

Notes, Chapter 1

0.1 Criteria for Evaluating Languages

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

0.2 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

0.3 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