

Parsing & Modeling Software Engineering Artifacts

Andrea Mocci, Luca Ponzanelli, Michele Lanza

REVEAL @ Software Institute
Università della Svizzera italiana





Andrea **Mocci**



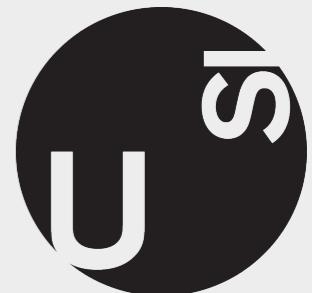
Luca **Ponzanelli**



Michele **Lanza**



Tutorial
Authors





Andrea **Mocci**



Luca **Ponzanelli**



Michele **Lanza**



**Tutorial
Speaker**



14:00 Introduction

14:10 Foundations

14:30 Hands-On Session

15:00 Applications

15:15 Wrap-up and Q&A Session

15:30 End - Lunch Time



**Tutorial
Outline**

```
String
if(parameters.contains("name")){
    hql += " and p.name = :name";
}
if(parameters.contains("age")){
    hql += " and p.age = :age";
}
TypedQuery<Person> query = em.createQuery(hql, Person.class);
if(parameters.contains("name")){
    query.setParameter("name", values[0].toString());
}
parameters.contains("age")){
    query.setParameter("age", Integer.valueOf(values[0].list()));
}
```



Source
Code



Software
Developer





Development Team



Developer
Community



Web
Community



GitHub



stackoverflow

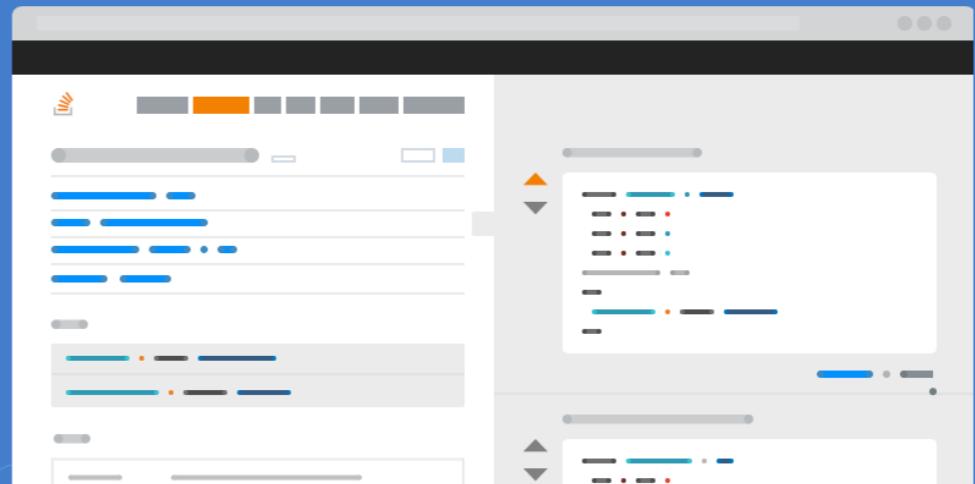
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0 votes	0 answers	2 views	Lost in callback hell with Node, Express and google Analytics API	javascript node.js asynchronous async-await	asked 31 secs ago Simon Breton 78
0 votes	0 answers	2 views	Is it possible to create a `SQLReader` (like a `TextLineReader`) to read data from a database in TensorFlow?	database tensorflow reader	asked 32 secs ago MiniQuark 12.7k



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javascript node.js asynchronous async-await

asked 31 secs ago Simon Breton 78

0 votes 0 answers 2 views

Is it possible to create a `SQLReader` (like a `TextLineReader`) to read data from a database in TensorFlow?

database tensorflow reader

asked 32 secs ago MiniQuark 12.7k



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€42,000 - €55,000

css html

Android UI XML Layout



I've created textView layout into main.xml, i want to see effects onto emulator, but i did not get my changes, it shows old result when i run my app into emulator.....

0



eg:

```
<?xml version="1.0" encoding="utf-8"?>
<TextView xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/textview"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:text="@string/hello"/>
```



strings:

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string name="hello">Hello, Android! I am a string resource!</string>
    <string name="app_name">Hello, Android</string>
</resources>
```

Please help if anyone know.....



android



android-emulator



Stack
Overflow

2 Answers

[active](#)[oldest](#)[votes](#)

0

You probaly need to set the contentView of your Activity using the setContentView() to point to the new layout

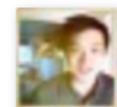
```
public class HelloAndroid extends Activity {  
    /** Called when the activity is first created. */  
    @Override  
    public void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.main);  
    }  
}
```

See more under "Upgrade the UI to an XML Layout"

<http://developer.android.com/resources/tutorials/hello-world.html>

[share](#) [improve this answer](#)

answered Oct 21 '10 at 7:51



Mads Lee Jensen

2,510 • 3 • 27 • 44

hi folks, i'm new to android i've simple created a HelloAndroid application i want to try with xml layout. i've done it through developer guideline but after running the app it does not show the content that i've written into string.xml – [abhay](#) Oct 21 '10 at 8:08

[add a comment](#)



Stack
Overflow

If you want dynamically change the text in your text view you need:

0

- set the content view for your activity:

```
setContentView(R.layout.main);
```

- get a reference to the TextView object:

```
TextView tv= (TextView) findViewById(R.id.textview);
```

- assing a new value:

```
tv.setText(R.string.app_name);
```

share improve this answer

edited Oct 21 '10 at 9:01

answered Oct 21 '10 at 8:19



Asahi

8,060 • 7 ● 48 ● 70

Could you tell me the meaning of "v." in this line TextView tv= (TextView)v.findViewById(R.id.textview); ? –

abhay Oct 21 '10 at 8:56

oops, missed it. meant to write just findViewById(). – Asahi Oct 21 '10 at 9:01

add a comment



Stack
Overflow

Because of problems with "argoHome" location, I imported
java.net.URLDecoder and added the line
URLDecoder.decode(argoHome); just below this one :
public void loadModulesFromDir(String dir) in ModuleLoader.java.

Another problem in ModuleLoader :
since the cookbook explains how to make a PluggableDiagram (that's
exactly what I am doing, so I extend this class), I have not found
where the JMenuItem returned by method getDiagramMenuItem() in
PluggableDiagram is attached in Argo menus. It seems this is not yet
implemented, even though PluggableDiagrams implements Diagram!

So I have added those lines :

```
void append(PluggableDiagram aModule) {  
ProjectBrowser.TheInstance  
.appendPluggableDiagram((PluggableDiagram)aModule); }
```

Of course, such modifications must be reflected in ProjectBrowser.



Development
Emails

Because of problems with "argoHome" location, I imported `java.net.URLDecoder` and added the line `URLDecoder.decode(argoHome);` just below this one : `public void loadModulesFromDir(String dir)` in `ModuleLoader.java`.

Another problem in `ModuleLoader` : since the cookbook explains how to make a `PluggableDiagram` (that's exactly what I am doing, so I extend this class), I have not found where the `JMenuItem` returned by method `getDiagramMenuItem()` in `PluggableDiagram` is attached in Argo menus. It seems this is not yet implemented, even though `PluggableDiagrams` implements `Diagram!`

So I have added those lines :

```
void append(PluggableDiagram aModule) {  
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.appendPluggableDiagram((PluggableDiagram)aModule); }
```

Of course, such modifications must be reflected in `ProjectBrowser`.



**Development
Emails**



Mining
Unstructured Data



State
of the Art

Augmenting API Documentation with Insights from Stack Overflow

Christoph Treude
School of Computer Science
University of Adelaide
Adelaide, SA, Australia
christoph.treude@adelaide.edu.au

Martin P. Robillard
School of Computer Science
McGill University
Montréal, QC, Canada
martin@cs.mcgill.ca

ABSTRACT

Software developers need access to different kinds of information which is often dispersed among different documentation sources, such as API documentation or Stack Overflow. We present an approach to automatically augment API documentation with “insight sentences” from Stack Overflow—sentences that are related to a particular API type and that provide insight not contained in the API documentation of that type. Based on a development set of 1,574 sentences, we compare the performance of two state-of-the-art summarization techniques as well as a pattern-based approach for insight sentence extraction. We then present SISE, a novel machine learning based approach that uses as features the sentences themselves, their formatting, their question, their answer, and their authors as well as part-of-speech tags and the similarity of a sentence to the corresponding API documentation. With SISE, we were able to achieve a precision of 0.64 and a coverage of 0.7 on the development set. In a comparative study with three state-of-the-art developers, we found that SISE resulted in the highest number of sentences that

not obvious where a particular piece of information is stored. Different documentation formats, such as wikis or blogs, contain different kinds of information, written by different individuals and intended for different purposes [38]. For instance, API documentation captures information about functionality and structure, but lacks other types of information, such as concepts or purpose [18]. Some of the most severe obstacles faced by developers learning a new API are related to its documentation [32], in particular because of scarce information about the API’s design, rationale [31], usage scenarios, and code examples [32].

On the other hand, “how-to” questions [35] (also referred to as “how-to-do-it” questions [10]) are the most frequent question type on the popular Question and Answer (Q&A) site Stack Overflow, and the answers to these questions have the potential to complement API documentation in terms of concepts, purpose, usage scenarios, and code examples. While a lot of research has focused on finding code examples for APIs (e.g., [17], [33]), less work has been conducted on improving or augmenting the natural language descriptions contained in API documentation.



State
of the Art

Table 2: Regular Expressions for filtering Stack Overflow Threads

question part	pattern
body	<pre>.*(^ [a-z]+ [\.!?\s]) [(\<)]TypeName([>\)\.,!?\\$] [a-z]+).* (non-qualified API type surrounded by lower case words or punctuation marks)</pre>
title or body	<pre>(?i).*\bPackageName\.TypeName\b.* (fully-qualified API type, case-insensitive)</pre>
body	<pre>.*<code>.*\bTypeName\b.*</code>.* (non-qualified API type in code)</pre>
body	<pre>.*<a.*href.*PackageName/TypeName\.html.*>.*.* (link to the official API documentation)</pre>
title	<pre>(?i).*\b(a an)TypeName\b.* (non-qualified API type prefixed with “a” or “an”, case-insensitive)</pre>



State of the Art
Regular Expressions

Table 2: Regular Expressions for filtering Stack Overflow Threads

question part	pattern
body	$.*(^ [a-z]+ [\!.!\?] [\<\>])\text{TypeName}([>\backslash)\backslash.,!?\$\backslash [a-z]+) .*$ <p>(non-qualified API type surrounded by lower case words or punctuation marks)</p>
title or body	$(?i).*\b\text{PackageName}\.\text{Type}\text{Name}\b.*$ <p>(fully-qualified API type, case-insensitive)</p>
body	$.*<\text{code}>.*\b\text{Type}\text{Name}\b.*</\text{code}>.*$ <p>(non-qualified API type in code)</p>
body	$.*<\text{a}.*\text{href}.*\text{PackageName}/\text{Type}\text{Name}\.\text{html}.*>.*</\text{a}>.*$ <p>(link to the official API documentation)</p>
title	$(?i).*\b(a\ an\)\text{Type}\text{Name}\b.*$ <p>(non-qualified API type prefixed with “a” or “an”, case-insensitive)</p>



State of the Art
Regular Expressions



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srcML (sõrs em el), *n.* **1.** an infrastructure for the exploration, analysis, and manipulation of source code. **2.** an XML format for source code. **3.** a lightweight, highly scalable, robust, multi-language parsing tool to convert source code into srcML. **4.** a free software application licensed under GPL.

srcML is supported in part by a grant from the [National Science Foundation](#) (CNS 13-05292/05217) and is directed by Principal Investigators Dr. Michael L. Collard and Dr. Jonathan I. Maletic. The three year grant (July 2013 - June 2016) is for the enhancement and maintenance of srcML. The goal is to provide a more robust research infrastructure for the exploration, analysis, and manipulation of large scale software systems.

News:

- Latest versions of the srcML Tools srcSAX and srcSlice posted, June 30, 2015.
- New beta version 0.9.5 of srcML posted, May 20, 2015.
- srcML Technical Briefing at ICSE 2015 in Florence, Italy, May 18-19.
- srcSAX version posted Oct 2, 2014.
- One of the first papers on srcML published at IWPC 2003 and entitled "[An XML-Based Lightweight C++ Fact Extractor](#)" by M. L. Collard, H. Kagdi, and J. I. Maletic received the *Most Influential Paper Award* at ICPC 2013 in San Francisco, California, May 20-21.



State of the Art
<srcML>



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Demo

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State of the Art
<srcML>



Island
Grammars



Island
Grammars

Generating Robust Parsers using Island Grammars*

Leon Moonen

CWI, P.O. Box 94079

1090 GB Amsterdam, The Netherlands

<http://www.cwi.nl/~leon/>

leon@cwi.nl

Abstract

Source model extraction—the automated extraction of information from system artifacts—is a common phase in reverse engineering tools. One of the major challenges of this phase is creating extractors that can deal with irregularities in the artifacts that are typical for the reverse engineering domain (for example, syntactic errors, incomplete source code, language dialects and embedded languages).

This paper proposes a solution in the form of island grammars, a special kind of grammars that combine the detailed specification possibilities of grammars with the liberal behavior of lexical approaches. We show how island grammars can be used to generate robust parsers that combine the accuracy of syntactical analysis with the speed, flexibility and tolerance usually only found in lexical analysis. We conclude with a discussion of the development of MANGROVE, a generator for source model extractors based on island grammars and describe implications for future work and case studies.



Island
Grammars

Keywords and phrases: Island grammars, parser generation,

These artifacts typically contain *irregularities* that make it hard (or even impossible) to parse the code using common parser based approaches. Our goal is to obtain *robust* parsers that can handle artifacts with such irregularities. Examples of the kind of irregularities we want to deal with include:

Syntax errors: In a program maintenance environment, we want to be able to deal with systems containing syntax errors (e.g., browse or query code to fix those errors). Most parser based techniques will fail when encountering syntactic errors.

Completeness: The source code of a system may be incomplete. A typical situation is that some of the header files (or copybooks) of a system are lost or mutilated over the years, making a full reconstruction impossible.

Dialects: A legacy language like COBOL (but also a language like C) has a large number of, slightly different, vendor-specific dialects. Ideally, we can support them all. However, a parser for one dialect may not accept code written in another.

Embedded languages: Several programming languages have been upgraded with embedded languages for database access,

IslandGrammar:
(Island | Water)*

Island:
JavaFragment | JSONFragment | ...

Water:
ANY⁺



**Island
Grammars**

```

ReferenceType:
  ClassOrInterfaceType
  TypeVariable
  ArrayType

ClassOrInterfaceType:
  ClassType
  InterfaceType

ClassType:
  Identifier TypeArgumentsopt
  ClassOrInterfaceType.Identifier TypeArgumentsopt

InterfaceType:
  ClassType

TypeVariable:
  Identifier

ArrayType:
  PrimitiveType Dims
  ClassOrInterfaceType Dims
  TypeVariable Dims

Dims:
  ([ ])+

```

```

TypeParameter:
  TypeParameterModifier* Identifier TypeBoundopt

TypeParameterModifier:
  Annotation

TypeBound:
  extends TypeVariable
  extends ClassOrInterfaceType AdditionalBound*

