

Sequence

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Discussion

A Sequence is an ordered or directed arrangement of elements with defined progression relationships among those elements.

A Sequence can arrange:

- Activities
- Actions
- Operations
- Events
- States
- Instructions
- Messages
- Transactions
- Observations
- Measurements
- Decisions
- Other identifiable elements

A Sequence can define:

- One or more initial elements
- Preceding elements
- Following elements
- Sequential progression
- Parallel progression
- Conditional progression
- Alternative progression
- Iterative progression
- Event-driven progression
- Error-handling progression
- Completion conditions
- Termination conditions

Progression within a Sequence can depend on:

- Completion of an element
- An observed value
- An event
- A state
- A decision
- A condition
- A timeout

- An error
- Another defined progression criterion

A Sequence can define:

- A total ordering in which each element has one determined position relative to every other element
- A partial ordering in which some elements can occur concurrently or without a required ordering
- Conditional alternatives in which the applicable progression depends on defined conditions
- Repetition in which an element can occur more than once

Definition

ordered or directed arrangement of elements with defined progression relationships among those elements

Source

Adapted from:

- [OMG Test Information Interchange Format \(TestIF\), Version 1.0 Beta 3, Sections 7.3.4 and 7.3.14](#)
- [Test Sequence](#)
- [Sequence Step](#)
- DIDO Reference Implementation Conceptual Model
- DIDO-TE draft Requirements Register

OMG TestIF represents a TestSequence as a directed arrangement of SequenceSteps. Each SequenceStep references the SequenceSteps that can follow it.

This definition generalizes the arrangement and progression characteristics for use beyond testing.

Note

A Sequence differs from a set:

- A Sequence defines ordering or progression relationships among its elements
- A set groups elements without necessarily defining their ordering or progression

A Sequence differs from a collection:

- A Sequence defines ordering or progression
- A collection groups elements without necessarily defining how they progress

A Sequence differs from an individual element:

- A Sequence defines the arrangement and progression relationships
- An element occupies a position or participates in that progression

A Sequence does not need to be strictly linear.

A Sequence can include:

- Branches
- Parallel paths
- Conditional paths
- Repeated elements
- Error-handling paths
- Multiple completion points

A Sequence defines permitted or expected progression. The occurrence of that progression is a separate concept.

For testing:

- A [Test Sequence](#) defines permitted progression during [Test Execution](#)
- A [Sequence Step](#) identifies a position or occurrence within the Test Sequence
- An [Execution Path](#) identifies the progression that actually occurred
- A [Test Run](#) records the Execution Path and its execution context

A Sequence can have one element. In that case, the Sequence still identifies the element as the initial and completing element and can establish conditions applicable to its occurrence.

Two Sequences can contain the same elements but define different ordering, progression, branching, or repetition.

Example

A Sequence contains the following activities:

- Establish a Test Environment
- Submit a transaction
- Observe the participating Nodes
- Evaluate the Test Results
- Preserve the Evidence

The Sequence defines:

- Establishment of the Test Environment as the initial activity
- Transaction submission after successful establishment
- Concurrent observation of the participating Nodes
- Evaluation after all required observations complete
- Evidence preservation after evaluation
- An alternative error-handling path when establishment or transaction submission fails

The activities form a Sequence because the arrangement defines their ordering and progression relationships.

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