

goto;

GOTO Copenhagen 2022

#GOTOcph

Why you don't trust your linter



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(we're hiring)



elm-review



Elm Radio
podcast



Turn right onto Quai de l'Hôtel de ville



350 m



Turn left onto Rue Saint-Martin



70 m



Turn left onto Quai de Gesvres



2.1 km



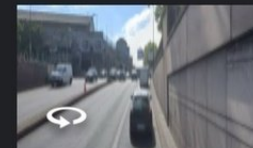
Keep left to continue on Quai de la Rapée



2.0 km



Use the right lane to take the ramp to A3/A6/Périphérique/Prte de Bercy/Charenton



Lint

```
if (user.jobTitle = "manager") {  
    // Do something...  
}
```

```
@SuppressWarnings("rule")  
                                // eslint-disable rule
```

```
# rubocop:disable rule
```

```
// NOLINT
```

You don't trust your linter

```
# pylint: disable=rule
```

```
// phpcs:disable rule
```

```
//nolint:rule
```

```
@Suppress("rule")
```



elm-review

elm-review.com

```
-- ELM-REVIEW ERROR ----- src/Main.elm:26:1
```

```
NoUnused.Variables: Top-level variable `sayHello` is not used
```

```
26| sayHello name =  
   ^^^^^^^^
```

```
27|     "Hello " ++ name
```

You should either use this value somewhere, or remove it at the location I pointed at.

I think I can fix this. Here is my proposal:

```
25|  
26| sayHello name =  
27|     "Hello " ++ name  
28|
```

```
? Do you wish to apply this fix? > (Y/n)
```

False positives

Communication

Automatic fixes

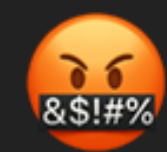
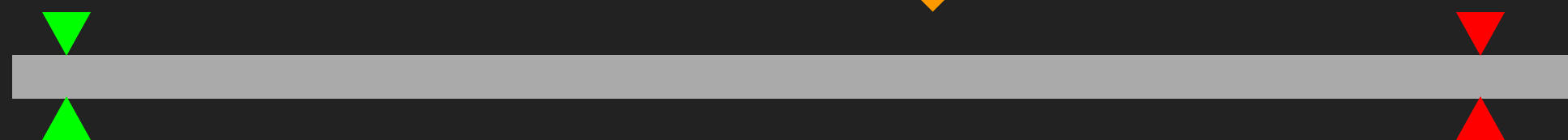
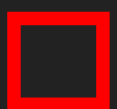
Configuration

Ignoring reports

False positives

when the tool reports issues that it shouldn't have

// linter-disable



// linter-disable

// linter-disable

How should I fix this issue?



Should I ignore this report?

Causes of false positives



Bugs



Missing information



Presumptions



False positives/negatives



(when the tool doesn't report an issue that it should have reported)

Providing information

- Contents of all files in the project
- Type information
- Dependencies
- Files from different languages

How easy is it to analyze
the language?

↗ Compiled languages

↗ Statically typed languages

↗ Explicit patterns

↘ Dynamic constructs

Report when it
looks like an array

Track 2 Is Presenting



Report when we
know it's an array

lambda D A λ S

28-29 JULY 2022
KRAKÓW | POLAND



Static analysis tools love pure FP
Jeroen Engels

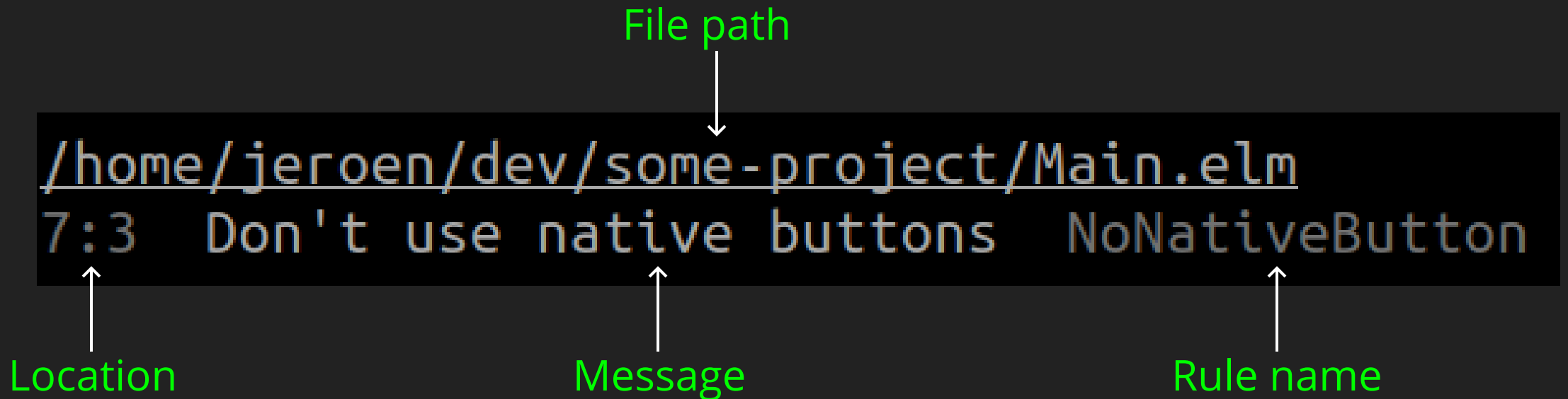
https://www.youtube.com/watch?v=_rzoyBq4hJ0

