

Mini Course: Elm

Jeremie Gillet

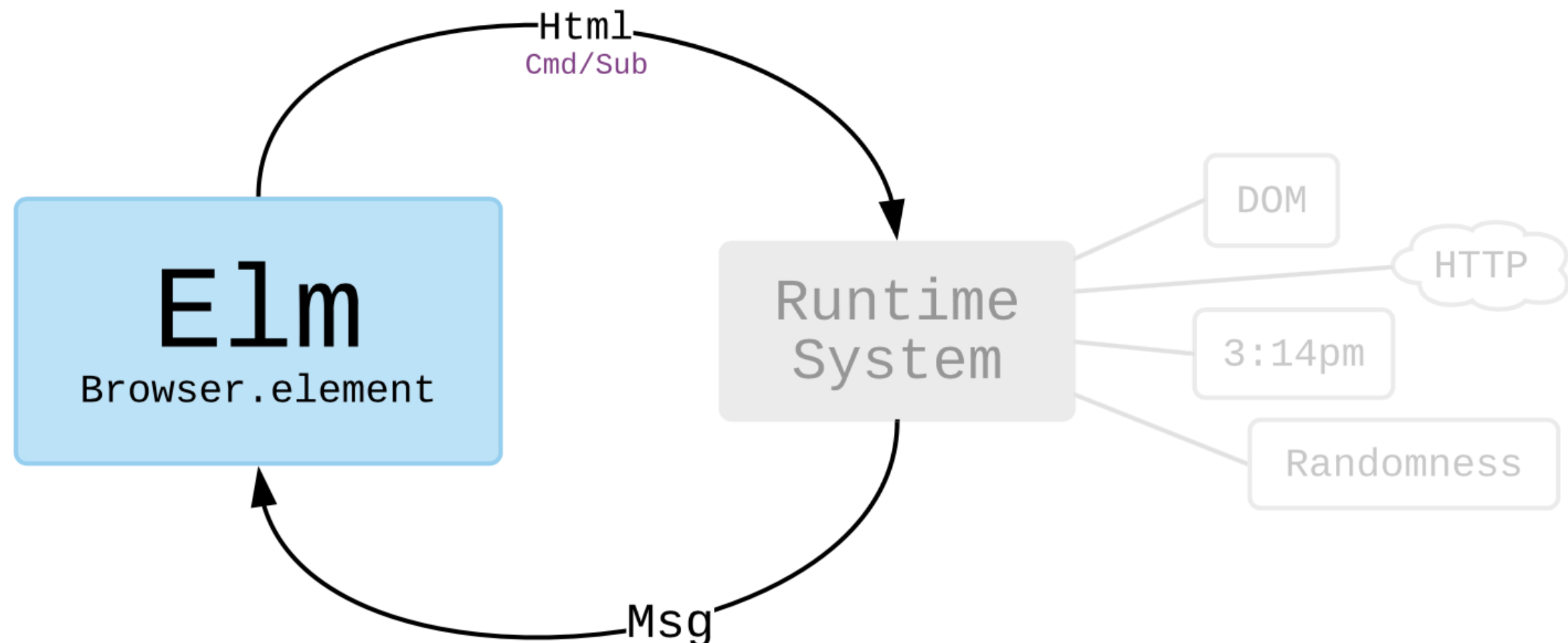
Session 3: Commands and Subscriptions

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Commands and Subscriptions

Reaching out into the world

- `Browser.sandbox => Browser.element`
- Command: send requests to the internet/browser/system
- Subscriptions: listen to external events (clock, key presses...)



Jumping right in: Http request

Getting data from the internet

- Download everything from <https://github.com/oist/mini-course-elm>
- Open a terminal, cd into the folder “session3” and run

```
elm reactor
```

- Open a browser to <http://localhost:8000> > src > Book.elm
- Exercise: Install the package [krisajenkins/remotedata](#) and change the model to use [WebData](#)
- In general, to install a package (already done for you here)

```
elm install elm/http elm/random elm/time elm/json
```

Randomness

God doesn't play dice (in pure functional languages)

- Elm is a pure language: calling a function with the same arguments will always return the same value
- To get a random value, you need to specify what kind of data you want (via a generator) and generate it outside (via a command)
- Elm/random defines many primitives that you can combine to get a custom random data
- `session3 > src > Dice.elm`
- Exercise: create a weighted die or throw two die at once

Subscriptions

Time is ticking

- You can listen to specific outside events (from computer, browser, window resize, keyboard...) with

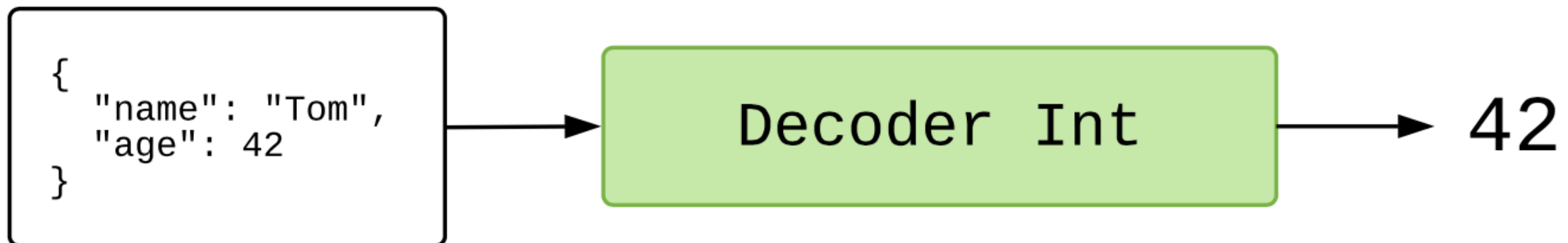
`subscriptions : Model -> Sub Msg`

- Subscriptions send messages treated the usual way
- Example: session3 > src > Clock.elm
- Tasks are operations to be ran asynchronously
- Exercise: add a pause button
- Other things you can subscribe to in: Browser.Events

JavaScript Object Notation

JSON for short

- JSON is the main format for web data exchange
- Elm has a special way to interact with JSON: Decoders. You describe what kind of data you expect, then ask Elm to run the decoder and give you meaningful Elm data (or an error)
- Json.Decode has building blocks that you put together
- Example: session3 > src > Cats.elm



JSON Example

Response from api.giphy.com/v1/gifs

```
{
  "data": {
    "type": "gif",
    "id": "l2JhxfHWMBWuDmIpi",
    "title": "cat love GIF by The Secret Life Of Pets",
    "image_url": "https://media1.giphy.com/media/
l2JhxfHWMBWuDmIpi/giphy.gif",
    "caption": "",
    ...
  },
  "meta": {
    "status": 200,
    "msg": "OK",
    "response_id": "5b105e44316d3571456c18b3"
  }
}
```