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HW_08

Question 2

foldr f v [] = v

foldr f v (x::xs) = f x (foldr f v xs)

foldl f v [] = v

foldl f v (x::xs) = foldl f (f v x) xs

and b1 b2 = if b1 then b2 else false

andl l = foldl and t l

andr l = foldr and t l

• andr (t::f::t::t::[])

Call by name:

andr (t::f::t::t::[])

= foldr and t (t::f::t::t::[])

=and t (foldr and t f::t::t::[])

=if t then (foldr and t f::t::t::[]) else f

=foldr and t f::t::t::[]

=and f (foldr and t t::t::[])

=if f then (foldr and t t::t::[]) else f

=false

Call by value:

andr (t::f::t::t::[])

= foldr and t (t::f::t::t::[])

= and t (foldr and t f::t::t::[])

= and t (and f (foldr and t t::t::[]))

= and t (and f (and t (foldr and t t::[])))

= and t (and f (and t (and t (foldr and t []))))

= and t (and f (and t (and t t)))

= and t (and f (and t (if t then t else f)))

= and t (and f (and t t))

= and t (and f (if t then t else f))

= and t (and f t)

= and t (if f then t else f)

= and t f

= if t then f else f

= false

• andl (t::f::t::t::[])

Call by name:

andl (t::f::t::t::[])

=foldl and t (t::f::t::t::[])

=foldl and (and t t) f::t::t::[]

=foldl and (and (and t t) f) t::t::[]

=foldl and (and (and (and t t) f) t) t::[]

=foldl and (and (and (and (and t t) f) t) t) []

=and (and (and (and t t) f) t) t

=if (and (and (and t t) f) t) then t else f

=if (if (and (and t t) f) then t else f) then t else f

=if (if (if (and t t) then f else f) then t else f) then t else f

=if (if (if (if t then t else f) then f else f) then t else f) then t else f

=if (if (if t then f else f) then t else f) then t else f

=if (if f then t else f) then t else f

=if f then t else f

=f

Call by value:

andl (t::f::t::t::[])

=foldl and t (t::f::t::t::[])

=foldl and (and t t) f::t::t::[]

=foldl and (if t then t else f) f::t::t::[]

=foldl and t f::t::t::[]

=foldl and (and t f) t::t::[]

=foldl and (if t then f else f) t::t::[]

=foldl and f t::t::[]

=foldl and (and f t) t::[]

=foldl and (if f then t else f) t::[]

=foldl and f t::[]

=foldl and (and f t) []

=foldl and (if f then t else f) []

=foldl and f []

=false