A taste of Haskell?

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IIIT Open Source Developers group

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What's programming like?

A lot like building a cathedral.

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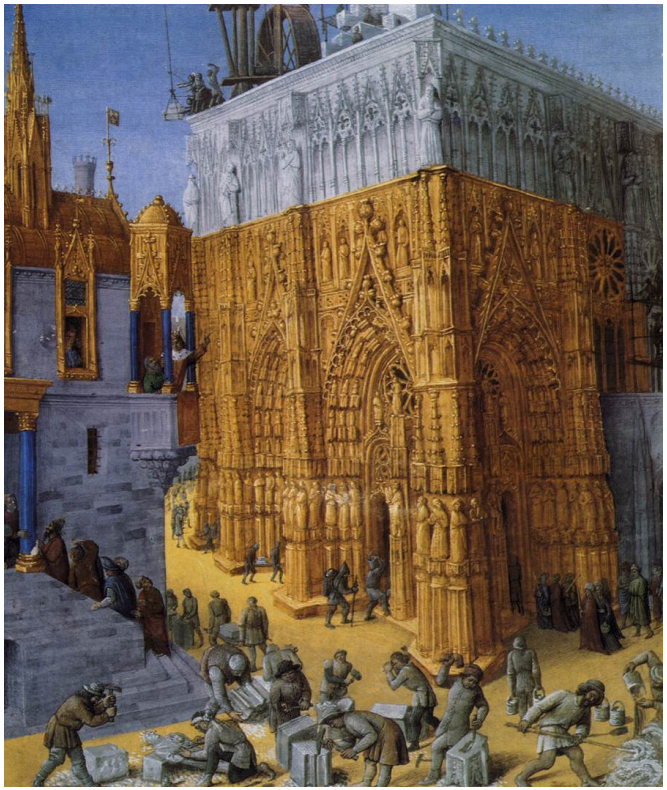

Figure: First we build

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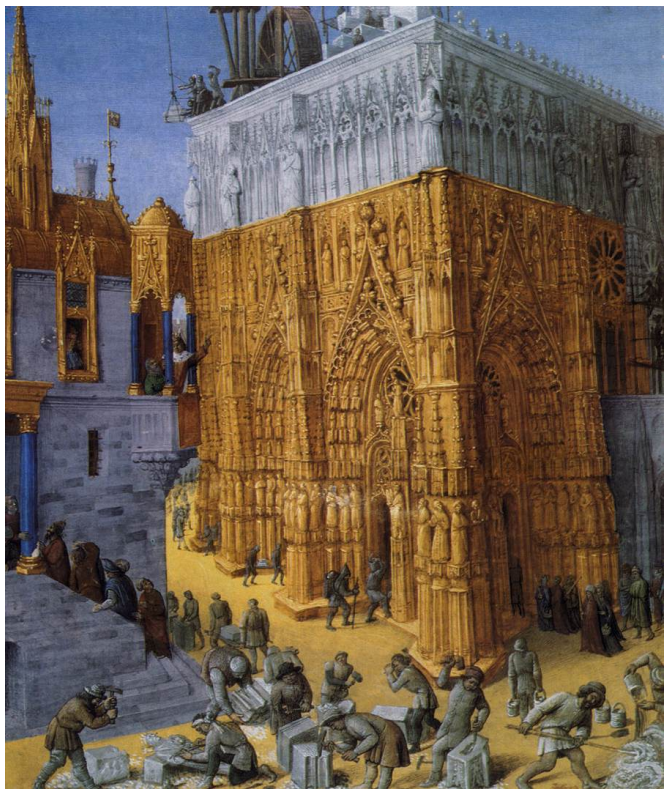

Figure: First we build

Figure: Then we pray

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- If $f : A \to B$, can ask $f(a)$ for $a \in A$.

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Return a string which is the concatenation of the strings in *iterable*. A `TypeError` will be raised if there are any non-string values in *iterable*, including `bytes` `objects`. The separator between elements is the string providing this method.

