

# Reason Programming Language

## Part 2

The logo for the Reason programming language, featuring a red square with the letters 'RE' in white, followed by the word 'ASON' in a dark blue, sans-serif font.

**REASON**

# Internal vs External Evaluation Criteria

- In Part 1, I already discussed important Internal qualities of language(readability, abstract data types, concurrency implementation, etc).
- Another legitimate way to evaluate languages is to ask whether a language meets the needs of a given user community. External evaluation.
- The actual users of languages (businesses, engineers, scientists) have certain demands on the languages they use.
- Reason is a language build specifically for web development at Facebook.
- How good is Reason programming language as tool for its intended use?

# Rapid Development

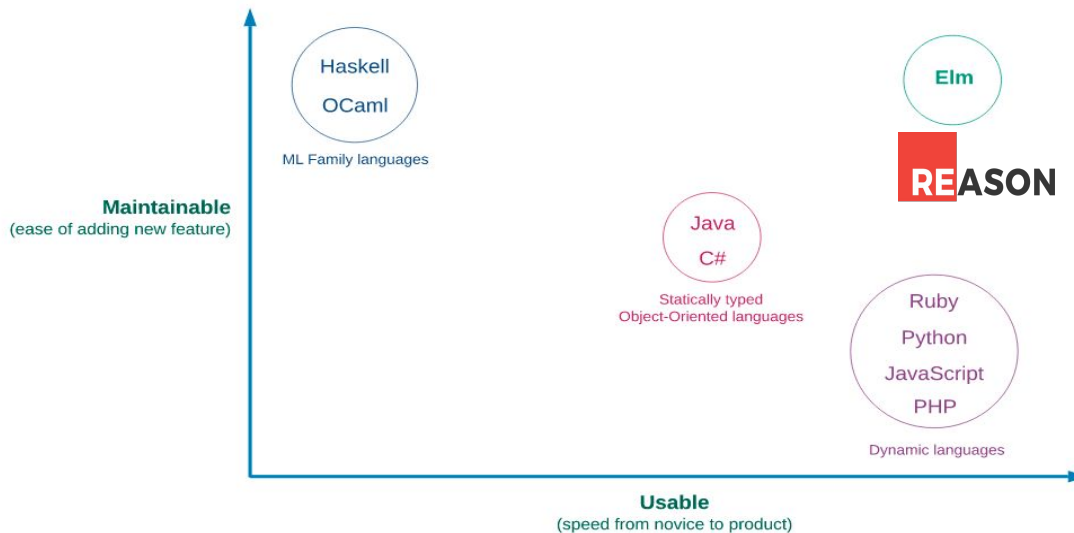
- Programmers are more expensive than machines, so they'd better be able to make fast progress.
- Powerful, safe type inference means you rarely have to annotate types, but everything gets checked for you.
- Reason compiler runs in watch mode, so any changes to files will be picked up and compiled in milliseconds.
- The compiler catches almost all errors at compile time instead of waiting for program to fail at run time as in plain JavaScript

```
We've found a bug for you!  
/home/markche/Desktop/Projects/csci_6221/src/Components/AddTodo/AddTodo.re 2:48  
  
1 | [react.component]  
2 | let make = () => <button> {ReasonReact.string(2)} </button>;  
  
This has type:  
  int  
But somewhere wanted:  
  string  
  
You can convert a int to a string with string_of_int.
```

```
>>>> Start compiling  
[3/3] Building src/Index-Csci_6221.cmj  
>>>> Finish compiling 55 mseconds  
>>>> Start compiling  
bsb: no work to do.  
>>>> Finish compiling 7 mseconds  
□
```

# Easy Maintenance

- Maintenance is expensive. More than 80% of total project spending.
- The powerful type system underlying Reason will reduce bugs, increase maintainability, and improve the refactorability of code.



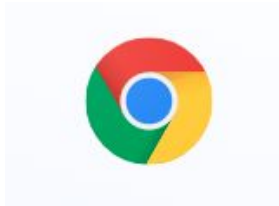
# Reliability and safety

- Type system is "sound" (the types will always be correct). E.g. If a type isn't marked as nullable, its value will never lie and let through some undefined values. Reason code has no null/undefined errors.
- Tony Hoare, who invented the null reference in 1965 as part of the ALGOL typesystem, described it as billion dollar mistake, that led to many program crashes.



