Building web apps with Elm

Visit README for demo and exercise URLs: bit.ly/fluent-elm-18

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Programming Elm

Build Safe and Maintainable Front-End Applications

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edited by Brian MacDonald

bit.ly/programming-elm
Functional and statically typed programming language for *frontend* development
Web and UI Focused
Compiles to JavaScript
No runtime exceptions in practice.
**Compile time static type checks**

The 2nd argument to function `add` is causing a mismatch.

```
7|     add 2 "3"
     ^^^
```

Function `add` is expecting the 2nd argument to be:

```
    Int
```

But it is:

```
    String
```
Functional
Pure 

Data in
Data out
Pure | No side effects
Pure Predictable and Testable!
Immutable Data

• Safety and consistency
• Explicit flow of data
• No subtle mutation bugs
No undefined is not a function
Fast
One framework. No fatigue.
✓ Easier to write code
✓ Easier to refactor
✓ Easier to write tests
Content

• Functions and expressions
• Static applications
• Dynamic applications with the Elm Architecture
• Working with Lists
• Static Types and Type Aliases
• Input Events and Union Types
Format

- Demos via ellie-app.com
- Exercises via ellie-app.com
- Q&A
Coding Time!

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The Elm Architecture

- **Update**
- **Model**
- **View**
- **Messages**
UI as a Function

Model

View

Virtual DOM
Model: Todo List

View

Virtual DOM

<html />

Todo List

- Learn Elm
- Build awesome Elm apps
- Learn functional programming
User deletes first todo item

Model: New Todo List

<html />

Todo List

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Elm notices missing todo item in virtual DOM list, so it just removes the corresponding `<li>` instead of fully rendering.

```html
<html />
</html>
```

**Todo List**
- Learn Elm
- Build awesome Elm apps
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Messages

Standardized application events
Associate message with event

Events
Text Input
Mouse Click

elm
app
model

When event triggers (i.e. user clicks), deliver message
Respond to messages and create new state
model

Update

View
model

Update

View
Choose your car model.

- Update
- View

Select red color.
Update

model

View

Select red color
Update
model
View
Select red color
model

Update

View

VDOM
Coding Time!
Resources

- bit.ly/programming-elm
- elm-lang.org
- elm-lang.org/examples
- guide.elm-lang.org
- www.elm-tutorial.org
- builtwithelm.co
- Slack
  - elmlang.herokuapp.com
Thanks!

Slides: bit.ly/fluent-elm-slides-18
Repo: bit.ly/fluent-elm-18

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