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intercalate ::
  String -> [String] -> String
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`str.join(iterable)`

Return a string which is the concatenation of the strings in *iterable*. A `TypeError` will be raised if there are any non-string values in *iterable*, including `bytes` `objects`. The separator between elements is the string providing this method.

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docs.python.org/3/library/stdtypes.html#str.join

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https://hackage.haskell.org/package/base-4.14.0.0/docs/Prelude.html#t:Num

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A thing one can accumulate answers on. So a list, a set, a binary tree, ...

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- `sum y`
- 6

Foldable in detail

```
class Foldable t where
  -- | Map each element of the structure to a monoid, and combine the results.
  foldMap :: Monoid m => (a -> m) -> t a -> m
```

Foldable instances are expected to satisfy the following laws:

```
foldr f z t = appEndo (foldMap (Endo . f) t ) z
foldl f z t = appEndo (getDual (foldMap (Dual . Endo . flip f) t)) z
fold = foldMap id
length = getSum . foldMap (Sum . const  1)
```

https://hackage.haskell.org/package/base-4.14.0.0/docs/Data-Foldable.html#t:Foldable

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- `map [] = [] ; map (x:xs) = (f x):(map f xs)`
- `map :: (t1 -> t2) -> [t1] -> [t2]`

Fibonacci, Take 2

- `fibs` satisfies a recurrence:
- `fibs ! 0 = 0`
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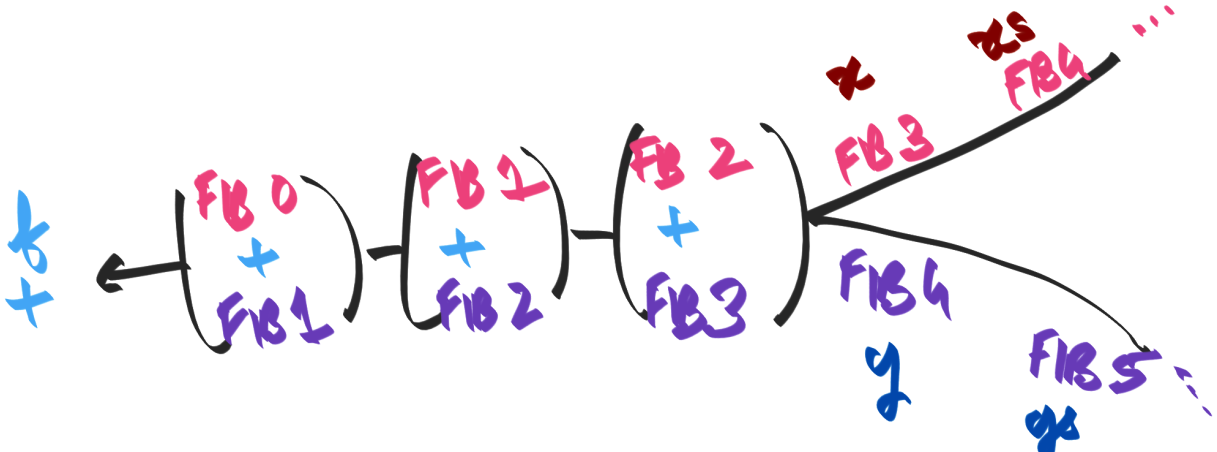

