Differences between Versions of UML Diagrams (2003)

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Presentation overview

- Define the problem
- Discuss the difficulties in finding a solution
- Present solution
- Conclusion and discussion
The Problem
Existing technology - Windiff

- Fails if lines are long, sequence diagrams etc
Textual representation

- Arbitrary ordering in text version
- Location data stored separately.
Difficulties in the solution

- How do we:
  - Abstract from modifications done to the layout and other irrelevant details
  - Visualize structural changes (shifting of operation from one class to another)
  - Detect differences
Presentation of differences - Union

- Use color to distinguish between docs
- Start with layout of one of the base docs (one with more nodes)
Presentation of differences - Union

- Use color to distinguish between docs
- Start with layout of one of the base docs (one with more nodes)
Types of differences
Intra-node difference
Result
Intra-node position change

VERSION 1

VERSION 2
Differences in structure
Creation
Deletion
Result

???
Modifications to layout
Result
Structural shifts
Result
Inter-node shifts
Result

[Diagram of HTML document structure]
Creating a unified document: 2-way difference
Creating a unified document: 3-way difference
Creating a unified document: 3-way difference

- 3rd document precedes first two
- 5 colors: common, insertion, deletion
- Complex to visualize

Diagram:

- Version 1
- Version 2
- Version 3
Computing the difference

- Diagrams are acyclic spanning trees
- All elements are modelled as objects (class, attribute, relationship)
- Assume that root object is unchanged except for attributes and components
Difference Operation
Result
Color restrictions

• Too much color is confusing
• Developers usually interested in a subset of differences:
  • Changes that affect elements of a specific type
  • Changes of original data (the change can be expressed many times later = irrelevant)
  • Changes from a particular editing session
• Uninteresting changes are in grey
Final notes

- New approach of a unified diagram
- Future work – 3-way document merging
- Difference tool integrated into PISET
- [http://pi.informatik.uni-siegen.de/Projekte/sidiff](http://pi.informatik.uni-siegen.de/Projekte/sidiff)
- Last site update July 2011
Discussion

- Can we always define a “root”?
- Is this approach useful in large diagrams?
- Does the approach need more “tracing” abilities? How can we easily see where an element has been shifted to?