

Early Programming Languages

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9.11.2011

The situation around 1960

- Small computers in research environments
 - Alvac III E, Bendix G-15 (1000 words of mem)
 - You sign up for an hour a few days ahead
 - IO: Typewriter (plus a bell)
- Large computers at universities and banks
 - IBM 704, Honeywell (32K words of 36 bits)
 - You deliver cards and fetch output next day
 - IO: Punched cards, printers with cap letters

How to use (program) computers

- Small computers with hexadecimal numbers
- Large computers with assembler code
- Awfully cumbersome and error-prone
- The remedy → **Programming Languages**
- **Fortran** (IBM, 1957)
- **Algol 58** (Int'l committee, 1958)
 - dialects: Neliac, Jovial, etc.
- **Algol 60** (Int'l committee, 1960)

Algol 60

- Free format for program text
- Declaration of all names of variables, etc.
- Mathematical notation for expressions
- Types and type checking by compiler:
 - integer, real, Boolean
- IF and FOR statements
- Procedures, local variables, block structure
- Recursion

More programming Languages

- **COBOL** (Sammet, DoD, 1962)
 - split the world into science and accounting
 - computers with binary or decimal arithmetic
- **LISP** (McCarthy, MIT, 1962)
 - functional language, recursion, no iteration
 - only dynamic lists as data structures
 - often associated with Artificial Intelligence

More programming languages

- PL/1 (IBM, 1965)
 - tried to reunify the scientific and the business worlds (together with the IBM 360 computers)
 - contained both, binary and decimal arithmetic
 - introduced the 8-bit byte
 - became a monster (70-pass compilers)
 - promised to render programming into child's play
- Algol W (Wirth, IFIP WG 2.1, 1966)
- **Pascal** (Wirth, 1970)