

# Use Babel AST in ESLint

Programming Experience 2019

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# Context



[https://github.com/  
LivelyKernel/lively4-core/](https://github.com/LivelyKernel/lively4-core/)

A screenshot of a web-based code editor window. The window has a title bar with a hamburger menu icon, the text "Work", and standard window controls (minimize, maximize, close). The code editor contains five lines of JavaScript code:

```
1 var x = 5;  
2  
3 function plus(x) {  
4   return this + x;  
5 }
```

Line 1 has a yellow warning icon to its left. A tooltip box is open above line 1, displaying the message: "'x' is assigned a value but never used." The code is syntax-highlighted: keywords like "function" and "return" are in blue, and identifiers like "x" are in green.


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Chart 2

# Motivation

- ESLint is a convenient tool for programming
- For code unknown to ESLint, we can't utilize it
- False positives -> Bad Code



```
Workspace
1 function plus(x) {
2   return this + x;
3 }
4
5 let variable = 5; if(variable == -0){-0::plus(3)};
6
7
```

The screenshot shows a code editor window titled 'Workspace'. It contains JavaScript code with a syntax error highlighted by a red 'x' icon and a yellow tooltip. The tooltip text is 'Parsing error: Unexpected token :'. The code is as follows:

```
1 function plus(x) {
2   return this + x;
3 }
4
5 let variable = 5; if(variable == -0){-0::plus(3)};
6
7
```

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Chart 3

# ESLint

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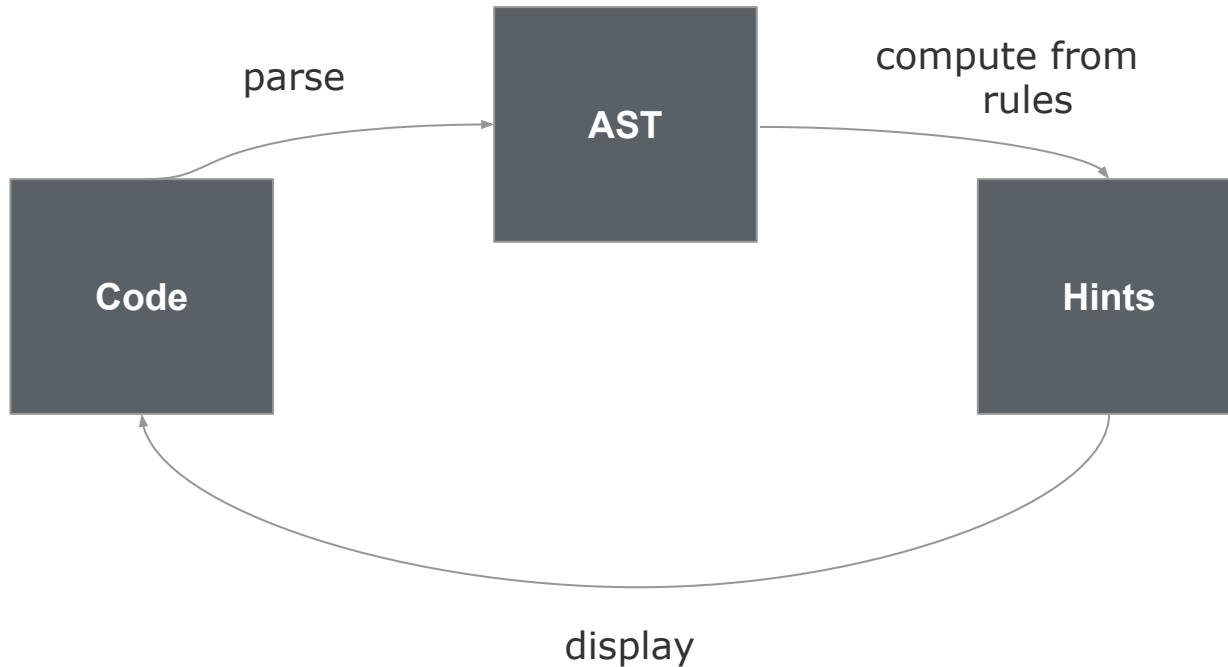
- ESLint = ECMAScript Lint
- static code analysis
- supports current standards of ECMAScript



