# IO monads

**Imperative Functional Programming** [1993]

**https://www.microsoft.com/en-us/research/wp-content/uploads/1993/01/imperative.pdf**

**P. Wadler and S.L. Peyton-Jones**

```
doneIO :: IO ()
seqIO  :: IO a -> IO b -> IO b


mainIO = hello `seqIO` hello
         where
             hello = putsIO "hello"
```

# IO monads

```
mainIO = hello 'seqIO' hello
       where
         hello = putsIO "hello"
```

**hello is an effect and we can now do it twice
without breaking referential transparency**