Linting Angular

twitter.com/mgechev
github.com/mgechev
blog.mgechev.com

PROGRAMMING

Minko Gechev

mgechev

Functional time traveler.

California, USA

http://blog.mgechev.com/

Organizations

Overview | Repositories 171 | Stars 98 | Followers 2.8k | Following 3

angular-style-guide

Set of best practices for Angular application development

★ 4.8k 705

angular-seed

Modular starter project for Angular 2 (and beyond) with statically typed build and AoT compilation

TypeScript ★ 3.8k 1.4k

angular/mobile-toolkit

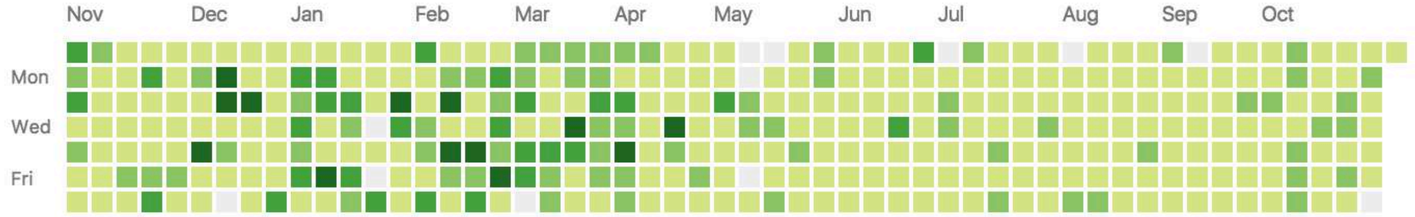
JavaScript implementation of different computer science algorithms.

TypeScript ★ 746 75

codelyzer

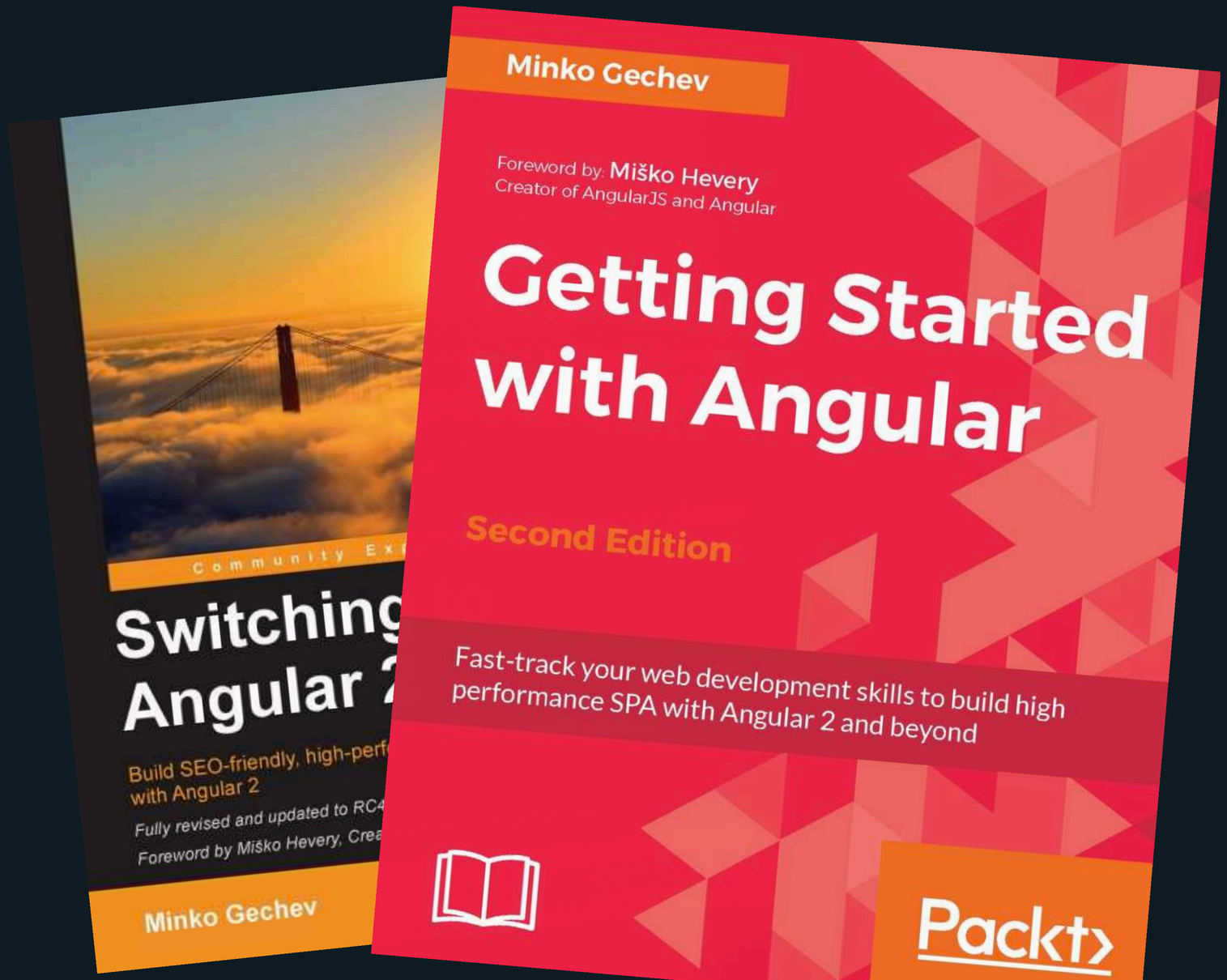
Linting for Angular projects.

TypeScript ★ 929 84



twitter.com/**mgechev**

github.com/**mgechev**


Minko Gechev
Foreword by Miško Hevery
Creator of AngularJS and Angular
Getting Started with Angular
Second Edition
Fast-track your web development skills to build high performance SPA with Angular 2 and beyond
Packt
Minko Gechev
Build SEO-friendly, high-perf
with Angular 2
Fully revised and updated to RC4
Foreword by Miško Hevery, Crea

ANGULAR CRUISE

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@UriShaked

Agenda

History

Codelyzer

How codelyzer works?

Compilers 101

Future plans

History

JavaScript Daily
@JavaScriptDaily

Follow

Community-Driven Best Practices and Style Guidelines for Angular 2 Application Development:

mgechev/angular2-style-guide

angular2-style-guide - Community-driven set of best practices and style guidelines for Angular 2 application development

github.com

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7:10 PM - 12 Apr 2016

JavaScript Daily
@JavaScriptDaily

Follow

The Official Angular 2 Style Guide:
angular.io/styleguide

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90	120

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Applying The Style Guide In Your Project

Enforcing Style

Enforcing Style

- Fork the official style guide
  - Modify the styles according to your needs

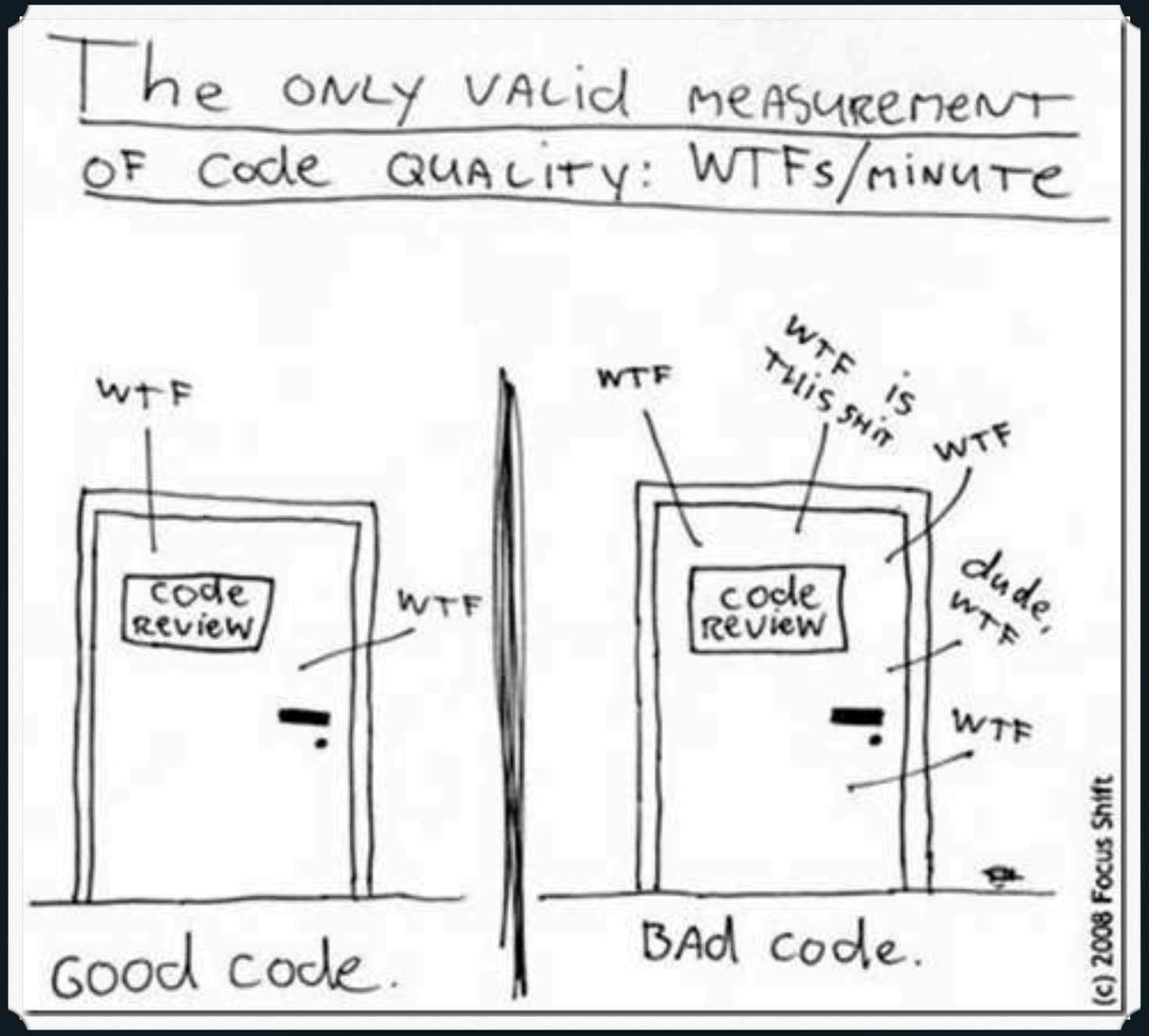
Enforcing Style

- Fork the official style guide
  - Modify the styles according to your needs
- Introduce the style guide to your team

