

Laziness

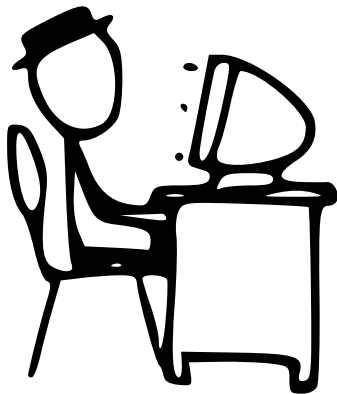
BarcampGhent 4

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Hello!

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Overview

Introduction

What is laziness?

Lazy lists

Composability

Lazy I/O

(Examples)

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(Examples)

What is laziness?

A procrastinating runtime

CAN YOU GET ME
THESE REPORTS
ASAP?

ON IT.

REDDIT

What is laziness?

*When do you think
these slides were made?*

What is laziness?

Laziness for programming languages?

$$x = 4 + 12$$



```
print x
```



What is laziness?

This sounds like a pretty stupid idea

What is laziness?

But actually it is *very* powerful

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(Examples)

Lazy lists

A list of all primes?

A list of all even numbers?

Lazy lists

```
ones = 1 : ones
```

Lazy lists

```
evens = filter even [1 ..]
```


Lazy lists

```
fibs = 1 : 1 :  
      zipWith (+) fibs (tail fibs)
```

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(Examples)

Composability

Lazy functions are more composable
and allow more code reuse

Composability

any odd [2, 4, 7, 10]

Composability

any `f list` = **or** `(map f list)`

Composability

any f list = **or** (map f list)

Imagine an expensive `f`. Will we short-circuit?

Composability

A well-known example

```
if ( list.isEmpty() ) {  
    return 0;  
} else {  
    return list.get(0);  
}
```

Composability

A well-known example

if True $x \ y = x$

if False $x \ y = y$

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Lazy I/O

Laziness also applies to input/output

Lazy I/O

Example: implementing the standard `rev` program

Lazy I/O

“Looks like someone’s Hello World program accidentally ended up in the BSD utils”

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Questions?