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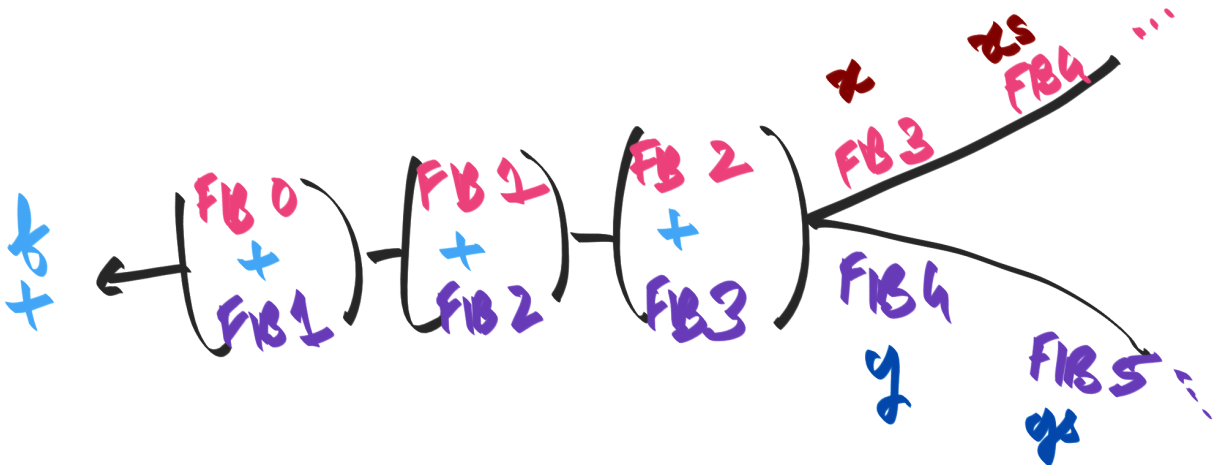

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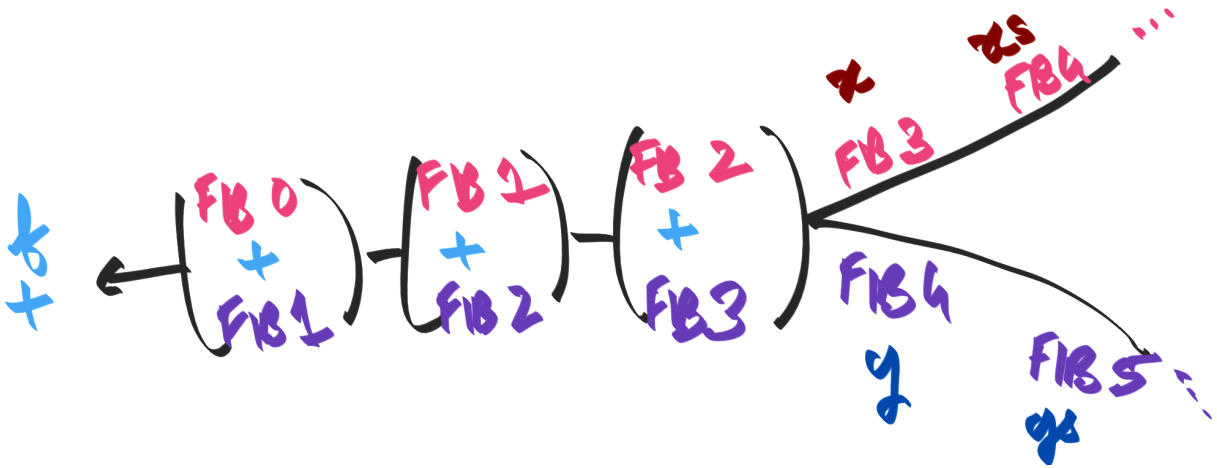

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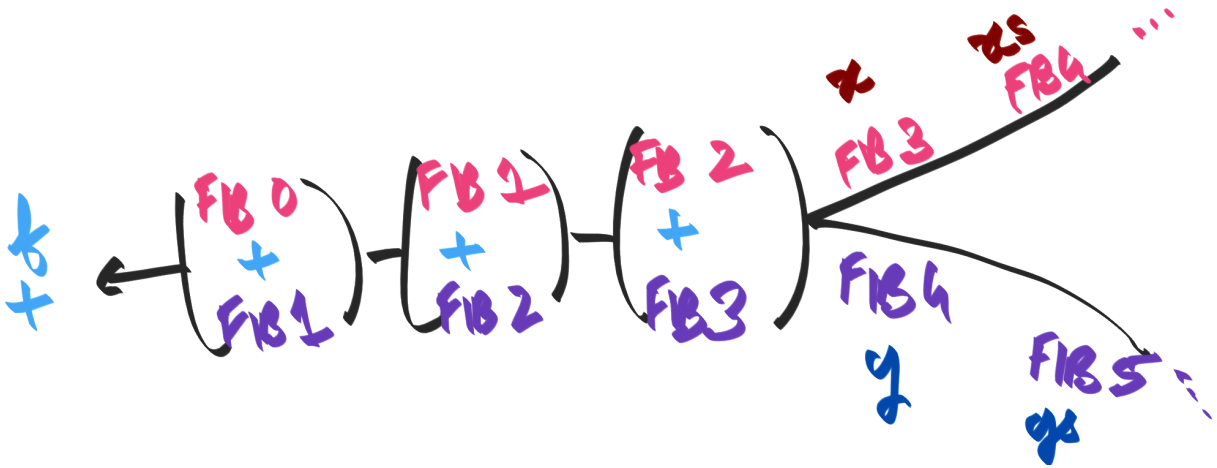

