

# How the magic of Open Source helps our project

# Introduction

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# Introduction

# Agenda

1. **What is Open Source?**
2. npm and node\_modules
3. Understanding
4. Fixing
5. Changing
6. Closing



01

# What is Open Source?



# Misconceptions

- It's free!
- Free labour!
- It is not economically viable
- It is a niche



# What is Open Source?

- According to the Open Source Initiative
  - Code availability
  - Derived works
  - No discrimination
  - Free redistribution



# What kind of Open Source exist?

- Based on the openness
  - Open Source
  - Open Core
  - Code available
- Based on the license <sup>[1]</sup>
  - GPL
  - BSD
  - MIT
  - ... Many others

[1] <https://www.mend.io/blog/top-open-source-licenses-explained/>





# Agenda

1. What is Open Source?
2. **npm and node\_modules**
3. Understanding
4. Fixing
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# 02

## npm and node\_modules



# What is npm?

- Node.js Package Manager
- Registry of open source packages
- Command line client

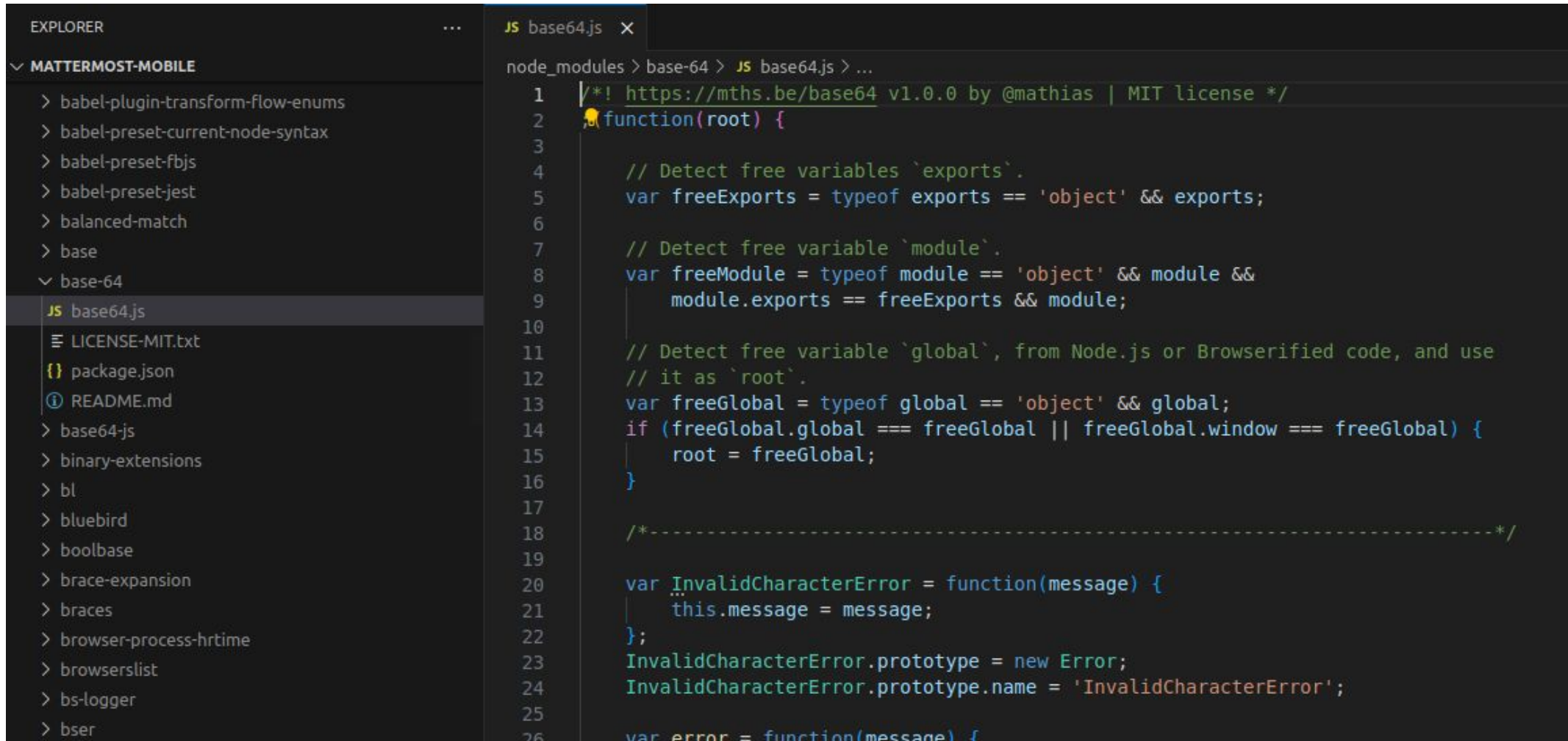


# node\_modules folder

```
node_modules
├── .bin
├── @aashutoshrathi
├── @ampproject
├── @babel
├── @bcoe
├── @discoveryjs
├── @egjs
├── @eslint
├── @eslint-community
├── @formatjs
├── @gorhom
├── @hapi
├── @humanwhocodes
├── @istanbuljs
├── @jest
├── @jridgewell
├── @mattermost
├── @msgpack
├── @nicolo-ribaudo
├── @nodelib
├── @nozbe
├── @react-native
├── @react-native-camera-roll
├── @react-native-clipboard
├── @react-native-community
├── @react-native-cookies
├── @react-navigation
├── @sentry
├── @sentry-internal
├── @sideway
├── @sinclair
├── @sinonjs
├── @stream-io
├── @svgr
├── @testing-library
├── @trysound
├── @tsconfig
├── @types
├── @typescript-eslint
├── @voximplant
├── @webassemblyjs
├── @webpack-cli
├── @xtuc
├── @yarnpkg
├── abort-controller
├── absolute-path
├── accepts
├── acorn
├── acorn-import-assertions
├── acorn-jsx
├── agent-base
├── ajv
├── ajv-formats
├── ajv-keywords
├── anser
├── ansi-escapes
├── ansi-fragments
├── ansi-regex
├── ansi-styles
├── anymatch
├── appdirsjs
├── argparse
├── arr-diff
├── arr-flatten
├── arr-union
├── array-buffer-byte-length
├── array-includes
├── array-union
├── array-unique