AdditionalBound:
  & InterfaceType

```



ReferenceType:

ClassType

InterfaceType

TypeVariable

ArrayType

ClassType:

Identifier TypeArguments_{opt}

ClassOrInterfaceType.Identifier TypeArguments_{opt}

TypeArguments:

< TypeArgumentList >

TypeArgumentList:

TypeArgument (, TypeArgument)*

TypeArgument:

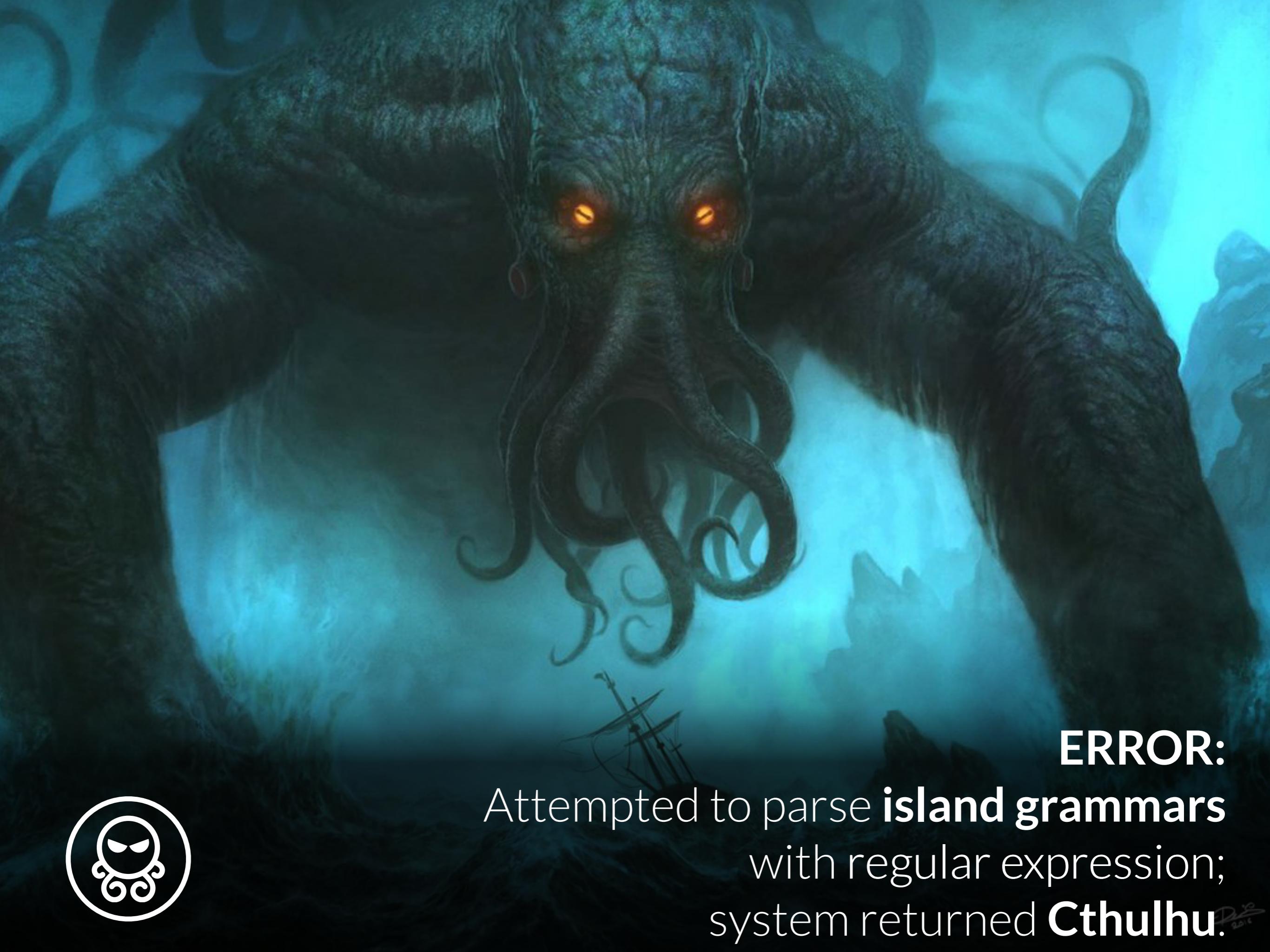
ReferenceType



Island Grammars
Recursion



ERROR:
Attempted to parse **island grammars**
with regular expression;
system returned **Cthulhu.**





Mining structured data in natural language artifacts with island parsing

Alberto Bacchelli ^a  , Andrea Mocci ^b , Anthony Cleve ^c , Michele Lanza ^b 

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<https://doi.org/10.1016/j.scico.2017.06.009>

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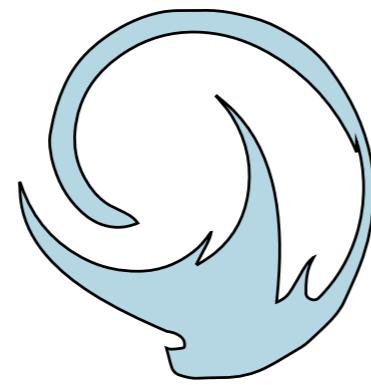
Abstract

Software repositories typically store data composed of structured and unstructured parts. Researchers mine this data to empirically validate research ideas and to support practitioners' activities. Structured data (e.g., source code) has a formal syntax and is straightforward to analyze; unstructured data (e.g., documentation) is a mix of natural language, noise, and snippets of structured data, and it is harder to analyze. Especially the structured content (e.g., code snippets) in unstructured data contains valuable information.

Researchers have proposed several approaches to recognize, extract, and analyze structured data embedded in natural language. We analyze these approaches and investigate their drawbacks. Subsequently, we present two novel methods, based on generalized LR (SGLR) and Parsing Expression Grammars (PEGs), to address these drawbacks and to mine structured fragments within unstructured data. We validate



**Island
Grammars**



StORMeD Island Parser

<http://stormed.inf.usi.ch>

Version: 2.0.0

Parsing Expression Grammars: A Recognition-Based Syntactic Foundation

Bryan Ford
Massachusetts Institute of Technology
Cambridge, MA
`baford@mit.edu`

Abstract

For decades we have been using Chomsky’s generative system of grammars, particularly context-free grammars (CFGs) and regular expressions (REs), to express the syntax of programming languages and protocols. The power of generative grammars to express ambiguity is crucial to their original purpose of modelling natural languages, but this very power makes it unnecessarily difficult both to express and to parse machine-oriented languages using CFGs. Parsing Expression Grammars (PEGs) provide an alternative, recognition-based formal foundation for describing machine-oriented syntax, which solves the ambiguity problem by not introducing ambiguity in the first place. Where CFGs express nondeterministic choice between alternatives, PEGs instead use *prioritized choice*. PEGs address frequently felt expressiveness limitations of CFGs and REs, simplifying syntax definitions and making it unnecessary to separate their lexical and hierarchical components. A linear-time parser can be built for any PEG, avoiding both the complexity and fickleness of LR parsers and the inefficiency of generalized-GV parsing. While PEGs provide a rich set of operators for constructing grammars, they are reducible to two minimal recognizers developed earlier: TDPL and gTS/GTDPL, which are here proven equivalent in effective recognition power.



Island Parsing with PEGs

1 Introduction

Most language syntax theory and practice is based on *generative* systems, such as regular expressions and context-free grammars, in which a language is defined formally by a set of rules applied recursively to generate strings of the language. A system, in contrast, defines a language in terms of rules or predicates that decide whether or not a given string is in the language. Simple languages can be expressed easily in either paradigm. For example, $\{s \in a^* \mid s = (aa)^n\}$ is a generative definition of a trivial language over a unary character set, whose strings are “constructed” by concatenating pairs of a’s. In contrast, $\{s \in a^* \mid (|s| \bmod 2 = 0)\}$ is a recognition-based definition of the same language, in which a string of a’s is “accepted” if its length is even.

While most language theory adopts the generative paradigm, most practical language applications in computer science involve the recognition and structural decomposition, or *parsing*, of strings. Bridging the gap from generative definitions to practical recognizers is the purpose of our ever-expanding library of parsing algorithms with diverse capabilities and trade-offs [9].

Chomsky’s generative system of grammars, from which the ubiquitous context-free grammars (CFGs) and regular expressions (REs)

Input: "int"

IntFirst: ✓

"int" ✓ | "integer"

IntegerFirst: ✓

"integer" ✗ | "int" ✓



Island Grammars
with PEGs

Input: "int"

IntFirst: ✓

"int" ✓ | "integer"

IntegerFirst: ✓

"integer" ✗ | "int" ✓

Input: "integer"

IntFirst: ✗

"int" ✓ | "integer"

IntegerFirst: ✓

"integer" ✓ | "int"

Priority Matters in PEG!

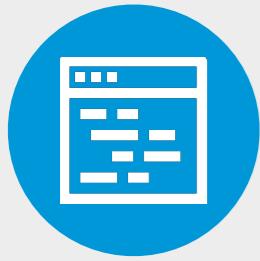


Island Grammars
with PEGs



Island Grammar
for Java 8

```
@Override  
private void aMethod(  
    Object param  
    List<T> list,  
    int[] array){  
    ...  
}
```



Fragments
and Sub-constructs

```
@CustomAnnotation(p1 = “foo”, p2 = “bar”)
private <T> void aMethod(
    final Function<T, Boolean> lambda,
    List<@NonNull ? super T> list,
    @NonNull T... params){