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What is the Fibonacci sequence? `fibs = 0:1:(zipWith (+) fibs (tail fibs))`

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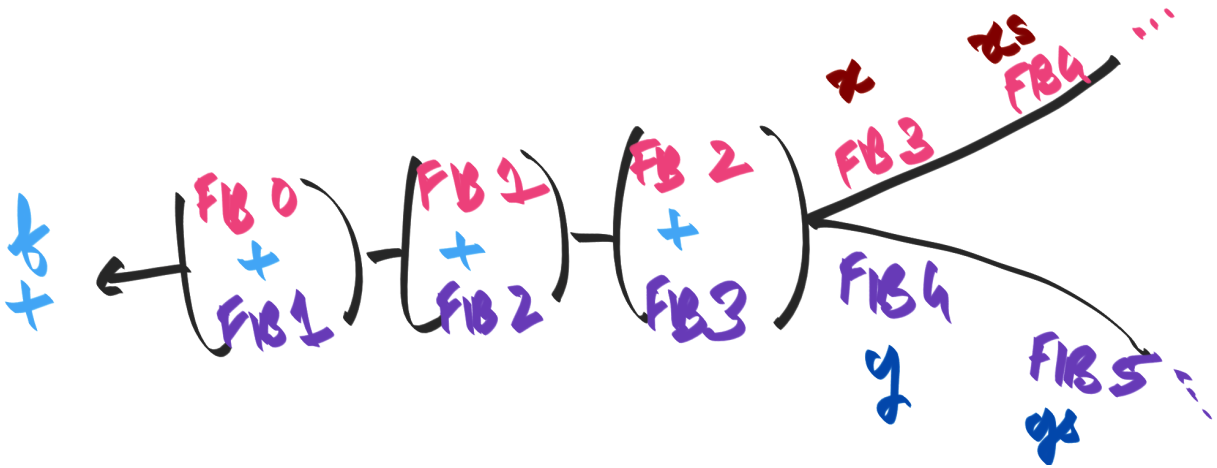

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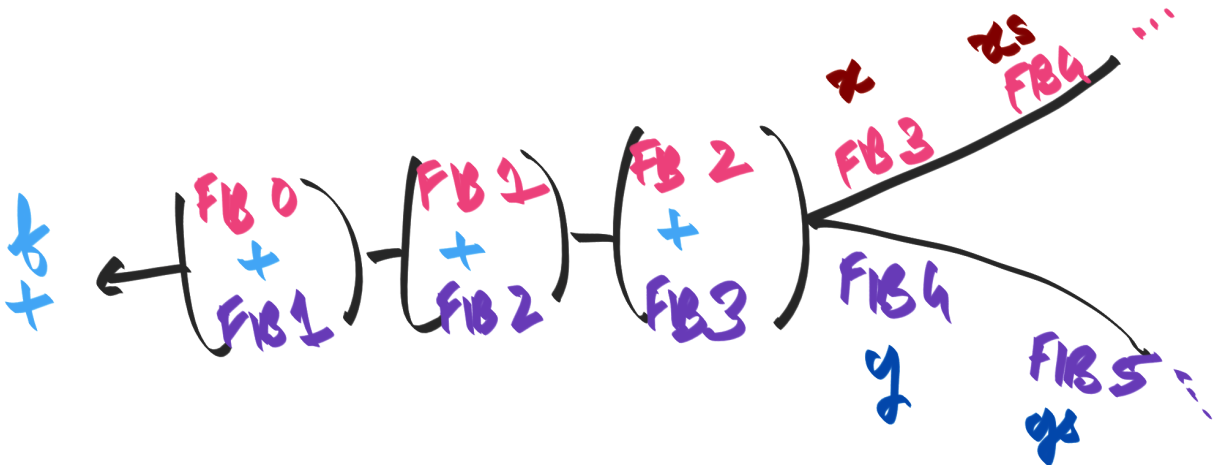

