Tastydoc

A documentation tool for dotty using TASTy files

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Dottydoc vs Tastydoc

Problems & Further work

What is Tastydoc ?

- Documentation tool for Dotty

What is Tastydoc ?

- Documentation tool for Dotty
- Uses TASTy files

What is Tastydoc ?

- Documentation tool for Dotty
- Uses TASTy files
- Outputs Markdown

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Accessible information

- Annotations, modifiers (including scope modifiers), parameters, type parameters, and return types

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- Members, parents, constructors, known subclasses and companion

Accessible information

- Annotations, modifiers (including scope modifiers), parameters, type parameters, and return types
- Members, parents, constructors, known subclasses and companion
- User documentation (Wiki-style & Markdown)

TASTy

- Extract information from them

TASTy

- Extract information from them
- Independent from the compiler

Linking

- To types

Linking

- To types
- Companion

Linking

- To types
- Companion
- Annotations

Linking

- To types
- Companion
- Annotations
- Scope modifiers

Linking

- To types
- Companion
- Annotations
- Scope modifiers
- Parents

Markdown

- Easy to edit by hand & preview

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- Easy to add own files

Markdown

- Easy to edit by hand & preview
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- Easy for the user to make links

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- Git hosting service have built-in preview

Markdown

- Easy to edit by hand & preview
- Easy to add own files
- Easy for the user to make links
- Git hosting service have built-in preview
- Easy to convert to another format (HTML, PDF, etc.)

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Example: scala.tasty.Reflection

scala.tasty

class Reflection

Companion object Reflection

```
class Reflection extends Core with ConstantOps with ContextOps with CommentOps with FlagsOps with IdOps
```

Constructors:

```
Reflection(kernel: Kernel)
```

Concrete Type Members:

typing

```
final object typing
```

Concrete Value Members:

error

```
def error(msg: => String, source: SourceFile, start: Int, end: Int)(ctx: Context): Unit
```

error

```
def error(msg: => String, pos: Position)(ctx: Context): Unit
```

rootContext

```
implicit def rootContext: Context
```

Context of the macro expansion

Example: scalaShadowing.language

scalaShadowing

object language

```
final object language extends Serializable
```

The `scala.language` object controls the language features available to the programmer, as proposed in the **SIP-18 document**. Each of these features has to be explicitly imported into the current scope to become available:

```
import language.postfixOps // or language._
List(1, 2, 3) reverse
```

The language features are:

- `dynamics` enables defining calls rewriting using the `Dynamic` trait
- `postfixOps` enables postfix operators
- `reflectiveCalls` enables using structural types
- `implicitConversions` enables defining implicit methods and members
- `higherKinds` enables writing higher-kinded types
- `existentials` enables writing existential types
- `experimental` contains newer features that have not yet been tested in production

and, for dotty:

- `Scala2`] backwards compatibility mode for Scala2
- `noAutoTupling` disable auto-tupling
- `strictEquality` enable strick equality

production Language Features

experimental Experimental Language Features

experimental 10 Dotty-specific features come at the end. Note: Due to the more restricted language import mechanism in dotty (only imports count, implicits are disregarded) we don't need the constructions of the inherited language features. A simple object for each feature is sufficient.

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Representation

- Contain information about an entity

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- Easy to use, no knowledge of TASTy required

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- Code is easy to maintain

Representation

- Contain information about an entity
- Easy to use, no knowledge of TASTy required
- Code is easy to maintain
- Similar to Dottydoc Entity $\rightarrow$can reuse Dottydoc code

Reference

- Contain information about types

Reference

- Contain information about types
- Necessary for linking

Reference

- Contain information about types
- Necessary for linking
- Inspired by Dottydoc

User documentation

- Access to all @ except `@usecase` and `@define`

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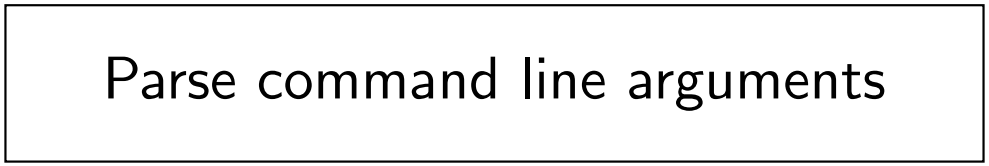
- Support Wiki-style and Markdown