    ...
}

class LocalClass {

    ...
}

...
}
```



Fragments
and Sub-constructs

Type:
 PrimitiveType
 ReferenceType

PrimitiveType:
 {Annotation} NumericType
 {Annotation} boolean

NumericType:
 IntegralType
 FloatingPointType

IntegralType:
 (one of)
 byte short int long char

FloatingPointType:
 (one of)
 float double

ReferenceType:
 ClassOrInterfaceType
 TypeVariable
 ArrayType

ClassOrInterfaceType:
 ClassType
 InterfaceType

ClassType:
 {Annotation} Identifier [TypeArguments]
 ClassOrInterfaceType . {Annotation} Identifier
 [TypeArguments]

InterfaceType:
 ClassType

TypeVariable:
 {Annotation} Identifier

ArrayType:
 PrimitiveType Dims
 ClassOrInterfaceType Dims
 TypeVariable Dims

Dims:
 {Annotation} [] {{Annotation} []}

UnannType:
 UnannPrimitiveType
 UnannReferenceType

UnannPrimitiveType:
 NumericType
 boolean

UnannReferenceType:
 UnannClassOrInterfaceType
 UnannTypeVariable
 UnannArrayType

UnannClassOrInterfaceType:
 UnannClassType
 UnannInterfaceType

UnannClassType:
 Identifier [TypeArguments]
 UnannClassOrInterfaceType . {Annotation}
Identifier [TypeArguments]

UnannInterfaceType:
 UnannClassType

UnannTypeVariable:
 Identifier

UnannArrayType:
 UnannPrimitiveType Dims
 UnannClassOrInterfaceType Dims
 UnannTypeVariable Dims

TypeParameter:
 {TypeParameterModifier} Identifier [TypeBound]

TypeParameterModifier:
 Annotation

TypeBound:
 extends TypeVariable
 extends ClassOrInterfaceType {AdditionalBound}

AdditionalBound:
 & InterfaceType

TypeArguments:
 < TypeArgumentList >

TypeArgumentList:
 TypeArgument {, TypeArgument}

TypeArgument:
 ReferenceType
 Wildcard

Wildcard:
 {Annotation} ? [WildcardBounds]

WildcardBounds:
 extends ReferenceType
 super ReferenceType

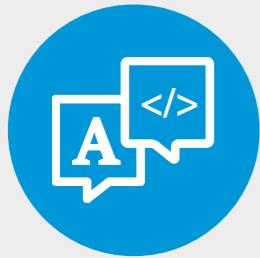
<p>MethodDeclaration: {MethodModifier} MethodHeader MethodBody</p> <p>MethodModifier: (one of) Annotation public protected private abstract static final synchronized native strictfp</p> <p>MethodHeader: Result MethodDeclarator [Throws] TypeParameters {Annotation} Result MethodDeclarator [Throws]</p> <p>Result: UnannType void</p> <p>MethodDeclarator: Identifier ([FormalParameterList]) [Dims]</p> <p>FormalParameterList: ReceiverParameter FormalParameters , LastFormalParameter LastFormalParameter</p> <p>FormalParameters: FormalParameter {, FormalParameter} ReceiverParameter {, FormalParameter}</p>	<p>FormalParameter: {VariableModifier} UnannType VariableDeclaratorId</p> <p>VariableModifier: (one of) Annotation final</p> <p>LastFormalParameter: {VariableModifier} UnannType {Annotation} ... VariableDeclaratorId FormalParameter</p> <p>ReceiverParameter: {Annotation} UnannType [Identifier .] this</p> <p>Throws: throws ExceptionTypeList</p> <p>ExceptionTypeList: ExceptionType {, ExceptionType}</p> <p>ExceptionType: ClassType TypeVariable</p> <p>MethodBody: Block ;</p>
--	--

How to deal with **natural language**?



Fragments
and Natural Language

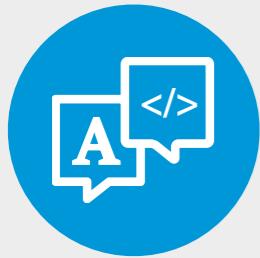
Consider the constructor `public FooBar() { }` and the method `private void aMethod() { }` immersed in narrative



Fragments
and Natural Language

Consider the constructor **public FooBar() { }** and the method **private void aMethod() { }** immersed in narrative

Water(Consider the constructor)

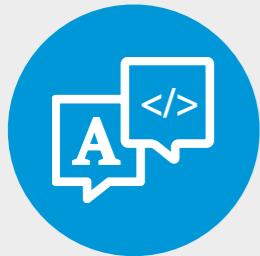


Fragments
and Natural Language

Consider the constructor `public FooBar() { }` and the method `private void aMethod() { }` immersed in narrative

Water(Consider the constructor)

ConstructorDecl(`public FooBar() { }`)



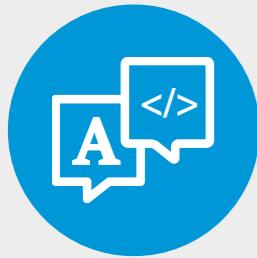
Fragments
and Natural Language

Consider the constructor `public FooBar() { }` and the method `private void aMethod() { }` immersed in narrative

Water(Consider the constructor)

ConstructorDecl(`public FooBar() { }`)

Water(and the method)



Fragments
and Natural Language

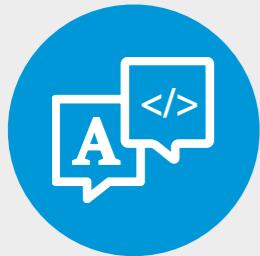
Consider the constructor `public FooBar() { }` and the method `private void aMethod() { }` immersed in narrative

Water(Consider the constructor)

ConstructorDecl(`public FooBar() { }`)

Water(and the method)

MethodDecl(`private void aMethod() { }`)



Fragments
and Natural Language

Consider the constructor `public FooBar() { }` and the method `private void aMethod() { }` immersed in narrative

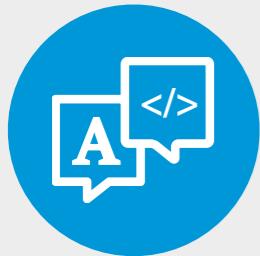
Water(Consider the constructor)

ConstructorDecl(`public FooBar() { }`)

Water(and the method)

MethodDecl(`private void aMethod() { }`)

Water(immersed in narrative)

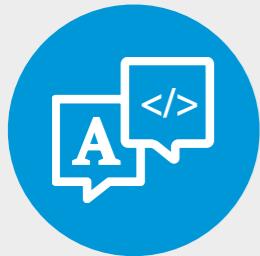


Fragments
and Natural Language

Consider the constructor `public FooBar() { }` and the method `private void aMethod() { }` immersed in narrative

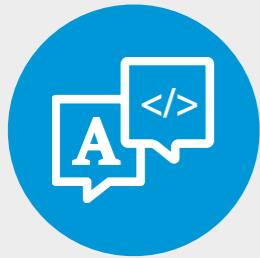


Water(Consider the constructor)
ConstructorDecl(`public FooBar() { }`)
Water(and the method)
MethodDecl(`private void aMethod() { }`)
Water(immersed in narrative)



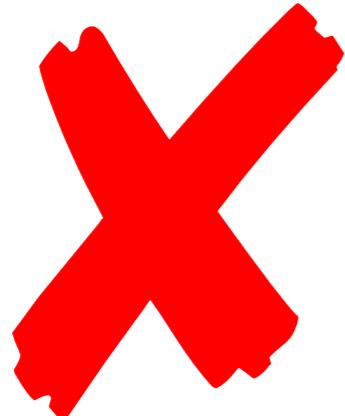
Fragments
and Natural Language

Consider the constructor `FooBar()` `{ }` and the method
`void aMethod()` `{ }` immersed in narrative

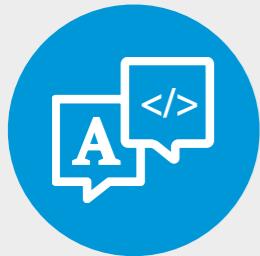


Fragments
and Natural Language

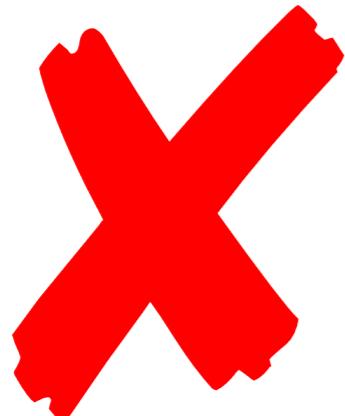
Consider the constructor `FooBar()` `{ }` and the method
`void aMethod()` `{ }` immersed in narrative



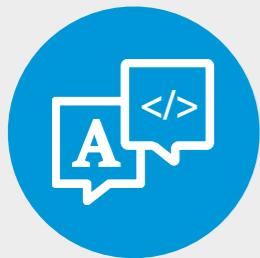
Water(Consider the)
MethodDecl(constructor `FooBar()` `{ }`)
Water(and the method)
MethodDecl(`void aMethod()` `{ }`)
Water(immersed in narrative)



Consider the constructor **FooBar()** { } and the method
void aMethod() { } immersed in narrative



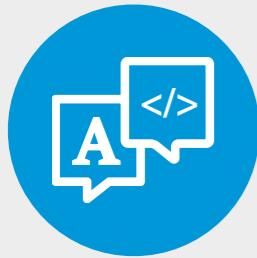
Water(Consider the)
MethodDecl(constructor **FooBar()** { })
Water(and the method)
MethodDecl(**void aMethod()** { })
Water(immersed in narrative)



Fragments
and Natural Language

MethodDecl(constructor FooBar() { })

MethodDecl:
 Modifier* **Type** **Identifier** **Args** **Body**



Fragments
and Natural Language

MethodDecl(constructor FooBar() { })

MethodDecl:

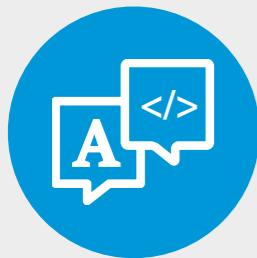
Modifier* -

Type constructor

Identifier FooBar

Args ()

Body { }



Fragments
and Natural Language

MethodDecl(constructor FooBar() { })

MethodDecl:

Modifier*

-

Type

constructor

Identifier

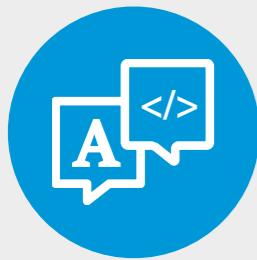
FooBar

Args

○

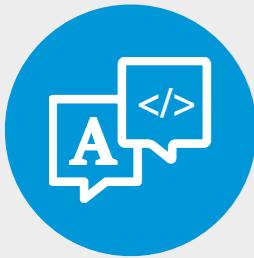
Body

{ }



Fragments
and Natural Language

Java **syntax** does not handle
ambiguity with natural language

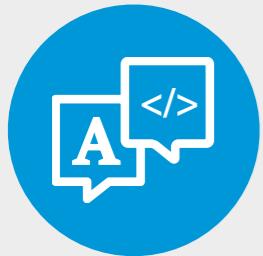


Fragments
and Natural Language

Java **syntax** does not handle
ambiguity with natural language

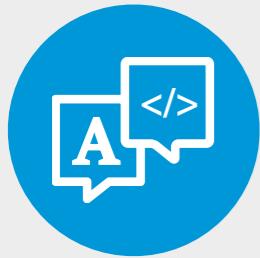
```
//valid constructor  
fooBar() { }
```

```
//valid method  
void Bar() { }
```



Fragments
and Natural Language

How can we **improve disambiguation?**



Fragments
and Natural Language

Naming conventions to the rescue!

METHOD NAMES

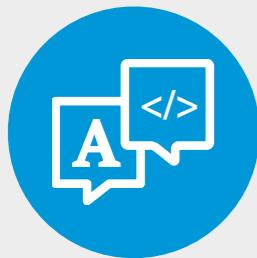
Begin with lower letter (e.g., aMethod)

Might implement camel case

CLASS NAMES

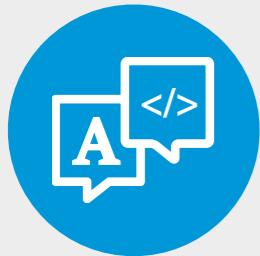
Begin with capital letter (e.g., SomeType)

Might implement camel case



Fragments
and Natural Language

`ConstructorDecl:`
`Modifier* Identifier Args Body`

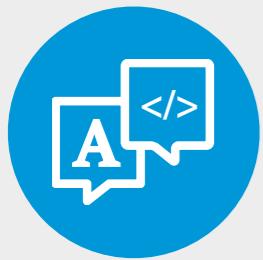


Fragments
and Natural Language

`ConstructorDecl:`
`Modifier* Identifier Args Body`

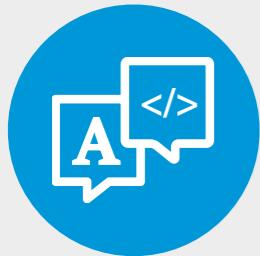


`ConstructorDecl:`
`Modifier+ Identifier Args Body |`
`ClassIdentifier Args Body`



Fragments
and Natural Language

MethodDecl:
Modifier* Type Identifier Args Body



Fragments
and Natural Language

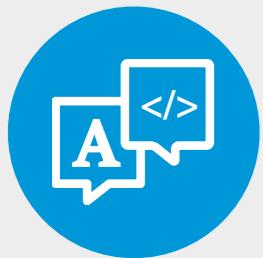
MethodDecl:

Modifier* Type Identifier Args Body



MethodDecl:

Modifier+ Type Identifier Args Body |
StrictType MethodIdentifier Args Body



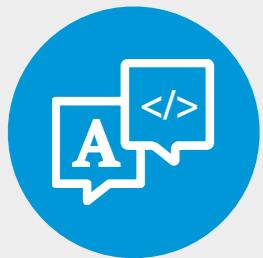
Fragments
and Natural Language

MethodDecl:

Modifier⁺ Type Identifier Args Body |
StrictType MethodIdentifier Args Body

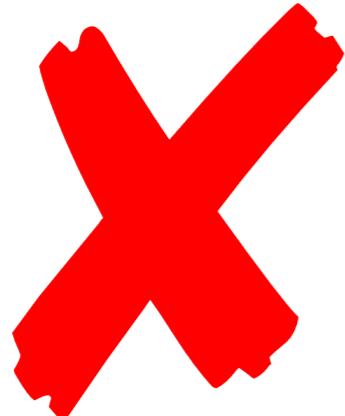
ConstructorDecl:

Modifier⁺ Identifier Args Body |
ClassIdentifier Args Body

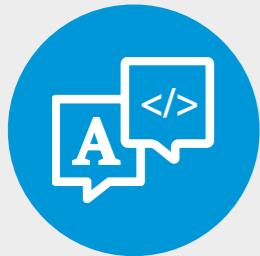


Fragments
and Natural Language

Consider the constructor `FooBar()` `{ }` and the method
`void aMethod()` `{ }` immersed in narrative



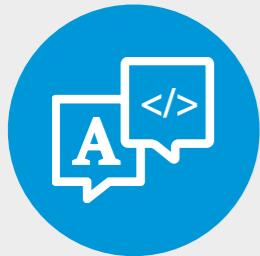
Water(Consider the)
MethodDecl(constructor `FooBar()` `{ }`)
Water(and the method)
MethodDecl(`void aMethod()` `{ }`)
Water(immersed in narrative)



Consider the constructor `FooBar()` `{ }` and the method
`void aMethod()` `{ }` immersed in narrative



Water(Consider the constructor)
ConstructorDecl(`FooBar()` `{ }`)
Water(and the method)
MethodDecl(`void aMethod()` `{ }`)
Water(immersed in narrative)



Fragments
and Natural Language

Consider the constructor `FooBar()` and the method
`void aMethod()` immersed in narrative



Water(Consider the constructor)
XXX(FooBar())
Water(and the method)
MethodDecl(`void aMethod()`)
Water(immersed in narrative)

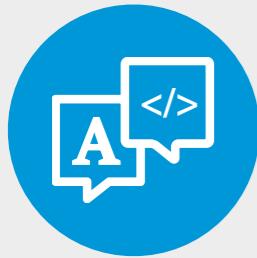


Fragments
and Natural Language

XXX(FooBar())

```
//valid constructor  
declarator  
public FooBar() {  
  
    ...  
}
```

```
//valid method  
invocation  
new FooBar();
```

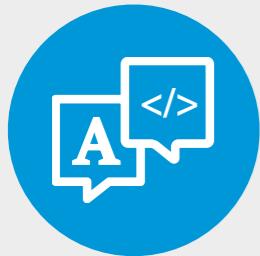


Fragments
and Natural Language

```
//valid constructor  
declarator  
public FooBar() {  
    ...  
}
```

```
//valid method  
invocation  
new FooBar();
```

`FooBar()` is part of an **incomplete production**



Fragments
and Natural Language

An Incomplete Production:

Matches a **relaxed** grammar rule

Could lead to **hardly solvable** ambiguity



Incomplete
Productions

Why are incomplete productions needed?



Incomplete
Productions

Problem with extending JPanel

▲ I have an abstract entity:

0

```
public abstract class Entity extends JPanel implements FocusListener
```

▼ And I have a TextEntity:



```
public class TextEntity extends Entity
```

Inside TextEntity's constructor I want to put a JTextArea that will cover the panel:

```
textArea = new JTextArea();
textArea.setSize(getWidth(),getHeight());
add(textArea);
```

But `getWidth()` and `getHeight()` returns 0. Is it a problem with the inheritance or the constructor?

[java](#) [inheritance](#)

[share](#) [edit](#)

asked Apr 7 '10 at 12:40



Halo

756 ● 12 ● 32



Incomplete
Productions

```
public abstract class SomeClass  
    extends SuperClass implements SomeInterface
```

```
public class SomeClass extends SuperClass
```

```
class SomeClass extends SuperClass
```

```
class SomeClass
```



Incomplete
Productions

IncompleteClassDecl:

...

Modifier* class Identifier extends Type |
Modifier* class Identifier implements Type |
Modifier* class Identifier



Incomplete
Productions

The higher the **relaxation**
The higher the **ambiguity**



Incomplete
Productions

The higher the **relaxation**
The higher the **ambiguity**

“I missed a class yesterday”

Matches IncompleteClassDecl!



Incomplete
Productions

IncompleteClassDecl:

...

Modifier* class Identifier extends Type |
Modifier* class Identifier implements Type |
Modifier* class Identifier



Incomplete
Productions

IncompleteClassDecl:

...

```
Modifier* class Identifier extends Type |  
Modifier* class Identifier implements Type |  
Modifier+ class Identifier |  
class ClassIdentifier
```

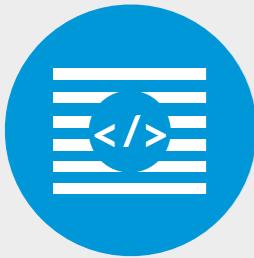
ClassIdentifier:

Identifier respecting naming conventions



Incomplete
Productions

Code elements
with a **role** in the narrative



In-Paragraph
Fragments

Problem with extending JPanel

▲ I have an abstract entity:

0

```
public abstract class Entity extends JPanel implements FocusListener
```

▼ And I have a TextEntity:



```
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[java](#) [inheritance](#)

[share](#) [edit](#)

asked Apr 7 '10 at 12:40



Halo

756 ● 12 ● 32



In-Paragraph
Fragments

Qualified Identifiers
Method and Class Names
Method Invocations



In-Paragraph
Fragments

Qualified Identifiers

Method and Class Names

Method Invocations



**In-Paragraph
Fragments**

QualifiedIdentifier:
Identifier (Identifier)⁺



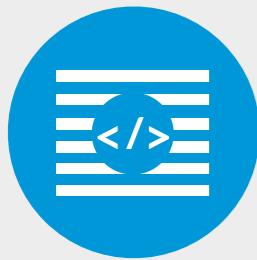
**In-Paragraph
Fragments**

QualifiedIdentifier:
Identifier (. Identifier)+

“java.util.Date vs java.sql.Date: when to use which and why?”



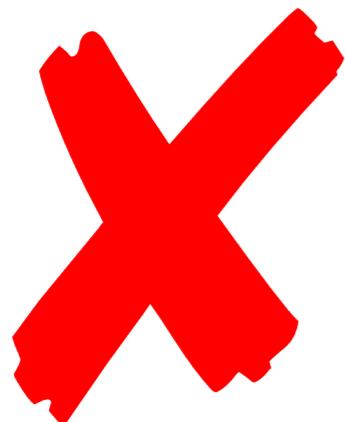
QualifiedIdentifier(java.util.Date)
Water(vs)
QualifiedIdentifier(java.sql.Date)
Water(: when to use which and why?)