├── array.prototype.findlastindex
├── array.prototype.flat
├── array.prototype.flatmap
├── array.prototype.tosorted
├── arraybuffer.prototype.slice
├── asap
├── assign-symbols
├── ast-types
├── astral-regex
├── async
├── async-limiter
├── asynciterator.prototype
├── asynckit
├── at-least-node
├── atob
├── available-typed-arrays
├── axios
├── axios-cookiejar-support
├── babel-core
├── babel-jest
├── babel-loader
├── babel-plugin-istanbul
├── babel-plugin-jest-hoist
├── babel-plugin-module-resolver
├── babel-plugin-polyfill-corejs2
├── babel-plugin-polyfill-corejs3
├── babel-plugin-polyfill-regenerator
├── babel-plugin-syntax-trailing-function-commas
├── babel-plugin-transform-flow-enums
├── babel-preset-current-node-syntax
├── babel-preset-fbjs
├── babel-preset-jest
├── balanced-match
├── base
├── base-64
├── base64-js
├── binary-extensions
├── bl
├── bluebird
├── boolbase
├── brace-expansion
├── braces
├── browser-process-hrtime
├── browserslist
├── bs-logger
├── bser
├── buffer
├── buffer
├── buffer-from
├── bunyan
├── bunyan-debug-stream
├── bytes
├── cache-base
├── caf
├── call-bind
├── caller-callsite
├── caller-path
├── callsites
├── camelcase
├── caniuse-lite
├── chalk
├── char-regex
├── character-entities
├── character-entities-legacy
├── character-reference-invalid
├── child-process-promise
├── chokidar
├── chrome-trace-event
├── ci-info
├── cjs-module-lexer
├── class-utils
├── cli-cursor
├── cli-spinners
├── cliui
├── clone
├── clone-deep
├── co
├── collect-v8-coverage
├── collection-visit
├── color
├── color-convert
├── color-name
├── color-string
├── colorid
├── colorette
├── combined-stream
├── comma-separated-tokens
```



# node\_modules folder



The image shows a VS Code editor window with two panes. The left pane, titled 'EXPLORER', displays the file structure of a project named 'MATTERMOST-MOBILE'. The 'node\_modules' folder is expanded, showing a list of sub-packages including 'babel-plugin-transform-flow-enums', 'babel-preset-current-node-syntax', 'babel-preset-fbjs', 'babel-preset-jest', 'balanced-match', 'base', 'base-64', 'base64-js', 'binary-extensions', 'bl', 'bluebird', 'boolbase', 'brace-expansion', 'braces', 'browser-process-hrtime', 'browserslist', 'bs-logger', and 'bser'. The 'base64.js' file is selected and highlighted.

