Results

December 9, 2011

AutoPrelude.hs

Properties

	plain	simple ind	approx	fixpoint ind

Summary

	total	plain	simple ind	approx	fixpoint ind

Bool.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{and_{absorb}}$ `&& x (|| x y) = x`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{and_{assoc}}$ `&& x (&& y z) = && (&& x y) z`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{and_{assoc_{comm}}}$ `&& y (&& x z) = && x (&& y z)`				
$prop_{and_{comm}}$ `&& y x = && x y`				
$prop_{and_{complement}}$ `&& x (not x) = False`		$\checkmark_{\text{fin}}$		

<table>
<tr><td>$prop_{and_{distrib}}$

&& (|| x y) (|| x z) = || x (&& y z)</td><td></td><td>$\checkmark_\infty$</td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{and_{idem}}$

&& x x = x</td><td></td><td>$\checkmark_\infty$</td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{and_{identity}}$

&& x (True) = x</td><td></td><td>$\checkmark_\infty$</td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{and_{zero}}$

&& x (False) = False</td><td></td><td>$\checkmark_{\text{fin}}$</td><td></td><td></td></tr>
<tr><td>$prop_{de_{morgan_0}}$

&& (not x) (not y) = not (|| x y)</td><td></td><td>$\checkmark_\infty$</td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{de_{morgan_1}}$

|| (not x) (not y) = not (&& x y)</td><td></td><td>$\checkmark_\infty$</td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{not_{false}}$

not (False) = True</td><td>$\checkmark_\infty$</td><td></td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{not_{involutive}}$

not (not x) = x</td><td></td><td>$\checkmark_\infty$</td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{not_{true}}$

not (True) = False</td><td>$\checkmark_\infty$</td><td></td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{or_{absorb}}$

|| x (&& x y) = x</td><td></td><td>$\checkmark_\infty$</td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{or_{assoc}}$

|| x (|| y z) = || (|| x y) z</td><td></td><td>$\checkmark_\infty$</td><td>$\checkmark_\infty$</td><td></td></tr>
<tr><td>$prop_{or_{assoccomm}}$

|| y (|| x z) = || x (|| y z)</td><td></td><td></td><td></td><td></td></tr>
</table>

$prop_{or_{comm}}$ `|| y x = || x y`				
$prop_{or_{complement}}$ `|| x (not x) = True`		$\checkmark_{\text{fin}}$		
$prop_{or_{distrib}}$ `|| (&& x y) (&& x z) = && x (|| y z)`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{or_{idem}}$ `|| x x = x`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{or_{identity}}$ `|| x (False) = x`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{or_{zero}}$ `|| x (True) = True`		$\checkmark_{\text{fin}}$		

Summary

	total	plain	simple ind	approx	fixpoint ind
$\checkmark_{\infty}$	15/23	2/15	13/15	15/15	
$\checkmark_{\text{fin}}$	4/23		4/4		

EnvMonad.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{app_{assoc}}$ `>>== (>>== m f) g e = >>== m (lambda.5 f g) e`				
$prop_{app_{assocl}}$ `>>= (>>= m f) g e = >>= m (lambda.4 f g) e`				
$prop_{app_{return_{left}}}$ `>>== f return e = f e`	$\checkmark_{\infty}$			

$prop_{app_{return_{leftl}}}$ `>>= f return e = f e`	$\checkmark_\infty$			
$prop_{app_{return_{right}}}$ `>>== (return a) f e = f a e`	$\checkmark_\infty$			
$prop_{app_{return_{rightl}}}$ `>>= (return a) f e = f a e`	$\checkmark_\infty$			
$prop_{app_{returnl_{left}}}$ `>>== f returnl e = f e`	$\checkmark_\infty$			
$prop_{app_{returnl_{leftl}}}$ `>>= f returnl e = f e`	$\checkmark_\infty$			
$prop_{app_{returnl_{right}}}$ `>>== (returnl a) f e = f a e`	$\checkmark_\infty$			
$prop_{app_{returnl_{rightl}}}$ `>>= (returnl a) f e = f a e`	$\checkmark_\infty$			
$prop_{assoc}$ `>>== (>>== m f) g = >>== m (lambda.3 f g)`				
$prop_{assocl}$ `>>= (>>= m f) g = >>= m (lambda.2 f g)`				
$prop_{fmap_{comp}}$ `fmap (. f g) = . (fmap f) (fmap g)`				
$prop_{fmap_{id}}$ `fmap id = id`				
$prop_{fmapl_{comp}}$ `fmapl (. f g) = . (fmapl f) (fmapl g)`				

