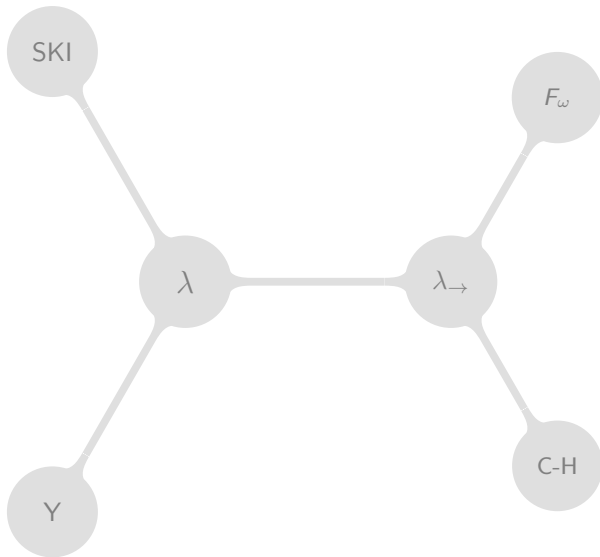


Introduction to Lambda Calculus

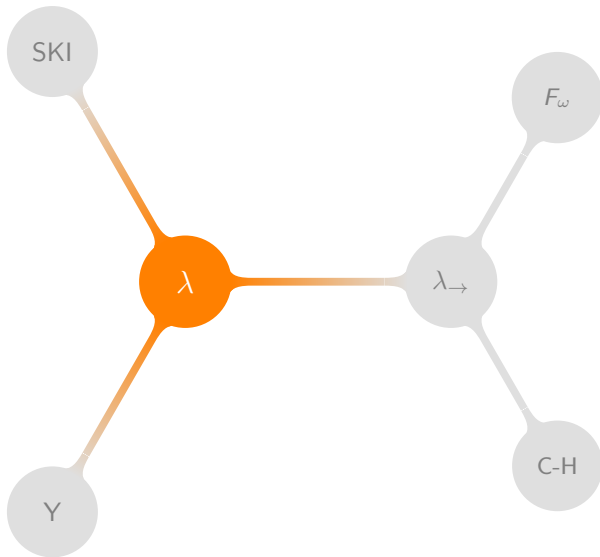
Maciek Makowski (@mmakowski)

10th August 2014

The Plan



Basic Lambda Calculus



Syntax

$\langle term \rangle ::= x$	(variable)
$(\lambda x. \langle term \rangle)$	(abstraction)
$(\langle term \rangle \langle term \rangle)$	(application)

where $x \in \mathbb{X}$ – the set of variables

Syntax

v_1

Syntax

v_1

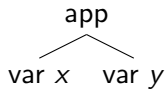
var v_1

Syntax

$x\ y$

Syntax

$x\ y$



Syntax

$\lambda a.b$

Syntax

$\lambda a.b$

abs a
|
var b

Syntax

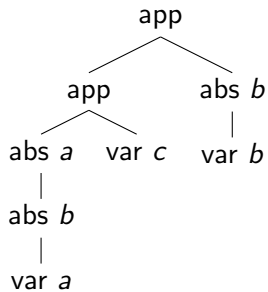
$(\lambda a. \lambda b. a) \ c \ (\lambda b. b)$

Syntax

$\langle term \rangle ::= x$	(variable)
$(\lambda x. \langle term \rangle)$	(abstraction)
$(\langle term \rangle \langle term \rangle)$	(application)

Syntax

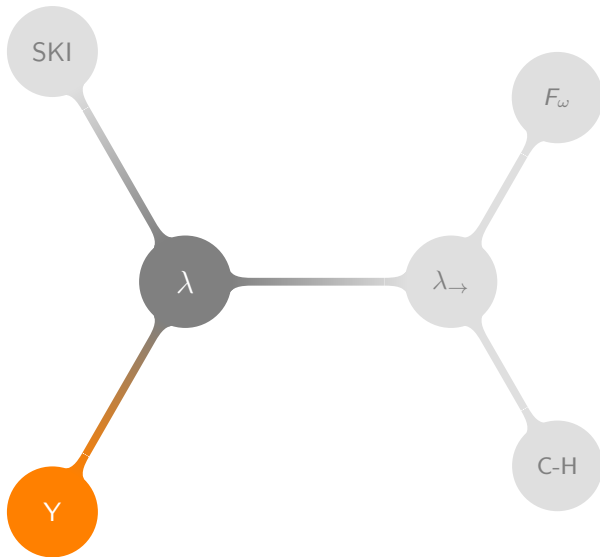
$(\lambda a. \lambda b. a) c (\lambda b. b)$



Rewriting

TODO

Programming in Lambda Calculus



Simple Types