Effective false positives

true positives that are considered to be false positives

How is the error
communicated?

Not sufficient to help the developer fix the issue



Developers need to understand

- What they did wrong
- Why it is a problem
- How to move forward

Not understanding reports leads to workarounds

```
view : Model -> Html Msg
view model =
  -- elm-review-disable-next-line
  Html.button
    [ Attr.style "height" "34px"
    , Events.onClick UserClickedOnRemoveButton
    ]
    [ Html.text "Remove" ]
```



```
-- ELM-REVIEW ERROR ----- src/Main.elm:321:5
```

Rule name →

NoNativeButton: Use Ui.Button instead of the native Html.button

↑
File path
and location

↑
Message

Source
code extract →

Context →

Problem →

Suggestion →

Example →

Automatic fixes

```
index.js | 110 +++++-----  
lib/removeAccents.js | 527 ++++++-----  
test/fuzzyMatchingTest.js | 414 +++++-----  
test/readmeTest.js | 114 +++++-----  
4 files changed, 586 insertions(+), 579 deletions(-)
```

```
diff --git a/index.js b/index.js  
index 5daa5c4..5fa47c5 100644  
--- a/index.js  
+++ b/index.js  
@@ -1,59 +1,67 @@  
-var fuzzySet = require('fuzzyset.js');  
-var removeAccents = require('./lib/removeAccents');  
+const fuzzySet = require('fuzzyset.js');  
+const removeAccents = require('./lib/removeAccents');  
  
function FuzzyMatching(items) {  
-  var self = this;  
-  self.set = fuzzySet();  
-  self.itemMap = {};  
-  
-  if (items) {  
-    items.forEach(function(item) {  
-      self.add(item);  
-    });  
-  }  
+  const self = this;  
+  self.set = fuzzySet();  
+  self.itemMap = {};  
+  
+  if (items) {  
+    for (const item of items) {  
+      self.add(item);  
+    }  
+  }  
}
```

Prompt for fixes

```
-- ELM-REVIEW ERROR ----- src/Api.elm:56:1
```

```
NoUnused.Variables: Top-level variable `someFunction` is not used
```

```
55| someFunction : String -> List String
56| someFunction value =
   | ^^^^^^^^^^^^^^^
57|     [ doSomethingWith value
```

You should either use this value somewhere, or remove it at the location I pointed at.

I think I can fix this. Here is my proposal:

```
54|
55| someFunction : String -> List String
56| someFunction value =
57|     [ doSomethingWith value
58|       , doSomethingElseWith value
59|     ]
60|
```

```
? Do you wish to apply this fix? > (Y/n)
```

Configuring linters

Essential configuration

Accidental configuration

Accidental configuration

Tell the tool how to work **with** your project
because it can't figure some information on its own

- What language features are available/enabled?
- What tools does this project work with? Build tools, macros...



False positives

because of the configuration

~~Accidental configuration~~

```
// elm.json
{
  "type": "application",
  "source-directories": [
    "src"
  ],
  "elm-version": "0.19.1",
  "dependencies": {
    "...": "..."
  }
}
```

All necessary information
in standard files

Essential configuration

Tell the tool **what** you want from it

Which rules do you want to enable?

Configuring elm-review

```
config : List Rule
config =
  [ NoBadThing.rule
  , NoOtherBadThing.rule { some = "options" }
  -- ...and more rules
  ]
```

Enable rules
you agree with

false positive \approx error you disagree with

Advice on adding a rule

Get your team's approval

Understand not all rules are good

Understand the problem well

Be ready to disable the rule if it feels painful

Don't use other people's configuration

Ignoring reports

```
@SuppressWarnings("rule")  
                                // eslint-disable rule
```

```
# rubocop:disable rule
```

```
// NOLINT
```

Disable comments

```
# pylint: disable=rule
```

```
// phpcs:disable rule
```

```
//nolint:rule
```

```
@Suppress("rule")
```

Line 11: Don't do this thing
Line 12: Don't do this thing
Line 13: Don't do this thing
Line 14: Don't do this thing
Line 15: Don't do this thing
Line 16: Don't do this thing
Line 17: Don't do this thing
Line 18: Don't do this thing
Line 19: Don't do this thing
Line 20: Don't do this thing
Line 21: Don't do this thing
Line 22: Don't do this thing
Line 23: Don't do this thing
Line 24: Don't do this thing
Line 25: Don't do this thing
Line 26: Don't do this thing
Line 27: Don't do this thing
Line 28: Don't do this thing
Line 29: Don't do this thing
Line 30: Don't do this thing
Line 31: Don't do this thing
Line 32: Don't do this thing
Line 33: Don't do this thing
Line 34: Don't do this thing
Line 35: Don't do this thing
Line 36: Don't do this thing
Line 37: Don't do this thing

For rules you want to enforce

Errors

Warnings

For rules you don't want to enforce...?