The right pane shows the code for 'base64.js'. The code is as follows:

```
1  /*! https://mths.be/base64 v1.0.0 by @mathias | MIT license */
2  function(root) {
3
4    // Detect free variables `exports`.
5    var freeExports = typeof exports == 'object' && exports;
6
7    // Detect free variable `module`.
8    var freeModule = typeof module == 'object' && module &&
9      module.exports == freeExports && module;
10
11   // Detect free variable `global`, from Node.js or Browserified code, and use
12   // it as `root`.
13   var freeGlobal = typeof global == 'object' && global;
14   if (freeGlobal.global === freeGlobal || freeGlobal.window === freeGlobal) {
15     root = freeGlobal;
16   }
17
18   /*-----*/
19
20   var InvalidCharacterError = function(message) {
21     this.message = message;
22   };
23   InvalidCharacterError.prototype = new Error;
24   InvalidCharacterError.prototype.name = 'InvalidCharacterError';
25
26   var error = function(message) {
```



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2. npm and node\_modules
- 3. Understanding**
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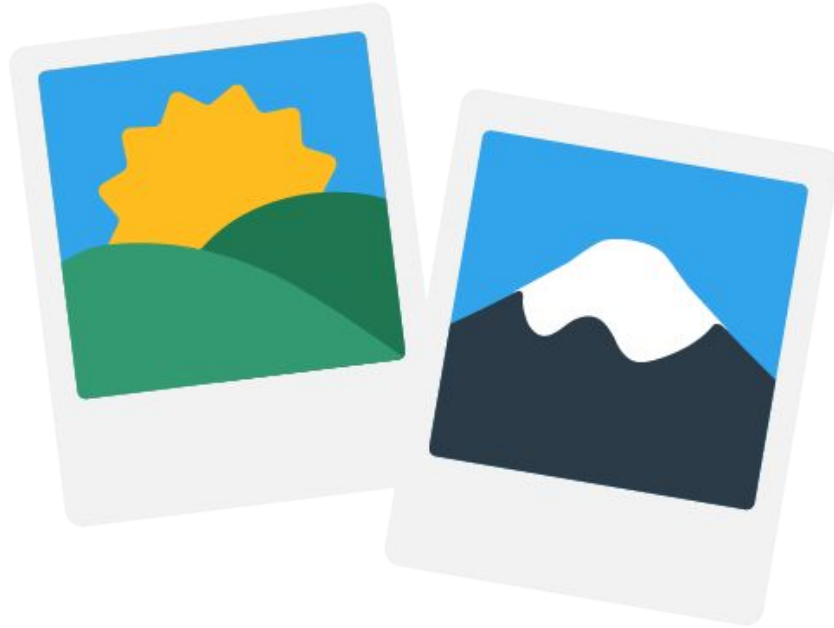


# 03

## Understanding



# The image problem





# Going deeper

The image shows a VS Code editor with two files open. The top file is `index.js` in the `node_modules > react-native-fast-image > dist` directory. It contains a `requireNativeComponent` call for `FastImageView` with a `nativeOnly` property. A yellow lightbulb icon indicates a warning: `// Types of requireNativeComponent are not correct.`

```
125 }); // Types of requireNativeComponent are not correct.
126
127 const FastImageView = requireNativeComponent('FastImageView', FastImage, {
128   nativeOnly: {
```

