



Sands/TDA451/Lecture2B

Efficiency

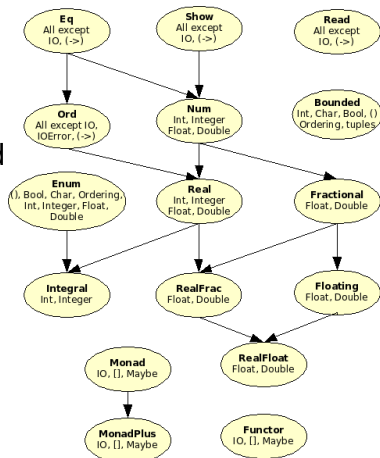
What is the type of sort?

(Incorrect) `sort :: [a] -> [a]`

It works for many different types, yes, but not *all*. Which ones?

Example of sorting function definitions (demo)

The Predefined Classes and Instances (from the haskell report)



Defining Type Classes

```
class Eq a where
  (==) :: a -> a -> Bool
  (/=) :: a -> a -> Bool
```

```
class Eq a => Ord a where
  (<=) :: a -> a -> Bool
  (>=) :: a -> a -> Bool
```

Defining Type Classes

```
class Eq a where
  (==) :: a -> a -> Bool
  (/=) :: a -> a -> Bool

  x /= y = not (x == y)
```

Can provide some default implementations

```
class Eq a => Ord a where
  (<=) :: a -> a -> Bool
  (>=) :: a -> a -> Bool

  x >= y = not (x <= y) || x == y
```

Type Classes vs C++/Java...

Haskell type classes not used so often for e.g. abstract datatypes. Encapsulation usually handled using **modules**

See http://www.haskell.org/haskellwiki/OOP_vs_type_classes for discussion