# Portability

- Program should run on many different platforms, with minimal rewriting.
- Reason works *with* JavaScript, and compiles to the highest quality of clean, readable and performant JavaScript, directly runnable in the browser and Node.js.
- Easy JavaScript interop. Use packages from NPM with minimum hassle, or even drop in a snippet of raw JavaScript while you're learning.





# Reusability

- ReasonReact Library helps you use Reason to build React components with deeply integrated, strong, static type safety.
- Mix and match Javascript or Reason based React components in the same application.



```
/* file: Greeting.re */  
  
[@react.component]  
let make = (~name) =>  
  <button> {ReasonReact.string("Hello " ++ name ++ "!")} </button>;
```

# Low training time(learnability)

- The language should be easy to learn. Training is expensive.
- Reason is a functional programming language. They are notorious for having a steep learning curve.
- ReasonML Programming - Full Course for Beginners  
<https://www.youtube.com/watch?v=sjWsAYJF8BA>





# Project TodoMVC



- Developers these days are spoiled with choice of front-end frameworks for structuring and organizing JavaScript web apps. Hard to choose the right one.
- To help solve this problem, **TodoMVC** <http://todomvc.com/> was created at <https://github.com/tastejs/todomvc>

## Examples

JavaScript	Compile-to-JS	Labs
These are applications written in programming languages that compile to JavaScript.		
Kotlin + React <sup>®</sup>	Spine <sup>®</sup>	Dart <sup>®</sup>
Closure <sup>®</sup>	Elm <sup>®</sup>	AngularDart
TypeScript + AngularJS	TypeScript + React	Reagent <sup>®</sup>
Scala.js + Binding.scala <sup>®</sup>	js_of_ocaml <sup>®</sup>	Humble + GopherJS <sup>®</sup>

<sup>®</sup> = App also demonstrates routing



# Development - Github/Actions



markchernov / csci\_6221

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## Workflows

New workflow

All workflows

Azure Static Web Apps CI/CD

## All workflows

Filter workflows

6 results

Event Status Branch Actor

✓ add icon	master	44 minutes ago	...
Azure Static Web Apps CI/CD #6: Commit 7901075 pushed by markchernov			
✓ Merge branch 'master' of https://github.com/markch...	master	24 days ago	...
Azure Static Web Apps CI/CD #5: Commit 12a88f3 pushed by markchernov			
✓ Add files via upload	master	last month	...
Azure Static Web Apps CI/CD #4: Commit a177490 pushed by markchernov			
✓ cp index to build folder	master	2 months ago	...
Azure Static Web Apps CI/CD #3: Commit 1648fbf pushed by markchernov			
✗ add webpack to build	master	2 months ago	...
Azure Static Web Apps CI/CD #2: Commit df6c606 pushed by markchernov			
✗ ci: add Azure Static Web Apps workflow file on-beha...	master	2 months ago	...
Azure Static Web Apps CI/CD #1: Commit 0394887 pushed by markchernov			

# Deploy - Azure Static Web App



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**csci-6221**

Static Web App (Preview)

<<



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**Essentials**

Resource group ([change](#)) : [CSCI\\_6221](#)

Location : [East US 2](#)

Subscription ([change](#)) : [Visual Studio Enterprise Subscription](#)

Subscription ID : [0f37adcc-833c-4ac4-b0be-6e2098074c13](#)

Tags ([change](#)) : [Click here to add tags](#)

URL : <https://blue-coast-0b6ce380f.azurestaticapps.net>

Source : [master](#)

Deployment history : [GitHub Action runs](#)

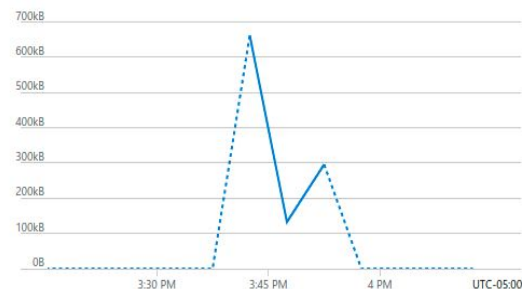
Edit workflow : [azure-static-web-apps-blue-coast-0b6ce380f.yml](#)

**Requests**



SiteHits (Sum)  
csci-6221  
**18**

**Data out**



Data Out (Sum)  
csci-6221  
**1.09 MB**

# Web Hosting - Azure



- <https://todo.markche.com/>