$prop_{fmapl_{id}}$ `fmapl id = id`				
$prop_{fmaplrl_{comp}}$ `fmaplrl (. f g) = . (fmaplrl f) (fmaplrl g)`				
$prop_{fmaplrl_{idl}}$ `fmaplrl id = id`				
$prop_{fmaprl_{comp}}$ `fmaprl (. f g) = . (fmaprl f) (fmaprl g)`				
$prop_{fmaprl_{id}}$ `fmaprl id = id`				
$prop_{return_{left}}$ `>>== f return = f`	$\checkmark_{\infty}$			
$prop_{return_{leftl}}$ `>>= f return = f`	$\checkmark_{\infty}$			
$prop_{return_{right}}$ `>>== (return a) f = f a`	$\checkmark_{\infty}$			
$prop_{return_{rightl}}$ `>>= (return a) f = f a`	$\checkmark_{\infty}$			
$prop_{returnl_{left}}$ `>>== f returnl = f`	$\checkmark_{\infty}$			
$prop_{returnl_{leftl}}$ `>>= f returnl = f`	$\checkmark_{\infty}$			
$prop_{returnl_{right}}$ `>>== (returnl a) f = f a`	$\checkmark_{\infty}$			

$prop_{returnl_{rightl}}$ `>>= (returnl a) f = f a`	$\checkmark_{\infty}$			

Summary

	total	plain	simple ind	approx	fixpoint ind
$\checkmark_{\infty}$	16/28	16/16			

Expr.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{mirror}$ `e = mirror (mirror e)`		$\checkmark_{\infty}$		
$prop_{mirror_{eval}}$ `eval e = eval (mirror e)`				
$prop_{mirror_{size}}$ `size e = size (mirror e)`				

Summary

	total	plain	simple ind	approx	fixpoint ind
$\checkmark_{\infty}$	1/3		1/1		

Fix.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{even}$ `even x = evenFix x`				
$prop_{evenSingl}$ `evenSingl x = even x`				

$prop_{evenSinglFix}$ `evenSingl x = evenFix x`				
$prop_{odd}$ `odd x = oddFix x`				

Summary

	total	plain	simple ind	approx	fixpoint ind

Functions.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{comp_{assoc}}$ `. (. f g) h = . f (. g h)`				
$prop_{comp_{assoc'}}$ `. (. f g) h a = . f (. g h) a`	$\checkmark_{\infty}$			
$prop_{comp_{assocl}}$ `... (... f g) h = ... f (... g h)`				
$prop_{comp_{equal}}$ `. = ...`				
$prop_{curry_{uncurry}}$ `id = . curry uncurry`				
$prop_{dans_{identity}}$ `const x y = id x`	$\checkmark_{\infty}$			
$prop_{dans_{nonidentity}}$ `const y x = id x`	$\perp$			

$prop_{left_{id}}$ `. f id = f`	$\checkmark_\infty$			
$prop_{left_{idl}}$ `... f id = f`	$\checkmark_\infty$			
$prop_{malins_{identity}}$ `const id x y = flip const x y`	$\checkmark_\infty$			
$prop_{malins_{identity'}}$ `const id = flip const`	$\checkmark_\infty$			
$prop_{mikaels_{identity}}$ `id f x = f x`	$\checkmark_\infty$			
$prop_{nonidentity}$ `const x = id`	$\perp$			
$prop_{right_{id}}$ `. id f = f`	$\checkmark_\infty$			
$prop_{right_{idl}}$ `... id f = f`	$\checkmark_\infty$			
$prop_{uncurry_{curry}}$ `id = . uncurry curry`				
$prop_{uncurry_{equal}}$ `uncurry = uncurry'`				
$prop_{uncurry_{f_{equal}}}$ `uncurry f = uncurry' f`				
$prop_{uncurry_{f_{tuple_{equal}}}}$ `uncurry f t = uncurry' f t`		$\checkmark_{\text{fin}}$		

$prop_{uncurry_{f_{unboxedtuple_{equal}}}}$ `uncurry f (T2 a b) = uncurry' f (T2 a b)`	$\checkmark_\infty$			

Summary

	total	plain	simple ind	approx	fixpoint ind
$\checkmark_\infty$	10/20	10/10			
$\checkmark_{\text{fin}}$	1/20		1/1		
$\perp$	2/20	2/2			

FV.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{free}$ `mem v (freeVars e) = freeIn v e`				

