Test Design

Agenda

- Test design
- Test design specification
- Test design techniques
  - Static
  - Dynamic
    - Structure based
    - Experience based
    - Specification based

Test Design

The **test design** is the first stage in developing the tests for software testing projects.

During this stage we record what needs to be tested, and is derived from the documents that come into the testing stage, such as requirements and designs.

Test Design Specification

Test design specification is a document with records of features to be tested, and how a successful test of these features would be recognized. The test design does not record the values to be entered for a test, but describes the requirements for defining those values

TDS Includes:

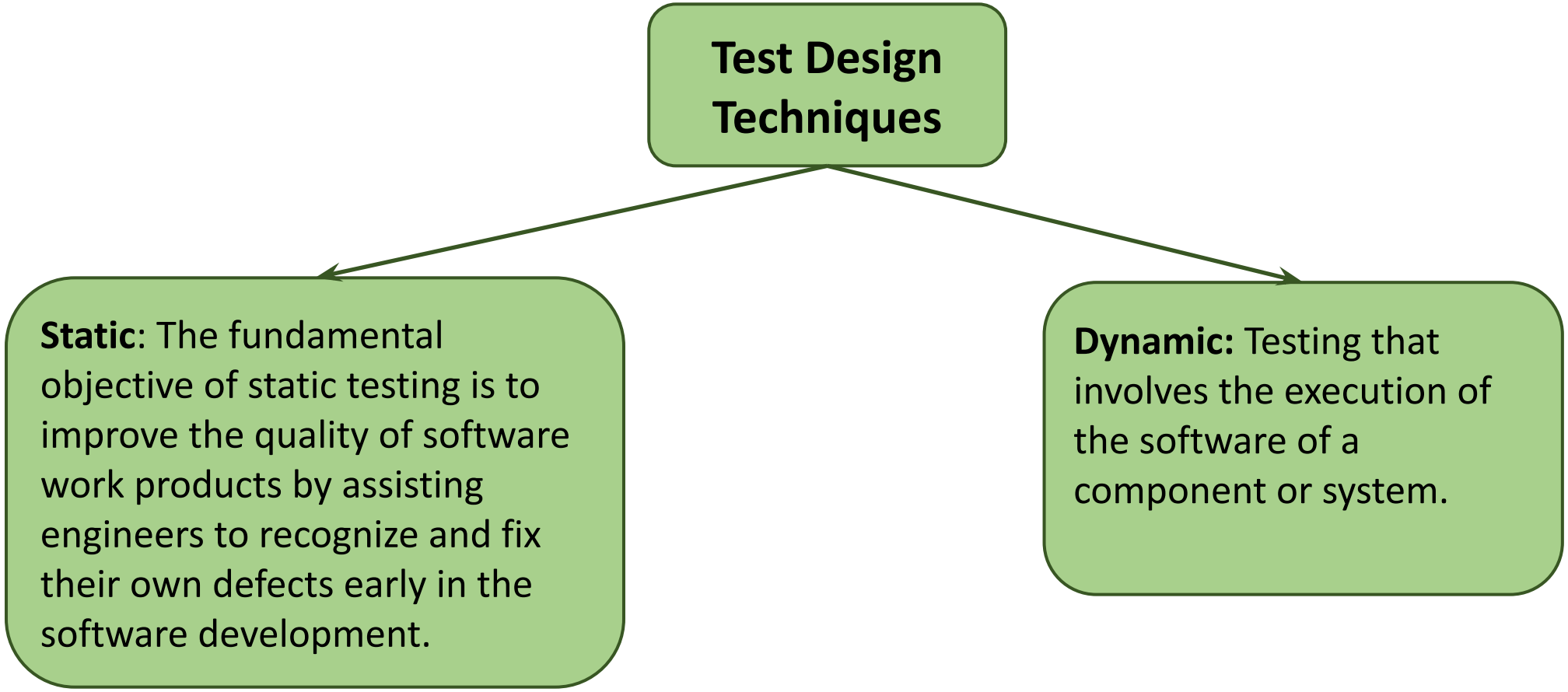
- Test Design Specification Identifier
- Features to be Tested
- Test Identification
- Feature Pass/Fail Criteria

