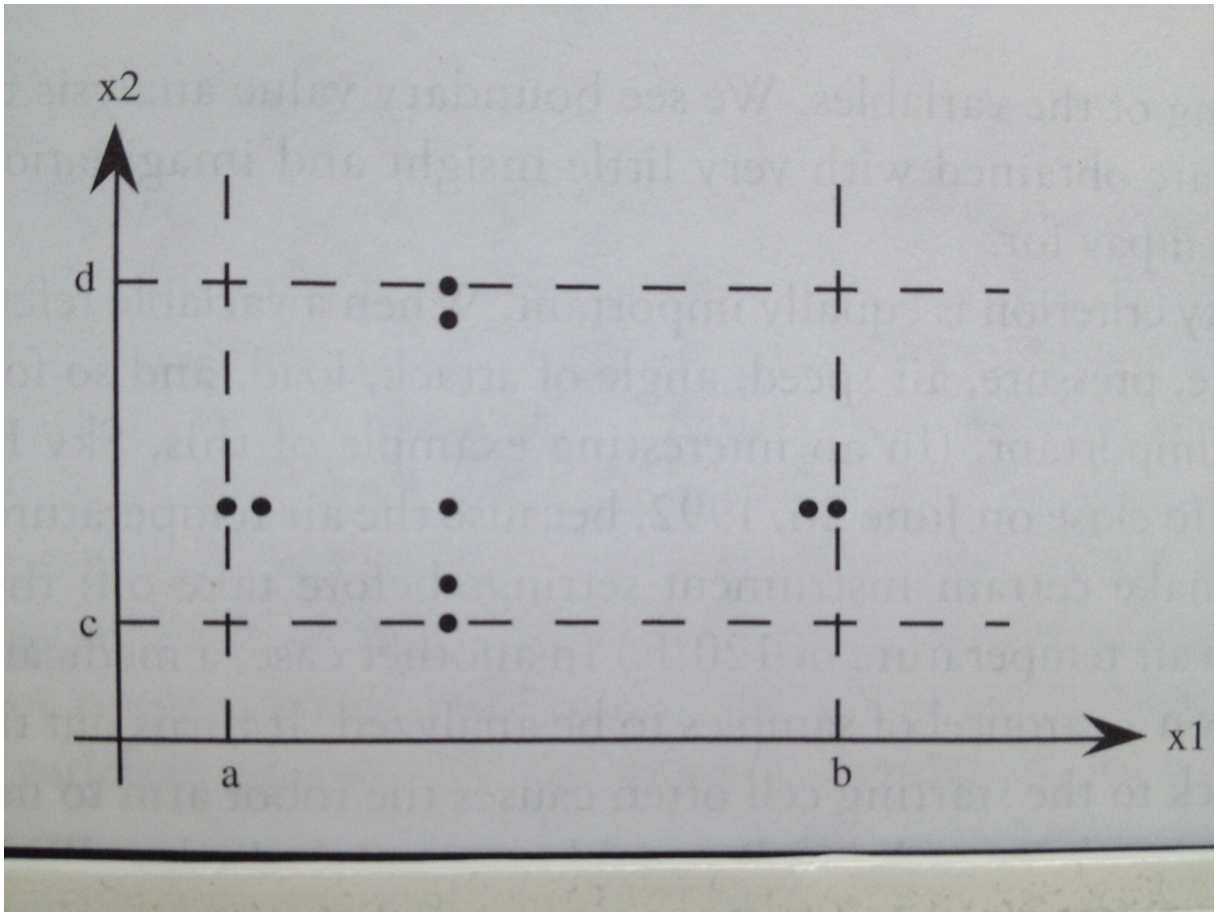
Consequently, **Boundary Value Analysis** test cases are:

- keep all but one variable at their normal values
- let that variable range over all the values from the previous slide.

For 2 input variables: 9 test cases.

For n input variables: $4n + 1$ test cases.