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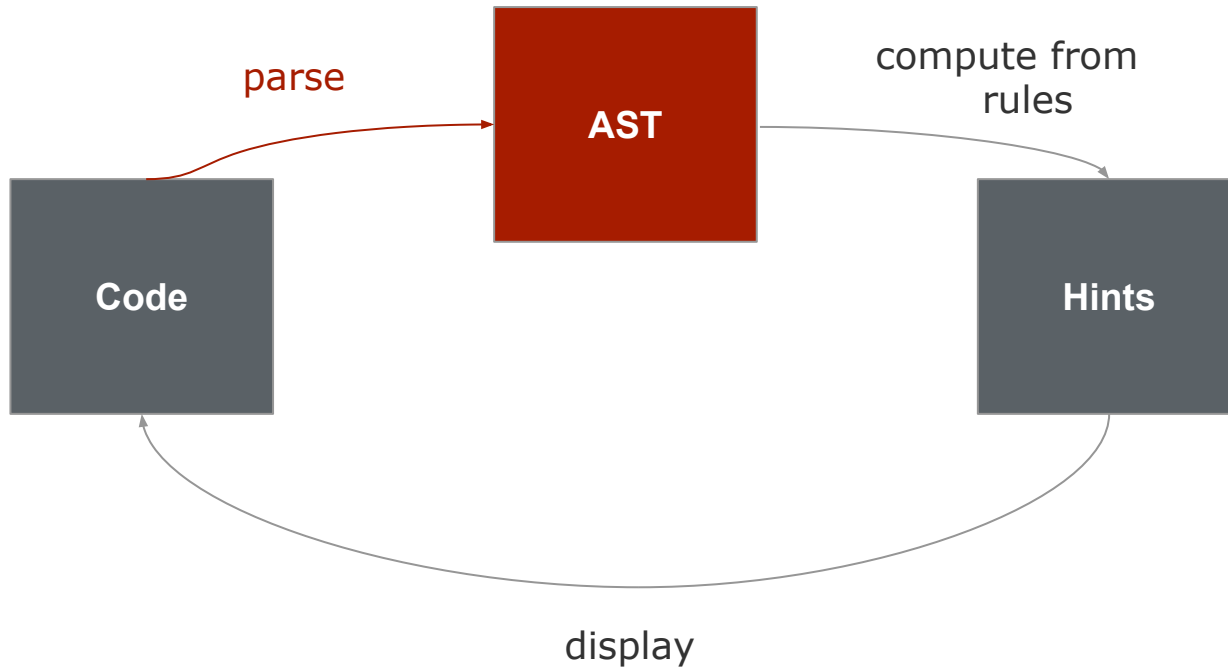
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Chart 5



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Chart **6**

# Babel

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- Javascript\*  $\neq$  Javascript
- experimental features like binding operator
- compile down to ECMAScript
- we can correctly compile a babel AST already

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# Babel AST vs Espree AST

## Babylon

```
Program {  
  type: "Program"  
  start: 0  
  end: 476  
+ range: [2 elements]  
- body: [  
  + VariableDeclaration {type, start, end, range, declarations,  
  + FunctionDeclaration {type, start, end, range, id, ... +5}  
  ]  
  sourceType: "module"  
}
```

<https://astexplorer.net/>

## Espree

```
File {  
  type: "File"  
  start: 0  
  end: 476  
+ loc: {start, end}  
- program: Program {  
  type: "Program"  
  start: 0  
  end: 476  
+ loc: {start, end}  
  sourceType: "module"  
- body: [  
  + VariableDeclaration {type, start, end, loc, declarations, ... +2}  
  + FunctionDeclaration {type, start, end, loc, id, ... +5}
```





