Introduction to Haskell & some category theory

Wellington Functional Programming

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26 March 2015

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Data Science

Introduction

Haskell is strange ?

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A functional programming language

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A functional programming language

With lazy evaluation

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A functional programming language

With lazy evaluation

Pure, with no side effects

Haskell is strange ?

A functional programming language

With lazy evaluation

Pure, with no side effects

Fairly old

Haskell is strange ?

A functional programming language

With lazy evaluation

Pure, with no side effects

Fairly old, fairly odd

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Haskell is hard ?

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My program won't compile,
and I don't know why ?

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Oh god, I am reading math !

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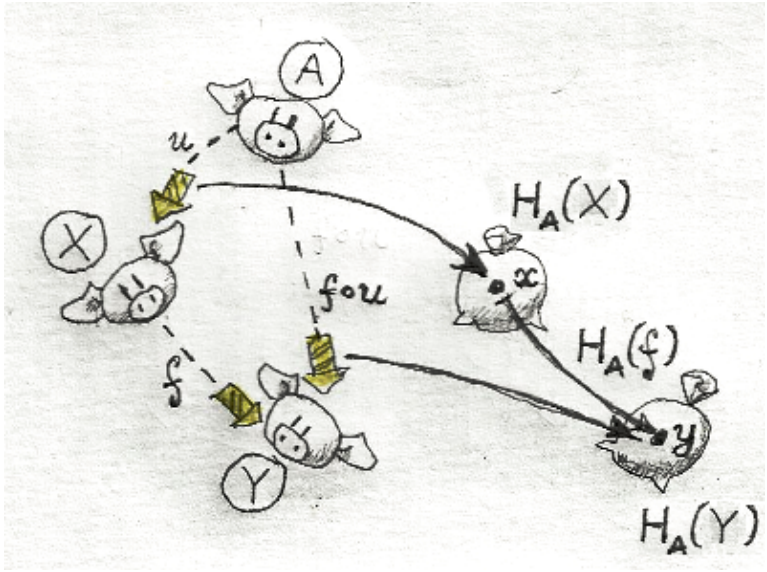
Huh ?



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Haskell is impractical ?

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Strong type system gets in the way

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Hard to install, and find good libraries

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Is Haskell impractical ?

- Hackage has thousands of libraries
- Haskell is fast, and getting faster

To learn Haskell,
it helps to learn a little category theory.

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Actually, I reckon you already know category theory!

Anatomy of a function

```
def capitalise(name):
    f = name[0].upper()
    r = name[1:].lower()
    return f+r
```

