

Elm Integration

Functional Programming

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Git practices

Advanced Elm

Scaling Elm

Integrating Elm

Elm in JavaScript

Exercise 2

JavaScript in Elm

Why integrating?

Elm real-life examples

A version control system (VCS)

A **version control system** (VCS) ... also known as a **source control system**.

A version control system (VCS) ... also known as a **source control system**. ... **source**.

A file to **ignore** things that does not belong in source control systems.

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□ Binaries

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- ❑ Binaries
- ❑ Compressed files

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- ❑ Logs


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- ❑ Compressed files
- ❑ Logs
- ❑ Password files and secret keys

A file to **ignore** things that does not belong in source control systems.

- ❑ Binaries
- ❑ Compressed files
- ❑ Logs
- ❑ Password files and secret keys
- ❑ Weird Mac files like .DS_Store, .Thrashes etc.

 ELM-part

 REST-part/restapi

 elm-stuff

 README.md

 elm-package.json

 .vscode

 bin

 node_modules

 public/stylesheets

 routes

 views

 app.js

 package.json


Why is this important?

Size with binaries 14000Kb

Why is this important?

Size with binaries	14000Kb
Size without binaries	44Kb

Removed binaries #1

[Edit](#)[Open](#) Jegp wants to merge 2 commits into `mathiasj64:master` from `Jegp:master`[Conversation](#) 0 [Commits](#) 2 [Files changed](#) 1,330**+50 -234,470** 

Jegp commented just now



1330 files changes. Auch



Jegp added some commits a minute ago



Removed binaries

[Verified](#)[81da549](#)

Added gitignore

[Verified](#)[53895fd](#)

Reviewers

No reviews

Assignees

No one assigned

Labels

None yet

Projects

Add more commits by pushing to the **master** branch on `Jegp4_FP_ELM_REST`.

1. Do not include binaries

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2. If you do, remove them!

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2. If you do, remove them!

```
git rm -cached -r directory
```


- types, records, immutability

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- **Elm architecture**
 - Model - View - Update

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- Asynchronous calls with HTTP

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- **Elm architecture**
 - Model - View - Update
- Asynchronous calls with HTTP
- Timed events with **subscriptions**

- Scaling elm with cool functional programming

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- Integrating Elm in your normal JavaScript

- Scaling elm with cool functional programming
- Integrating Elm in your normal JavaScript
- Real-life Elm examples

Clone the elm-exercises from
cphbus-functional-programming

`https://github.com/cphbus-functional-programming/
elm-exercises`

Work on the `toggle.elm` and `radio.elm` files in the `advancedelm` folder

Goal: The view code in both examples can be simplified drastically. Figure out how and implement it!

... or **Reusable views**

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- Decouple functionality

... or **Reusable views**

- Decouple functionality (not state)

... or **Reusable views**

- ❑ Decouple functionality (not state)
- ❑ Reuse components without knowing the context

Reusable views gives us independent code.

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Independent code can be neatly structured!

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```
module MyView exposing (..)

checkbox : String -> Msg -> Html Msg
checkbox ...
```

Reusable views gives us independent code.

Independent code can be neatly structured!

```
module MyView exposing (..)

checkbox : String -> Msg -> Html Msg
checkbox ...
```

```
import MyView

view : Msg -> Model -> (Model, Cmd Msg)
view =
    ...
    MyView.checkbox
```



Elm compiles to JavaScript

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No problem! We can work with JavaScript like we normally do!

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- How to embed Elm in JavaScript

Elm compiles to JavaScript

No problem! We can work with JavaScript like we normally do!

- How to embed Elm in JavaScript
- How to communicate between Elm and JavaScript

```
elm-make Main.elm --output=main.html
```

```
elm-make Main.elm --output=main.html
```

```
elm-make Main.elm --output=main.js
```

```
elm-make Main.elm --output=main.html
```

```
elm-make Main.elm --output=main.js
```

```
<script src="main.js"></script>
```

```
elm-make Main.elm --output=main.html
```

```
elm-make Main.elm --output=main.js
```

```
<script src="main.js"></script>
```

Full screen:

```
<script>  
    var app = Elm.Main.fullscreen();  
</script>
```

```
elm-make Main.elm --output=main.html
```

```
elm-make Main.elm --output=main.js
```

```
<script src="main.js"></script>
```

Full screen:

```
<script>  
    var app = Elm.Main.fullscreen();  
</script>
```

Inside an element:

```
<div id="main"></div>  
<script>  
    var node = document.getElementById('main');  
    var app = Elm.Main.embed(node);  
</script>
```

Clone the elm-exercises from
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Work on the password.html and include using
`Elm.Password.fullscreen()`

Goal: When you integrate the password.opt.js file into the password.html file and tell me the content, you get a break!

How can we communicate with Elm?

How can we communicate with Elm?

How does Elm do it internally?

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How does Elm do it internally?

What happens when a user clicks a button?

How can we communicate with Elm?

How does Elm do it internally?

What happens when a user clicks a button?

Conclusion: Elm is event-driven!

```
port module Main exposing (..)
...
```



```
port portedFunction : String -> Cmd String
```

```
port portedFunction : String -> Cmd String
```

```
var node = document.getElementById('main');  
var app = Elm.Main.embed(node);  
app.ports.portedFunction...
```



```
port portedFunction : String -> Cmd String
```

```
var node = document.getElementById('main');  
var app = Elm.Main.embed(node);  
app.ports.portedFunction...
```

```
app.ports.portedFunction  
  .subscribe(function(input) { ... });
```

```
port module Main exposing (..)
...
```

```
port module Main exposing (..)
...
```

```
port portedSubscription : (String -> msg) -> Sub msg
```

```
port module Main exposing (...)  
...
```

```
port portedSubscription : (String -> msg) -> Sub msg
```

```
var node = document.getElementById('main');  
var app = Elm.Main.embed(node);  
app.ports.portedSubscription...
```

```
port module Main exposing (...)  
...
```

```
port portedSubscription : (String -> msg) -> Sub msg
```

```
var node = document.getElementById('main');  
var app = Elm.Main.embed(node);  
app.ports.portedSubscription...
```

```
app.ports.portedSubscription.send("hullubullu");
```

Clone the elm-exercises from
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elm-exercises](https://github.com/cphbus-functional-programming/elm-exercises)

Work on the `Event.elm` and `Subscription.elm` files.

Goal 1: Read and execute instructions in `Event.elm`

Goal 2: Read and execute instructions in `Subscription.elm`

Why integrating?

The correct path is to first use Elm in a small experiment. If the experiment goes bad, stop it! If it goes great, expand the experiment a bit more. Then just repeat this process until you are using Elm or not!

`http://debug.elm-lang.org/edit/Mario.elm`

`http://unsoundscapes.com/elm-flatris.html`

`https://github.com/debois/elm-mdl`