In-Paragraph
Fragments

QualifiedIdentifier:
Identifier (. Identifier)+

“Hi Mario. How are you?”



Water(Hi)
QualifiedIdentifier(Mario. How)
Water(are you?)

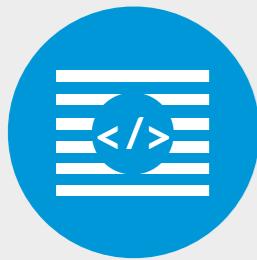


In-Paragraph
Fragments

QualifiedIdentifier:
Identifier (. Identifier)+

“Hi Mario. How are you?”

Spaces are allowed in Java

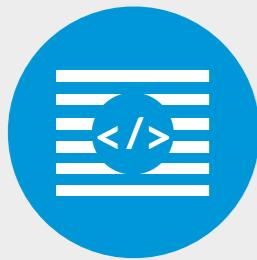


In-Paragraph
Fragments

QualifiedIdentifier:
Identifier (. Identifier)⁺



QualifiedIdentifier:
Identifier (. !(Space⁺) Identifier)⁺



In-Paragraph
Fragments

Qualified Identifiers

Method and Class Names

Method Invocations



**In-Paragraph
Fragments**

Qualified Identifiers

Method and Class Names

Method Invocations



In-Paragraph
Fragments

ClassName:
JavaLetter (JavaLetterOrDigit)*

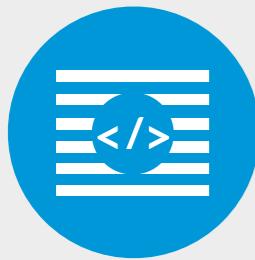


In-Paragraph
Fragments

ClassName:
JavaLetter (JavaLetterOrDigit)*



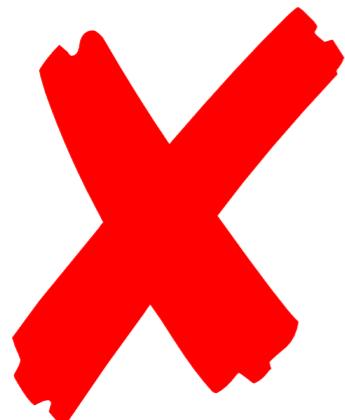
ClassName:
CapitalLetter (JavaLetterOrDigit)+



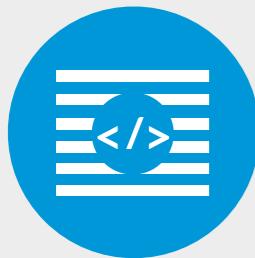
In-Paragraph
Fragments

ClassName:
CapitalLetter (JavaLetterOrDigit)+

*“Inside TextEntity’s constructor I want to put a
JTextArea that will cover the panel”*



ClassName(Inside)
ClassName(TextEntity)
Water(’s constructor I want to put a)
ClassName(JTextArea)
Water(that will cover the panel)



**In-Paragraph
Fragments**

ClassName:
CapitalLetter (JavaLetterOrDigit)+

“Inside *TextEntity’s constructor I want to put a
JTextArea that will cover the panel”*

Respects the naming convention!

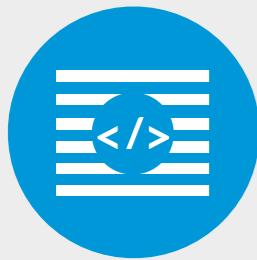


**In-Paragraph
Fragments**

ClassName:
CapitalLetter (JavaLetterOrDigit)+



ClassName:
CapitalLetter IdentifierWithCaseChanges



In-Paragraph
Fragments

ClassName: CapitalLetter IdentifierWithCaseChanges

*“Inside TextEntity’s constructor I want to put a
JTextArea that will cover the panel”*



Water(Inside)
ClassName(TextEntity)
Water('s constructor I want to put a)
ClassName(JTextArea)
Water(that will cover the panel)



In-Paragraph
Fragments

ClassName:

CapitalLetter IdentifierWithCaseChanges

MethodName:

LowerCaseLetter IdentifierWithCaseChanges



In-Paragraph
Fragments

MethodName:
LowerCaseLetter IdentifierWithCaseChanges

aMethodName

Java Style

a_method_name

C Style



In-Paragraph
Fragments

MethodName:

LowerCaseLetter IdentifierWithCaseChangeOrUnderscore

aMethodName

Java Style

a_method_name

C Style



In-Paragraph
Fragments

Qualified Identifiers

Method and Class Names

Method Invocations



In-Paragraph
Fragments

Qualified Identifiers
Method and Class Names

Method Invocations



In-Paragraph
Fragments

```
object.aMethod<SomeType>(p1,p2,p3)
```



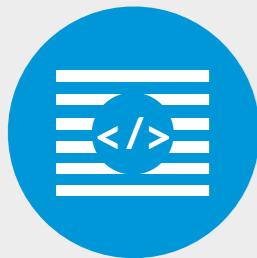
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier object.aMethod

TypeArgument_{opt} <SomeType>

Args (p1, p2, p3)



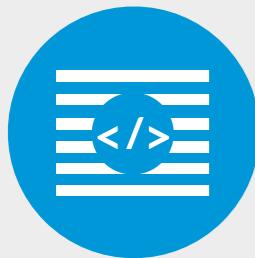
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier TypeArgument_{opt} Args



object.aMethod<SomeType>()
aMethod<SomeType>()
method<SomeType>()



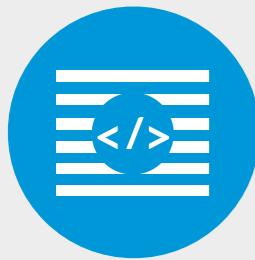
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier TypeArgument_{opt} Args



object.aMethod()
aMethod()
method()



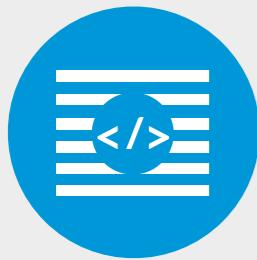
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier TypeArgument_{opt} Args



object.aMethod()
aMethod()
method()



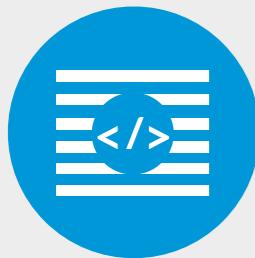
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier TypeArgument_{opt} Args



object.aMethod(p1, p2, p3)
aMethod(p1, p2, p3)
method(p1, p2, p3)



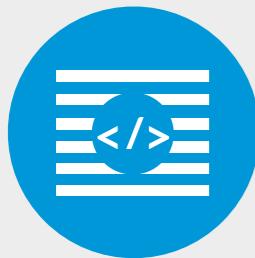
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier TypeArgument_{opt} Args



object.aMethod(p1, p2, p3)
aMethod(p1, p2, p3)
method(p1, p2, p3)



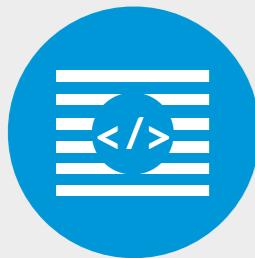
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier TypeArgument_{opt} Args



object.aMethod(p1)
aMethod(p1)
method(p1)



In-Paragraph
Fragments

MethodInvocation:

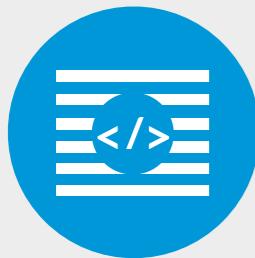
QualifiedIdentifier TypeArgument_{opt} Args



object.aMethod(p1)

aMethod(p1)

method(p1)



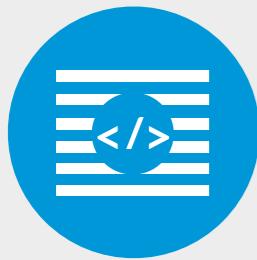
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier TypeArgument_{opt} Args

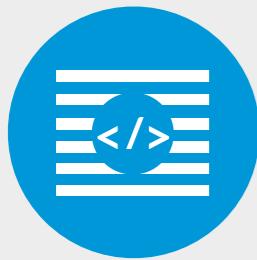


object.aMethod(p1)
aMethod(p1)
method(p1)



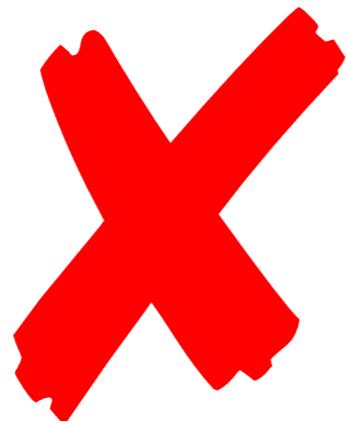
In-Paragraph
Fragments

method invocations with one argument
introduce **false positives**

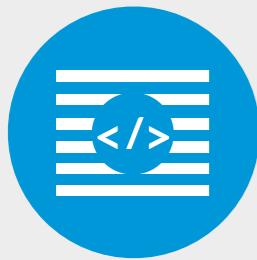


In-Paragraph
Fragments

“the color of the apples (red) is not yellow”



Water(the color of the)
MethodInvocation(apples (red))
Water(is not yellow)



In-Paragraph
Fragments

Should we ignore all method invocations with **one** argument?



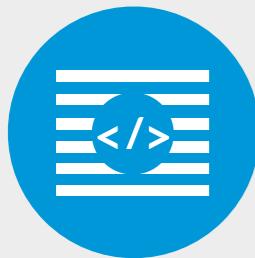
In-Paragraph
Fragments

MethodInvocation:

QualifiedIdentifier TypeArgument_{opt} Args



object.aMethod(p1)
aMethod(p1)
method(p1)
method(obj.value)
method("text")
method(obj.inv())
method(2 * var)



In-Paragraph
Fragments

Valid constructs **containing** invalid
or incomplete constructs



Island
With Lakes

IncompleteClassDeclaration

```
@Entity  
@Table(name = "shops")  
public class Shop {  
    ...  
    @ManyToOne(fetch=FetchType.EAGER)  
    @Table(name = "shop_type_id")  
    private TypeShop typeShop;  
    ...  
}
```

FieldDeclaration



Island
with Lakes

Water

ClassDeclaration:

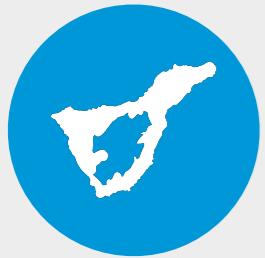
Modifier* class Identifier (extends Type)_{opt}
(implements InterfaceType)_{opt} Body



Island
with Lakes

ClassDeclaration:

Modifier* class Identifier (extends Type)_{opt}
(implements InterfaceType)_{opt} BodyWithIslands



Island
with Lakes

ClassDeclaration:

Modifier* **class** Identifier (**extends** Type)_{opt}
(**implements** InterfaceType)_{opt} BodyWithIslands

MethodDeclaration:

Modifier+ Type Identifier Args BodyWithIslands |
StrictType MethodIdentifier Args BodyWithIslands



Island
with Lakes

IncompleteClassDeclaration

```
@Entity  
@Table(name = "shops")  
public class Shop {  
    ...  
    @ManyToOne(fetch=FetchType.EAGER)  
    @Table(name = "shop_type_id")  
    private TypeShop typeShop;  
    ...  
}
```

FieldDeclaration



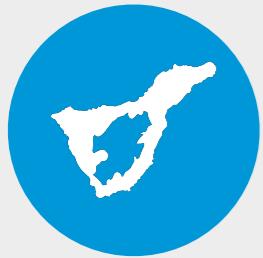
Island
with Lakes

Water

ClassDeclaration

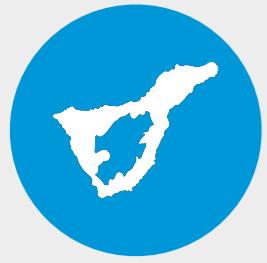


```
@Entity  
@Table(name = "shops")  
public class Shop {  
    ...  
    @ManyToOne(fetch=FetchType.EAGER)  
    @Table(name = "shop_type_id")  
    private TypeShop typeShop;  
    ...  
}
```



Island
with Lakes

Are lakes limited to the **body**?



Island
with Lakes

When and why should I use System.arraycopy (or: arrays vs collections)



In the answers here lately, I found some different habits (or flavours). So I wonder when and why is the use of Java's `System.arraycopy(...)` preferable to something like `Collection.addAll(...)`?
When not?

2



Edit: It boils down to arrays vs. collections. Thanks so far. But which can be handled more efficiently by the computer or is... well... better for programmers?



1

Thanks
Mike
[;-)

java

share edit

edited Dec 17 '09 at 11:18



mikej

41k • 8 • 106 • 109

asked Dec 17 '09 at 11:00



DerMike

5,941 • 8 • 31 • 48



Island
with Lakes

Java generics to enforce return type of abstract method

▲ I have the following situation :

11

```
abstract class X { abstract X someMethod (...) {...} }.
```

▼ Now I want to constrain any implementation of X to have its 'someMethod' method return that particular implementation type, not just X :

★ 1

```
class X1 extends X { X1 someMethod (...) {...} }.  
class X1 extends X { X someMethod (...) {...} }. //want this to be flagged as an error  
class X2 extends X { X1 someMethod (...) {...} }. //want this to be flagged as an error too
```

Is it possible to achieve this using Java generics ?

EDIT

Okay. I only asked the yes/no question and got a "yes". My fault. What I was actually interested in is "how do I write the declarations".

java

share edit

edited Oct 26 '09 at 22:12

asked Oct 26 '09 at 22:01



Erwin Smout

9,857 ● 1 ● 12 ● 33



Island
with Lakes

```
abstract class SomeClass {  
    abstract void someMethod(...) {...}  
}
```

The diagram illustrates the concept of elision in Java syntax. It shows a vertical line with two blue brackets above it. The first bracket spans from the start of the class definition to the start of the method declaration. The second bracket spans from the end of the method declaration to the closing brace. This visualizes how the entire body of the class and its methods are elided when the class is declared abstract.

Elision



Island
with Lakes

```
abstract class SomeClass {  
    abstract void someMethod(...) {...}  
}
```

MethodDeclaration:

Modifier⁺ Type Identifier Args BodyWithIslands |
StrictType MethodIdentifier Args BodyWithIslands



Island
with Lakes

MethodDeclaration:

Modifier⁺ Type

Args BodyWithIslands |

StrictType MethodIdentifier Args BodyWithIslands

Args:

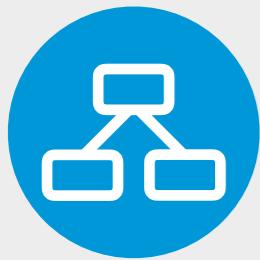
(FormalParam^{*}) |

(Ellipsis)



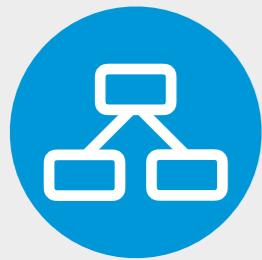
Island
with Lakes

How do we **model** the results of the parser?