this is a function

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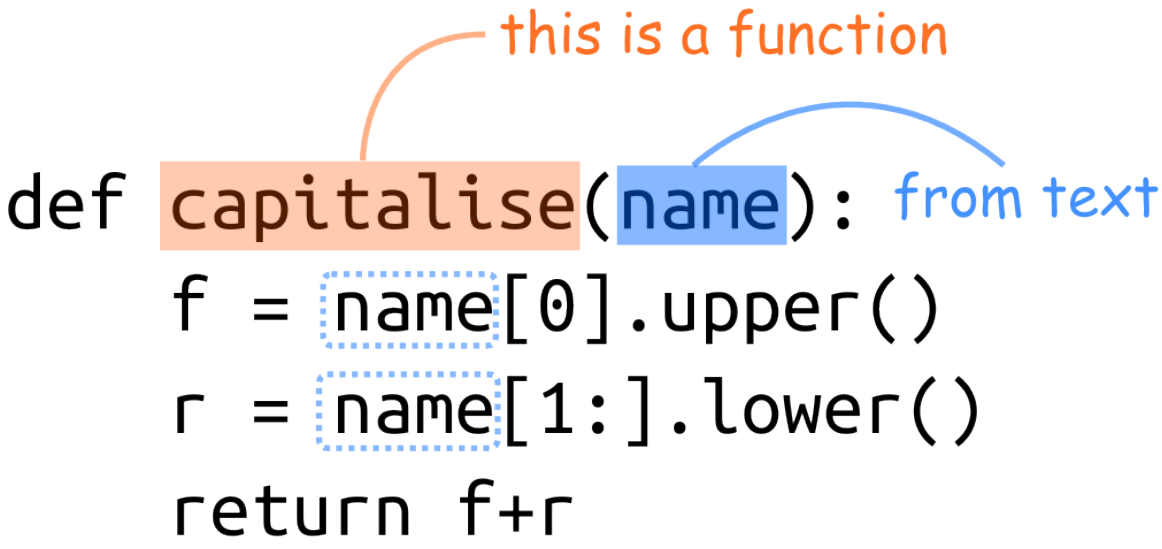
this is a function
def capitalise(name):
from text
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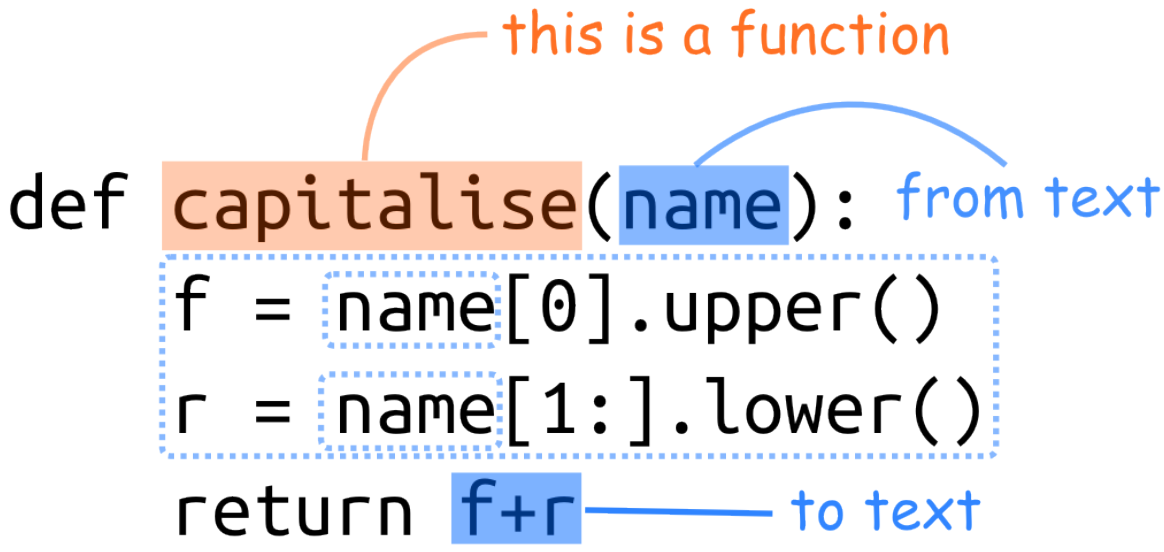
r = name[1:].lower()
return f+r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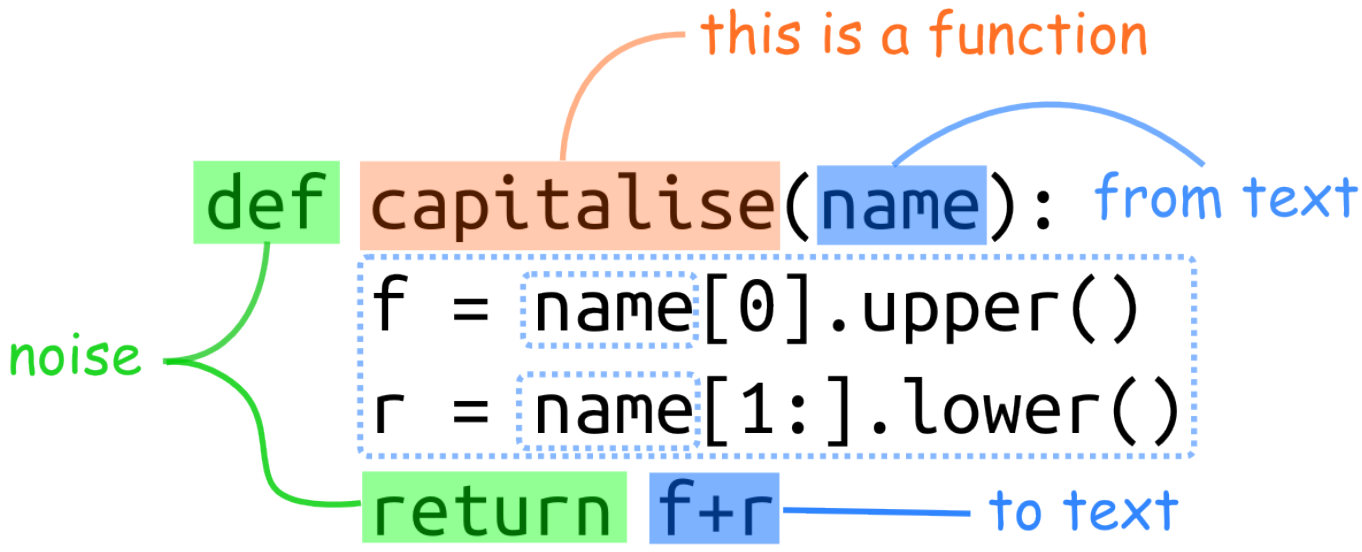
this is a function
def capitalise(name): from text
f = name[0].upper()
r = name[1:].lower()
noise
return f+r
to text

```
capitalise :: String -> String
capitalise [] = []
capitalise (a:as)
  = (toUpper a : map toLower as)
```

