Australian
National
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COMP3610/6361
Principles of Programming Languages

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Section 12

Implementing IMP

Motivation

- started with (a variant) of IMP
- added several features
  (e.g. functions, exceptions, objects, . . .)
- no concurrency yet
- no verification
  (you may have seen some bits of Hoare logic)

- this week
  - ▸ IMP, implementation and tools
  - ▸ guest lecture: semantics for (a subset) of C

Implementations of IMP I

- **ML**
  https://www.cl.cam.ac.uk/teaching/2021/Semantics/L2/
  P. Sewell

- **C**
  "any compiler"

- **Java**
  https://www.cl.cam.ac.uk/teaching/2021/Semantics/L1/l1.java
  M. Parkinson

- **Haskell**
  (several implementations available)

Implementations of IMP II

- **Coq**
  https://softwarefoundations.cis.upenn.edu/lf-current/Imp.html
  B. Pierce
- **Isabelle**
  https://isabelle.in.tum.de (src/HOL/IMP)
  G. Klein and T. Nipkow