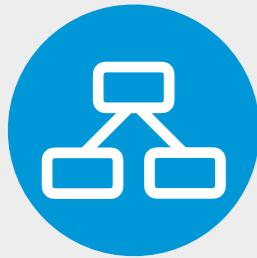
Modeling
Results

Heterogenous Abstract Syntax Tree (**H-AST**)

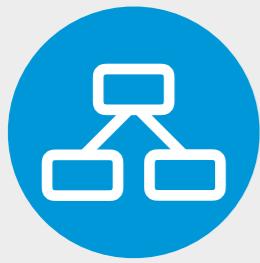


Modeling
Results

```
case class ClassDeclarationNode (  
    val modifiers: Seq[ModifierNode],  
    val identifier: IdentifierNode,  
    val typeParams: Option[TypeParamsNode],  
    val superType: Option[TypeNode],  
    val interfaces: Option[TypeListNode],  
    val body: ClassBodyNode  
)
```

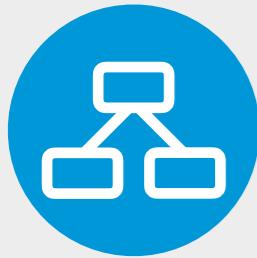


What about **incompleteness**?

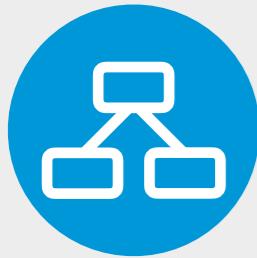


Modeling
Results

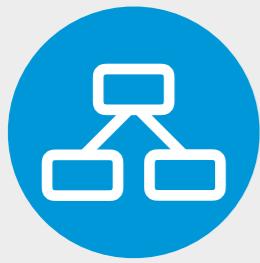
```
case class ClassDeclarationNode (  
    val modifiers: Seq[ModifierNode],  
    val identifier: IdentifierNode,  
    val typeParams: Option[TypeParamsNode],  
    val superType: Option[TypeNode],  
    val interfaces: Option[TypeListNode],  
    val body: ClassBodyNode  
)
```



```
case class ClassDeclarationNode (  
    val modifiers: Seq[ModifierNode],  
    val identifier: IdentifierNode,  
    val typeParams: Option[TypeParamsNode],  
    val superType: Option[TypeNode],  
    val interfaces: Option[TypeListNode],  
    val body: Option[ClassBodyNode]  
)
```



...and **islands** with lakes?



Modeling
Results

```
case class ClassDeclarationNode (  
    val modifiers: Seq[ModifierNode],  
    val identifier: IdentifierNode,  
    val typeParams: Option[TypeParamsNode],  
    val superType: Option[TypeNode],  
    val interfaces: Option[TypeListNode],  
    val body: Option[ClassBodyNode]  
)
```

```
case class ClassBodyNode (  
    val members: Seq[MemberDeclarationNode]  
)
```

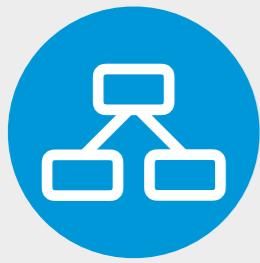


```
case class ClassDeclarationNode (  
    val modifiers: Seq[ModifierNode],  
    val identifier: IdentifierNode,  
    val typeParams: Option[TypeParamsNode],  
    val superType: Option[TypeNode],  
    val interfaces: Option[TypeListNode],  
    val body: Option[ClassBodyNode]  
)
```

```
case class ClassBodyNode (  
    val members: Seq[MemberDeclarationNode]  
)
```

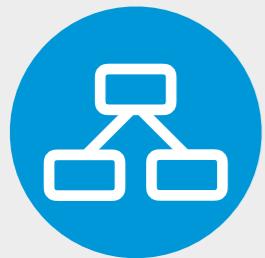
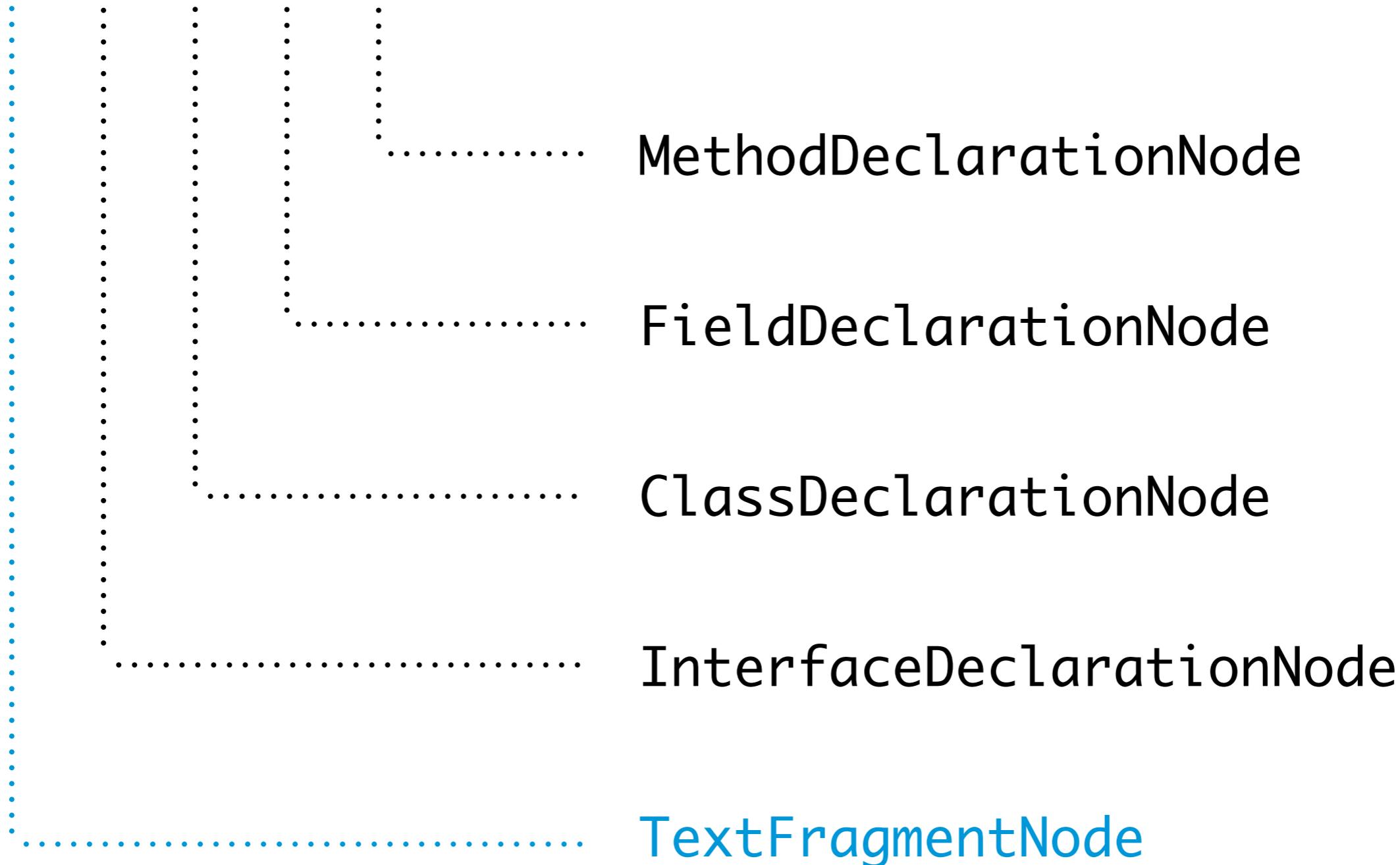


a H-AST allows **extensibility**

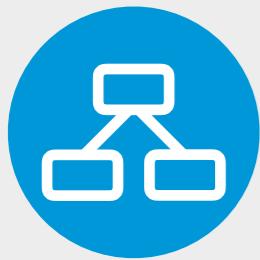


Modeling
Results

MemberDeclarationNode



a H-AST allows analyses **beyond text**



Modeling
Results

```
@Entity  
@Table(name = "shops")  
public class Shop {
```

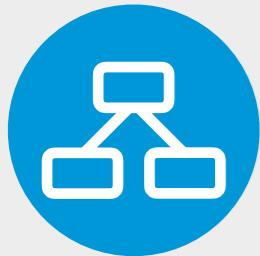
...

I dunno if this is correct...it keeps failing

```
@ManyToOne(fetch=FetchType.EAGER)  
@Table(name = "shop_type_id")  
private TypeShop typeShop;
```

...

}



Modeling
Results

```
@Entity  
@Table(name = "shops")  
public class Shop {
```

...

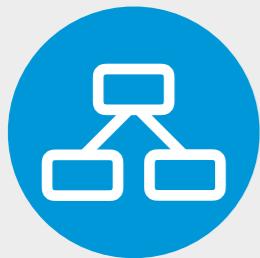
I dunno if this is correct...it keeps failing

```
@ManyToOne(fetch=FetchType.EAGER)  
@Table(name = "shop_type_id")  
private TypeShop typeShop;
```

...

}

Exclude Textual Fragments



Modeling
Results

```
@Entity  
@Table(name = "shops")  
public class Shop {
```

...

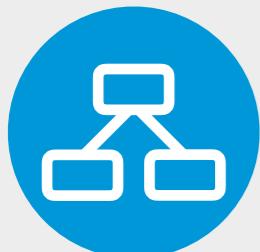
I dunno if this is correct...it keeps failing

```
@ManyToOne(fetch=FetchType.EAGER)  
@Table(name = "shop_type_id")  
private TypeShop typeShop;
```

...

}

Field Declarations Only



Modeling
Results

```
@Entity  
@Table(name = "shops")  
public class Shop {
```

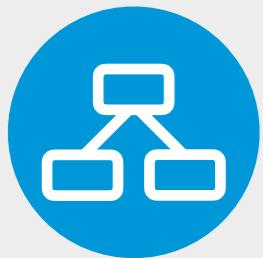
...

I dunno if this is correct...it keeps failing

```
@ManyToOne(fetch=FetchType.EAGER)  
@Table(name = "shop_type_id")  
private TypeShop typeShop;  
  
...
```

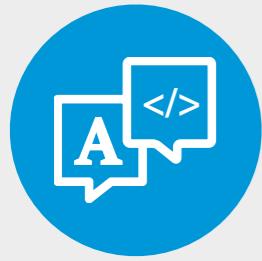
}

Identifiers Only



Modeling
Results

Can we extend the model to **additional languages**?



Multilingual
Support

Migrating from spring xml configuration to @Configuration (servlet 3.0) with bean references causes BeanNotOfRequiredTypeException

I am migrating from xml based spring configuration to "class" based configuration using the corresponding @Configuration annotation.

0

I came across the following problem: I want to create a new bean, which has a reference to another (service) bean. Therefore I autowired this class to set this reference during bean creation. My configuration class looks as follows:

1

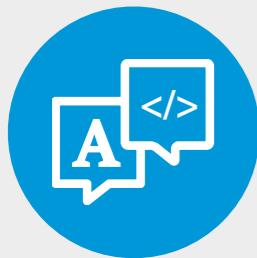
```
@Configuration  
@ComponentScan(basePackages = {"com.akme"})  
public class ApplicationContext {  
  
    @Resource  
    private StorageManagerBean storageManagerBean;  
  
    @Bean(name = "/storageManager")  
    public HessianServiceExporter storageManager() {  
        HessianServiceExporter hessianServiceExporter = new HessianServiceExporter();  
        hessianServiceExporter.setServiceInterface(StorageManager.class);  
        hessianServiceExporter.setService(storageManagerBean);  
        return hessianServiceExporter;  
    }  
}
```

But this doesn't work, because it causes a BeanNotOfRequiredTypeException exception during startup.

```
Bean named 'storageManagerBean' must be of type [com.akme.StorageManagerBean], but was actual
```

The StorageManagerBean is annotated with an @Service annotation. And the xml based configuration worked as expected:

```
<bean name="/storageManager" class="org.springframework.remoting.caucho.HessianServiceExport  
    <property name="service" ref="storageManagerBean"/>  
    <property name="serviceInterface" value="com.akme.StorageManager"/>  
/>
```



Multilingual
Support

How to parse JSON in Java



I have the following JSON text that I need to parse to get `pageName`, `pagePic`, `post_id`, etc.

379

What is the required code?



109

```
{  
    "pageInfo": {  
        "pageName": "abc",  
        "pagePic": "http://example.com/content.jpg"  
    }  
    "posts": [  
        {  
            "post_id": "123456789012_123456789012",  
            "actor_id": "1234567890",  
            "picOfPersonWhoPosted": "http://example.com/photo.jpg",  
            "nameOfPersonWhoPosted": "Jane Doe",  
            "message": "Sounds cool. Can't wait to see it!",  
            "likesCount": "2",  
            "comments": [],  
            "timeOfPost": "1234567890"  
        }  
    ]  
}
```

