Digestive Functors 0.3

GhentFPG

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Hello!

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Overview

What are formlets?
digestive-functors
digestive-functors 0.3
What are formlets?

Coined in a 2008 paper

*The essence of form abstraction*

Ezra Cooper, Sam Lindley, Philip Wadler, and Jeremy Yallop.

Haskell library by Chris Eidhof
What are formlets?

Idea: forms written using an Applicative Functor approach are inherently composable.
What are formlets?

data Date = Date
  { month :: Integer
  , day   :: Integer
  } deriving (Show)
What are formlets?

\[
\text{validDate :: Date \rightarrow Bool}
\]
\[
\text{validDate (Date m d) =}
\]
\[
\text{m 'elem' [1 .. 12] \&\&}
\]
\[
\text{d 'elem' [1 .. 31]}
\]
What are formlets?

dateForm' :: Form Date
dateForm' = Date

<$> inputIntegerF (Just 1)
<*> inputIntegerF (Just 16)

dateForm :: Form Date
dateForm = dateForm' `check`
  ensure validDate
  "This is not a valid date"
What are formlets?

Composability?

dateForm :: Form Date

inputIntegerF (Just 1) :: Form Integer
What are formlets?

data User = User

  { name :: String
  , password :: String
  , birthdate :: Date
  }

  deriving (Show)
What are formlets?

userForm :: Form User
userForm = User
    <$> inputF Nothing
    <$> passwordF Nothing
    <$> dateForm
Overview

What are formlets?

*digestive-functors*

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Released in 2010

A number of practical improvements in comparison to formlets

Similar API, completely different internals
digestive-functors

Allow user to click label instead of (small) checkbox

```html
<label for="checkbox">
  Label:
</label>
<input type="checkbox" id="checkbox" />
```
digestive-functors

Error type in formlets: [String]

Error type in digestive-functors: [ErrorDescription] → Html
digestive-functors

In formlets:

Cannot parse age
Name: Jasper
Age: hello
digestive-functors

In digestive-functors:

Name: Jasper
Age: hello

Cannot parse age
digestive-functors

Problems:

Sometimes hard to use
Suffered from TMTVA* Syndrome
Complicated implementation

*Too Many Type Variables, Aaargh!
Overview

What are formlets?

digestive-functors

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What I’ve been working on for some weeks

Attempts to overcome the main drawback of formlets
foo :: Form User

Specifies the validation rules as well as the HTML layout
Separation of concerns

- Create multiple representations for a single form
- Cleaner validation rules code
- Use different HTML templating engines
Disadvantage: some loss of type-safety

Probably impossible to have a type-safe coupling of view and validation rules without losing flexibility or ease-of-use

Explanation does not fit on this slide
dateForm' :: Form Date

dateForm' = Date

<$> "month" .: stringRead'

<*> "day" .: stringRead'

where

stringRead' = stringRead

"Can't parse"
dateForm :: Form Date

dateForm = check

"This is not a valid date"

validDate

dateForm'
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dateView view = do
  errorList "month" view
  label "month" view "Name:"
  inputText "month" view
  H.br

  errorList "day" view
  label "day" view "Email:"
  inputText "day" view
  H.br
userForm :: Form User
userForm = User

\$
"name" .: string'  
--- *Password is just a string!*

\*
"password" .: string'

\*
"birthdate" .: dateForm

where

string' = string Nothing
userView :: View Html -> Html
userView view = do
    label "name" view "Name: _"
    inputText "name" view
H.br

    label "name" view "Name: _"
    inputPassword "name" view
H.br

...
userView :: View Html -> Html
userView view = do

  ... label "birthdate.month"
  view "Month:"
  inputText "birthdate.month"
  view
H.br
userView :: View Html → Html
userView view = do
   ...
   dateView $ subView "birthdate" view
Demo