Enforcing Style

- Fork the official style guide
  - Modify the styles according to your needs
- Introduce the style guide to your team
- Verify that each individual code change follows it

Core Review Process


The ONLY VALID MEASUREMENT OF Code QUALITY: WTFs/MINUTE
WTF
code review
WTF
Good code.
WTF
WTF
This is SHIT
WTF
code review
dude, WTF
WTF
BAd code.
(c) 2008 Focus Shift

- Manual
- Boring
- Error Prone

codelyzer

Codelyzer is a project which aims to enforce common style using static code analysis

Codelyzer Rules

Codelyzer Rules

Components / directives name suffix

Codelyzer Rules

Components / directives name suffix

Components / directives selectors

Codelyzer Rules

Components / directives name suffix

Components / directives selectors

Implement life cycle hook interfaces

Codelyzer Rules

Components / directives name suffix

Components / directives selectors

Implement life cycle hook interfaces

Bind to public members

Codelyzer Rules

Components / directives name suffix

Components / directives selectors

Implement life cycle hook interfaces

Bind to public members

No dead CSS styles

Codelyzer Rules

Components / directives name suffix

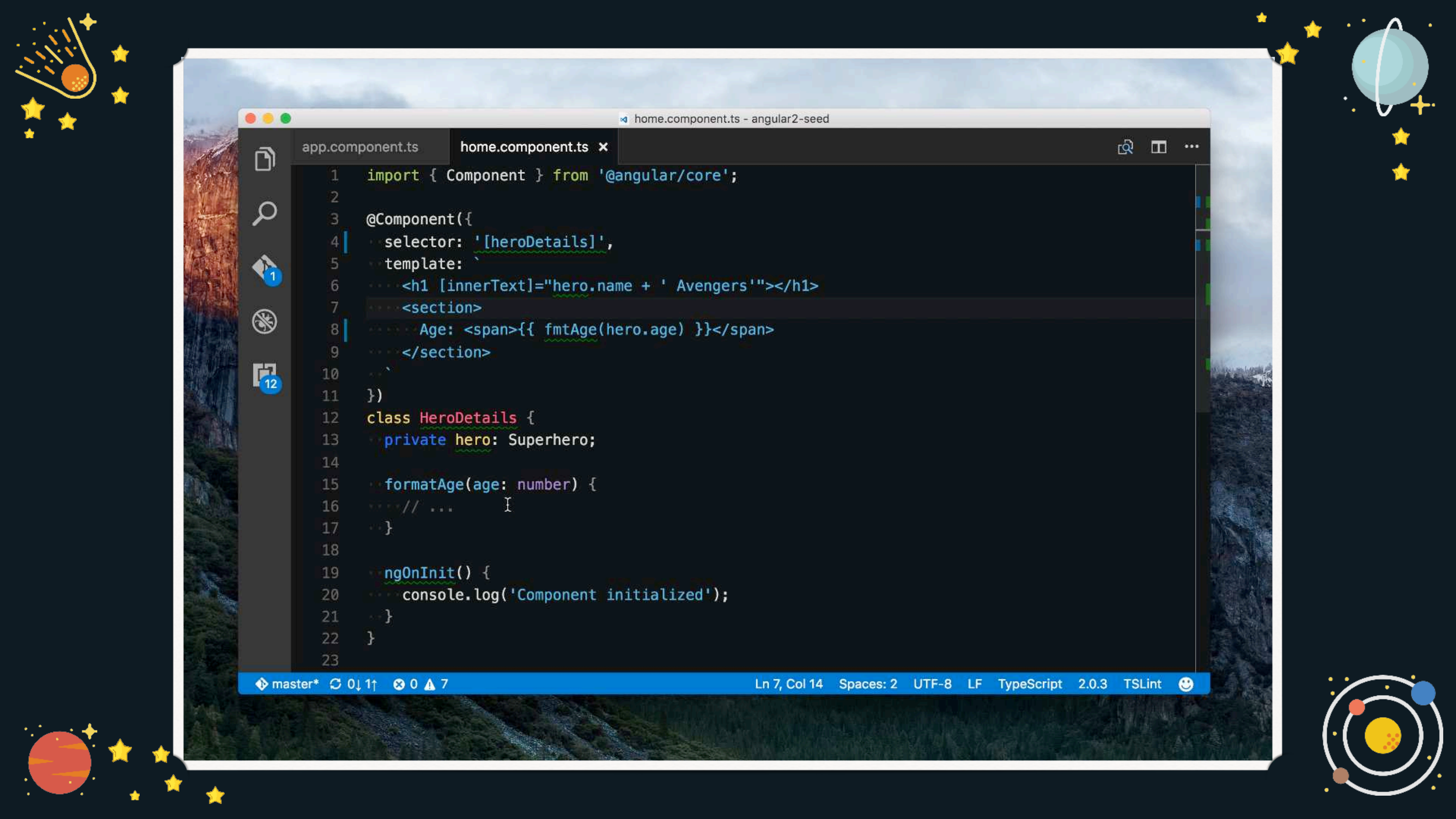
Components / directives selectors

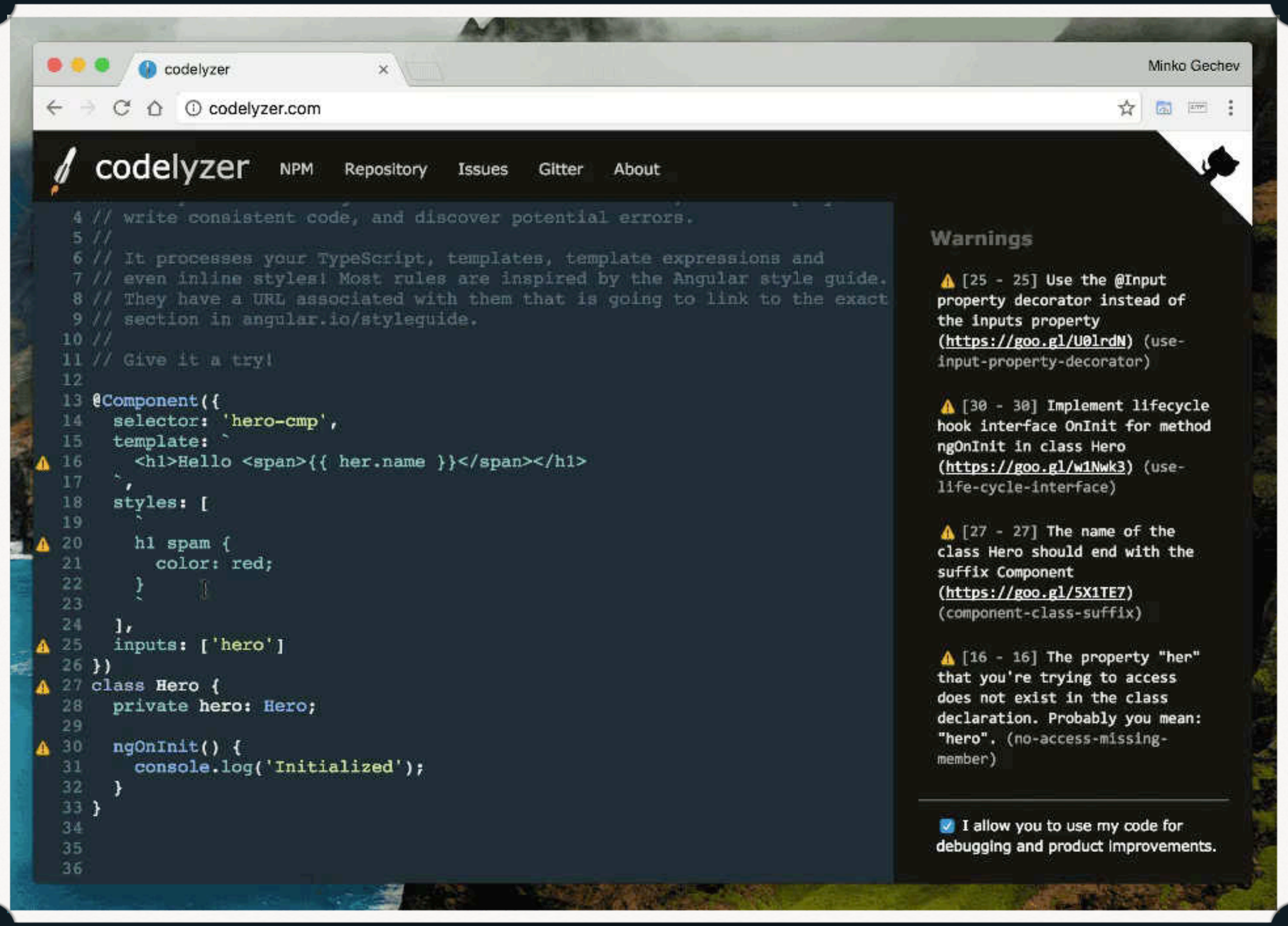
Implement life cycle hook interfaces

Bind to public members

No dead CSS styles

...