java json parsing

share improve this question

edited Oct 30 '15 at 6:24



hjpotter92

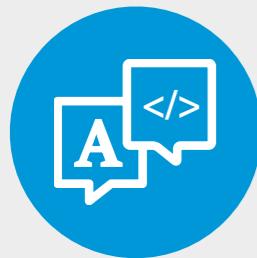
42.4k ● 11 ● 58 ● 88

asked Apr 7 '10 at 9:00



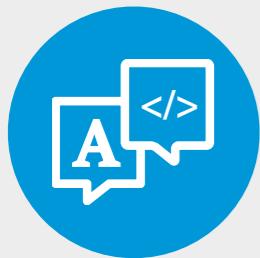
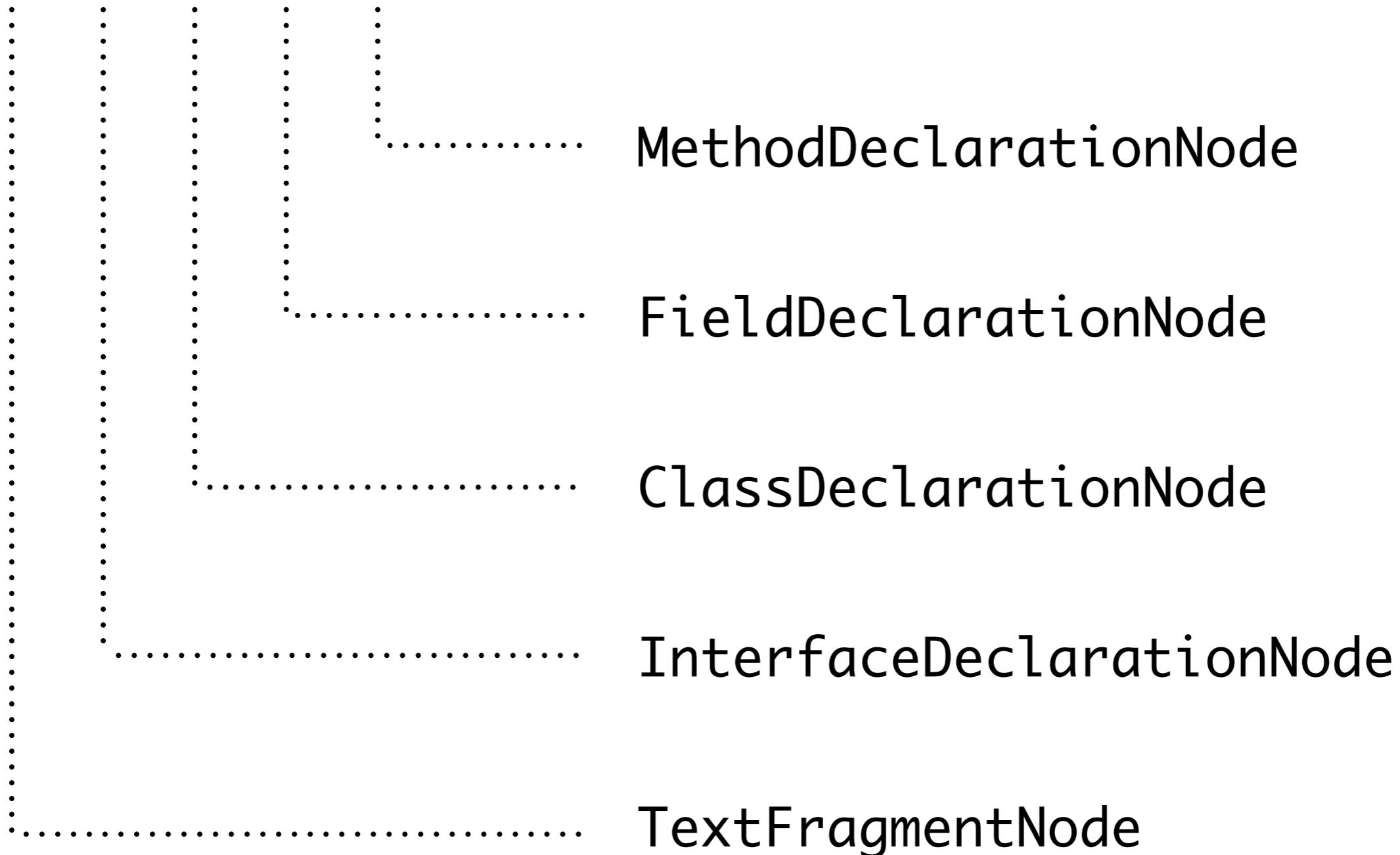
Muhammad Maqsoodur
Rehman

8,146 ● 29 ● 64 ● 111



Multilingual
Support

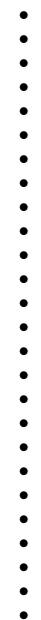
MemberDeclarationNode



Multilingual
Support

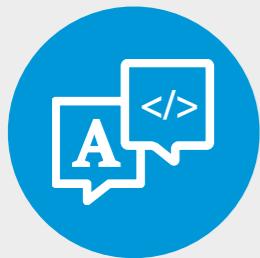
HASTNode

JavaASTNode JsonASTNode XmlLASTNode StackTraceASTNode



MemberDeclarationNode

⋮ ⋮ ⋮ ⋮ ⋮



Multilingual
Support

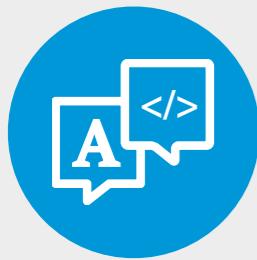
HASTNode

JavaASTNode JsonASTNode XmlLASTNode StackTraceASTNode

New in 2.0.0:
Full Javadoc Support

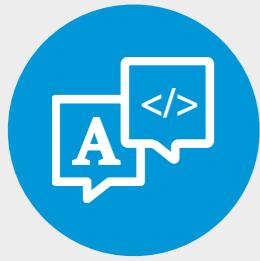
MemberDeclarationNode

⋮ ⋮ ⋮ ⋮ ⋮



Multilingual
Support

What about **Language in Language?**



Language in Language
Support (2.0.0)

```
public HessianServiceExporter storageManager() {
    HessianServiceExporter hessianServiceExporter = new HessianServiceExporter();
    hessianServiceExporter.setServiceInterface(StorageManager.class);
    hessianServiceExporter.setService(storageManagerBean);
    return hessianServiceExporter;
}
```

But this doesn't work, because it causes a BeanOfTypeException exception during startup.

```
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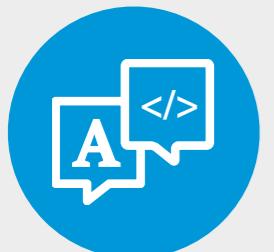
```
<bean name="/storageManager" class="org.springframework.remoting.caucho.HessianServiceExport
    <property name="service" ref="storageManagerBean"/>
    <property name="serviceInterface" value="com.akme.StorageManager"/>
</bean>
```

So, I've no idea what I am doing wrong and why spring tries to auto wired a proxy class.

I appreciate your help.

Best regards, Daniel

java xml spring configuration annotations



Language in Language Support

```
public HessianServiceExporter storageManager() {  
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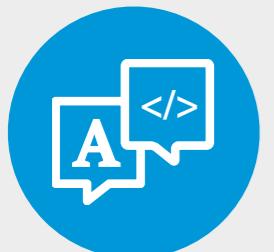
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<bean name="/storageManager" class="org.springframework.remoting.caucho.HessianServiceExport  
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java xml spring configuration annotations



Language in Language Support

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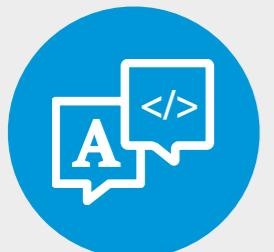
```
<bean name="/storageManager" class="org.springframework.remoting.caucho.HessianServiceExporter"
      <property name="service" ref="storageManagerBean"/>
      <property name="serviceInterface" value="com.akme.StorageManager"/>
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```

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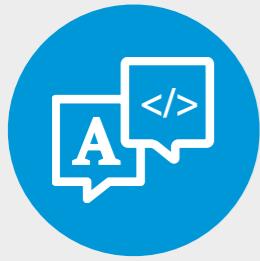
java xml spring configuration annotations



Language in Language Support

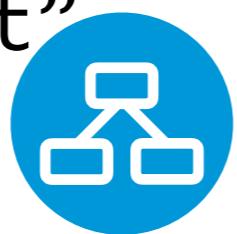
“java.util.List”

```
/*
  Uncomment this:
  i = i + 1;
*/
// a++;
```



Language in Language
Support

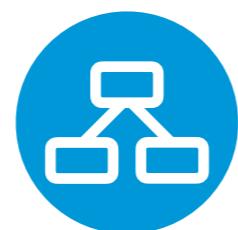
“java.util.List”



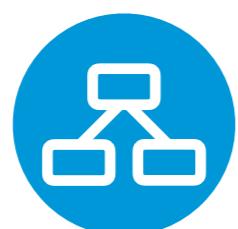
```
/*
```

Uncomment this:

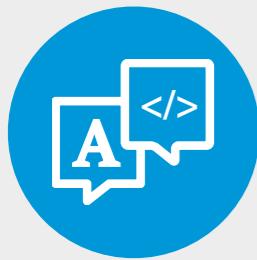
```
i = i + 1;  
*/
```



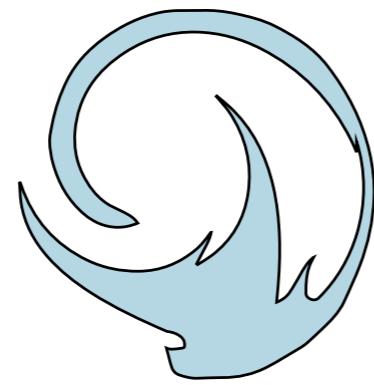
```
// a++;
```



Strings (in every language) and Comments **expose their embedded HAST**



Language in Language Support



StORMeD Island Parser

<http://stormed.inf.usi.ch>

Free island parsing service

1000 queries per day

Scala development kit available

Other languages “supported”



StORMeD
Island Parser

<http://stormed.inf.usi.ch>



StORMeD

Stack Overflow Ready Made Data

Home Dataset Summarization

Service



The Island Parsing Service

Do you need the **island parsing** technology behind **StORMeD**?

Now you have the chance to try it out. **For Free**.

Service Registration

To use the service a simple registration with a valid email address is needed. You can register [here](#) and obtain a key. Every registered user is assigned of a daily quota of **1000** requests. The quota gets **renewed on midnight**. The registration phase is needed to identify users and avoid abuse. The information gathered during the registration are considered confidential and will not be disclosed to third parties.

Only **one key per email** address can be released. Please remember that the key is personal.

Key Recovery

Did you forget or lost your key? No worries, you can recover it. All you need to do is to access the [Recovery Page](#) and follow the instructions.

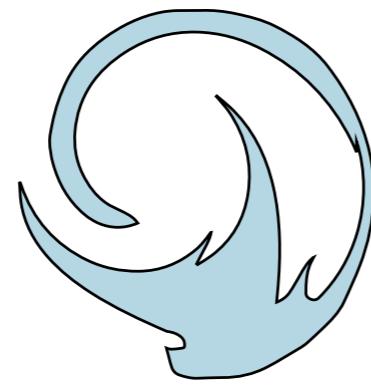
Service Methods

In the current version, the StORMeD API provides one single service `parse`. Every method requires a valid service key and the appropriate JSON with the correct parameters as POST request.

The table below contains all the methods provided by the service, with the input paramters and the service output.

Method	Parameters	Output
/parse	<code>text</code> : a string representing the text to be parsed by the service. <code>key</code> : a string representing a valid service key for a registered user.	<code>status</code> OK or ERROR, always present. if status equals ERROR

Hands-On



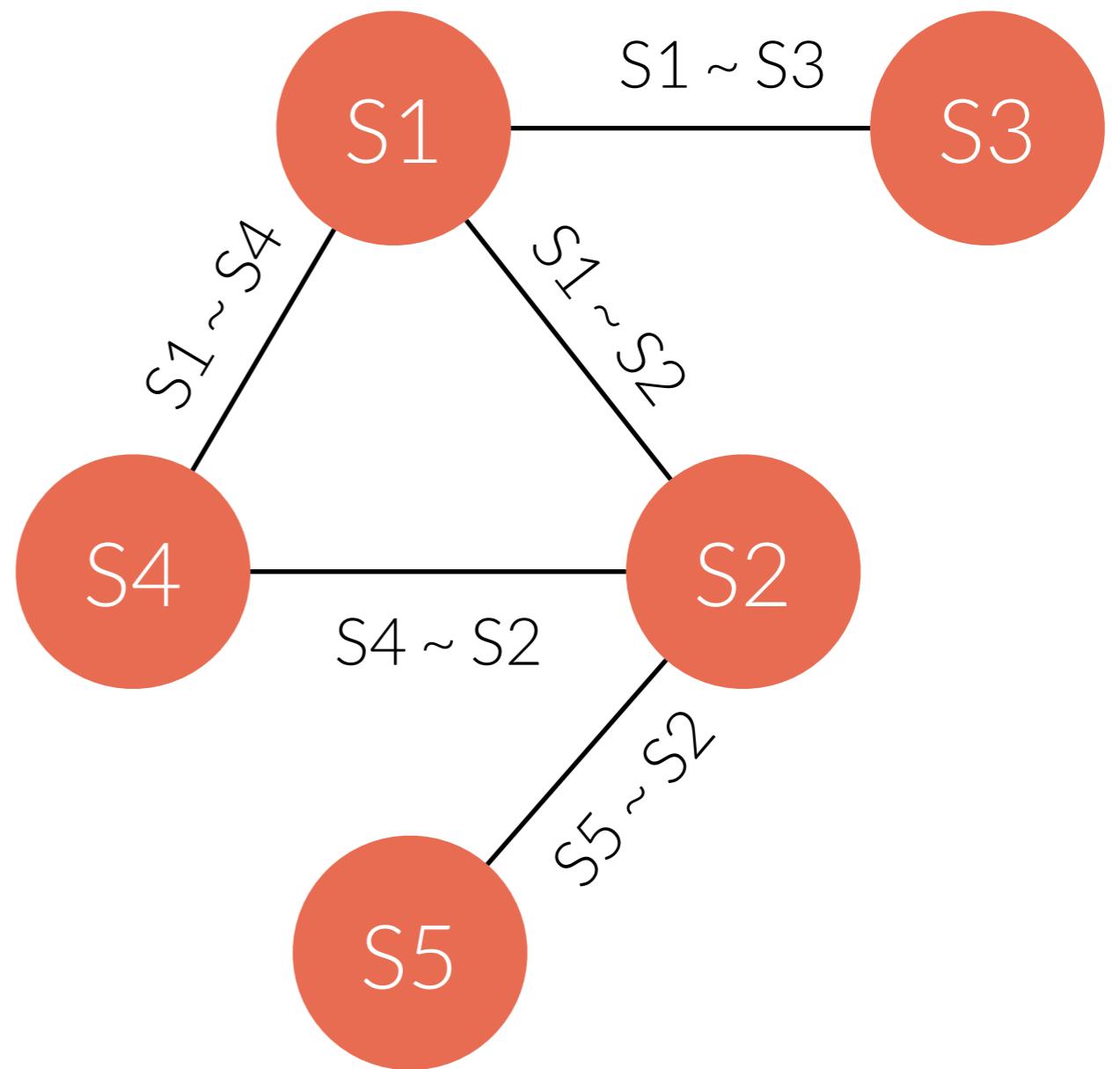
StORMeD Island Parser

<http://stormed.inf.usi.ch>



Applications
of Stormed

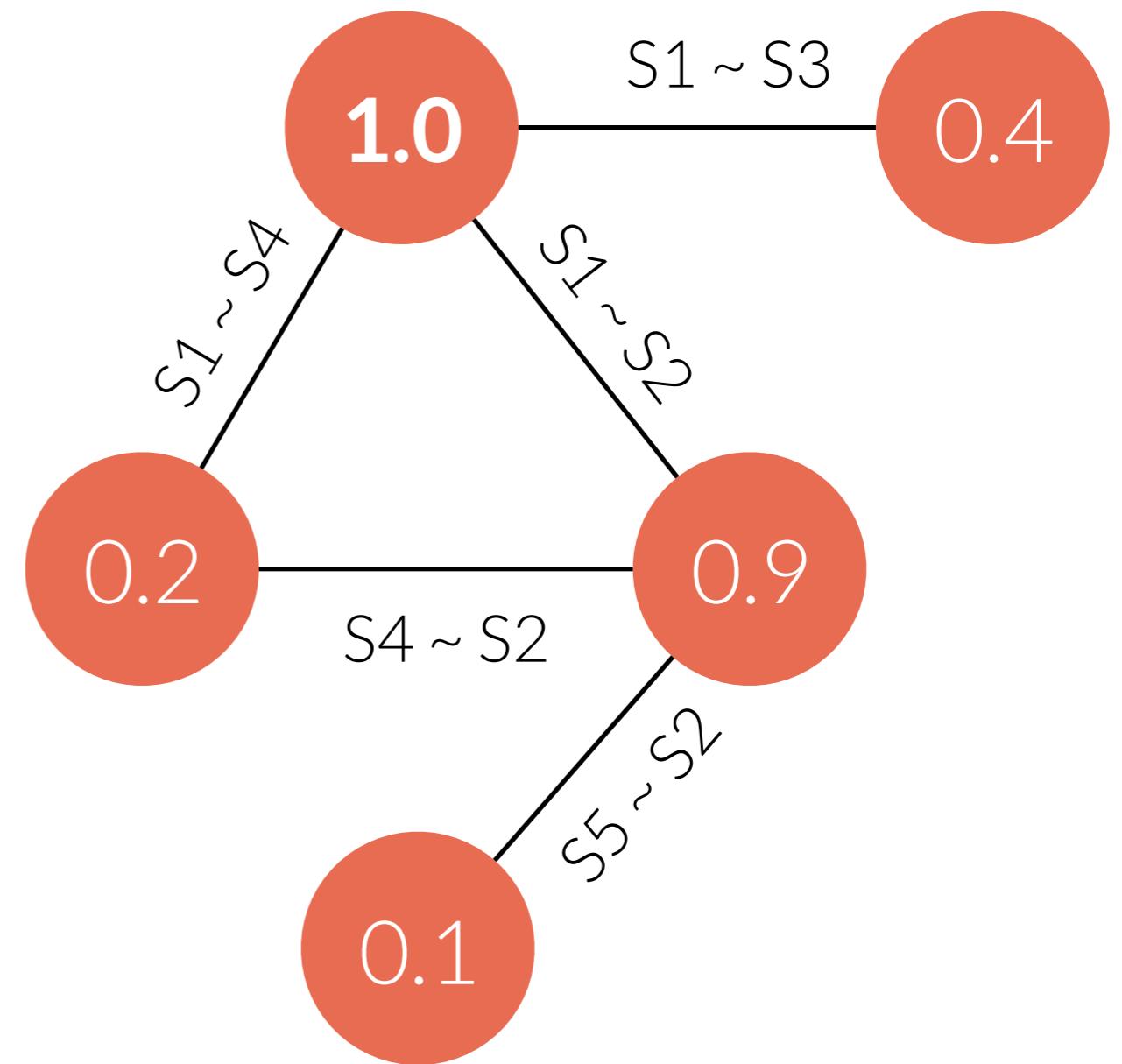
LexRank



Text
Summarization

G. Erkan and D. R. Radev
LexRank: Graph-based lexical centrality as salience in text summarization
Journal of Artificial Intelligence Research, vol. 22, 2004

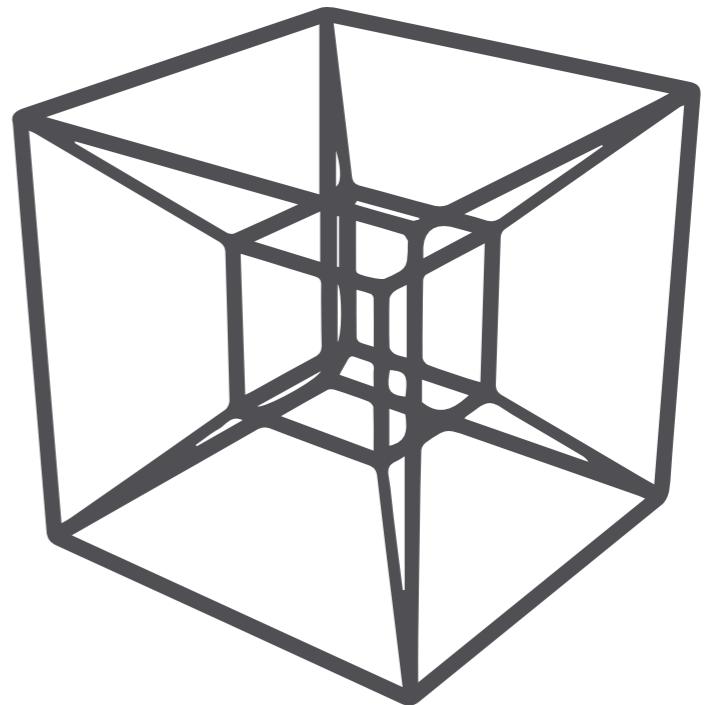
LexRank Sentence Centrality



Text
Summarization

G. Erkan and D. R. Radev
LexRank: Graph-based lexical centrality as salience in text summarization
Journal of Artificial Intelligence Research, vol. 22, 2004

The information is
heterogeneous
and **multidimensional**



Heterogeneous
Information

Android Xml Handler keeps only the last objects in my xml file

 0 I have a class named `ExampleHandler` extends from `DefaultHandler`.

 1 This class reads data from an external xml file (on the web) the structure of this xml file is :