BVA – illustration with 2 inputs



Robustness Testing

Forces attention on exception handling.

add

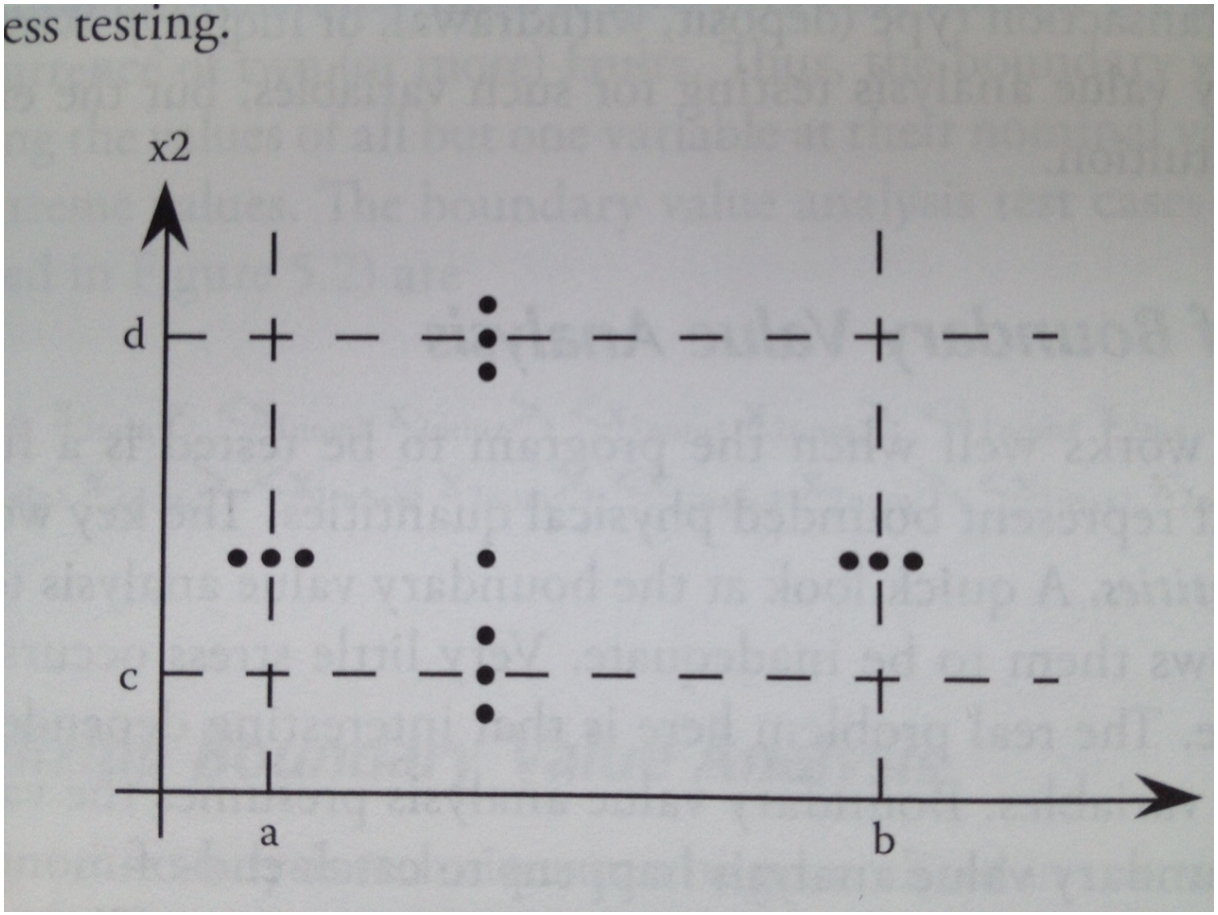
- value slightly larger than maximum – *"max+"*
- value slightly smaller than minimum – *"min-"*

and generate test cases as before.

What happens if a physical quantity exceeds its maximum?