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- This was not meant to enlighten! Only show off Haskell!

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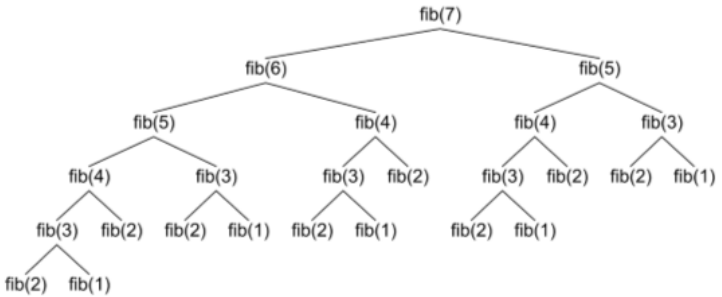

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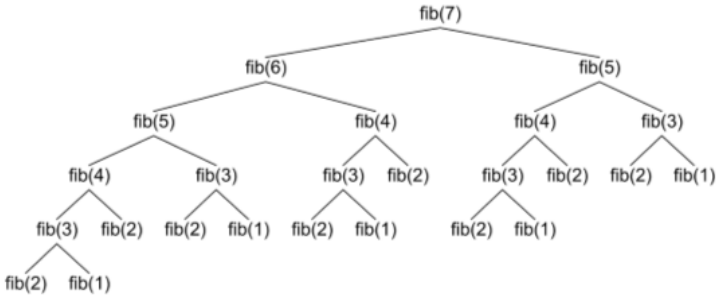

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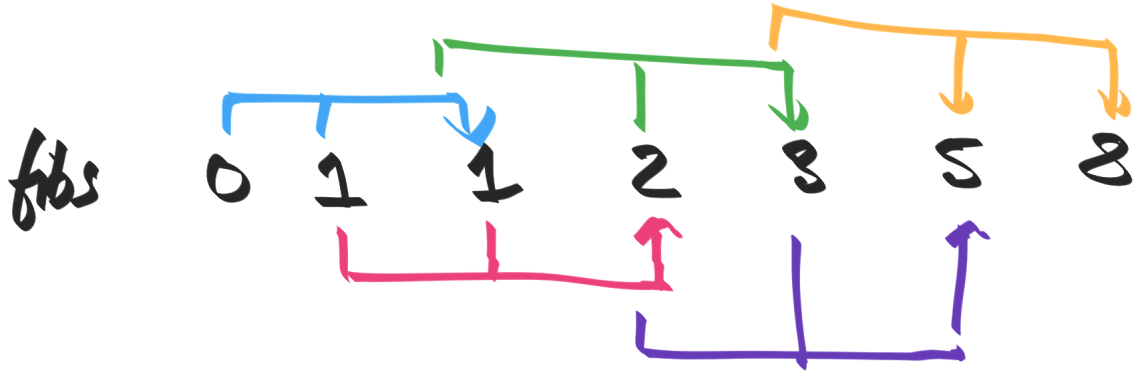

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- `x :: Char` because `getChar :: IO Char`
- `2 * (fromEnum x) == fromEnum x + fromEnum x`
- `int x = getchar(); 2 * x == x + x`
- `2 * getchar() != getchar() + getchar()`