```
<resultSet>
    <result>
        <title>WinRANI Web Services!</title>
        <nom>DADI</nom>
        <prenom>Morad</prenom>
        <adresse>DANS MES REVES</adresse>
    </result>
    ...
</resultSet>
```

I've created a class with the same structure of this xml file called `ParsedExampleDataSet` (it has getters and setters).

I've also created an `ArrayList` which will contain all the 'result' objects but the problem is that when the handler reads all the objects, all items in the `ArrayList` are the same.

Here is my code :

```
package com.example.helloandroid;

import java.util.ArrayList;

import org.xml.sax.Attributes;
import org.xml.sax.SAXException;
import org.xml.sax.helpers.DefaultHandler;

import android.util.Log;

public class ExampleHandler extends DefaultHandler{

    // =====
    // Fields
    // =====

    private boolean in_resultset = false;
    private boolean in_result = false;
    private boolean in_title = false;
    private boolean in_nom = false;
    private boolean in_prenom = false;
    private boolean in_adresse = false;
```

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 So long Winter Bash 2014

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XML

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Java

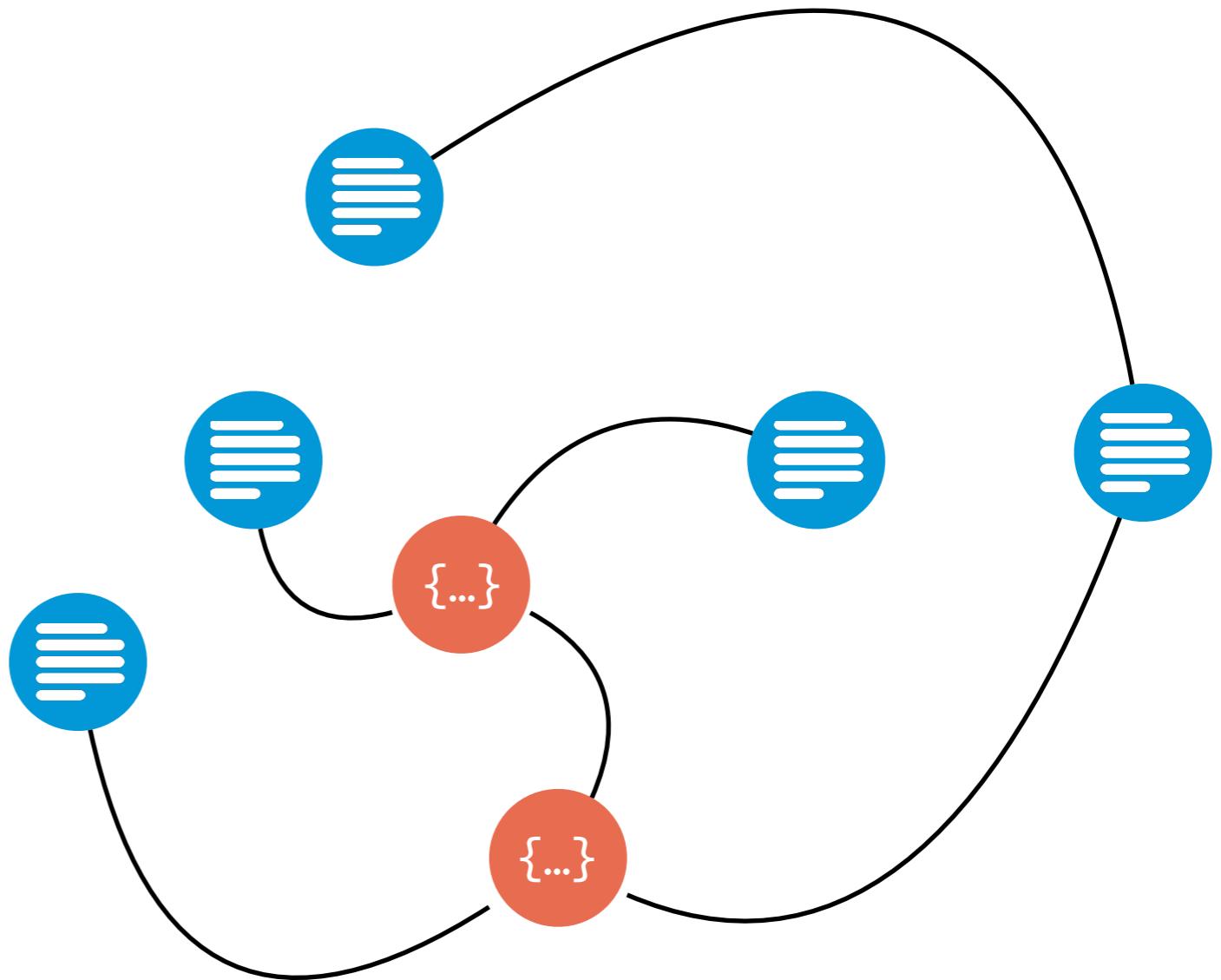


Code Unit

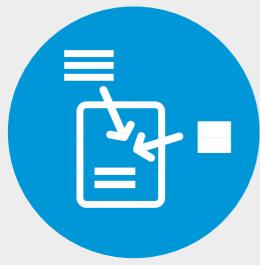
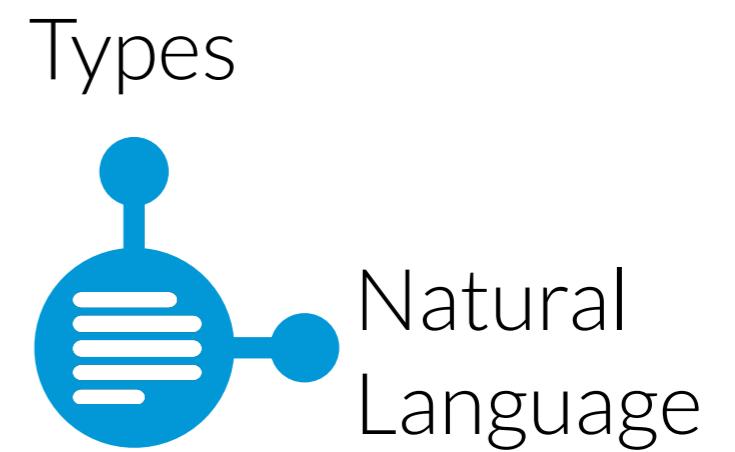
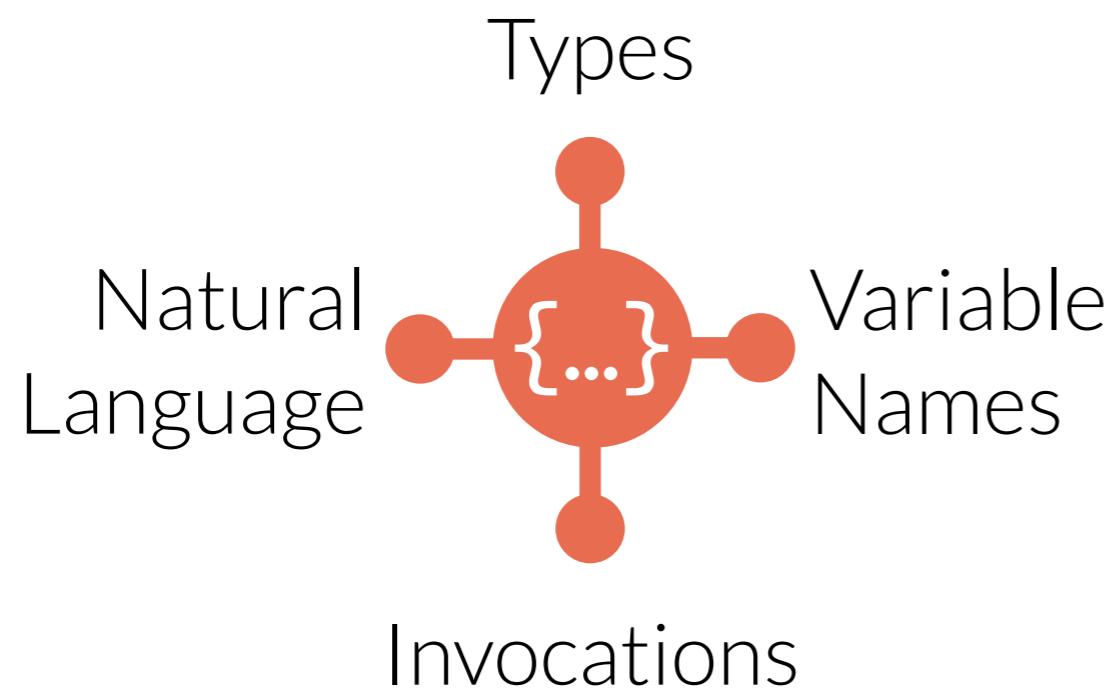


Text Unit

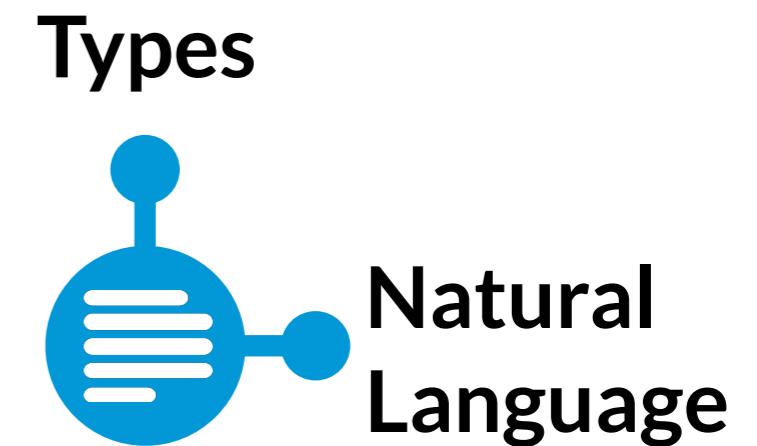
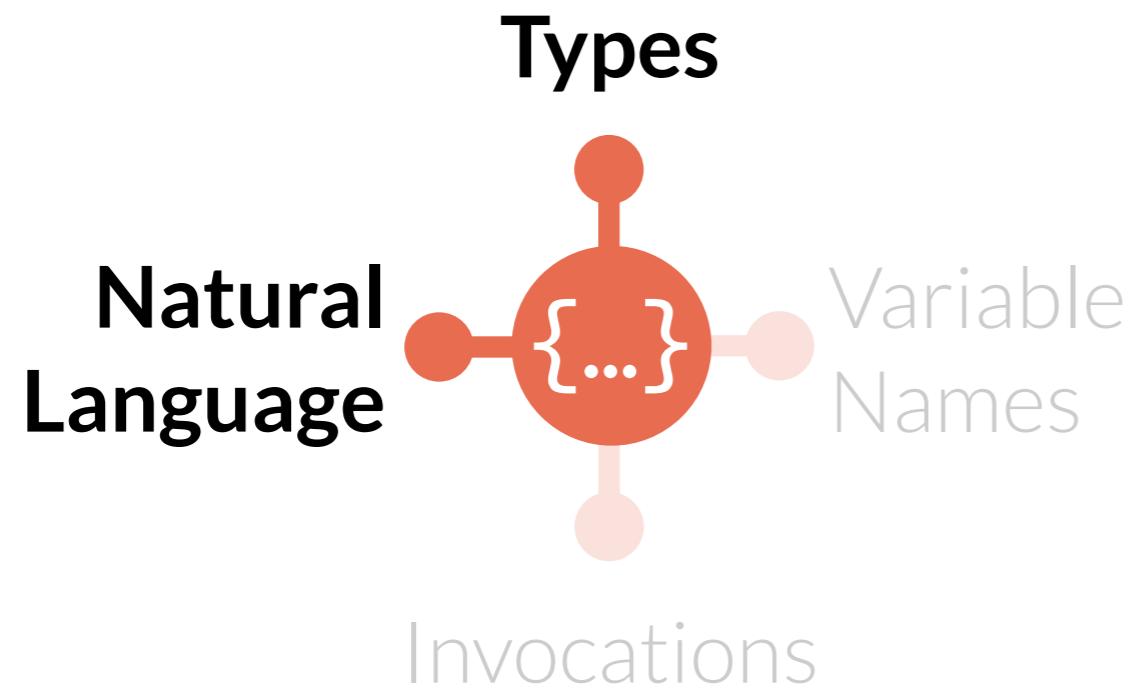
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Information Units?



Information
Units

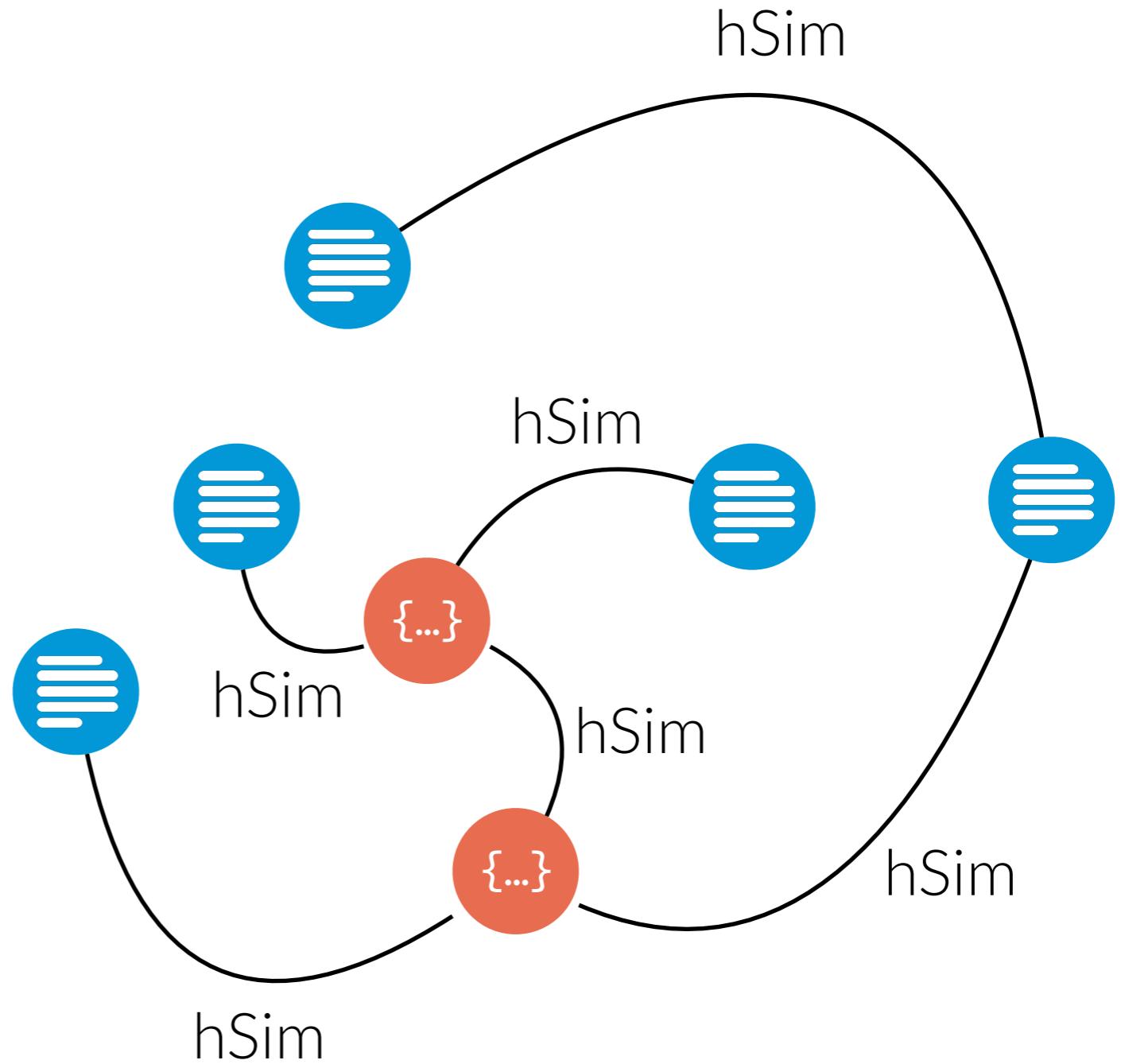


Meta
Information



**Meta
Information**

Holistic Similarity



Core of many
Applications



MyUnimol - [/University/Ricerca/2016/AndroidTasks/Think aloud/Todo/MyUnimol] - [app] - [/University/Ricerca/2016/AndroidTasks/Think aloud/Todo/MyUnimol/app/src/main/java/rocks/teammolise/myunimol/NavigationDrawer.java - Android Studio 2.1.2

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MyUnimol app src main java rocks teammolise myunimol NavigationDrawer

NavigationDrawer.java