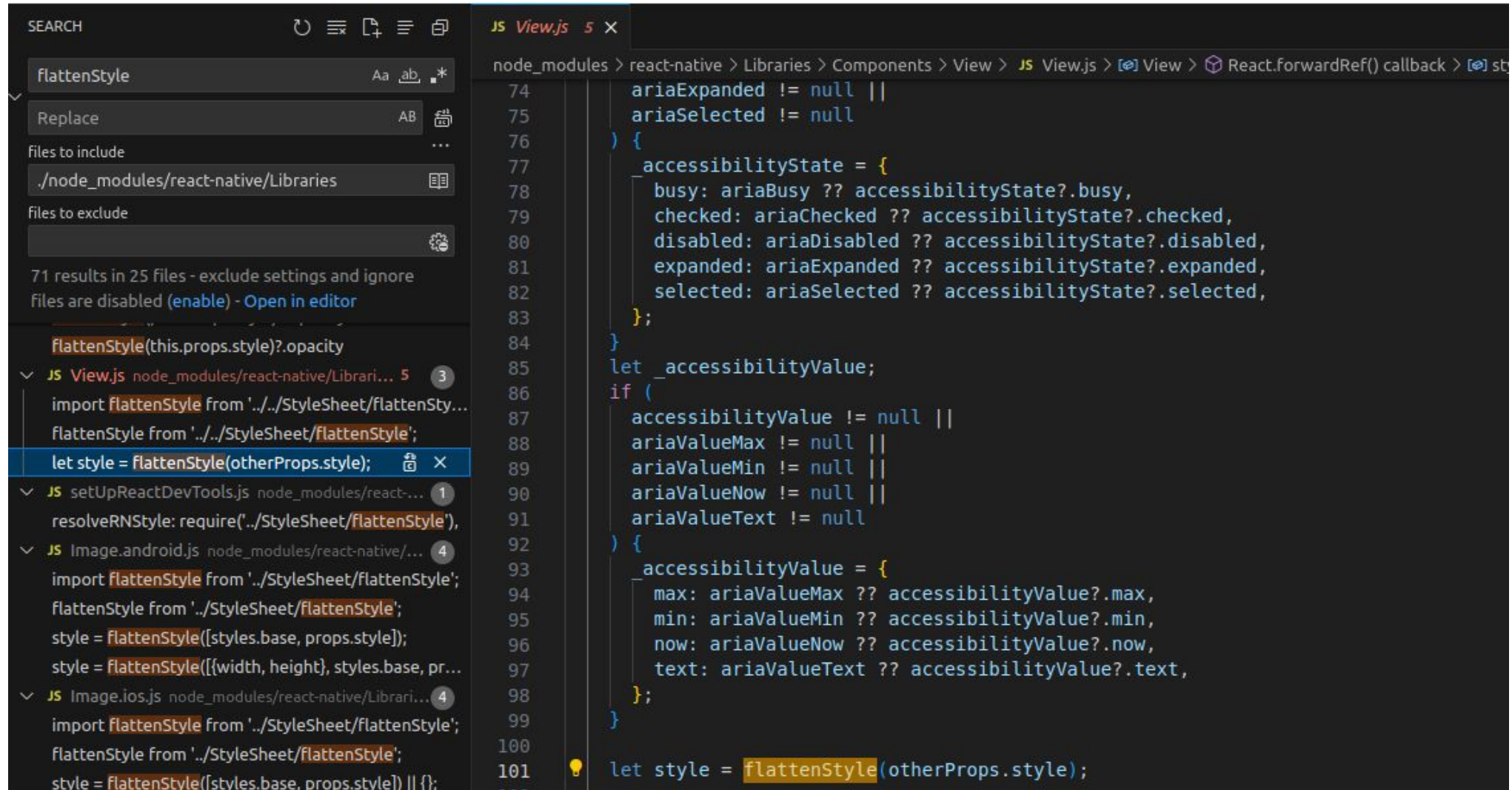
The bottom file is `FFFastImageView.h` in the `node_modules > react-native-fast-image > ios > FastImage` directory. It is an Objective-C header file that imports `FFFastImageSource.h` and defines an `SDAnimatedImageView` interface with several properties.

```
9 #import "FFFastImageSource.h"
10
11 @interface FFFastImageView : SDAnimatedImageView
12
13 @property (nonatomic, copy) RCTDirectEventBlock onFastImageLoadStart;
14 @property (nonatomic, copy) RCTDirectEventBlock onFastImageProgress;
15 @property (nonatomic, copy) RCTDirectEventBlock onFastImageError;
16 @property (nonatomic, copy) RCTDirectEventBlock onFastImageLoad;
17 @property (nonatomic, copy) RCTDirectEventBlock onFastImageLoadEnd;
18 @property (nonatomic, assign) RCTResizeMode resizeMode;
19 @property (nonatomic, strong) FFFastImageSource *source;
20 @property (nonatomic, strong) UIImage *defaultSource;
21 @property (nonatomic, strong) UIColor *imageColor;
22
23 @end
24
25
```

The Explorer sidebar on the left shows the project structure for `MATTERMOST-MOBILE`, including `react-native-fast-image`, `ios`, and `FastImage` subdirectories. The `FFFastImageView.h` file is selected in the Explorer.



