TypeScript is "a strongly typed programming language that builds on JavaScript."1 It adds additional syntax to JavaScript to help catch errors in the editor.1 The official TypeScript site gives the following example:

Graphical user interface, text, application

Description automatically generated with medium confidence

Notice the compact() function takes in a parameter called arr. The conditional statement on the next line has a typo in it though. It tries to reference orr, not arr. TypeScript points out this is an error that the editor wouldn't warn you about, and the code would crash at runtime. To save time, money and your hair, you can enable TypeScript to check for errors and clearly state what's wrong.

Graphical user interface, application

Description automatically generated

All you need to do is create a comment with @ts-check before the JS code you want checked. Additionally, TypeScript also allows you to specify the type of a variable to be checked against. If you have a variable set to a number, then accidentally try to assign it a boolean value, it will clearly tell you the mistake and how to fix it. Code editor errors are often vague, cryptic or just plain wrong. Companies use TypeScript to save time and simplify the coding and debugging processes.

Redux is "A predictable state container for JS apps."2 It's not meant for every application, as it takes longer time and more code to write.3 But complex applications that cannot be written with vanilla React can benefit from it if they meet some of the below criteria:

* You have large amounts of application state that are needed in many places in the app
* The app state is updated frequently
* The logic to update that state may be complex
* The app has a medium or large-sized codebase, and might be worked on by many people
* You need to see how that state is being updated over time3

Redux also has official bindings for React, making it easy to integrate into a React project.2 Both the TypeScript language and the Redux library are useful tools for developers looking to move past vanilla JS and React and work on today's large-scale, complex applications we depend on every day. 

References

1https://www.typescriptlang.org/

2https://redux.js.org/

3https://redux.js.org/faq/general#:~:text=Redux%20is%20most%20useful%20in,worked%20on%20by%20many%20people