```
package rocks.teammolise.myunimol;

import ...

public class NavigationDrawer extends MaterialNavigationDrawer implements MaterialSectionListener {

    private MaterialSection homeSection;
    private MaterialSection logoutSection;
    private MaterialSection taxSection;

    private String SENDER_ID = "43827055756";
    private GoogleCloudMessaging gcm;
    private NotificationHub hub;

    @Override
    public void init(Bundle savedInstanceState) {
        MaterialAccount account = new MaterialAccount(
            this.getResources(),
            "User Test",
            "0123456",
            R.drawable.avatar,
            R.drawable.bg_material);
        this.addAccount(account);

        this.homeSection = newSection("Home", new HomeFragment());
        this.taxSection = newSection("Pagamenti", new TaxesFragment());

        final Activity act = this;

        this.logoutSection = newSection("Logout", (MaterialSectionListener) (materialSection) -> {
            Utils.invalidateAll(act);
            Intent intent = new Intent(act, LoginActivity.class);
            intent.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP | Intent.FLAG_ACTIVITY_NEW_TASK);
            startActivity(intent);
            finish();
        });

        this.addSection(this.homeSection);
        this.addSection(this.taxSection);
        this.addSection(this.logoutSection);

        setBackPattern(MaterialNavigationDrawer.BACKPATTERN_CUSTOM);
        allowArrowAnimation();
        ImageView imageView = (ImageView) findViewById(android.R.id.home);
        this.actionBarDefaultIcon = imageView.getDrawable();

        // added from windows azure
        NotificationsManager.handleNotifications(this, SENDER_ID, NotificationsHandler.class);
        gcm = GoogleCloudMessaging.getInstance(this);
        String connectionString = "Endpoint=sb://myunimolnotificationhub-ns.servicebus.windows.net/;SharedAccessKeyName=DefaultListenSharedAccessSignature;SharedAccessKey=vHSMYp0eiNuGEk5AKKZ/+1hS0yV";
        hub = new NotificationHub("myunimolnotificationhub", connectionString, this);
        registerWithNotificationHubs();
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) { return super.onCreateOptionsMenu(menu); }

    @Override
    public void onSectionSelected(MaterialSection section) {
        if (section == this.homeSection) {
            Intent intent = new Intent(this, MainActivity.class);
            intent.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP | Intent.FLAG_ACTIVITY_SINGLE_TOP);
            startActivity(intent);
        } else if (section == this.taxSection) {
            Intent intent = new Intent(this, TaxesActivity.class);
            intent.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP | Intent.FLAG_ACTIVITY_SINGLE_TOP);
            startActivity(intent);
        } else if (section == this.logoutSection) {
            Intent intent = new Intent(this, LoginActivity.class);
            intent.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP | Intent.FLAG_ACTIVITY_SINGLE_TOP);
            startActivity(intent);
        }
    }
}
```

Project

Gradle Scripts

gradle.properties (Global Properties)

gradle-wrapper.properties (Gradle Version)

proguard-rules.pro (ProGuard Rules for app)

gradle.properties (Project Properties)

settings.gradle (Project Settings)

local.properties (SDK Location)

Captures

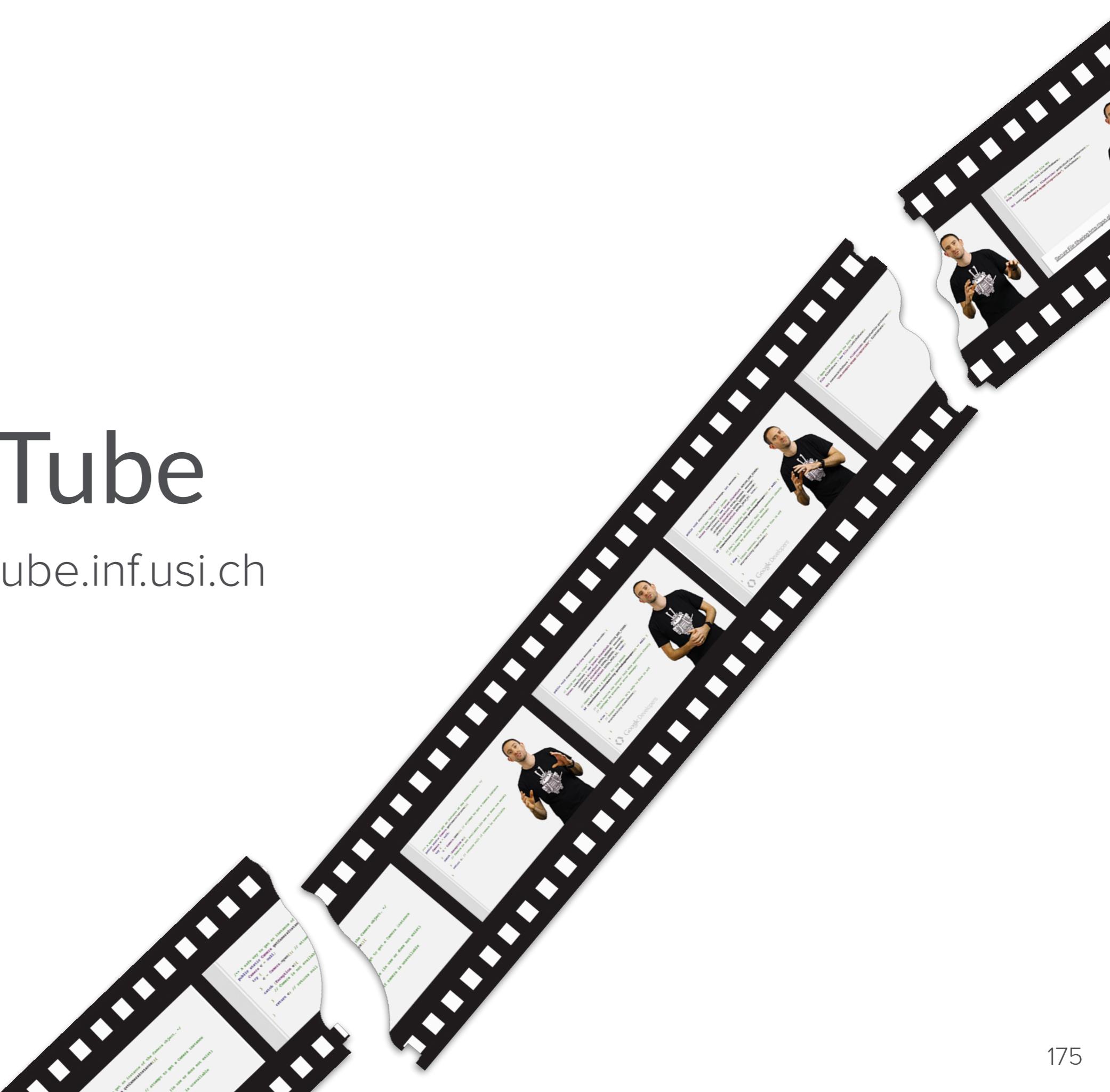
Build Variants

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L. Moonen

Generating Robust Parsers using Island Grammars

8th IEEE Int. Working Conference on Reverse Engineering (IWCRE 2001)

M.L. Collard, M. Decker, J.I. Maletic

Lightweight Transformation and Fact Extraction with the srcML Toolkit

11th IEEE Int. Working Conference on Source Code Analysis and Manipulation (SCAM 2011)

A. Bacchelli, A. Moccia, A. Cleve, M. Lanza

Mining structured data in natural language artifacts with island parsing

Science of Computer Programming, 2017

B. Ford

Parsing expression grammars: A recognition-based syntactic foundation

31st ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL 2004)

N. Syntyskyy, J. R. Cordy, T. R. Dean

Robust multilingual parsing using island grammars

Conference of the Centre for Advanced Studies on Collaborative Research (CASCON 2003)



Selected References

C. Treude and M. Robillard

Augmenting API documentation with insights from Stack Overflow

38th ACM/IEEE Int. Conference on Software Engineering (ICSE 2016)

L. Ponzanelli, A. Mocci, M. Lanza

Summarizing complex development artifacts by mining heterogeneous data

12th Int. Working Conference on Mining Software Repositories (MSR 2015)

G. Erkan and D. R. Radev

LexRank: Graph-based lexical centrality as salience in text summarization

Journal of Artificial Intelligence Research, vol. 22, 2004



Selected References

L. Ponzanelli, S. Scalabrino, G. Bavota, A. Mocci, M. Di Penta, R. Oliveto, M. Lanza
Supporting Software Developers with a Holistic Recommender System
39th ACM/IEEE Int. Conference on Software Engineering (ICSE 2017)

L. Ponzanelli, G. Bavota, A. Mocci, M. Di Penta, R. Oliveto, M. Hasan, B. Russo, S. Haiduc, M. Lanza
Too Long; Didn't Watch! Extracting Relevant Fragments from Software Development Video Tutorials
38th ACM/IEEE Int. Conference on Software Engineering (ICSE 2016)

L. Mastrangelo, L. Ponzanelli, A. Mocci, M. Hauswirth, N. Nystrom, M. Lanza
Use at Your Own Risk: The Java Unsafe API in the Wild
ACM International Conference on
Object Oriented Programming Systems Languages & Applications (OOPSLA 2015)



Selected References

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