## Get ESLint to use the correct Babel AST

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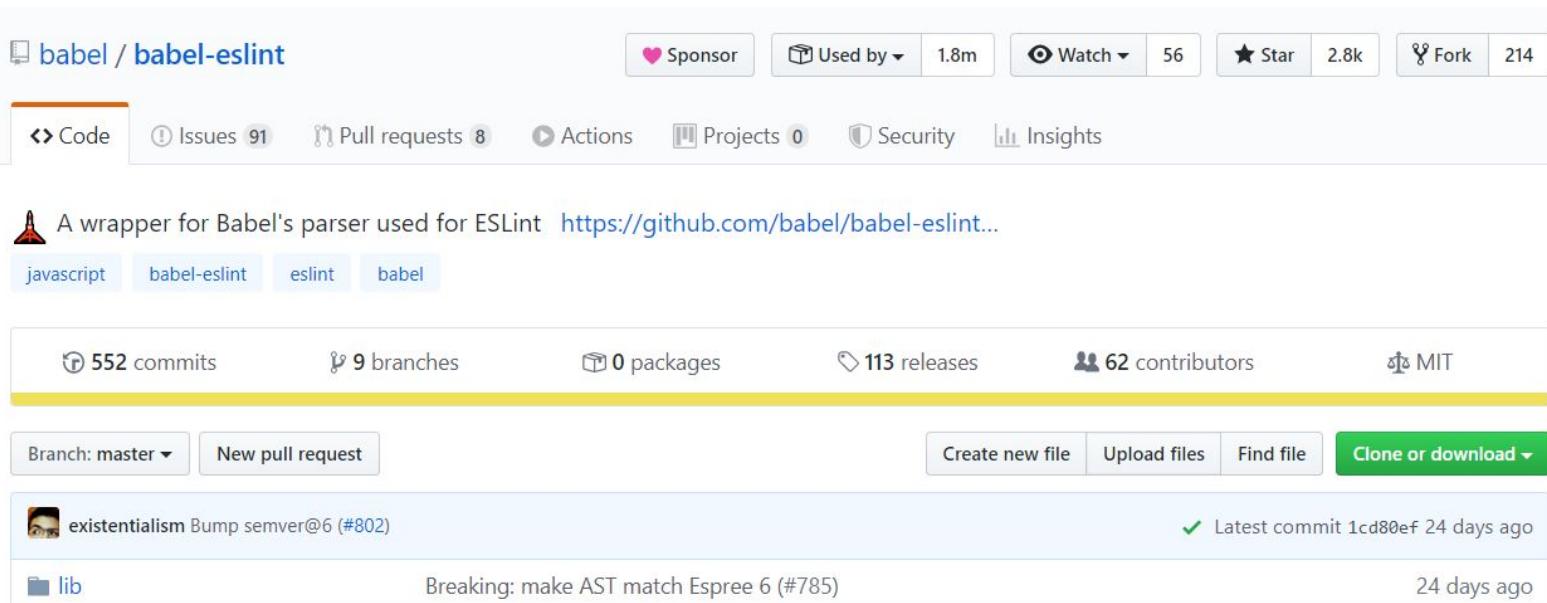
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# State of the Art

Github repository: [babel-eslint](https://github.com/babel/babel-eslint)

- converts Babylon AST into Espree Ast
- based on Node.js



**babel / babel-eslint**

Sponsor Used by 1.8m Watch 56 Star 2.8k Fork 214

Code Issues 91 Pull requests 8 Actions Projects 0 Security Insights

A wrapper for Babel's parser used for ESLint <https://github.com/babel/babel-eslint...>

javascript babel-eslint eslint babel

552 commits 9 branches 0 packages 113 releases 62 contributors MIT

Branch: master New pull request Create new file Upload files Find file Clone or download

existentialism Bump semver@6 (#802) Latest commit 1cd80ef 24 days ago

lib Breaking: make AST match Espree 6 (#785) 24 days ago

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# State of the Art

Example:

- `babel-eslint/lib/babylon-to-esprez/convertProgramNode.js`

```
3  module.exports = function(ast) {  
4    ast.type = "Program";  
5    ast.sourceType = ast.program.sourceType;  
6    ast.directives = ast.program.directives;  
7    ast.body = ast.program.body;  
8    delete ast.program;  
9  }
```