- load capacity of an elevator
- date, e.g. May 32
- temperature

Robustness Testing – illustration with 2 inputs

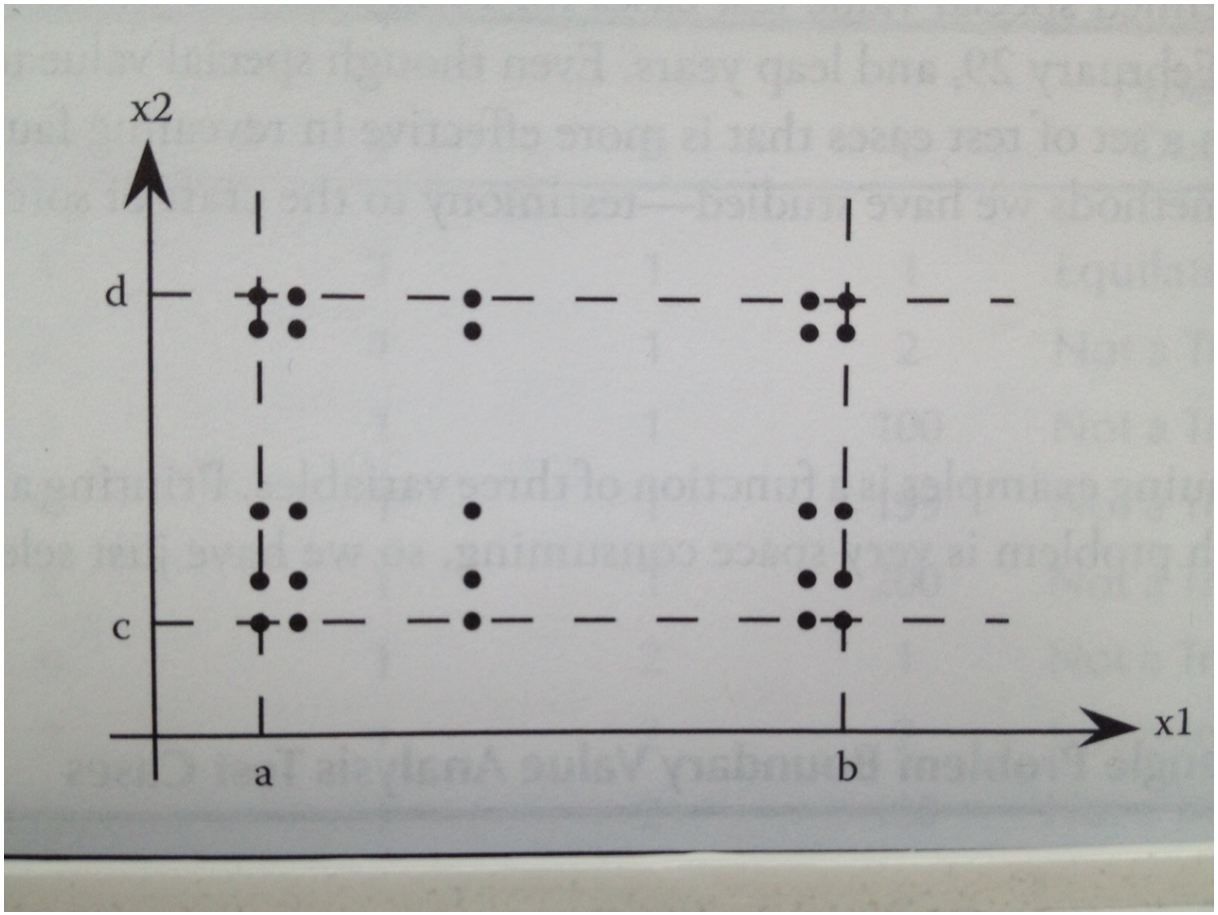


Worst Case Testing

Drop the single fault assumption.

Take the Cartesian product of the selected values of all variables.

