

Quiz 9

CSCI 334: Spring 2025

Name: _____

UNIX ID (e.g., abc1): _____

This question asks you to infer the type of the following F# function.

```
let f x y = x
```

We first desugar the above function into the following lambda expression,

```
λx.λy.x
```

and represent the function in tree form:



Infer the type of the function f using the Hindley-Milner algorithm. For full credit, you must correctly (a) deduce the type and (b) constraint for every subexpression by filling in the table below. Use the scratch space on the right if needed. If you use type variables, name them however you like.

subexpression	type	constraint	scratch space
y	a	n/a	$d = b \rightarrow c$ substitute $d = b \rightarrow a \rightarrow b$ convert to F# polymorphic type
x	b	n/a	
$\lambda y. x$	c	$c = a \rightarrow b$	
$\lambda x. \lambda y. x$	d	$d = b \rightarrow c$	

The F# type of f is: $a \rightarrow b \rightarrow a$

Refer to the following type constraint generation rules if needed.

abstraction	application	variable
$\gamma = \alpha \rightarrow \beta$	$\alpha = \beta \rightarrow \gamma$	no constraint