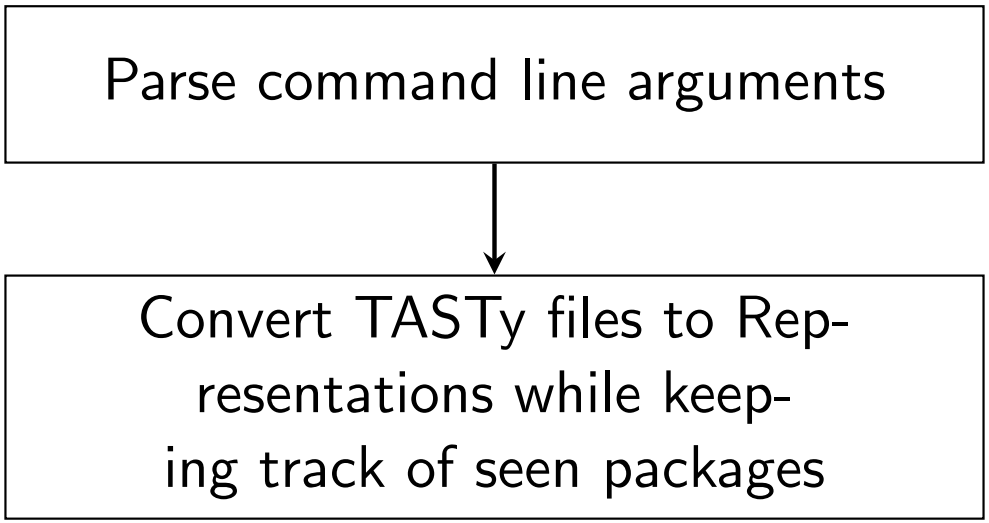
User documentation

- Access to all @ except `@usecase` and `@define`
- Support Wiki-style and Markdown
- Uses Dottydoc code modified for:
  - Markdown output
  - Small changes in structure

Workflow



Workflow


Parse command line arguments
Convert TASTy files to Representations while keeping track of seen packages

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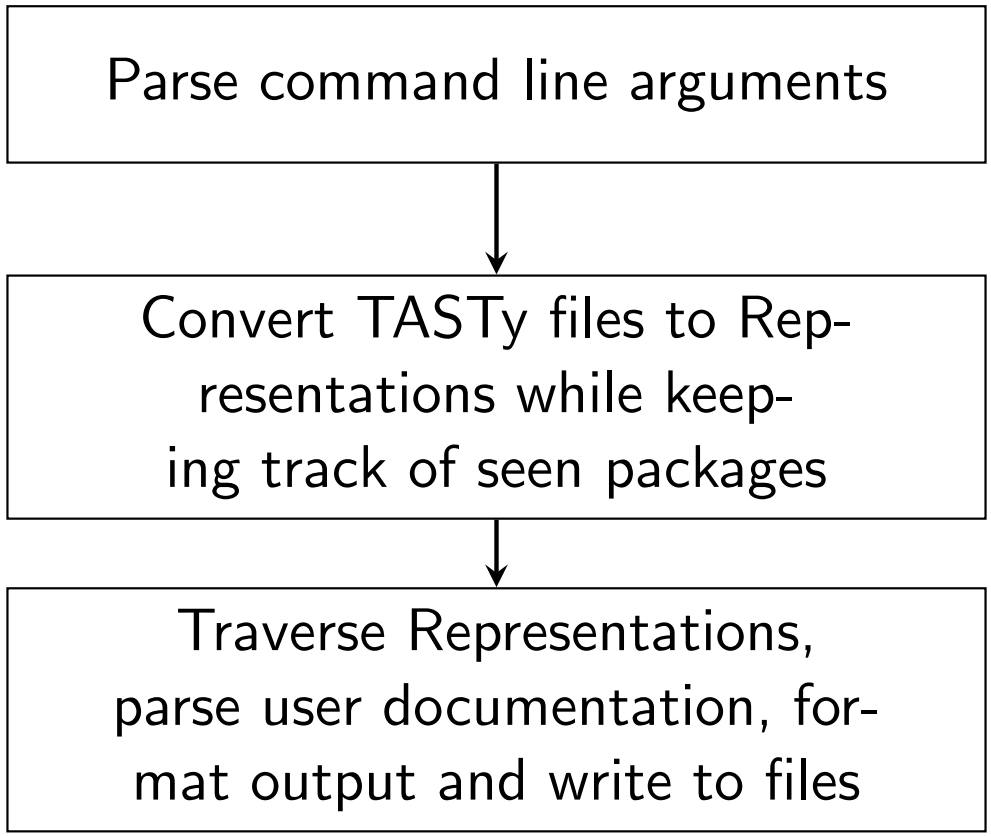
Parse command line arguments
Convert TASTy files to Representations while keeping track of seen packages
Traverse Representations, parse user documentation, format output and write to files

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General comparison

- Compiler internals

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- Markdown vs HTML/CSS

Extra features

- Scope modifiers

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- Known subclasses

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- Scope modifiers
- Known subclasses
- Refined types

Bugs fixed

- Buggy output

```
final val BITS_PER_LAZY_VAL : [31m2L[0m
```

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- Wrong parents

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final val BITS_PER_LAZY_VAL : [31m2L[0m
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- Wrong parents
- Annotations

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final val BITS_PER_LAZY_VAL : [31m2L[0m
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- Wrong parents
- Annotations
- Compiler artifacts

Bugs fixed

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```
final val BITS_PER_LAZY_VAL : [31m2L[0m
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- Wrong parents
- Annotations
- Compiler artifacts
- potentially program breaking code

```
def parents: List[Entity] = this :: this.parents
```

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- Linking inside code blocks

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- Section

Problems

- Markdown escaping
- Linking inside code blocks
- Section
- IDs for linking

Further work

- Markdown escaping

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- Type lambdas

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- Type lambdas
- Complex types

```
class Graph {
    type Node = Int
}
def linkingGraph(g: Graph): g.Node = ???
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class Graph {
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- Default values
- Extra user-documentation parsing
- HTML/CSS

Questions ?

?