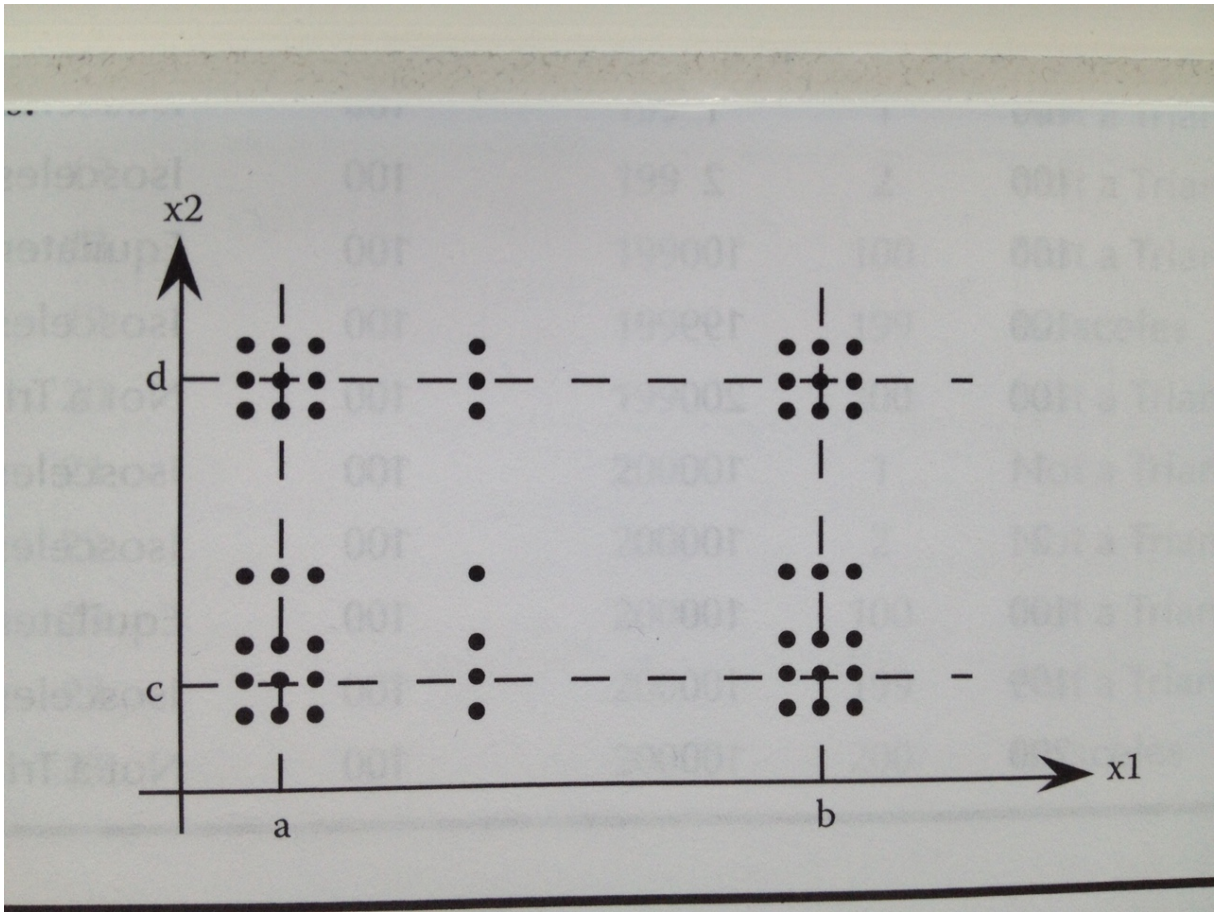
Worst Case Testing – illustration with 2 inputs



Robust Worst Case Testing

Drop the single fault assumption.
Add "$max+$ and "min-"

Robust Worst Case Testing – illustration with 2 inputs



Summary

4 Variants of Boundary Value Testing:
Boundary Value Analysis, Robustness Testing, Worst Case Testing, Robust Worst Case Testing.

Dimensions:

- Considering robustness or not.
- With or without single fault assumption.