Advice on how to use

```
// linter-disable  
this.code.will.crash();
```

Not available in elm-review

-- elm-review-disable rule ❌

Warnings ❌



Rules with exceptions



Higher quality
rules



Don't write
the rule

Disable comments and warnings
enable bad quality rules

When the rule doesn't make sense in some places

```
config : List Rule
config =
  [ NoUnused.Variables.rule
  , NoDebug.Log.rule
  ]
    |> Rule.ignoreErrorsForDirectories [ "tests/" ]
```

Allowing existing errors

gradually adopt a rule

Deprecating a function

```
{-| Does something.  
  
@deprecated Use someBetterFunction which does it better.  
  
-}  
someFunction input =  
    -- do something with input
```

Deprecating a function

src/Api.elm:285:12

NoDeprecated: Found new usage of deprecated element

```
284|     List.map (\error -> field ++ " " ++ error) errors
285|         |> someFunction
           ^^^^^^^^^^^^^^^
```

This element was marked as deprecated and should not be used anymore.

Please check its documentation to know the alternative solutions.

I found 7 errors in 1 file.

```
@SuppressWarnings("rule")
                                // eslint-disable rule

                                # rubocop:disable rule

// NOLINT

                                #![deny(clippy::all)]

                                # pylint: disable=rule

                                // phpcs:disable rule

//nolint:rule

                                @Suppress("rule")
```

Line 11: Don't do this thing
Line 12: Don't do this thing
Line 13: Don't do this thing
Line 14: Don't do this thing
Line 15: Don't do this thing
Line 16: Don't do this thing
Line 17: Don't do this thing
Line 18: Don't do this thing
Line 19: Don't do this thing
Line 20: Don't do this thing
Line 21: Don't do this thing
Line 22: Don't do this thing
Line 23: Don't do this thing
Line 24: Don't do this thing
Line 25: Don't do this thing
Line 26: Don't do this thing
Line 27: Don't do this thing
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Line 30: Don't do this thing
Line 31: Don't do this thing
Line 32: Don't do this thing
Line 33: Don't do this thing
Line 34: Don't do this thing
Line 35: Don't do this thing

Line 36: Don't do this thing

Line 37: Don't do this thing

Suppressing errors

```
$ elm-review suppress
```

review/suppressed/NoDeprecated.json

```
{
  "version": 1,
  "automatically created by": "elm-review suppress",
  "learn more": "elm-review suppress --help",
  "suppressions": [
    { "count": 7, "filePath": "src/Api.elm" }
  ]
}
```

No new errors

```
I found no errors!
```

```
There are still 7 suppressed errors to address.
```

Introducing a new error

src/Api.elm:286:12

(unsuppressed) NoDeprecated: Found new usage of deprecated element

```
285|     List.map (\error -> field ++ " " ++ error) errors
286|         |> someFunction
      ^^^^^^^^^^^^^^^
```

This element was marked as deprecated and should not be used anymore.

Please check its documentation to know the alternative solutions.

Errors marked with (unsuppressed) were previously suppressed, but you introduced new errors for the same rule and file. There are now more of those than what I previously allowed. Please fix them until you have at most as many errors as before. Maybe fix a few more while you're there?

I found 8 errors in 1 file.

Fixing a suppressed error

```
I found no errors!
```

```
There are still 6 suppressed errors to address, of which you fixed 1!
```

To summarize...

False positives and
effective false positives
lead to **losing trust**

Remove false reports
by providing more information

Communication

- What is the problem?
- Why is it a problem?
- How to solve the problem?

Avoid accidental configuration
as much as possible

Only enable rules
you agree with

Better alternatives than
disable comments and warnings
to ensure rules are enforced

Tools can only gain **trust** by
correctly and transparently
doing their tasks
over and over again

Please open issues
to improve your linter

Thank you!

Slides: <https://slides.com/jfmengels/why-you-dont-trust-your-linter>

Learn more:

- elm-review.com
- Talk: Static analysis tools love pure FP
https://www.youtube.com/watch?v=_rzoyBq4hJ0
- jfmengels.net
- Elm Radio podcast (()

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