Started on	Wednesday, 13 April 2022, 10:50 AM
State	Finished
Completed on	Wednesday, 13 April 2022, 10:59 AM
Time taken	9 mins 31 secs
Marks	4.00/4.00
Grade	**10.00** out of 10.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Match terms of simply typed lambda calculus with references and natural numbers with their corresponding types.

`λx:Ref (Ref Nat). !!x`	(Ref (Ref Nat))→Nat ✔
`ref (λx:Nat. ref x))`	Ref (Nat→(Ref Nat)) ✔
`λx:Ref Nat. ref x`	(Ref Nat)→(Ref (Ref Nat)) ✔
`λx:Nat. ref x`	Nat→(Ref Nat) ✔
`ref (ref (λx:Nat.x))`	Ref (Ref (Nat→Nat)) ✔
`ref (ref 0)`	Ref (Ref Nat) ✔

Your answer is correct.

The correct answer is: `λx:Ref (Ref Nat). !!x` → (Ref (Ref Nat))→Nat, `ref (λx:Nat. ref x))` → Ref (Nat→(Ref Nat)), `λx:Ref Nat. ref x` → (Ref Nat)→(Ref (Ref Nat)), `λx:Nat. ref x` → Nat→(Ref Nat), `ref (ref (λx:Nat.x))` → Ref (Ref (Nat→Nat)), `ref (ref 0)` → Ref (Ref Nat)

Question **2**

Correct

Mark 1.00 out of 1.00

True or False? The following terms of simply typed lambda calculus with natural numbers, records, and references are equivalent (i.e., they evaluate to the same value, assuming they start with the same store context).

1. `(x := succ !y; x := !y)`
2. `x := !y`

Select one:

- True
- False ✔

The correct answer is 'False'.

Question **3**

Correct

Mark 1.00 out of 1.00

What does the following term in simply typed lambda calculus with natural numbers and references evaluate to?

```
let x = ref 3 in
let f = (λz:Unit. x := succ (succ !x)) in
(f unit; f unit; f unit; !x)
```

Answer: 9 ✔

The correct answer is: 9

Question **4**

Correct

Mark 1.00 out of 1.00

True or False? The following terms of simply typed lambda calculus with natural numbers, records, and references are equivalent (compute to the same value, assuming they start with the same store context).

1. `(λx:Ref Nat. {a=x, b=!x, c=ref 3}) (ref 3)`
2. `{a=ref 3, b=3, c=ref 3}`

Select one:

- True ✔
- False

The correct answer is 'True'.

◄ Quiz 5 — Apr 7 from 9:10 to 9:20 (10 minutes)

Jump to...

Quiz 7 — Apr 14 from 9:10 to 9:20 (10 minutes) ►