Summary

total	plain	simple ind	approx	fixpoint ind

Infinite.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{concat_{repeat_{cycle}}}$ `concat (repeat (: x xs)) = cycle (: x xs)`				
$prop_{fmap_{comp}}$ `fmap (. f g) t = fmap f (fmap g t)`		$\checkmark_\infty$		$\checkmark_\infty$
$prop_{fmap_{id}}$ `fmap id t = t`		$\checkmark_\infty$	$\checkmark_\infty$	
$prop_{fmap_{iterate}}$ `fmap f (iterTree f f x) = iterTree f f (f x)`				$\checkmark_\infty$

$prop_{fmap_{left}}$ `fmap (. id f) t = fmap f t`		$\checkmark_\infty$	$\checkmark_\infty$	$\checkmark_\infty$
$prop_{fmap_{map_{toList}}}$ `map f (toList t) = toList (fmap f t)`				
$prop_{fmap_{map_{traverse}}}$ `map f (traverse t) = traverse (fmap f t)`				
$prop_{fmap_{right}}$ `fmap (. f id) t = fmap f t`		$\checkmark_\infty$	$\checkmark_\infty$	$\checkmark_\infty$
$prop_{map_{iterate}}$ `map f (iterate f x) = iterate f (f x)`				$\checkmark_\infty$
$prop_{mirror_{involutive}}$ `mirror (mirror t) = t`		$\checkmark_\infty$		
$prop_{mirror_{iterate}}$ `mirror (iterTree f g x) = iterTree g f x`			$\checkmark_\infty$	$\checkmark_\infty$
$prop_{mirror_{traverse_{rev}}}$ `reverse (traverse t) = traverse (mirror t)`				
$prop_{repeat_{cycle_{singleton}}}$ `repeat x = cycle (: x ([]))`			$\checkmark_\infty$	$\checkmark_\infty$
$prop_{repeat_{iterate}}$ `repeat x = iterate id x`			$\checkmark_\infty$	$\checkmark_\infty$
$prop_{tail_{repeat}}$ `repeat x = tail (repeat x)`			$\checkmark_\infty$	$\checkmark_\infty$

Summary

	total	plain	simple ind	approx	fixpoint ind
$\checkmark_\infty$	11/15		5/11	7/11	9/11

Integers.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{add_{assoc}}$ `+! x (+! y z) = +! (+! x y) z`				
$prop_{add_{comm}}$ `+! x y = +! y x`				
$prop_{add_{ident_{left}}}$ `x = +! zero x`				
$prop_{add_{ident_{right}}}$ `x = +! x zero`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{add_{inv_{left}}}$ `+! (neg x) x = zero`				
$prop_{add_{inv_{right}}}$ `+! x (neg x) = zero`				
$prop_{mul_{assoc}}$ `⋆! x (⋆! y z) = ⋆! (⋆! x y) z`				
$prop_{mul_{comm}}$ `⋆! x y = ⋆! y x`				
$prop_{mul_{ident_{left}}}$ `x = ⋆! one x`				
$prop_{mul_{ident_{right}}}$ `x = ⋆! x one`				
$prop_{neg_{involutive}}$ `x = neg (neg x)`				

$prop_{sign_{assoc}}$ `*% s (*% t u) = *% (*% s t) u`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{sign_{ident_{left}}}$ `*% s (Pos) = s`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{sign_{ident_{right}}}$ `*% (Pos) s = s`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{sign_{opposite_{involutive}}}$ `opposite (opposite s) = s`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	
$prop_{sign_{triple}}$ `*% s (*% s s) = s`		$\checkmark_{\infty}$	$\checkmark_{\infty}$	

Summary

	total	plain	simple ind	approx	fixpoint ind
$\checkmark_{\infty}$	6/16		6/6	6/6	

IWC.hs

Properties

	plain	simple ind	approx	fixpoint ind
$prop_{appAssoc}$ `app (app xs ys) zs = app xs (app ys zs)`		$\checkmark_{\infty}$		$\checkmark_{\infty}$
$prop_{binomialTheorems}$ `exp (S x) n = sum' (Z) n (lambda.0 n x)`				
$prop_{evenEq}$ `evenm n = evenr n`				$\checkmark_{\infty}$
$prop_{rotateLength}$ `rotate (len xs) xs = xs`				

$prop_{split}$ `newSplit x w (len w) = splitList x w`				
$prop_{sumLemma}$ `sum' n m (lambda.1 f g) = plus (sum' n m f) (sum' n m g)`				
$prop_{sumLemma2}$ `sum' n m (lambda.2 f t) = times t (sum' n m f)`				

Summary

	total	plain	simple ind	approx	fixpoint ind
$\checkmark_\infty$	2/7		1/2		2/2