A demonstration of technology metadata for ANTLR

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on behalf of 101companies.org

Set up rules to assign **metadata** describing the roles of files as far as **ANTLR** is concerned.

METAdata

What's ANTLR?

http://www.antlr.org

```
company :
  'company' STRING '{' department* '}' EOF;

department :
  'department' STRING '{'
    ('manager' employee)
    ('employee' employee)*
    department*
  '}';

employee :
  STRING '{'
    'address' STRING
    'salary' FLOAT
  '}';
```

ANTLR style grammar for companies

Grammars were hot in the 70ies?

You are so wrong!

The ANTLR theme

[−] ANTLR theme **ANTLR-centric grammarware theme**

yapg	*A ANTLR-based generator for text-to-object mappings*
antlrAcceptor	An ANTLR-based acceptor for textual syntax
antlrLexer	Lexer-based processing with ANTLR
antlrObjects	Object/Text mapping for Java with ANTLR for parsing
antlrParser	Processing textual syntax with semantic actions of ANTLR
antlrTrees	Parsing text to trees and walk them with ANTLR
gra2mol	Grammar to model transformation with Grammar2Model
xtext	An XText- and Eclipse-based DSL editor

http://101companies.org/index.php/Category:**ANTLR_theme**

Wanted!

101meta rules for ANTLR

When is a file ...

- ... the ANTLR library?
- ... an ANTLR grammar?
- ... an ANTLR-generated parser?
- ... a source that imports ANTLR?

(See more rules online.)

"Condition" of the rule

```
{
  "basename" : "#^antlr-(.*)\\.jar$#",
  "metadata" : {
    "partOf" : "ANTLR",
    "comment" : "The ANTLR library, Version $1"
  }
}
```

Expressed relationship

Assigned metadata

101meta

```
{
  "suffix" : ".g",
  "metadata" : {
    "inputOf" : "ANTLR",
    "comment" : "An ANTLR grammar"
  }
}
```

Expressed relationship

101meta

```
{
  "basename" : "#^.*Parser\\.java$#",
  "content" : "// \\$ANTLR.*\\.g",
  "metadata" : [
    {
      "outputOf" : "ANTLR",
      "comment" : "An ANTLR-generated parser"
    },
    { "concept" : "Parser" }
  ]
}
```

Condition on text of file

Metadata for software concept

101meta

```
{
  "suffix" : ".java",
  "predicate" :
    "technologies/Java_platform/javaImport.sh",
  "args" : [ "org.antlr.runtime" ],
  "metadata" : {
    "dependsOn" : "ANTLR",
    "comment" : "A source that imports ANTLR"
  }
}
```

Programmatic condition

Java package to be tested for

101meta

Metadata management

- Metadata **declaration**

  with rules, as demonstrated

- Metadata **assignment**

  with a rule engine @ 101worker

- Metadata **exploration**

  in the browser at **data**.101companies.org

  or with **explorer**.101companies.org

Disclaimer: This is not even beta.

Metadata declaration

All the previous rules are stored here:

https://github.com/101companies/101repo/blob/master/
technologies/ANTLR/.101meta

101meta metadata may be declared at all levels:

- specific ***technologies***
- specific ***languages***
- specific ***contributions***

Have a look at the "***.101meta***" files in *101repo*.

Metadata assignment


```
{
  - units: [
      - {
            id: 33,
          - metadata: {
                outputOf: "ANTLR",
                comment: "An ANTLR-generated parser"
            }
        },
      - {
            id: 33,
          - metadata: {
                concept: "Parser"
            }
        },
      + { … },
      + { … },
      + { … },
      + { … },
      + { … },
      - {
            id: 36,
          - metadata: {
                comment: "A source that imports ANTLR",
                dependsOn: "ANTLR"
            }
        }
    ],
  + metrics: { … }
}
```


101worker continuously walks over *101repo* to construct data for files matches *101meta* rules. In fact, each file is associated with such matches.

http://**data.101companies.org**/resources/contributions/antlrObjects/org/softlang/parser/**CompanyParser.java**.summary.json

Metadata exploration

http://explorer.101companies.org/

A related paper

"Linking Documentation and Source Code in a Software Chrestomathy" by *Jean-Marie Favre*, *Ralf Lämmel*, *Martin Leinberger*, *Thomas Schmorleiz*, and *Andrei Varanovich*. Under submission.

http://softlang.uni-koblenz.de/101meta/

Thanks!

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- Material for this demonstration:
  - https://github.com/101companies/101media/tree/master/antlr101demo