jInfer BasicRuleDisplayer Module Description

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Target audience: developers willing to extend jInfer, looking for ways to visualize grammars.

Responsible developer	Matej Vitásek
Required tokens	none
Provided tokens	`cz.cuni.mff.ksi.jinfer.base.interfaces.RuleDisplayer`
Module dependencies	Base
Public packages	none

1 Introduction

This is a fairly basic rule displayer, which draws rules as series of nested coloured rectangles. It does so by recursively descending down the regexp tree to draw the innermost nodes first, composing the outer nodes from them. User interface-wise, it creates a component with multiple tabs - each one for a new grammar to be displayed.

2 Structure

The main class implementing `RuleDisplayer` inference interface and simultaneously being registered as its service provider is `BasicRuleDisplayer`. Main method of this class is `createDisplayer()`, which looks up the component, adds a new panel to it and renders the specified grammar in it.

The diagram of classes involved in rule display is in figure 1. The top component of the rule displayer has a few panels in it, each containing its own `RuleDisplayer`, responsible for rendering specified grammar into an internal `Image` once, and then keeping it and drawing it onto panel's `Canvas` each time repainting is needed.

Grammar is rendered in the `drawRules()` method by recursively rendering its rules and stacking their image representations into the image. Rule painting is handled in the `NodePainter` class, with most important method `drawNode()`. While the code itself is a nice recursion programming exercise, there is nothing of a special interest in it.

All graphics used by *`BasicRuleDisplayer`* is contained in the `cz.cuni.mff.ksi.jinfer.basicruledisplayer.graphics` package.

2.1 Settings

All settings provided by *`BasicRuleDisplayer`* are NetBeans-wide. The options panel along with all the logic is in the `cz.cuni.mff.ksi.jinfer.basicruledisplayer.options` package. Available options include setting the maximum number of panels concurrently displayed, rules drawn, as well as maximum nesting level. Everything beyond these limits will be rendered as an icon suggesting omitted information. Furthermore, colours of various nodes can be set here.

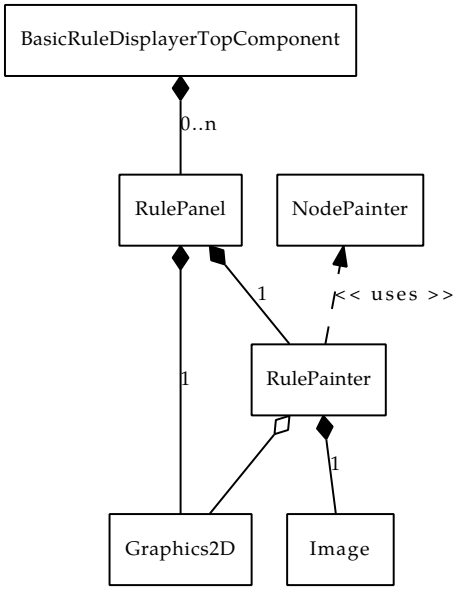

Figure 1: BasicRuleDisplayer class diagram

References

[Aho96] H. Ahonen. *Generating grammars for structured documents using grammatical inference methods*. PhD thesis, Department of Computer Science, University of Helsinki, Series of Publications A, Report A-1996-4, 1996.

[BNST06] Geert Jan Bex, Frank Neven, Thomas Schwentick, and Karl Tuyls. Inference of concise dtds from xml data. In *Proceedings of the 32nd international conference on Very large data bases*, VLDB '06, pages 115–126. VLDB Endowment, 2006.

[BNV07] Geert Jan Bex, Frank Neven, and Stijn Vansummeren. Inferring xml schema definitions from xml data. In *Proceedings of the 33rd international conference on Very large data bases*, VLDB '07, pages 998–1009. VLDB Endowment, 2007.

[Bou] Ronald Bourret. Dtd parser, version 2.0. `http://www.rpbourret.com/dtdparser/index.htm`.

[gra] Graph visualization software. `http://www.graphviz.org/`.

[HMU01] John E. Hopcroft, Rajeev Motwani, and Jeffrey D. Ullman. *Introduction to Automata Theory, Languages, and Computation (2nd Edition)*. Addison-Wesley, 2001.

[HW07] Yo-Sub Han and Derick Wood. Obtaining shorter regular expressions from finite-state automata. *Theor. Comput. Sci.*, 370(1-3):110–120, 2007.

[JAX] Java architecture for xml binding. `http://jaxb.java.net/`.

[jun] Java universal network/graph framework. `http://jung.sourceforge.net/`.

[KMS+a] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer Architecture*.

[KMS+b] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer AutoEditor automaton visualization and editor module*.

[KMS+c] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer Base Module Description*.

[KMS+d] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer BasicDTDExporter Module Description*.

[KMS+e] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer BasicIGG Module Description*.

[KMS+f] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer BasicRuleDisplayer Module Description*.

[KMS+g] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. jinfer javadoc. `http://jinfer.sourceforge.net/javadoc`.

[KMS+h] Michal Klempa, Mário Mikula, Robert Smetana, Michal Švirec, and Matej Vitásek. *jInfer TwoStep simplifier design and implementation*.

[log] Apache log4j™. `http://logging.apache.org/log4j/`.

[loo] org.openide.util.class lookup. `http://bits.netbeans.org/dev/javadoc/org-openide-modules/org/openide/modules/doc-files/api.html`.

[mod] Module system api. `http://bits.netbeans.org/dev/javadoc/org-openide-modules/org/openide/modules/doc-files/api.html`.

[net] Todo. `http://netbeans.org`.

[Nor] Theodore Norvell. A short introduction to regular expressions and context free grammars. `http://www.engr.mun.ca/~theo/Courses/fm/pub/context-free.pdf`.

[pro] Project sample tutorial. `http://platform.netbeans.org/tutorials/nbm-projectsamples.html`.

[VMP08] Ondřej Vošta, Irena Mlýnková, and Jaroslav Pokorný. Even an ant can create an xsd. In *DASFAA'08: Proceedings of the 13th international conference on Database systems for advanced applications*, pages 35–50, Berlin, Heidelberg, 2008. Springer-Verlag.

[Vyh] Julie Vyhnanovská. Automatic construction of an xml schema for a given set of xml documents.

[wik] Regular expression. `http://en.wikipedia.org/wiki/Regular_expression`.

[xml] Xml validation api. `http://download.oracle.com/docs/cd/E17802_01/webservices/webservices/docs/1.6/api/javax/xml/validation/package-summary.html`.