Notes 1-19

**Chapter 2:**

Plankalkul: 1945

* Never implemented
* Advanced data structures
  + Arrays and records

Why not machine code?:

* Poor readability
* Poor modifiability
* Tedious

Fortran 0: 1954

* FORmula TRANslation
* Made possible by the release of the IBM 704
  + Index registers
  + Floating point hardware
* Used for scientific applications
* Design goals:
  + Good array handling
  + Counting loops
  + No string handling or powerful input / output

Fortran 1: 1957

* Identifiers up to 6 characters
* Post-test counting loop (DO)
* If-statement
* Formatted input and output
* User-defined subprograms
* No separate compilation:
* IBM 704 had reliability issues
  + Large programs might not compile
* Code was fast

Fortran 2: 1958

* Separate compilation
* Bug fixes from previous version

Fortran 3 meh

Fortran 4: 1960-1962

* Explicit type declarations
* Selection statements
* Subprogram names can be parameters to other subprograms

Fortran 77: 1977

* More loop control statements
* IF THEN ELSE
* Character string handling

Fortran 90: 1990

* Modules
* Dynamic arrays
* Pointers
* CASE statement
* Recursion
* Parameter type checking

LISP- 1959- LIST Processing

* AI researchers had needs that were not being met:
  + Process data in a list form
  + Symbolic computation
    - Only had 2 data types: atom and list
    - Based on lambda calculus
* Pioneered functional programming
* No need for variables or assignment
* Control statements by way of recursion and conditional expressions

ALGOL: 1958

* Fortran has just hit the scene
  + ALGOL came shortly after
  + Fortran was not portable and was machine specific
  + There was no universal language for algorithms
* Design goals:
  + Close to mathematical notations
  + Good for describing algorithms
  + Must be translatable to machine code
* Language Features:
  + Concept of a data type normalized
  + Names any length
  + Arrays could have any # of subscripts
  + Parameters had a mode (in/out)
  + Brackets [] for subscripts
  + Compound statements with a begin and an end
  + Semicolon to separate statements
  + Assignment operator was :=
  + If else-if structures