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# Approach

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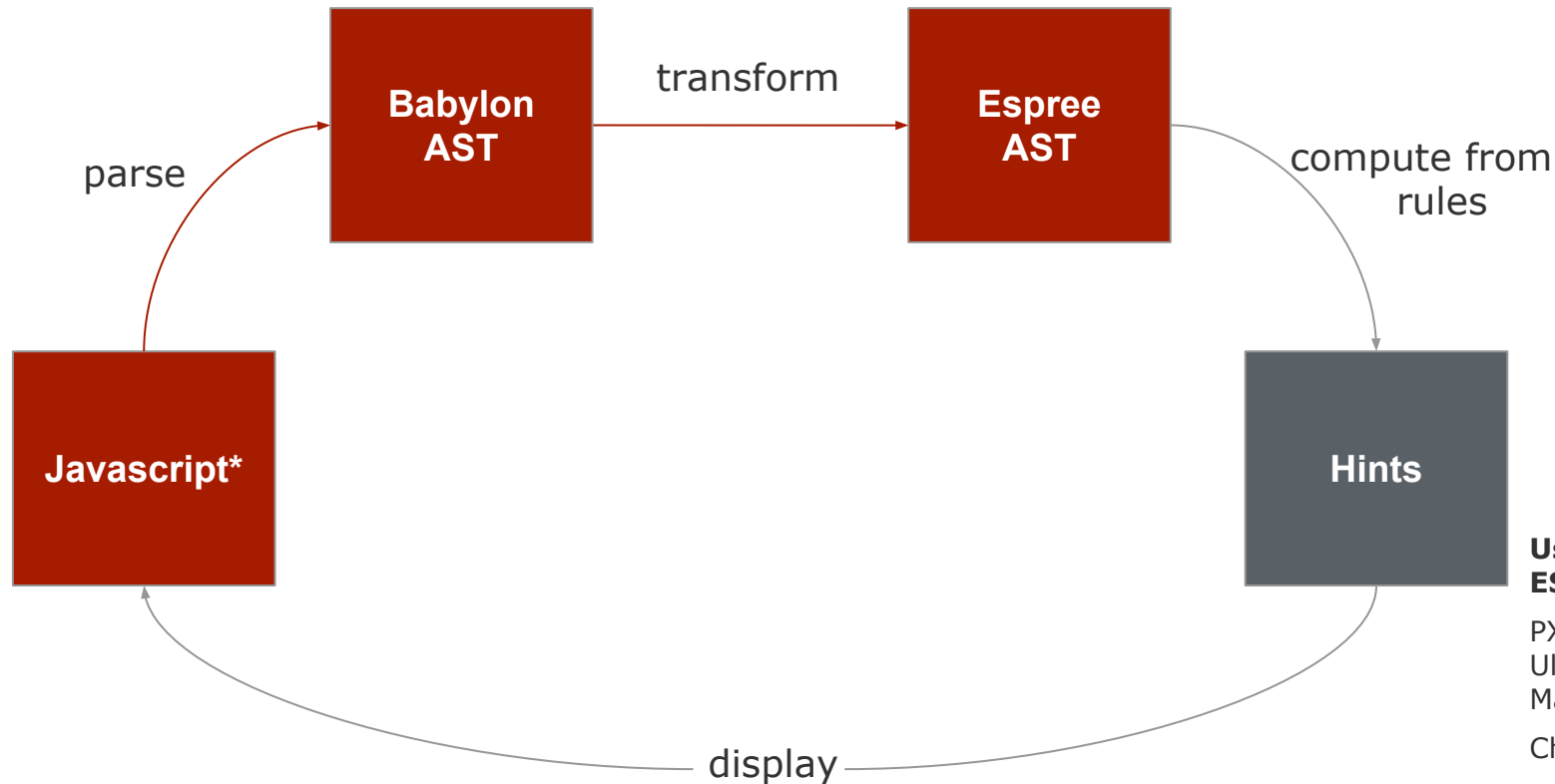
1. “Browserify” Node.js based approach
2. Convert existing Babylon AST into Espree AST
3. Customize ESLint parser in Lively4

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Chart **12**

# ESLint - Hinting

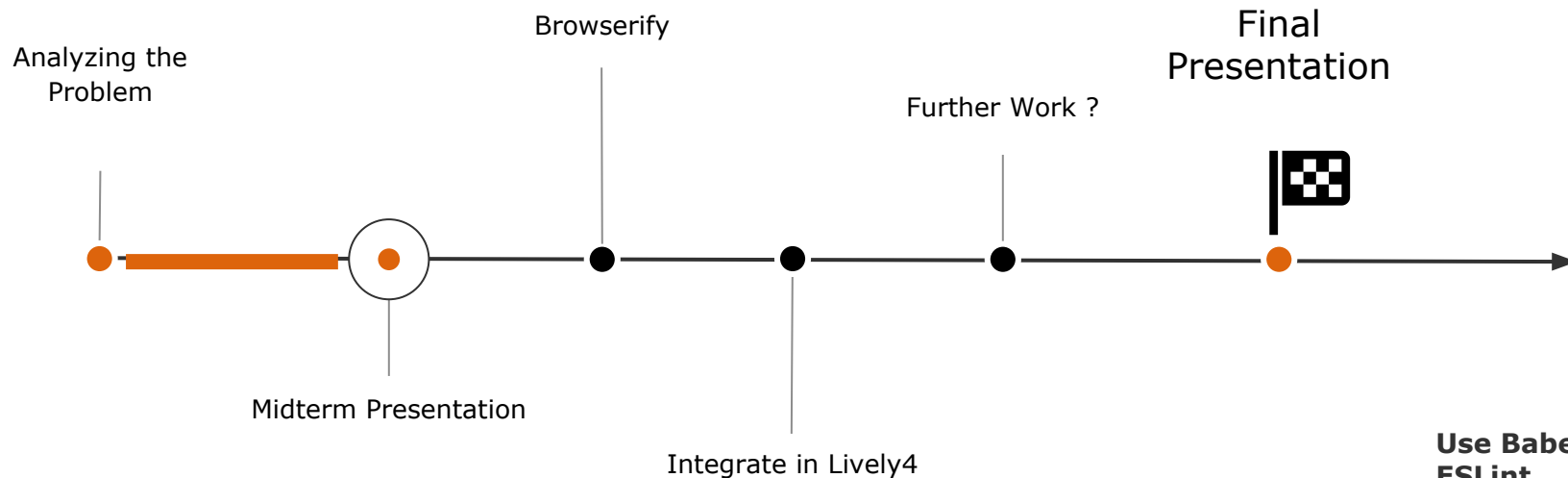



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Chart **13**

# Roadmap



 You are here

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Chart **14**

Thank you for your Attention

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