# Another example



The image shows a screenshot of an IDE with a search panel on the left and a code editor on the right. The search panel shows the results of a search for 'flattenStyle' in the file './node\_modules/react-native/Libraries'. The search results list several files, with 'JS View.js' selected. The code editor shows the content of 'JS View.js', with the line 'let style = flattenStyle(otherProps.style);' highlighted in blue. The code in the editor is as follows:

```
74   ariaExpanded != null ||
75   ariaSelected != null
76 ) {
77   accessibilityState = {
78     busy: ariaBusy ?? accessibilityState?.busy,
79     checked: ariaChecked ?? accessibilityState?.checked,
80     disabled: ariaDisabled ?? accessibilityState?.disabled,
81     expanded: ariaExpanded ?? accessibilityState?.expanded,
82     selected: ariaSelected ?? accessibilityState?.selected,
83   };
84 }
85 let _accessibilityValue;
86 if (
87   accessibilityValue != null ||
88   ariaValueMax != null ||
89   ariaValueMin != null ||
90   ariaValueNow != null ||
91   ariaValueText != null
92 ) {
93   accessibilityValue = {
94     max: ariaValueMax ?? accessibilityValue?.max,
95     min: ariaValueMin ?? accessibilityValue?.min,
96     now: ariaValueNow ?? accessibilityValue?.now,
97     text: ariaValueText ?? accessibilityValue?.text,
98   };
99 }
100
101 let style = flattenStyle(otherProps.style);
```



# What if I can't find it?

The image shows a VS Code editor with a search window open. The search window is titled "SEARCH" and shows the search term "updateMemo". The search results are displayed in a list, with the first result being "function updateMemo(nextCreate, deps) {" in "JS ReactFabric-prod.js". The code editor shows the implementation of "updateMemo" in "ReactFabric-prod.js".

```
node_modules > react-native > Libraries > Renderer > implementations > JS ReactFabric-prod.js > updateMemo
3905   areHookInputsEqual(deps, prevState[1])
3906   )
3907   return prevState[0];
3908   hook.memoizedState = [callback, deps];
3909   return callback;
3910
3911   function updateMemo(nextCreate, deps) {
3912     var hook = updateWorkInProgressHook();
3913     deps = void 0 === deps ? null : deps;
3914     var prevState = hook.memoizedState;
3915     if (
3916       null !== prevState &&
3917       null !== deps &&
3918       areHookInputsEqual(deps, prevState[1])
3919     )
3920       return prevState[0];
3921     nextCreate = nextCreate();
3922     hook.memoizedState = [nextCreate, deps];
3923     return nextCreate;
3924   }
3925   function updateDeferredValueImpl(hook, prevValue, value) {
3926     if (0 === (renderLanes & 21))
```



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# 04

## Fixing



# I want it from master

software-mansion / react-native-reanimated

<> Code Issues 239 Pull requests 50 Discussions

## Commits

3.5.4

Commits on Sep 21, 2023

- update version  
tjzel committed on Sep 21
- Fix exporting enums as types and type of global in PlatformChecker (#5103) ...  
tjzel committed on Sep 21

Commits on Sep 20, 2023

- bump version  
tjzel committed on Sep 20
- Fix Skia-Reanimated integration (#5103) ...  
tjzel committed on Sep 20
- Update type exports to fix build warnings (#5074) ...  
3 people committed on Sep 20

Commits on Sep 15, 2023

- Update JS version  
kmagiera committed on Sep 15
- fix Maximum call stack size exceeded (#5087) ...  
3 people authored and kmagiera committed on Sep 15

Commits on Sep 12, 2023

- Update JS version  
piaskowyk committed on Sep 12
- fix ReferenceError: Property '\_IS\_FABRIC' doesn't exist (#5065) ...  
efstathiosntonas and Efsthios Ntonas committed on Sep 12

software-mansion / react-native-reanimated

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## Commits

main

Commits on Oct 31, 2023

- Update paths in iOS/tvOS/macOS workflows (#5319) ...  
tomekzaw committed 3 days ago ✓
- Fix de1ay in web LA (#5298) ...  
m-bert committed 3 days ago ✓

