Notes, Chapter 1

0.1 Critera for Evaluating Languages

1. Readability
2. Writability
3. Reliability
4. Total Cost

Readability

Writability

Reliability

- **Reliability:** perform to specifications under all conditions
- Type Checking
  - Compile time & Running time
  - Java: all checking in compile time
  - Original C: subprogram parameters, int vs float
  - Current C: all parameters are type checked
- Exception handling
- **Aliasing**: Presence of two of more distinct referencing methods for the same memory location, e.g., pointers in C
  - Aliasing can reduce Readability
- Readability and Reliability
  - A language that does not support "natural" ways of expressing an algorithm will require the use of "unnatural" approaches, and hence reduced Reliability
  - Readability affects reliability in both the writing and maintenance

Evaluation Criteria: Cost

- Training programmers to use the language
- Writing programs (closeness to particular applications)
- Compiling & Executing programs
  - Java vs C
  - Compilation optimization
- Reliability: poor reliability leads to high costs
- Maintaining programs

Evaluation Critera: Others

- **Portability:**

Influences on Language Design

- Computer Architecture - Languages are developed around the prevalent computer archiecture, the Von Neumann Architecture.
- Program Design Methodologies

Assignment

Pick a language you learned at CalU, and discuss its:

1. its brief history
2. its readability, writability, and reliability
3. its implementation methods