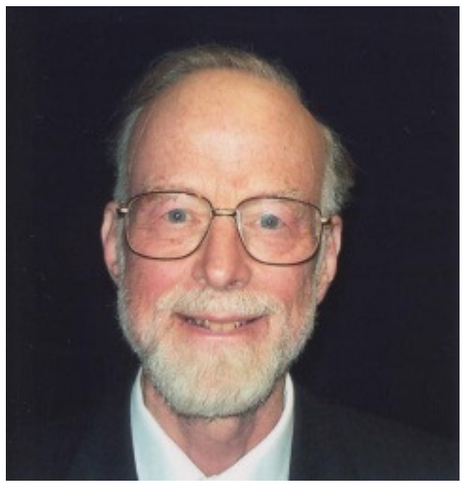
CSE 230

Programming Languages



Tony Hoare

Turing Award Lecture 1980

“There are two ways of constructing software.

One way is to make it so simple,

that there are obviously no deficiencies,

The other way is to make it so complicated

that there are no obvious deficiencies. ”

Goal: Obviously No Deficiencies

Readable

Goal: Obviously No Deficiencies

Reusable

Goal: Obviously No Deficiencies

Modifiable

Goal: Obviously No Deficiencies

Predictable

Goal: Obviously No Deficiencies

Checkable

Goal: Obviously No Deficiencies

Yes, but how?

Goal: Obviously No Deficiencies

Functional Programming(?)

Functional Programming ?

No Assignment.

No Mutation.

No Loops.

So, Who Uses FP ?

PL Researchers.

Functional Programming ?

Readable

Reusable

Modifiable

Predictable

Checkable

} **Parallelizable**

So, Who Uses FP ?

MapReduce

So, Who Uses FP ?

Google

TensorFlow

So, Who Uses FP ?

Microsoft®

F#

So, Who Uses FP ?

Scala

So, Who Uses FP ?

Erlang

So, Who Uses FP ?

Verse

So, Who Uses FP ?

CSE 230

CSE 230 : Outline

Readable
Reusable
} 1. FP & Abstraction

Modifiable
Predictable
Checkable
} 2. Types & Analysis

CSE 230 : Outline

- The Lambda Calculus (2wk)
- Types and Basic FP (2wk)
- Advanced FP (3wk)
- Formal Verification (2wk)

CSE 230: Medium of Instruction

Haskell

Why Haskell ?

Bleeding edge PL.

Why Haskell ?

Beautiful.

Why Haskell ?

Blows Your Mind.

Why Haskell ?

Alan Perlis

Epigrams In Programming

“A language that doesn't affect how you think about programming, isn’t worth knowing”

Why Haskell ?

Fun.

CSE 230 : Resources

Lectures, assignments, piazza, OH:

https://ucsd-cse230.github.io/fa23

Please sign yourselves up at PIAZZA & Github

CSE 230 : Grading

[40%] : 5 Programming Assignments

[30%] : 2 x Midterms

[30%] : Final Project

?