Commits on Oct 30, 2023

- Add react-hooks eslint plugin (#5330) ...  
szydlovsky committed 4 days ago ✓
- Organise type tests better (#5320) ...  
tjzel committed 4 days ago ✓
- Create commonTypes.ts in createAnimatedComponent (#5282) ...  
tjzel committed 4 days ago ✓
- Fix inverted FlatList (#5295) ...  
bartlomiejbloniarz committed 4 days ago ✓
- Support for react-native@0.73 (#4913) ...  
3 people committed 4 days ago ✓
- Bump next from 13.4.19 to 13.5.6 in /NextExample (#5304) ...  
3 people committed 4 days ago ✓

Commits on Oct 27, 2023

- Fix stack trace on worklet factory crash (#5197) ...  
tjzel committed last week ✓
- Add JSProps example (#5315) ...  
tomekzaw committed last week ✓

<https://github.com/software-mansion/react-native-reanimated/commit/5fa5b788e527hd968336f5468d59hd75892620>



# My options

- Wait for the new release
- Import from main
- Create a fork and import from the fork
- Patch the package



# npx patch-package

```
EXPLORER
MATTERMOST-MOBILE
  > react-native-exception-handler
  > react-native-fast-image
    > android
    > dist
    > ios
    LICENSE
    package.json
RNFastImage.podspec
node_modules > react-native-fast-image > RNFastImage.podspec
1 require 'json'
2
3 Pod::Spec.new do |s|
4   package = JSON.parse(File.read(File.join(__dir__, 'package.json')))
5
6   s.name       = "RNFastImage"
7   s.version    = package['version']
8   s.summary    = package['description']

```

```
EXPLORER
MATTERMOST-MOBILE
  > patches
    @nozbe+watermelondb+0.26.0.patch
    @react-native-community+netinfo+9.4.1.patch
    @sentry+utils+7.63.0.patch
    @types+commonmark-react-renderer+4.3.1.patch
    @types+react-syntax-highlighter+15.5.7.patch
    react-native-button+3.1.0.patch
    react-native-create-thumbnail+1.6.4.patch
    react-native-device-info+10.8.0.patch
    react-native-elements+3.4.3.patch
    react-native-fast-image+8.6.3.patch
react-native-fast-image+8.6.3.patch
patches > react-native-fast-image+8.6.3.patch
1 diff --git a/node_modules/react-native-fast-image/RNFastImage.podspec b/node_modules/react-native-fast-image/RNFastImage.podspec
2 index db0fada..8469b1a 100644
3 --- a/node_modules/react-native-fast-image/RNFastImage.podspec
4 +++ b/node_modules/react-native-fast-image/RNFastImage.podspec
5 @@ -16,6 +16,6 @@ Pod::Spec.new do |s|
6     s.source_files = "ios/**/*.{h,m}"
7
8     s.dependency 'React-Core'
9     - s.dependency 'SDWebImage', '~> 5.11.1'
10    - s.dependency 'SDWebImageWebPCoder', '~> 0.8.4'
11    + s.dependency 'SDWebImage', '~> 5.18.2'
12    + s.dependency 'SDWebImageWebPCoder', '~> 0.13.0'
13 end

```





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05

Changing



# react-native-haptic-feedback

Files

master

Go to file

react-native-haptic-feedback / android / src / main / java / com / mkuczera / vibrateFactory / VibrateFactory.java

abuciuman Fix: Package name

Code

Blame

39 lines (34 loc) · 2.45 KB

Code 55% faster with GitHub Copilot

EXPLORER

MATTERMOST-MOBILE

node\_modules

patches

@nozbe+watermelondb+0.26.0.patch

@react-native-community+netinfo+9.4.1.patch

@sentry+utils+7.63.0.patch

@types+commonmark-react-renderer+4.3.1.patch

@types+react-syntax-highlighter+15.5.7.patch

react-native-button+3.1.0.patch

react-native-create-thumbnail+1.6.4.patch

react-native-device-info+10.8.0.patch

react-native-elements+3.4.3.patch

react-native-fast-image+8.6.3.patch

react-native-haptic-feedback+2.0.3.patch

react-native-image-picker+4.0.4.patch

VibrateWithCreatePredefine...

