API-usage *analysis of a 101implementation*

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on behalf of 101companies.org

What is the JDOM API usage in a given Java-based 101companies implementation?

Let's familiarize with 101implementation:jdom!

Headline

--- Exercise in-memory XML processing with JDOM in Java ---

Languages

- XML
- Java

Technologies

- JDOM
- Eclipse

Features

- Tree structure
- Type-driven query
- Type-driven transformation

The data model for companies is provided as an XML schema.

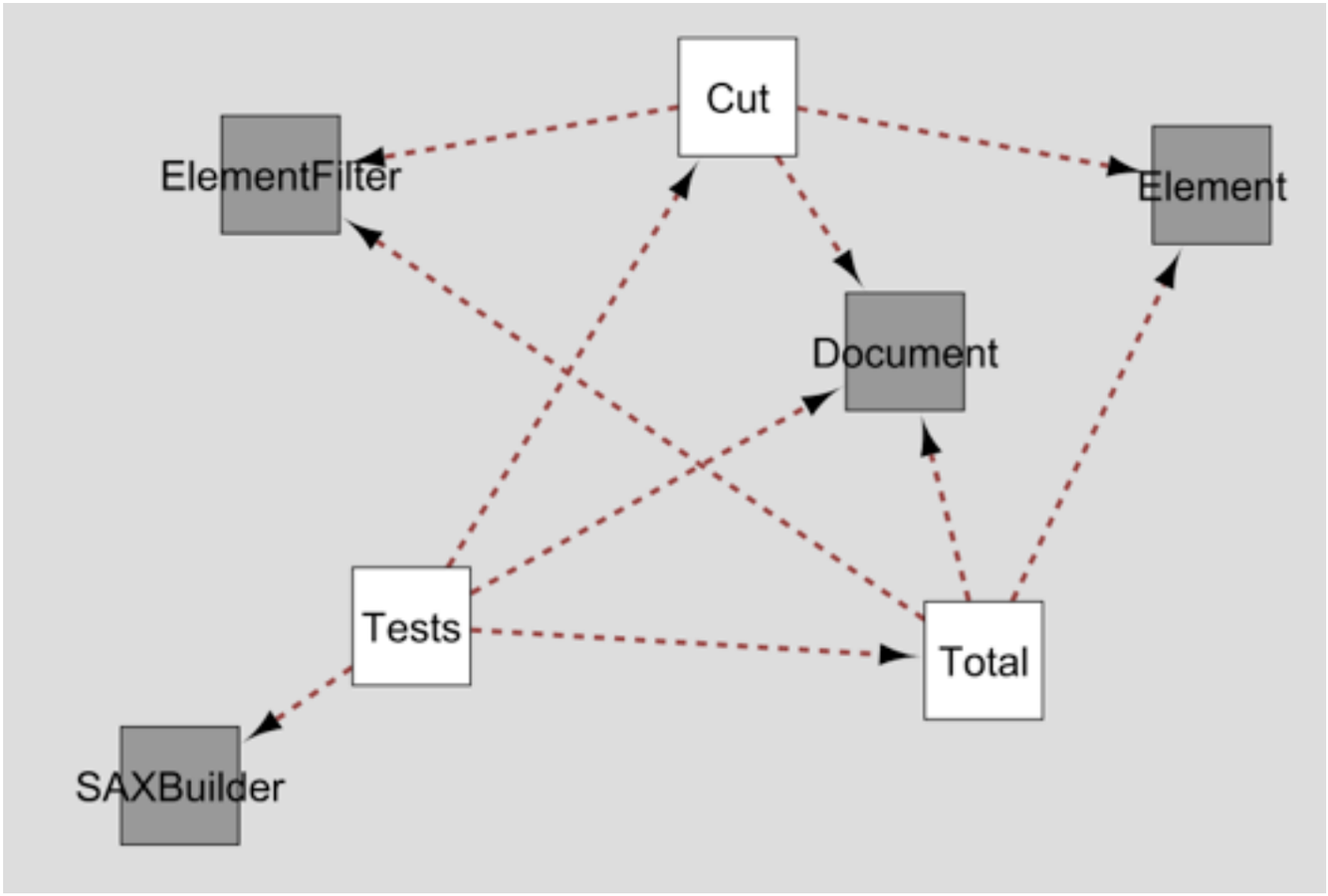
Validity is not checked or otherwise implied.

Eventually, we want to understand usage of the JDOM API.

Usage analysis
for the *JDOM* API
in *101implementation:jdom*

- What parts of the implementation use the API?
- What types and methods of the API are used?
- Can we observe a "usage profile"?

Dependencies between project and API



Computed by automated API-usage analysis

White boxes are types of *101implementation:jdom*.
Gray boxes are types of the *JDOM* API.

Results provided by ShiftLab team, *Victor Winter*, University of Nebraska at Omaha.
http://faculty.ist.unomaha.edu/winter/ShiftLab/

Dependencies between project and API

- Methods
  - Iterator *Document*.getDescendants(Filter filter)
  - String *Element*.getText()
  - Element *Element*.setText(String text)
- Constructors
  - *ElementFilter*(String name)

Only the "//" query axis is invoked and text content is manipulated.

No elements or attributes are constructed.

Results provided by ShiftLab team, *Victor Winter*, University of Nebraska at Omaha.
http://faculty.ist.unomaha.edu/winter/ShiftLab/

Disclaimer

We hardly scratched the surface of "API-usage analysis".

Further reading

See research theme "API usage analysis and migration" by the Software Languages Team, Koblenz; the listed papers also refer to relevant work broadly.

Summary:
What's the point of this demo?

- To demonstrate "meta-level" value of 101companies.
- To easily get started with reverse engineering for 101.
- To motivate profound reverse engineering experiments.

Thanks!

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- Material for this presentation:
  - https://github.com/rlaemmel/api101demo