State Transition Testing

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What is State Transition Testing?

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.

When to use?

When we have sequence of events that occur and associated conditions that apply to those events

When the proper handling of a particular event depends on the events and conditions that have occurred in the past

It is used for real time systems with various states and transitions involved

Deriving Test cases:

Understand the various state and transition and mark each valid and invalid state

Defining a sequence of an event that leads to an allowed test ending state

Each one of those visited state and traversed transition should be noted down

Steps 2 and 3 should be repeated until all states have been visited and all transitions traversed

For test cases to have a good coverage, actual input values and the actual output values have to be generated

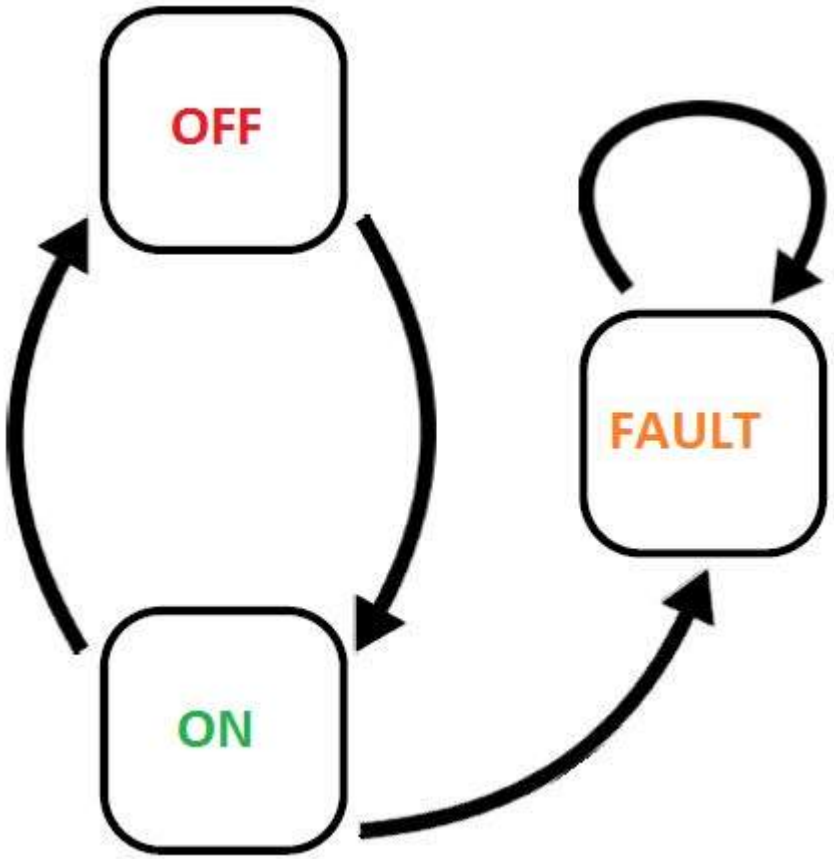
Advantages:

Allows testers to familiarise with the software design and enables them to design tests effectively.

It also enables testers to cover the unplanned or invalid states.

Example:

A System's transition is represented as shown in the below diagram:



The tests are derived from the above state and transition and below are the possible scenarios that need to be tested.

Tests	Test 1	Test 2	Test 3
Start State	Off	On	On
Input	Switch ON	Switch Off	Switch off
Output	Light ON	Light Off	Fault
Finish State	ON	OFF	On

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