

CMPT 383

Quiz #7

November 24, 2005

- 1) Write all reduction sequences for the expression `square(5+2)`.
`square` `:: Integer → Integer`
`square x` `= x * x`
- 2) Using the function `square`, design a function `quad` that raises its argument to the fourth power.
- 3) Define a function for computing the area of a circle with given radius `r` (declare `pi` as a `float` with value `22/7`).
- 4) Define a function `abs` that returns the absolute value of an integer.
- 5) Put the following strings in ascending order: "McMillan", "Macmillan", and "MacMillan".
- 6) What are the values of the following expressions?
 - a) `show(show 50)`
 - b) `show 50 ++ show 50`
 - c) `putStr("Results= " ++ show(3*33) ++ " and " ++ square(10))`
- 7) Suppose we curry the arguments of the function `delta`, so that we can write `delta a b c` rather than `delta(a,b,c)`. What is the type of the curried version?
`delta :: (Float,Float,Float) → Float`
- 8) Suppose we define `multiply` by
`multiply` `:: (Integer,Integer) → Integer`
`multiply(x,y)` `= if x==0 then 0 else x*y`

`infinity` `:: Integer`
`infinity` `= infinity + 1`

The symbol `==` is used for an equality test between two integer. Assume that the evaluation of `e1==e2` proceeds by reducing `e1` and `e2` to canonical form and testing whether the two results are identical.

Under lazy evaluation:

- a) What would be the value of `multiply(0,infinity)`?
- b) What would be the value of `multiply(infinity,0)`?