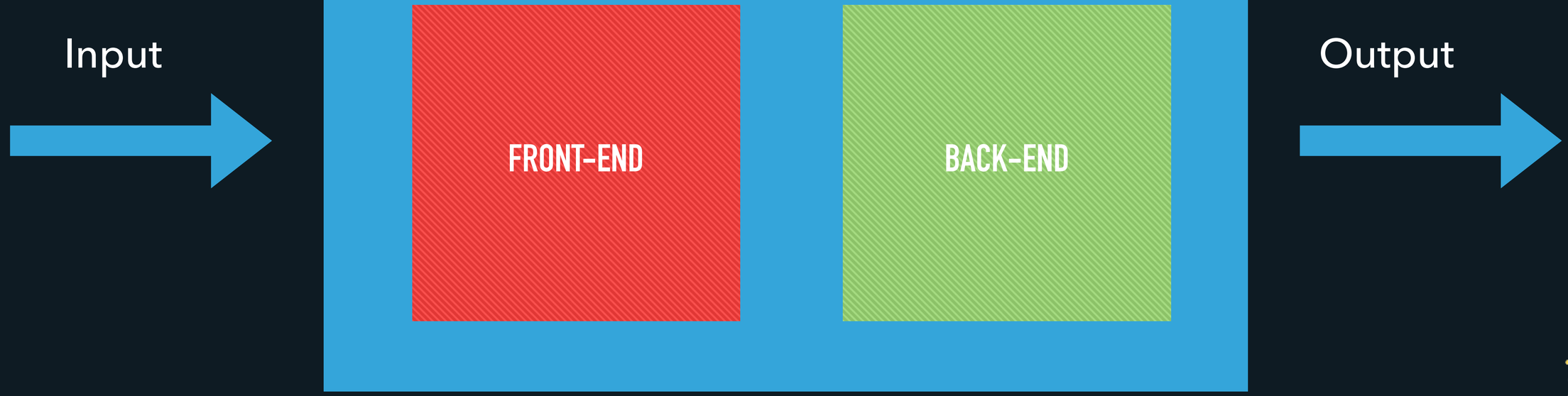

home.component.ts - angular2-seed
app.component.ts
home.component.ts
import { Component } from '@angular/core';
@Component({
selector: '[heroDetails]',
template: `
<h1 [innerText]="hero.name + ' Avengers'"></h1>
<section>
Age: {{ fmtAge(hero.age) }}
</section>
`
})
class HeroDetails {
private hero: Superhero;
formatAge(age: number) {
// ...
}
ngOnInit() {
console.log('Component initialized');
}
}
master* 0↓ 1↑ 0 7
Ln 7, Col 14 Spaces: 2 UTF-8 LF TypeScript 2.0.3 TSLint


codelyzer
Minko Gechev
codelyzer.com
codelyzer
NPM
Repository
Issues
Gitter
About
// write consistent code, and discover potential errors.
//
// It processes your TypeScript, templates, template expressions and
// even inline styles! Most rules are inspired by the Angular style guide.
// They have a URL associated with them that is going to link to the exact
// section in angular.io/styleguide.
//
// Give it a try!
@Component({
selector: 'hero-cmp',
template: `
<h1>Hello {{ her.name }}</h1>
`,
styles: [
`
h1 spam {
color: red;
}
`
],
inputs: ['hero']
})
class Hero {
private hero: Hero;
ngOnInit() {
console.log('Initialized');
}
}
Warnings
[25 - 25] Use the @Input property decorator instead of the inputs property (https://goo.gl/U0lrdN) (use-input-property-decorator)
[30 - 30] Implement lifecycle hook interface OnInit for method ngOnInit in class Hero (https://goo.gl/w1Nwk3) (use-life-cycle-interface)
[27 - 27] The name of the class Hero should end with the suffix Component (https://goo.gl/5X1TE7) (component-class-suffix)
[16 - 16] The property "her" that you're trying to access does not exist in the class declaration. Probably you mean: "hero". (no-access-missing-member)
I allow you to use my code for debugging and product improvements.

How Codelyzer Works?

Compiler

Compiler



Compiler

Compiler

Input
FRONT-END
...
LEXICAL ANALYSIS
SYNTAX ANALYSIS
SEMANTIC ANALYSIS
Output

Lexical Analysis

```
const product = a * b;
```

Lexical Analysis

```
tokenize('const product = a * b;')
```

Lexical Analysis

```
tokenize('const product = a * b;')
```

```
[
  { lexeme: 'const', type: 'keyword' },
  { lexeme: 'product', type: 'identifier' },
  { lexeme: '=', type: 'operator' },
  ...
]
```

Syntax Analysis

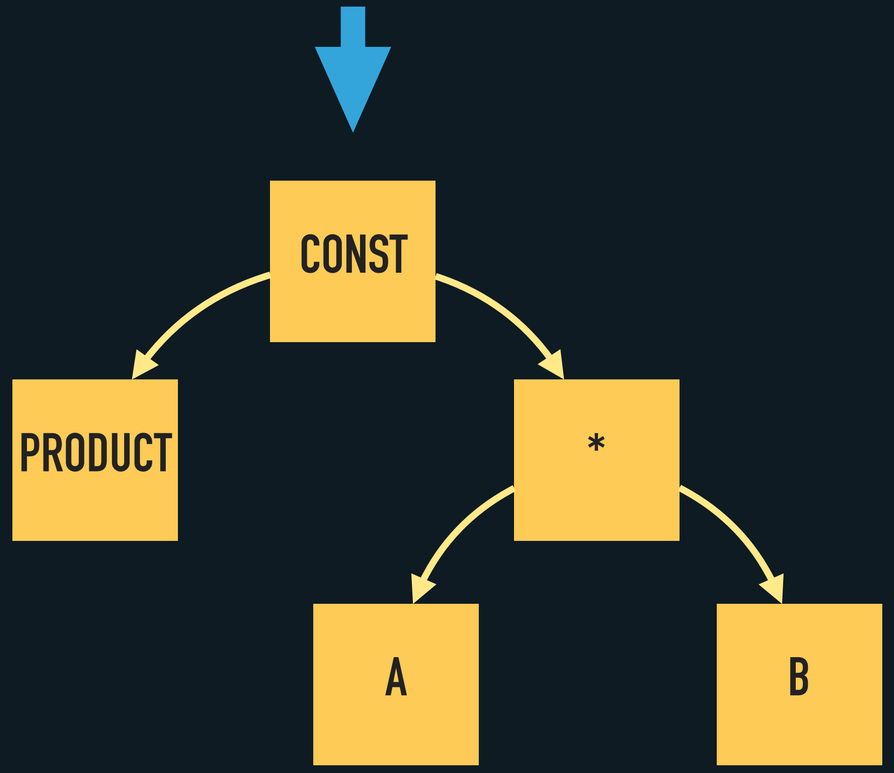
```
parse(tokenize('...'))
```

Syntax Analysis

```
parse(tokenize('...'))
```

Syntax Analysis

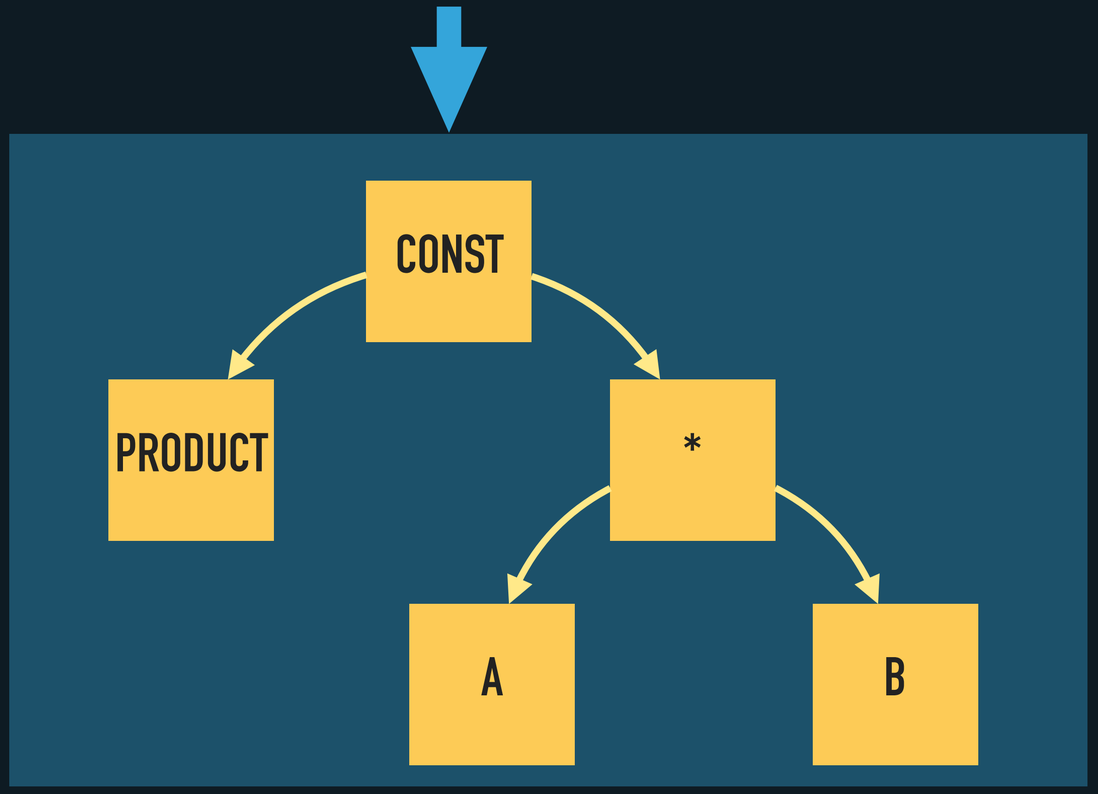
```
parse(tokenize('...'))
```



Syntax Analysis

```
parse(tokenize('...'))
```

AST



Semantic Analysis

```
typeCheck(parse(tokenize('...')))
```

```
checkConst(node) {
  return checkExpression(node.initializer)
}

checkExpression(node) {
  if (node instanceof BinOp) {
    return checkBinOperation(node);
  }
  ...
}

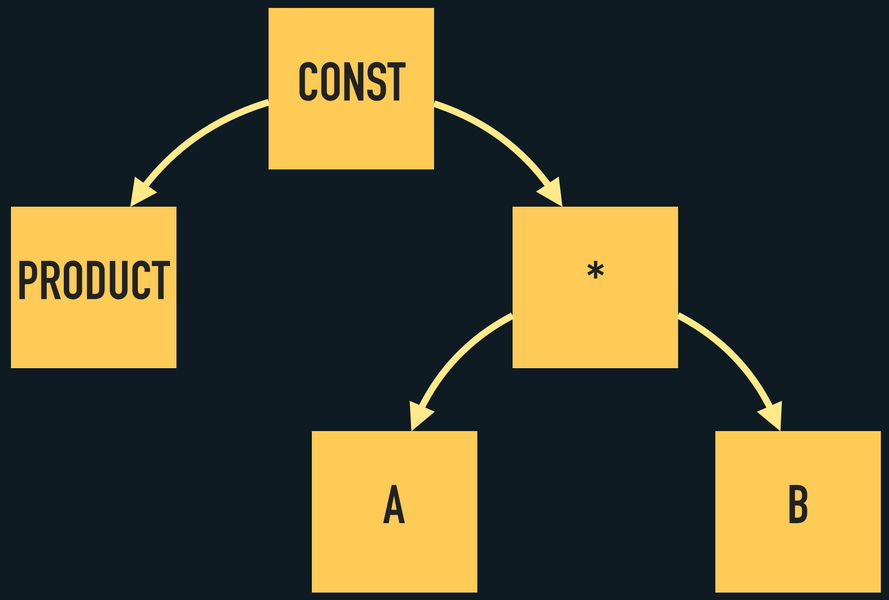
checkBinOperation(node) {
  if (isMultiplication(node)) {
    if (!isNumber(node.left) ||
        !isNumber(node.right)) {
      throw new Error("Node must be 'number'");
    }
    ...
  }
}
```

```
checkConst(node)

checkExpression(node)

checkBinOperation(node)

isNumber(node)
```