this is the function

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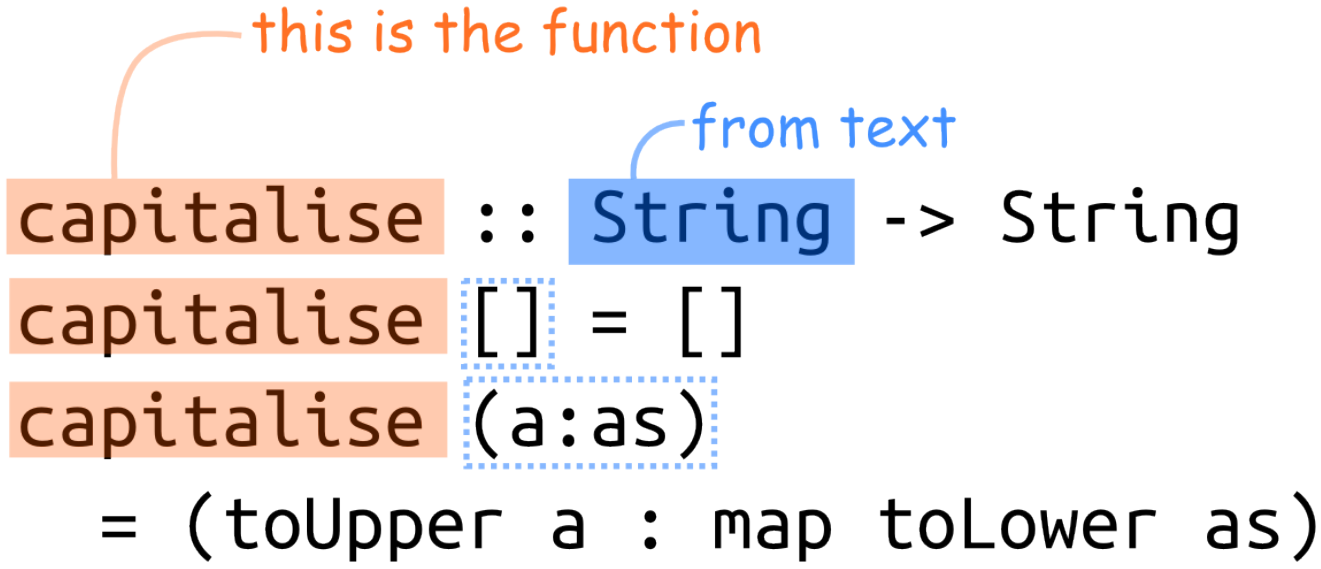
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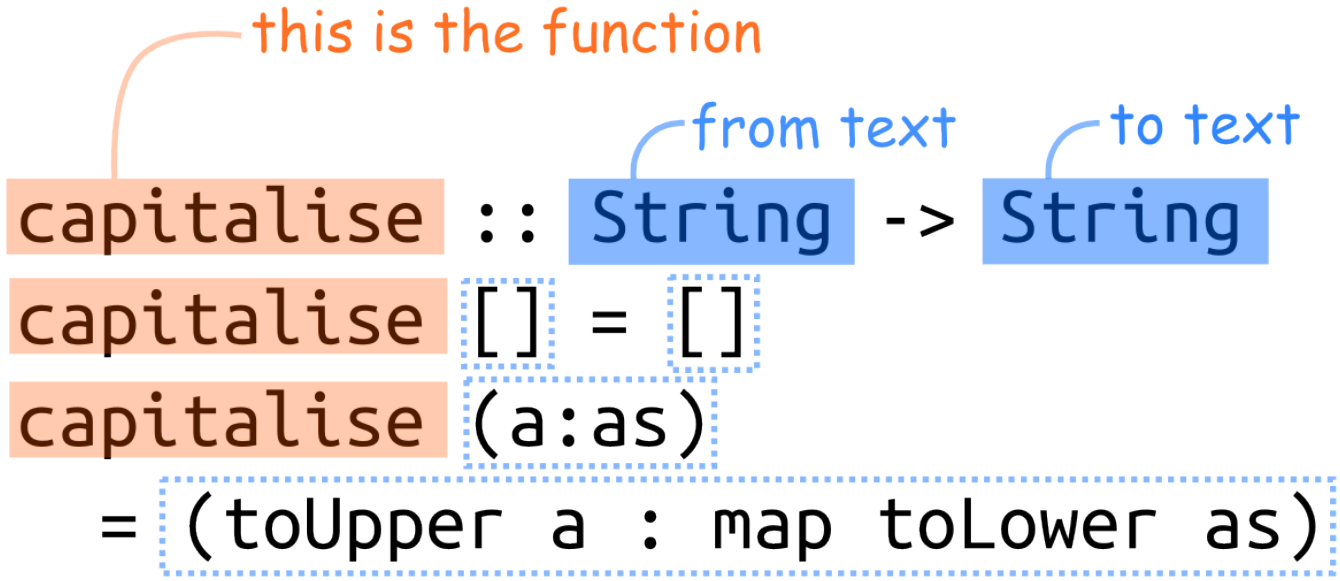
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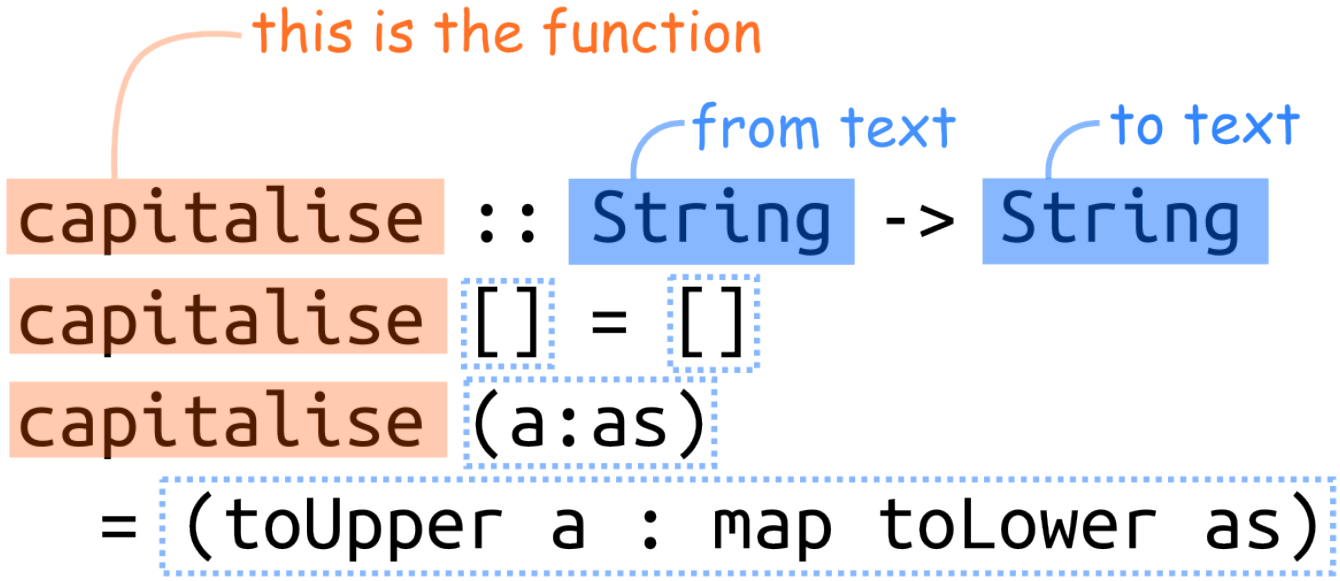
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no noise now !

A little category theory


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Programming patterns


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Functors


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Monads


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