Effects, or the "M" word

Keep every element, and drop every element.

```
powerset xs = filterM (const [True, False]) xs
```

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Trolling the Haskell IRC channel

https://gist.githubusercontent.com/quchen/5280339/raw/a18362f99e3847351e891f2ed37872d1dfa9f942/trolling_haskell

```
xQuasar>      | HASKELL IS FOR FUCKIN FAGGOTS. YOU'RE ALL A BUNCH OF
              | FUCKIN PUSSIES
xQuasar>      | JAVASCRIPT FOR LIFE FAGS
luite>        | hello
ChongLi>      | somebody has a mental illness!
merijn>       | Wow...I suddenly see the error of my ways and feel
              | compelled to write Node.js!
genisage>     | hi
luite>        | you might be pleased to learn that you can compile
              | haskell to javascript now
xQuasar>      | FUCK YOU AND YOUR HUSSY OPS
xQuasar>      | THEY CAN'T DO SHIT TO ME CUNTS
quchen>       | xQuasar: While I don't think anything is wrong with
              | faggots to the point where "faggot" isn't insulting
              | anymore, I assure you we have heterosexuals in our
              | language as well.
quchen>       | Haskell is invariant under gender. Really!
Iceland_jack> | quchen++
merijn>       | I don't blame him, I'd be this angry to if I had to write
              | javascript all day too
xQuasar>      | FUCK YOU STRAIGHT CUNTS
xQuasar>      | BESTIALITY IS THE BEST
quchen>       | merijn: Lol. And when I write that I mean it :D
quchen>       | xQuasar: Do you have any specific questions?
merijn>       | This is sort of like a puppy trying to be angry with
              | you...it's just kinda adorable to see him think he has
              | any effect :)
quchen>       | xQuasar: You're offtopic right now. This is a Haskell
              | help channel. Do you have Haskell questions?
quchen>       | xQuasar: We'd love to help you make your first steps.
tsinnema>     | hey -- is there a proper way to whine about no one having
              | responded to a question? :)
xQuasar>      | i just want to get kicked out of a bunch of channels for
              | fun
quchen>       | Have you seen LYAH? It's a very enjoyable book on
```

Trolling the Haskell IRC channel

https://gist.githubusercontent.com/quchen/5280339/raw/a18362f99e3847351e891f2ed37872d1dfa9f942/trolling_haskell

```
quchen>       | @where lyah
xQuasar>      | why is no one cooperating with me
lambdabot>    | http://www.learnyouahaskell.com/
tsinnema>     | in soviet russia, haskell learns a you
merijn>       | tsinnema: Yeah, wait 30 minutes or more and try again :)
Iceland_jack> | xQuasar: We are cooperating with you, you're just not
              | aware that your goal is learning Haskell
ChongLi>      | xQuasar: why not learn some Haskell instead?
xQuasar>      | alright i'll admit i lose
merijn>       | Ha, sometimes I forget how hard it is to troll haskell :)
nxorg8>       | #haskell is awesome :-)
xQuasar>      | what's haskell good for though
quchen>       | xQuasar: But there is so much to win here!
xQuasar>      | i'm more into gamedev
Iceland_jack> | figures
arkeet>       | it's good for writing programs.
xQuasar>      | what kind of programs?
ChongLi>      | xQuasar: any kind
arkeet>       | "what's C++ good for?"
Iceland_jack> | xQuasar: The ones that run on comput-ars.
ChongLi>      | it's a general purpose language
luite>        | xQuasar: frp can be useful for writing games, and with
              | ghcjs you can compile them to javascript to make web
              | games
tsinnema>     | merijn, yeah, seems reasonable :)
ChongLi>      | seriously though, if you learn it you may completely
              | change your perspective on programming
xQuasar>      | i have absolutely no idea what frp and ghcjs are
...
```

Equality: Eq

Ordering: Ord

Dictionary ordering: Ord for lists

Oh, that's just monoidal accumulation of a left absorbing semigroup