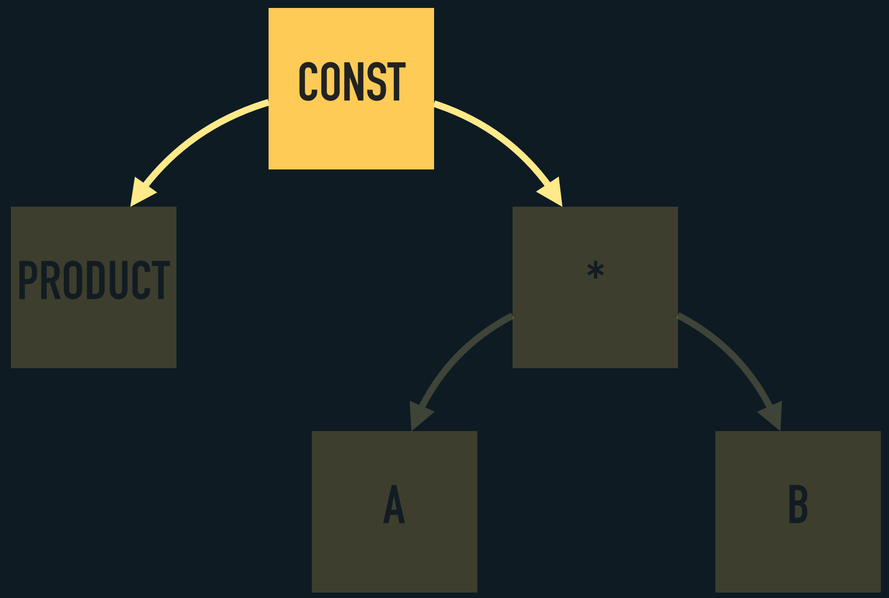


```
checkConst(node)

checkExpression(node)

checkBinOperation(node)

isNumber(node)
```

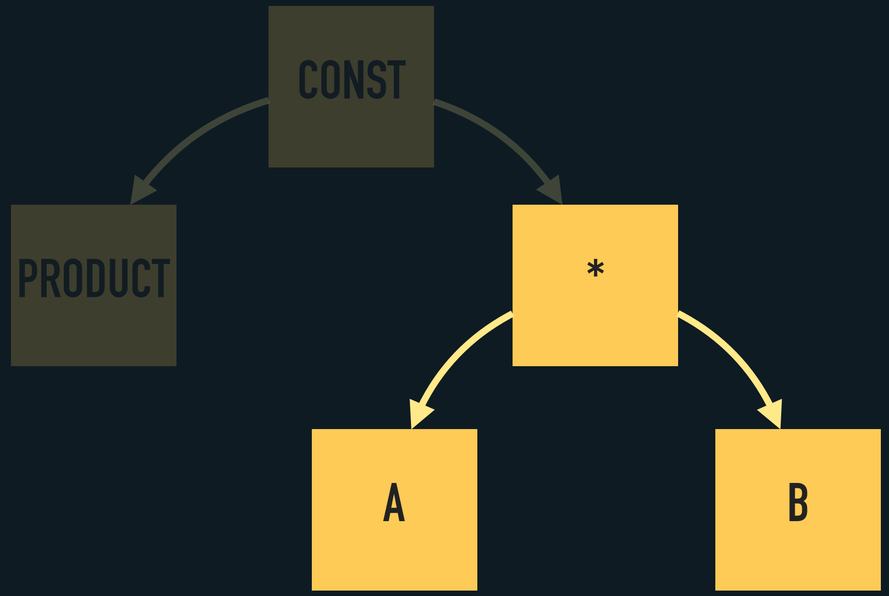


```
checkConst(node)

checkExpression(node)

checkBinOperation(node)

isNumber(node)
```

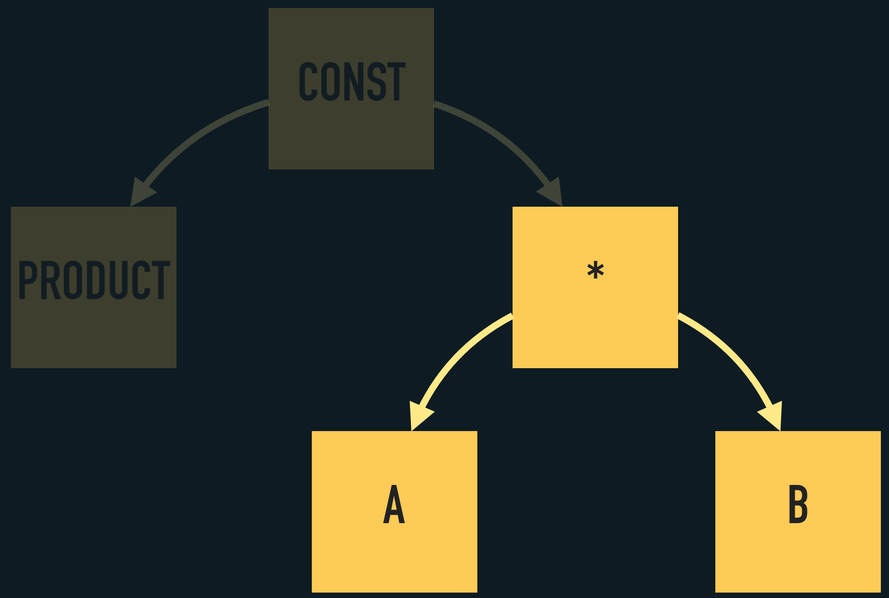


```
checkConst(node)

checkExpression(node)

checkBinOperation(node)

isNumber(node)
```

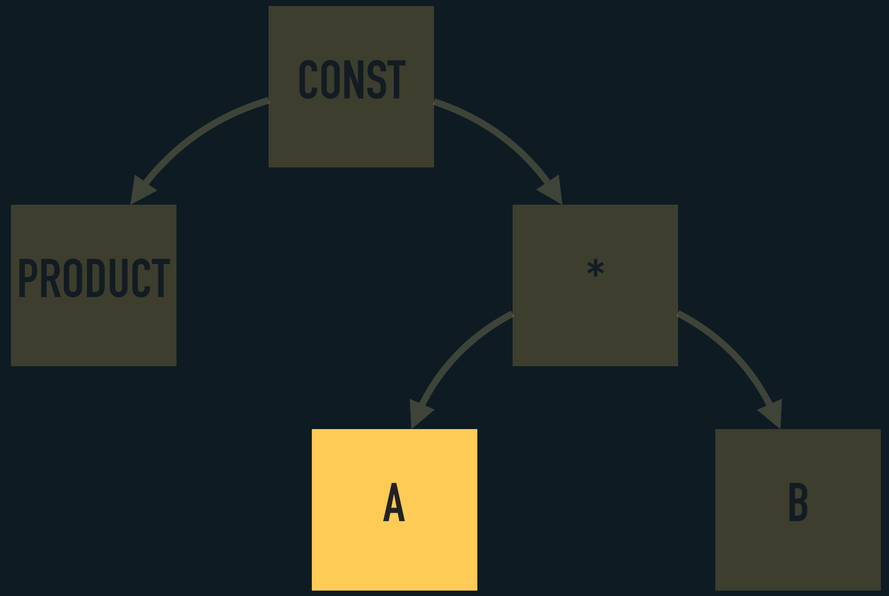


```
checkConst(node)

checkExpression(node)

checkBinOperation(node)

isNumber(node)
```

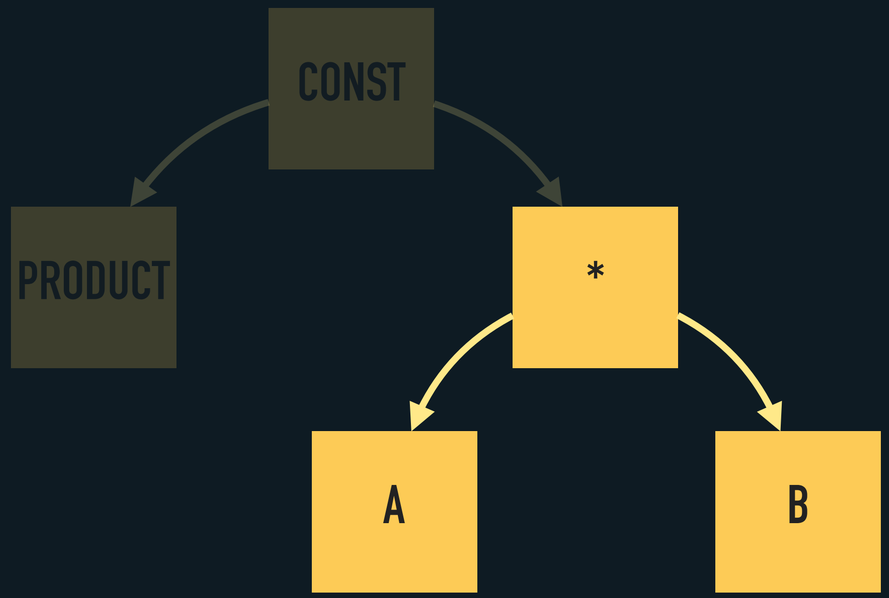


```
checkConst(node)

checkExpression(node)

checkBinOperation(node)

isNumber(node)
```

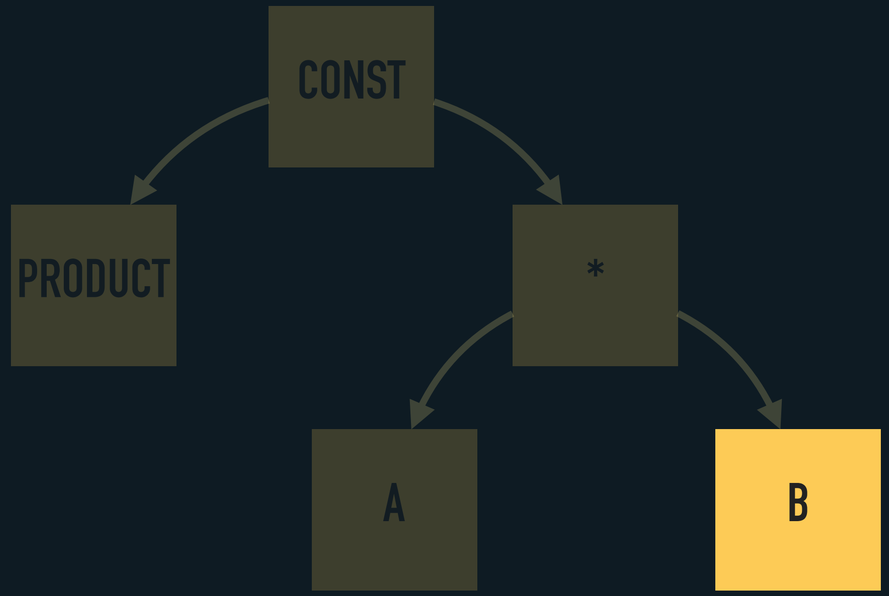


```
checkConst(node)

checkExpression(node)

checkBinOperation(node)

isNumber(node)
```



@ 爆笑gif图

Static program analysis is the analysis of computer software that is performed without actually executing programs.

