P9 Q15
GW

Denotational Semantics Qu 2 2005

(a) Bookwork from Den Sem. notes p.23

(b) $uncurry : (D_1 \to (D_2 \to E)) \to (D_1 \times D_2 \to E)$

is defined s.t.

$(uncurry(f))(x,y) = (fx)y$.

To be well-defined we require that uncurry(f) is a continuous function, ~~ie~~ ~~for~~ this it is sufficient to show uncurry f is continuous in each argument (x, y) separately.

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~~ous in each argument $y \in D_2$.~~

~~inuous function. For all $x \in D_1$.~~

~~notonic in argument $x \in D_1$~~

as f is monotonic. We also need that uncurry(f) preserves lubs of increasing chains in each argument.

Firstly fix the first argument to $x \in D_1$. Then $f(x)$ is a continuous function so $(fx)y$ is continuous in the argument y.

Secondly fix the second argument to $y \in D_2$.

Then ~~(f_{x_n})~~ as f is continuous $(f_{x_n})_y$ is continuous in x.

(c) Both work Dem. Sem notes P. 71

The Dem. Sem. notes are available from
www.cl.cam.ac.uk/~gw104.