VibrateWithDuration.java

VibrateWithHapticConstant.j...

index.tsx

react-native-haptic-feedback+2.0.3.patch

patches > react-native-haptic-feedback+2.0.3.patch

```
1 diff --git a/node_modules/react-native-haptic-feedback/android/src/main/java/com/mkuczera/VibrateFactory
2 index 167118f..e7b8fc4 100644
3 --- a/node_modules/react-native-haptic-feedback/android/src/main/java/com/mkuczera/VibrateFactory/Vibrat
4 +++ b/node_modules/react-native-haptic-feedback/android/src/main/java/com/mkuczera/VibrateFactory/Vibrat
5 @@ -15,7 +15,7 @@ import com.mkuczera.VibrateWithCreatePredefined;
6 public class VibrateFactory {
7     static Map<String, Vibrate> vibrateMap = new HashMap<>();
8     static {
9         vibrateMap.put("impactLight", new VibrateWithDuration(new long[]{0, 20}));
10 +       vibrateMap.put("impactLight", new VibrateWithDuration(new long[]{0, 5}));
11         vibrateMap.put("impactMedium", new VibrateWithDuration(new long[]{0, 40}));
12         vibrateMap.put("impactHeavy", new VibrateWithDuration(new long[]{0, 60}));
13         vibrateMap.put("notificationSuccess", new VibrateWithDuration(new long[]{0, 40, 60, 20}));
14
```

```
15         vibrateMap.put("impactHeavy", new VibrateWithDuration(new long[]{0, 60}));
16         vibrateMap.put("notificationSuccess", new VibrateWithDuration(new long[]{0, 40, 60, 20}));
17         vibrateMap.put("notificationWarning", new VibrateWithDuration(new long[]{0, 20, 60, 40}));
18         vibrateMap.put("notificationError", new VibrateWithDuration(new long[]{0, 20, 40, 30, 40, 40}));
19         vibrateMap.put("rigid", new VibrateWithDuration(new long[]{0, 30}));
20         vibrateMap.put("soft", new VibrateWithDuration(new long[]{0, 100, 40}));

```

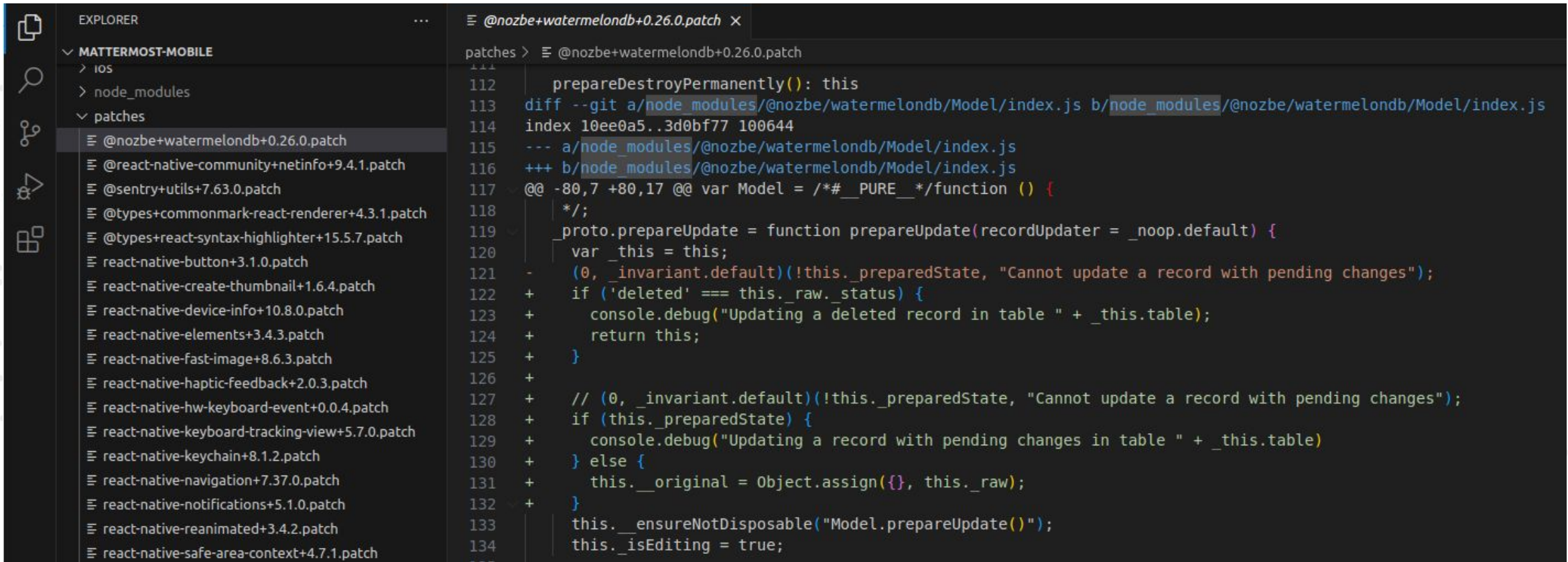
# WatermelonDB constraints

```
115     const preparedState = record._preparedState
116     if (!preparedState) {
117       invariant(record._raw._status !== 'disposable', `Cannot batch a disposable record`)
118       throw new Error(`Cannot batch a record that doesn't have a prepared create/update/delete`)
119     }
120
```

```
prepareUpdate(recordUpdater: (this) => void = noop): this {
  invariant(!this._preparedState, `Cannot update a record with pending changes. Update attempted for table ${this.table} and record ${this.id}.`)
  // ...
}
```