Wikipedia

codelyzer

Codelyzer Goals

- Analyze the source code statically
- Show warning when a style is violated
- Extensible
- Reuse as much as possible

tsc

tslint

Alex Eagle

Scott Wu

Martin Probst

Components as elements

STYLE 05-03

> **Do** give components an *element* selector, as opposed to *attribute* or *class* selectors.

> **Why?** components have templates containing HTML and optional Angular template syntax. They display content. Developers place components on the page as they would native HTML elements and WebComponents.

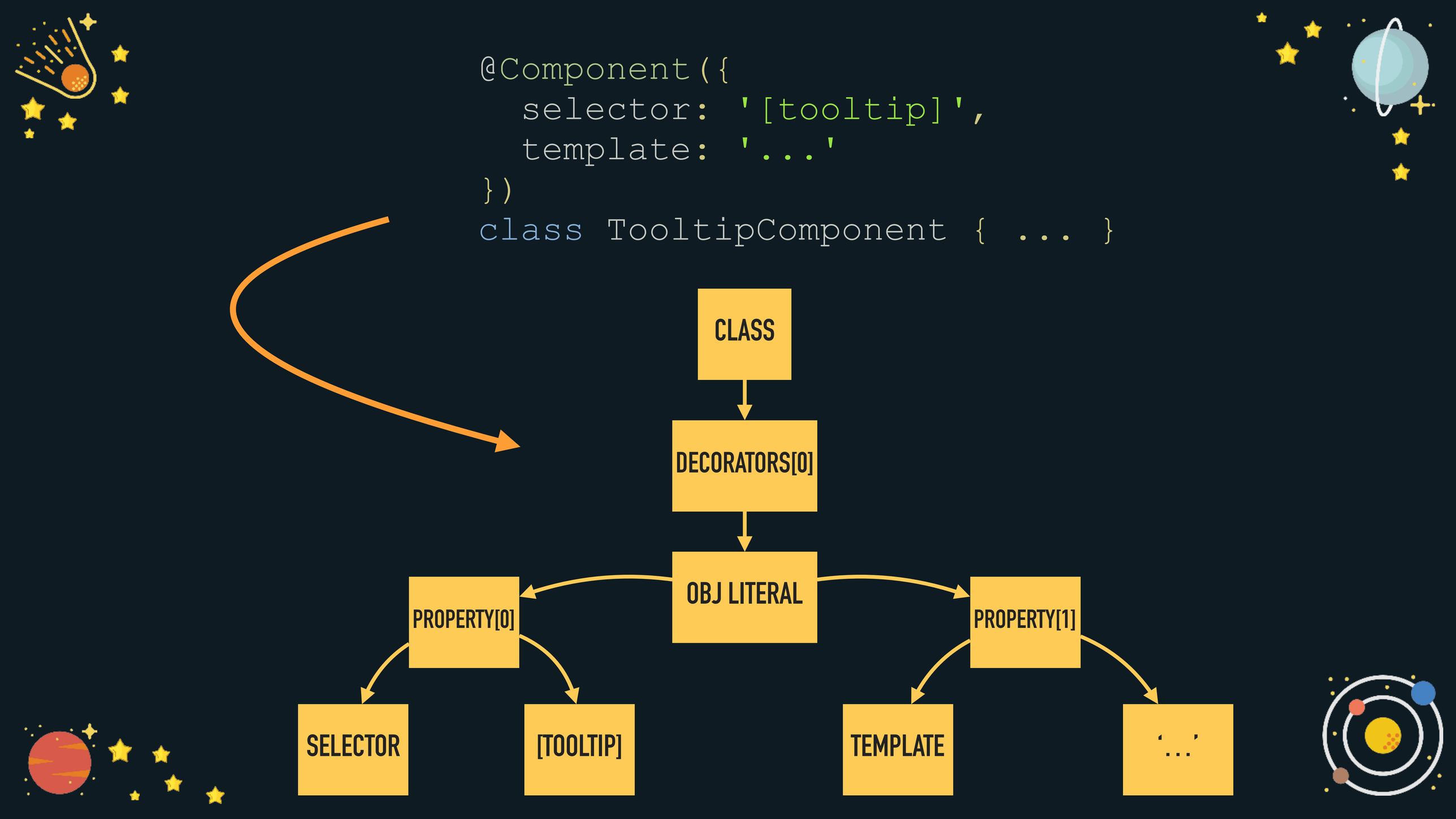
> **Why?** It is easier to recognize that a symbol is a component by looking at the template's html.

```
@Component({
  selector: '[tooltip]',
  template: '...'
})
class TooltipComponent { ... }
```

```
tsc.tokenize(`
   @Component({
      selector: '[tooltip]',
      template: '...'
   })
   class TooltipComponent { ... }
`)
```

```
ast = tsc.parse(
   tsc.tokenize(`
      @Component({
         selector: '[tooltip]',
         template: '...'
      })
      class TooltipComponent { ... }
   `)
);
```

```
@Component({
  selector: '[tooltip]',
  template: '...'
})
class TooltipComponent { ... }
```


@Component({
selector: '[tooltip]',
template: '...'
})
class TooltipComponent { ... }
CLASS
DECORATORS[0]
OBJ LITERAL
PROPERTY[0]
PROPERTY[1]
SELECTOR
[TOOLTIP]
TEMPLATE
'...'

Validate Selector

```
visitClass(node) {
  node.decorators.forEach(visitDecorator);
}

visitDecorator(node) {
  if (node.name === 'Component') {
    visitComponentMetadata(readMetadata(node))
  }
}

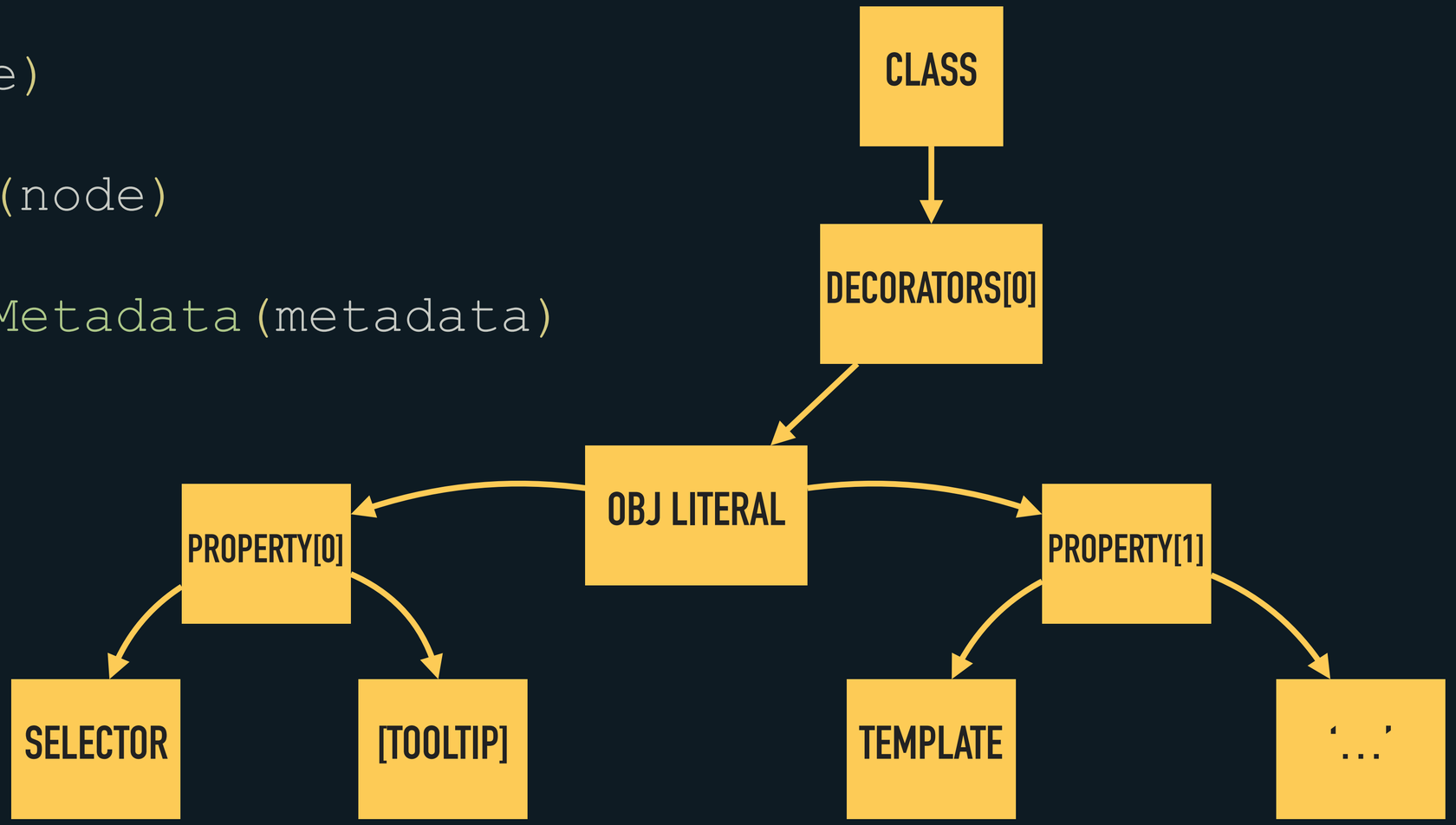
visitComponentMetadata(metadata) {
  if (!parseSelector(metadata.selector).element) {
    tslint.report('Components should have element selectors');
  }
}
```

Validate Selector

```
visitClass(node)

visitDecorator(node)

visitComponentMetadata(metadata)
```

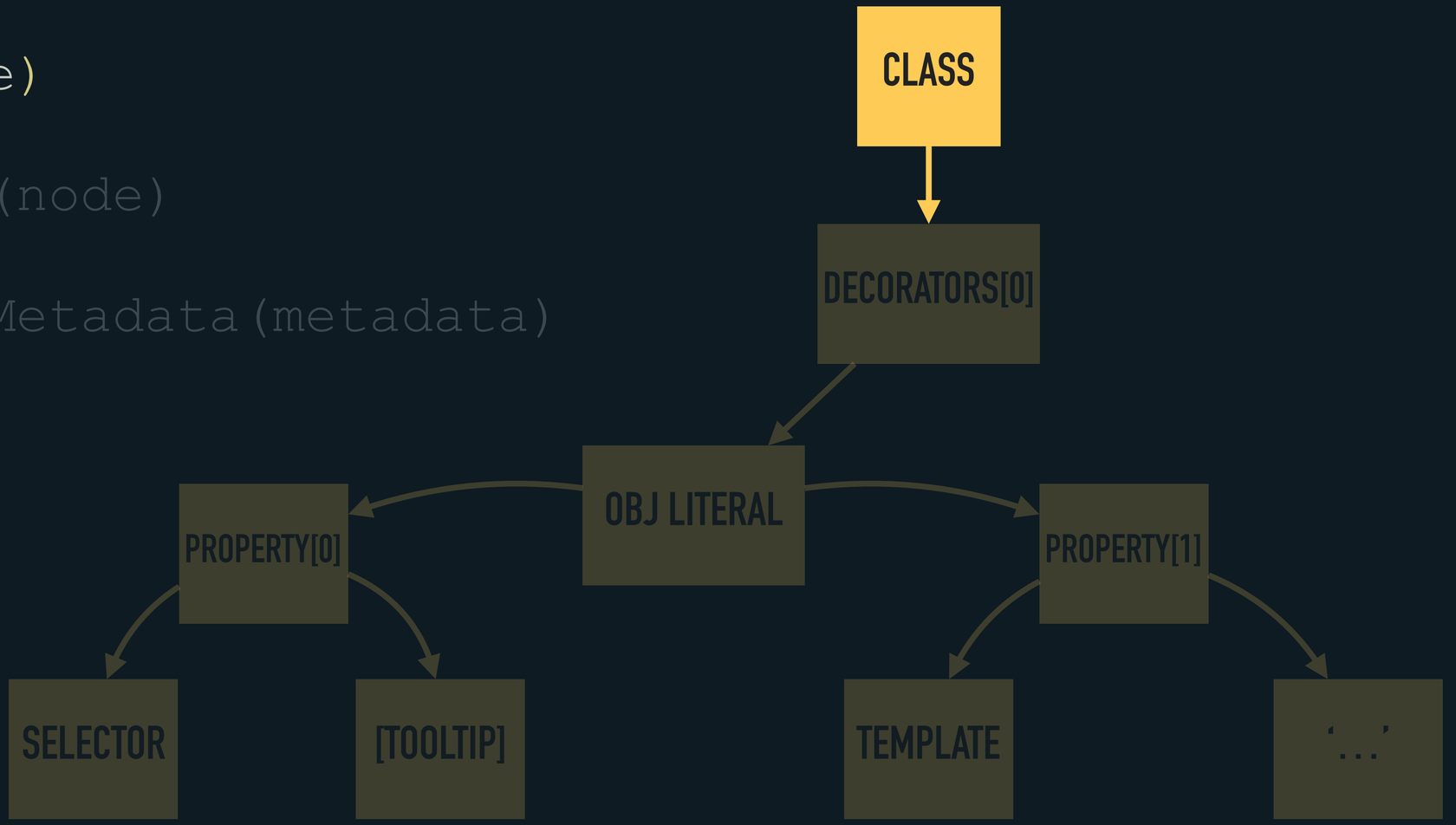


Validate Selector

```
visitClass(node)

visitDecorator(node)

visitComponentMetadata(metadata)
```

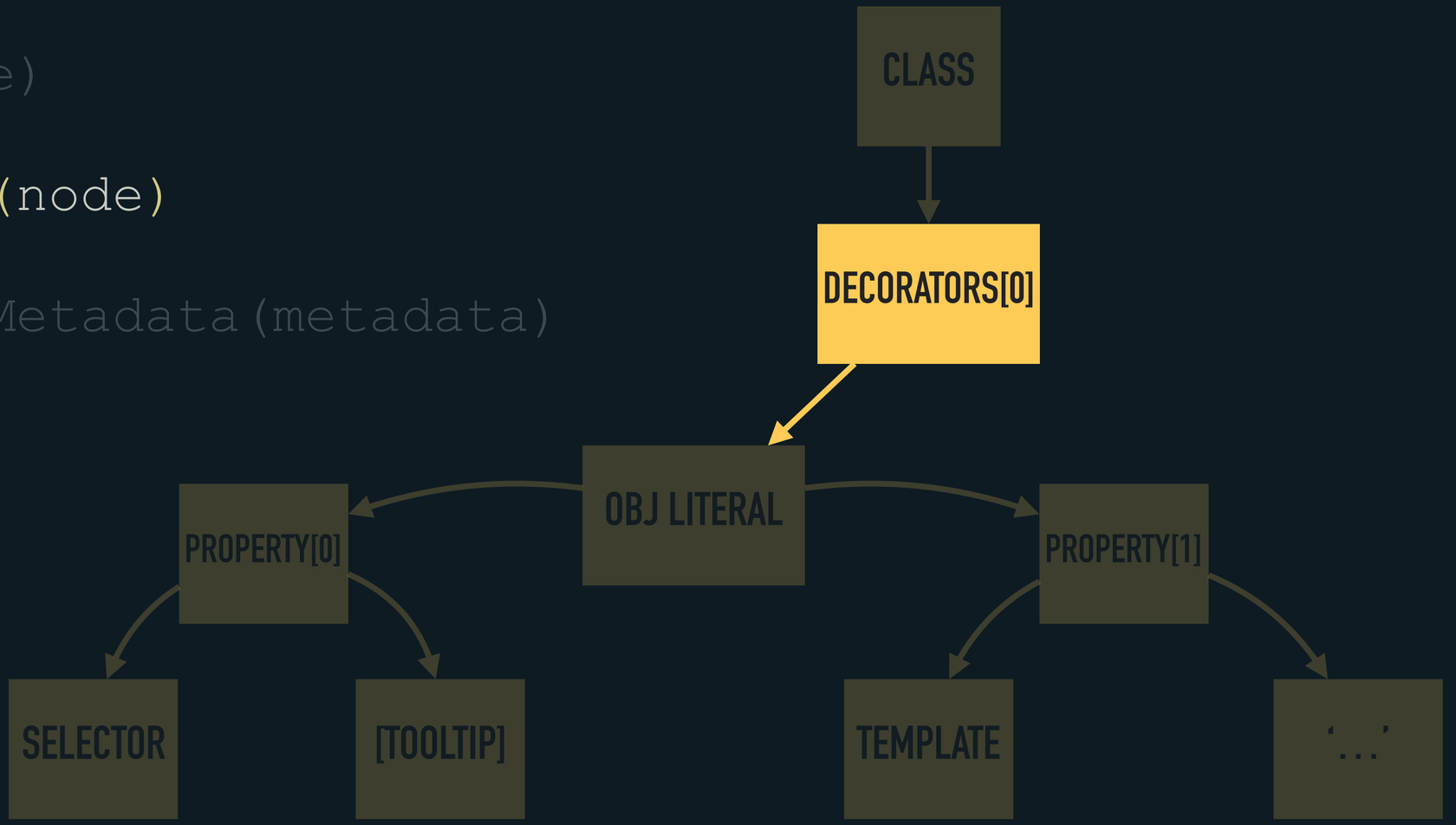


Validate Selector

```
visitClass(node)

visitDecorator(node)

visitComponentMetadata(metadata)
```

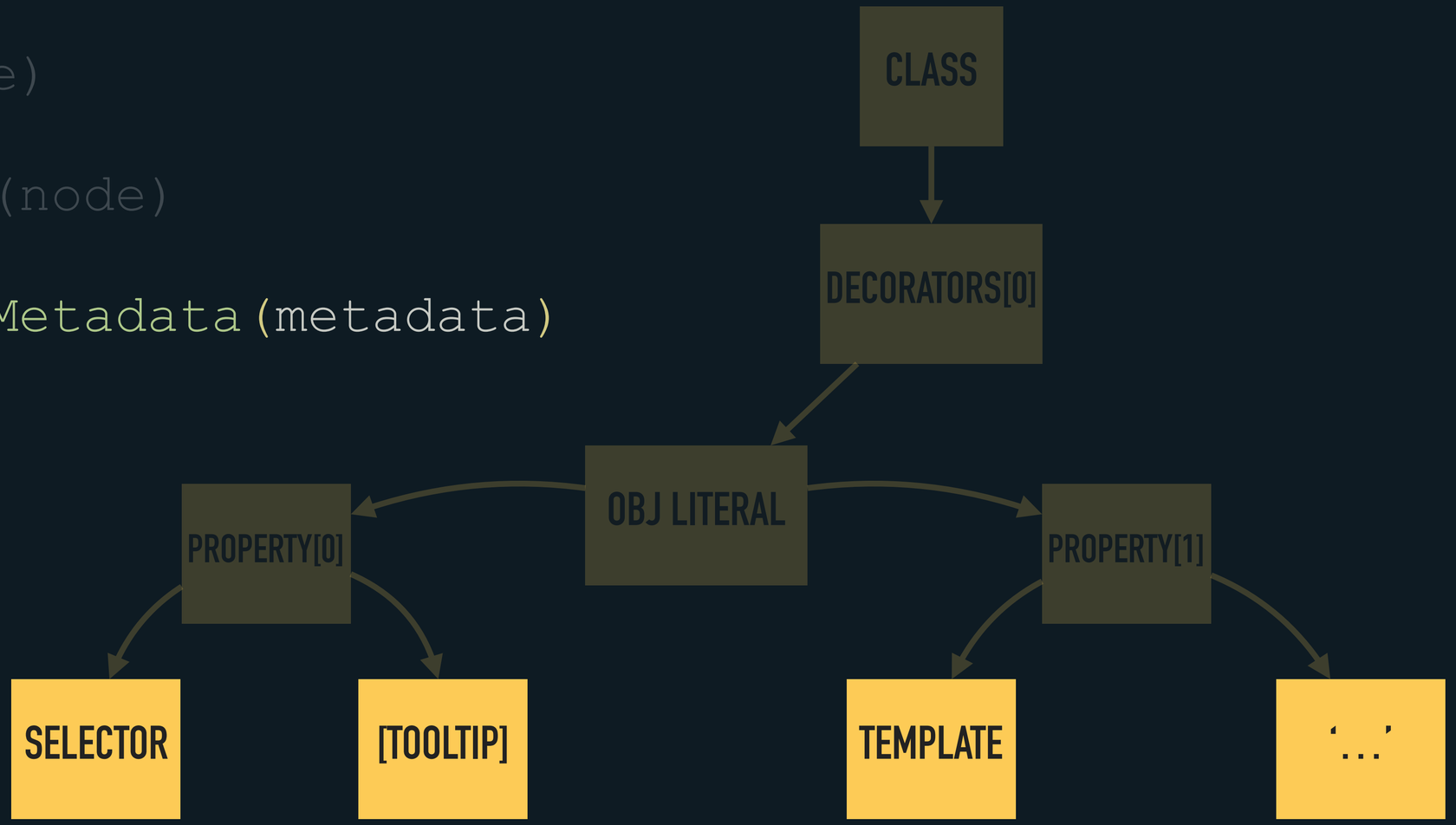


Validate Selector

```
visitClass(node)

visitDecorator(node)

visitComponentMetadata(metadata)
```

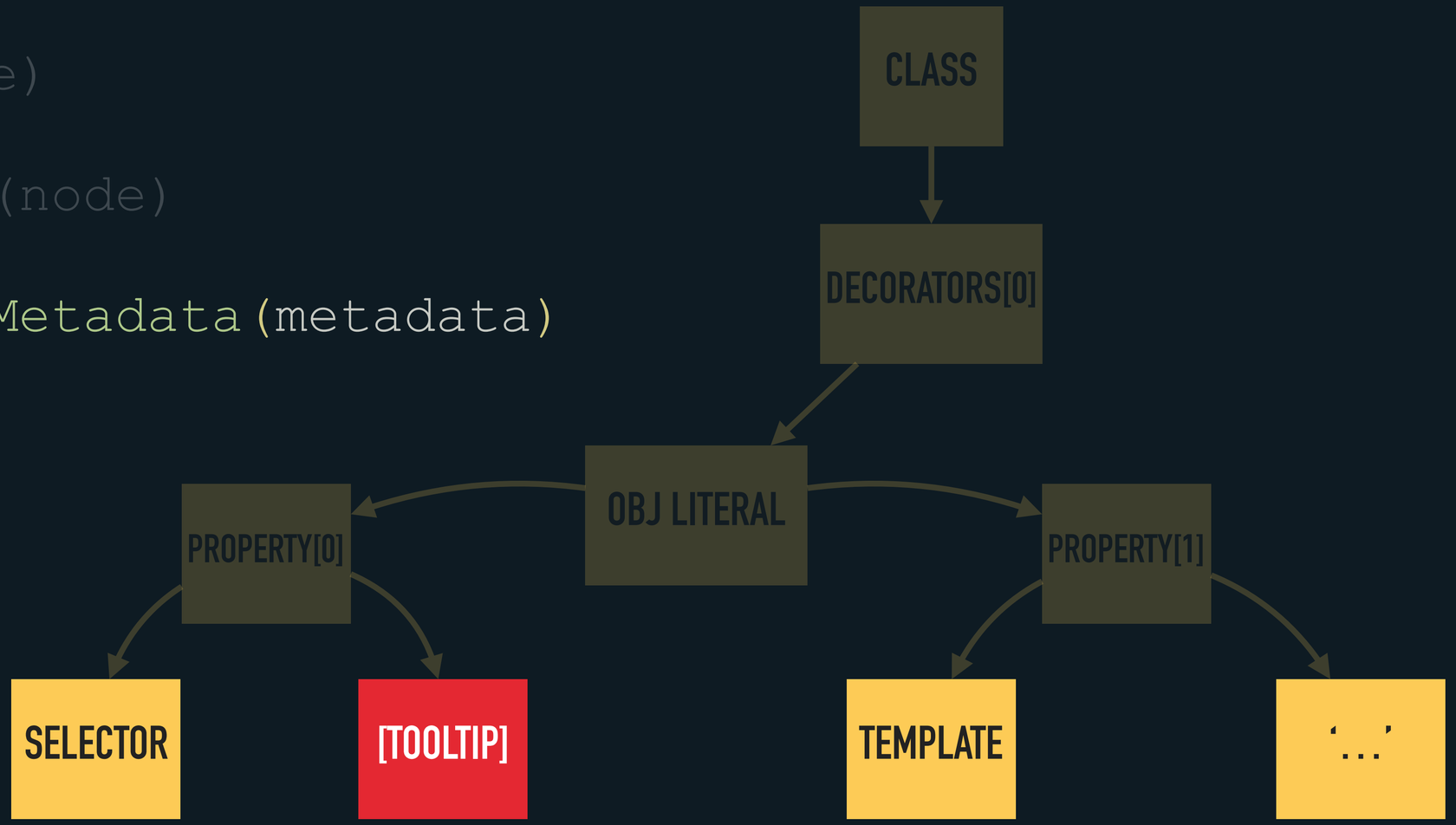


Validate Selector

```
visitClass(node)

visitDecorator(node)

visitComponentMetadata(metadata)
```



No Dead CSS

```
@Component({
  selector: 'header-cmp',
  template: `
    <header>
      <h1>{{ title }}</h1>
      <div class="greeting">Hello <span>{{ name }}</span>!</div>
    </header>
  `,
  styles: [`
    h1 {
      font-size: 25px;
    }

    .greeting spam {
      color: red;
    }
  `]
})
class HeaderComponent { ... }
```

```
@Component({
  selector: 'header-cmp',
  template: `
    <header>
      <h1>{{ title }}</h1>
      <div class="greeting">Hello <span>{{ name }}</span>!</div>
    </header>
  `,
  styles: [`
    h1 {
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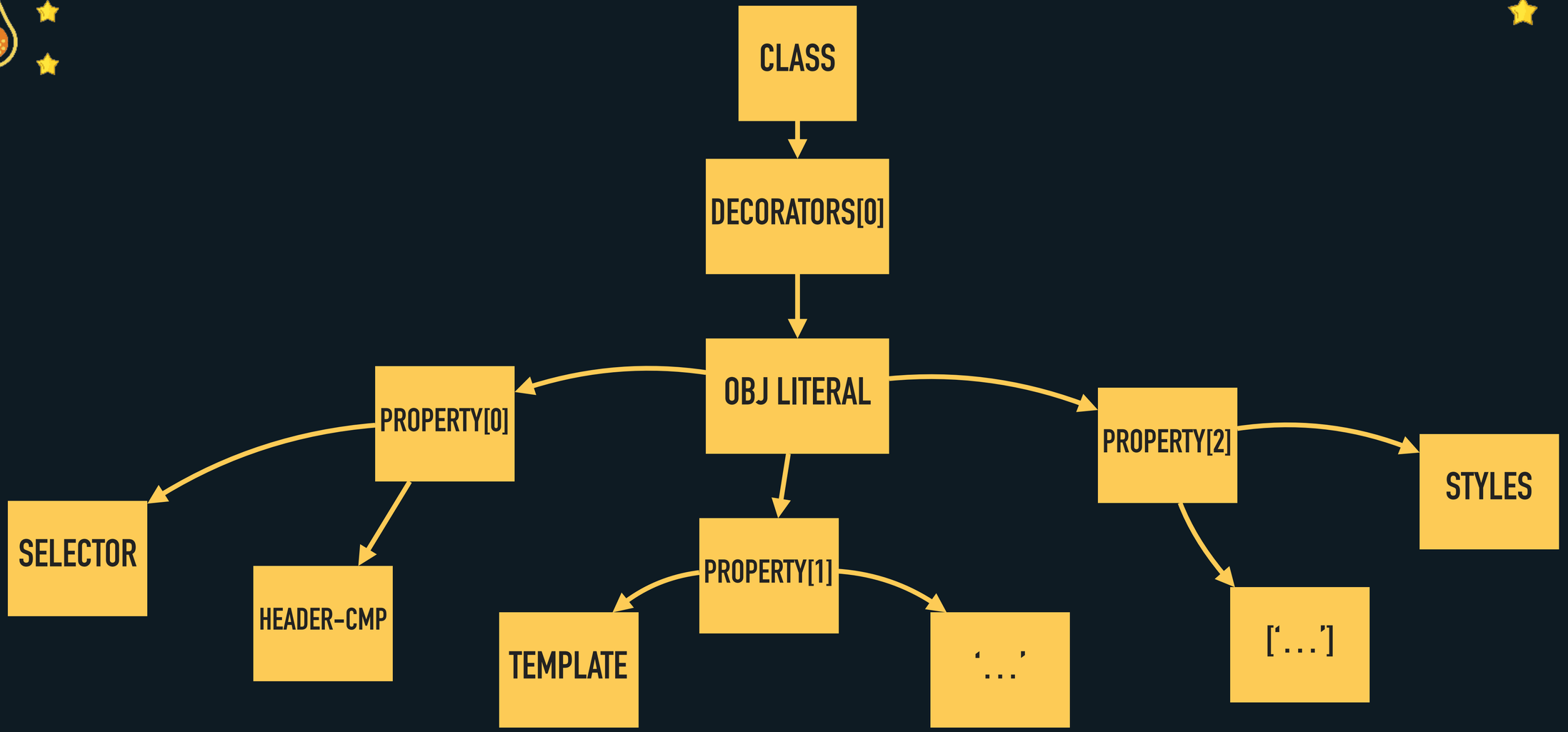
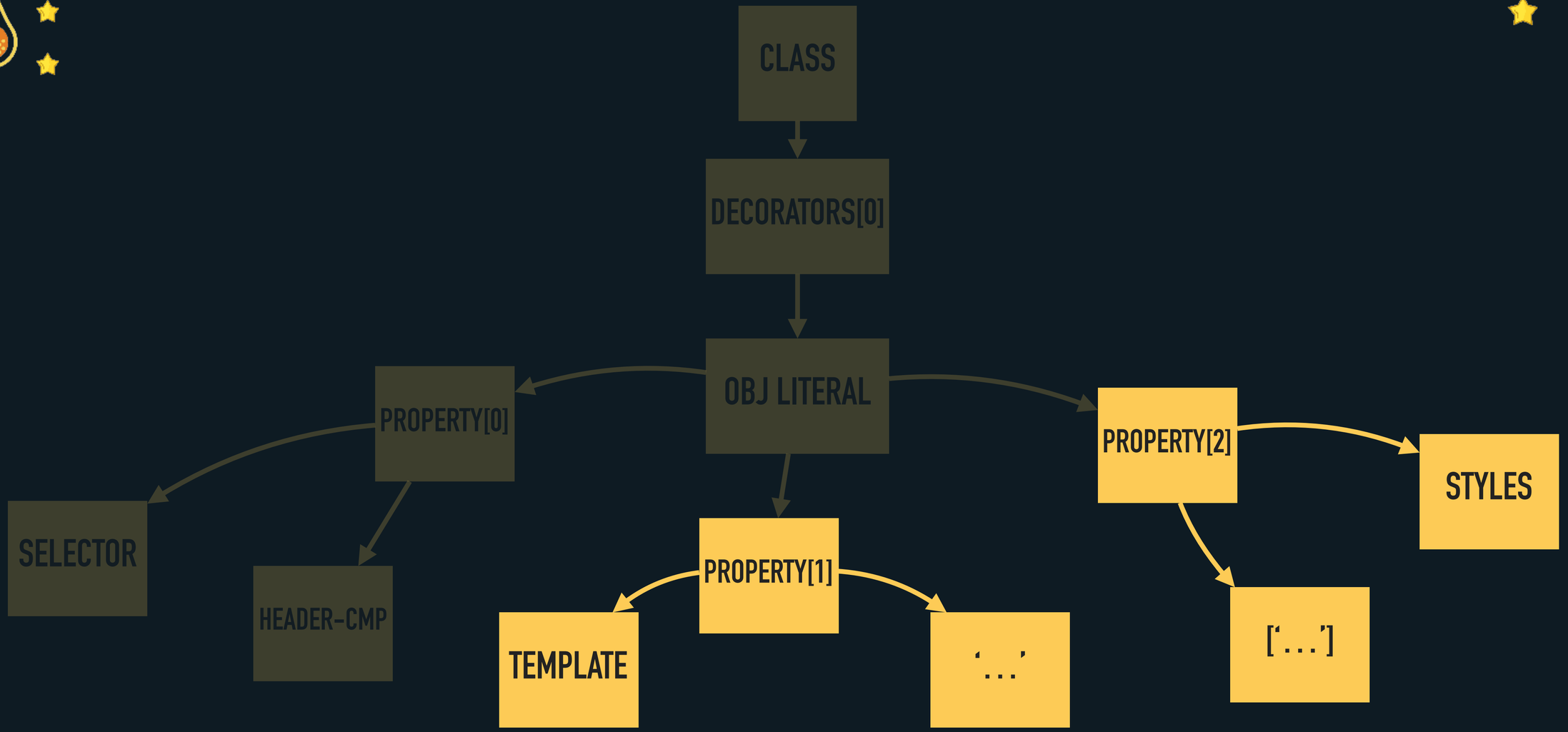
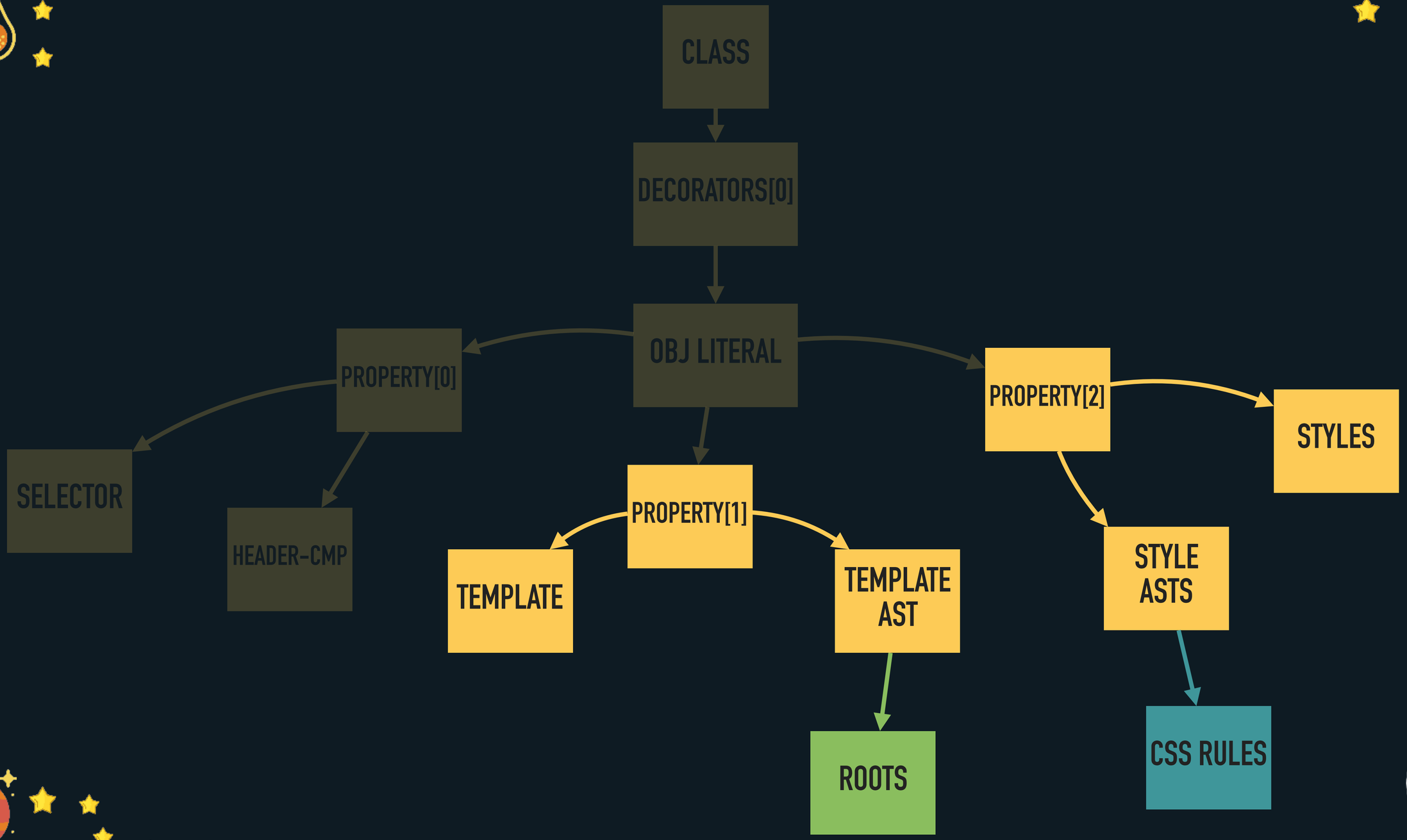
      color: red;
    }
  `]
})
class HeaderComponent { ... }
```


CLASS
DECORATORS[0]
OBJ LITERAL
PROPERTY[0]
SELECTOR
HEADER-CMP
PROPERTY[1]
TEMPLATE
'...'
PROPERTY[2]
STYLES
['...']


CLASS
DECORATORS[0]
OBJ LITERAL
PROPERTY[0]
SELECTOR
HEADER-CMP
PROPERTY[1]
TEMPLATE
'...'
PROPERTY[2]
STYLES
['...']

Strings Are Hard To Analyze


CLASS
DECORATORS[0]
OBJ LITERAL
PROPERTY[0]
SELECTOR
HEADER-CMP
PROPERTY[1]
TEMPLATE
TEMPLATE AST
ROOTS
PROPERTY[2]
STYLES
STYLE ASTS
CSS RULES

```
@Component({
  selector: 'sd-app',
  template: `
    <h1 class="header">Weather Forecast</h1>
    <div [class.hot]="temperature > 85">{{ temperature }}</div>
  `,
  styles: [
    `
    h1.head {
      font-size: 22px;
    }
    .hot {
      color: red;
    }
    div.medium {
      color: orange;
    }
    .cold {
      color: blue;
    }
    `
  ]
})
export class AppComponent {
  temperature = 80;
}
```

4GIFS.com

Current Limitations

- Linting per file - not entire program
  - Doesn’t perform type checking
- Will fail when selector is variable

```
import { Component as NgComponent }
  from '@angular/core';

const selector = '[tool' + 'tip]';

@NgComponent({
  selector,
  template: '...'
})
class TooltipComponent { ... }
```

```
import { Component as NgComponent }
  from '@angular/core';

const selector = '[tool' + 'tip]';

@NgComponent({
  selector,
  template: '...'
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class TooltipComponent { ... }
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```
import { Component as NgComponent }
  from '@angular/core';

const selector = '[tool' + 'tip]';

@NgComponent({
  selector,
  template: '...'
})
class TooltipComponent { ... }
```

ngast

github.com/mgechev/ngast

ngast

- Provides high-level API to the compiler
- Allows:
  - Deep metadata collection
  - Static evaluation of foldable expressions

```
import { Component as NgComponent }
  from '@angular/core';

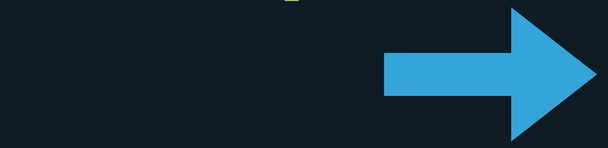
const selector = '[tool' + 'tip]';

@NgComponent({
  selector,
  template: '...'
})
class TooltipComponent { ... }
```

```
import { Component as NgComponent }
  from '@angular/core';

const selector = '[tool' + 'tip]';

@NgComponent({
  selector,
  template: '...'
})
class TooltipComponent { ... }
```



```
{
  "isHost": false,
  "isComponent": true,
  "selector": "[tooltip]",
  "changeDetection": 1,
  "inputs": {},
  "outputs": {},
  "template": {
    "template": "...",
    ...
  },
  ...
}
```

Codelyzer 3

- Deep metadata collection
- Autofixes
- Much more!

Thank you!

twitter.com/mgechev
github.com/mgechev
blog.mgechev.com