Test Design Techniques

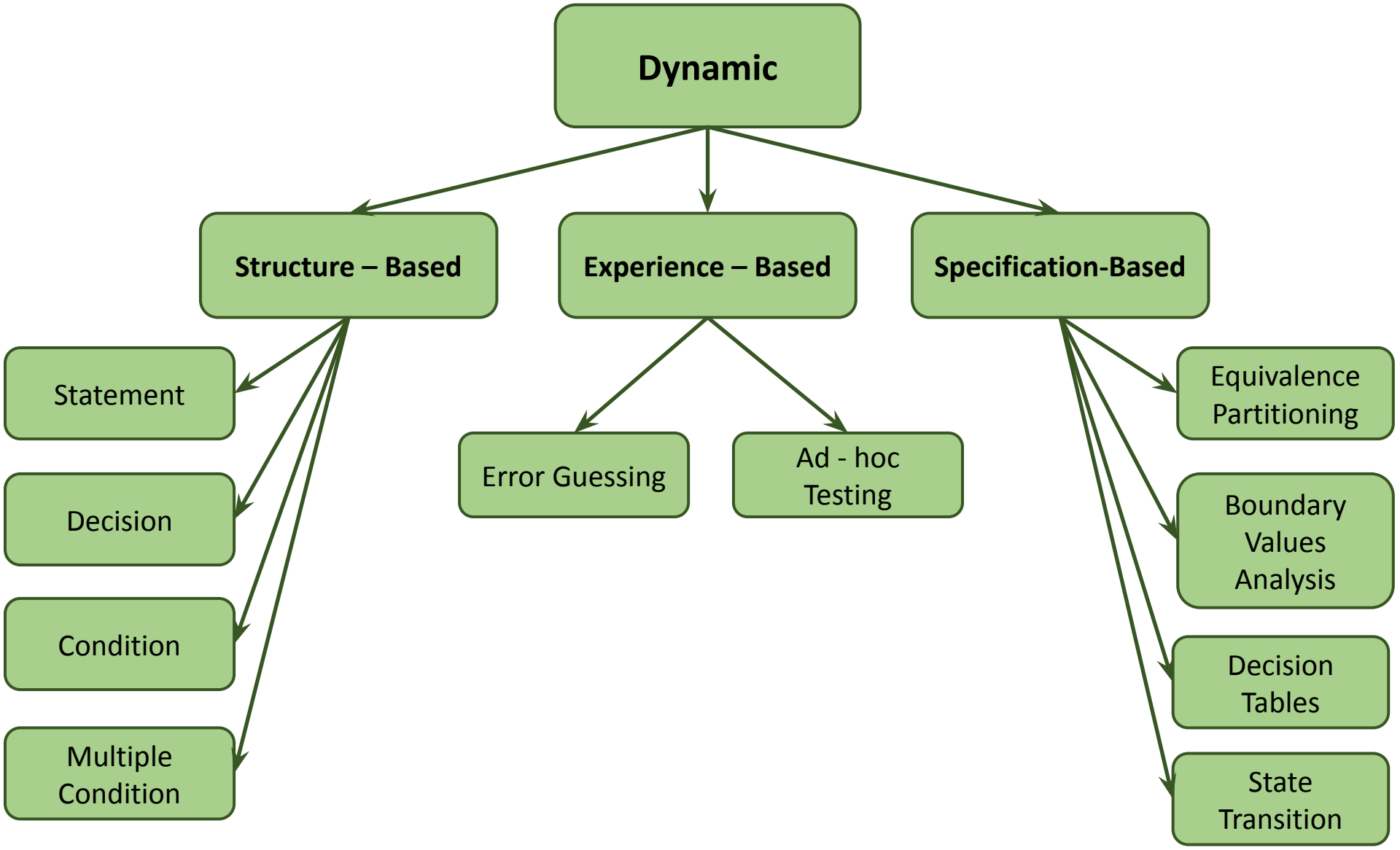
Test design techniques is a complex of techniques that help to derive test cases from the test basis based on the specifics of the system under test.

The purpose is to identify test conditions and test scenarios through which effective and efficient test cases can be written. Using this techniques is a better approach rather the test cases picking out of the air.

Test Design Techniques



Dynamic Techniques



Equivalence Partitioning: About

Equivalence partitioning (EP):

A black box test design technique in which test cases are designed to execute representatives from equivalence partitions.

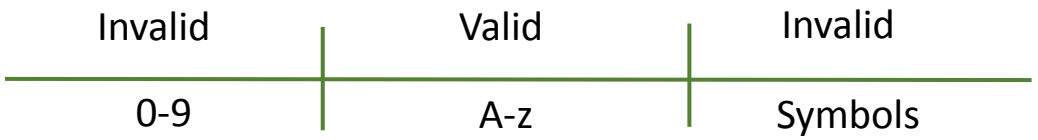
Idea:

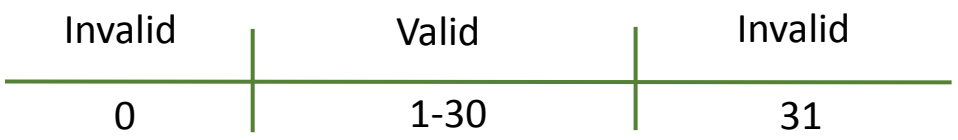
Divide (i.e. to partition) a set of test conditions into groups or sets that can be considered the same (i.e. the system should handle them equivalently), hence equivalence partitioning. In principle test cases are designed to cover each partition at least once.

Equivalence Partitioning: Example

Let’s consider detailed requirements for Name field:

- R1: field permits to enter only alphabetical values;
- R2: field length can not exceed 30 characters.





Boundary Value Analysis: About

Boundary value analysis (BVA):

Boundary value is an input value or output value which is on the edge of an equivalence partition or at the smallest incremental distance on either side of an edge, for example the minimum or maximum value of a range.

Idea:

Divide test conditions into sets and test the boundaries between these sets. Tests should be written to cover each boundary value.

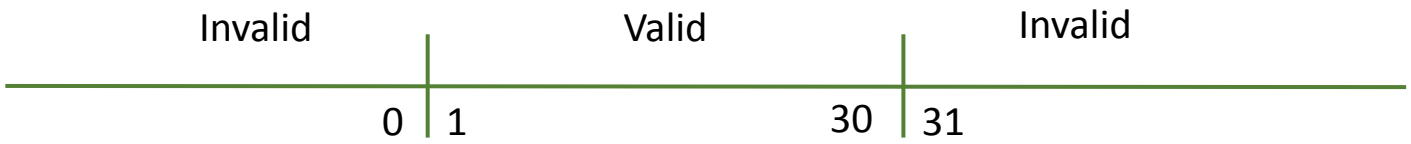
Boundary Value Analysis: Example

Example:

Based on the requirements for the Name field:

- R1: field permits to enter only alphabetical symbols;
- R2: field length can not exceed 30 characters.

Stand Out Boundary values.



State Transition: About

State Transition:

State Transition testing, a black box testing technique, in which outputs are triggered by changes to the input conditions or changes to 'state' of the system. In other words, tests are designed to execute valid and invalid state transitions

Idea:

Design diagram that shows the events that cause a change from one state to another. Tests should cover each path starting from the longest state combination.

State Transition: Example

Entering a Personal Identity Number (PIN) to a bank account