# WatermelonDB constraints



```
EXPLORER
  MATTERMOST-MOBILE
    > ios
    > node_modules
    > patches
      @nozbe+watermelondb+0.26.0.patch
      @react-native-community+netinfo+9.4.1.patch
      @sentry+utils+7.63.0.patch
      @types+commonmark-react-renderer+4.3.1.patch
      @types+react-syntax-highlighter+15.5.7.patch
      react-native-button+3.1.0.patch
      react-native-create-thumbnail+1.6.4.patch
      react-native-device-info+10.8.0.patch
      react-native-elements+3.4.3.patch
      react-native-fast-image+8.6.3.patch
      react-native-haptic-feedback+2.0.3.patch
      react-native-hw-keyboard-event+0.0.4.patch
      react-native-keyboard-tracking-view+5.7.0.patch
      react-native-keychain+8.1.2.patch
      react-native-navigation+7.37.0.patch
      react-native-notifications+5.1.0.patch
      react-native-reanimated+3.4.2.patch
      react-native-safe-area-context+4.7.1.patch

patches > @nozbe+watermelondb+0.26.0.patch
112   prepareDestroyPermanently(): this
113   diff --git a/node_modules/@nozbe/watermelondb/Model/index.js b/node_modules/@nozbe/watermelondb/Model/index.js
114   index 10ee0a5..3d0bf77 100644
115   --- a/node_modules/@nozbe/watermelondb/Model/index.js
116   +++ b/node_modules/@nozbe/watermelondb/Model/index.js
117   @@ -80,7 +80,17 @@ var Model = /*#__PURE__*/function () {
118     /*;
119     proto.prepareUpdate = function prepareUpdate(recordUpdater = _noop.default) {
120       var _this = this;
121       (0, _invariant.default)(!this._preparedState, "Cannot update a record with pending changes");
122       + if ('deleted' === this._raw._status) {
123         +   console.debug("Updating a deleted record in table " + _this.table);
124         +   return this;
125       + }
126       +
127       + // (0, _invariant.default)(!this._preparedState, "Cannot update a record with pending changes");
128       + if (this._preparedState) {
129         +   console.debug("Updating a record with pending changes in table " + _this.table)
130       + } else {
131         +   this._original = Object.assign({}, this._raw);
132       + }
133       this._ensureNotDisposable("Model.prepareUpdate()");
134       this._isEditing = true;
```



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# 06

## Closing



# Community

- Code
- Localization
- Security
- QA
- Troubleshooting in the Community server
- Bug reports
- Feature proposals





# Give back

- Open your code
- Open your tools
- Contribute to open source
- Donate



# Summary

- Get comfortable with `node_modules` (or the equivalent for your package manager)
- Dive deeper into libraries to have a better understanding of what you are doing
- Be able to fix libraries before the change gets upstream
- Be able to patch libraries so they work the way you want



**Thank you.**

# Connect

Mattermost office / Community server:

[community.mattermost.com](https://community.mattermost.com)

Slides:

