Concepts of Modern Programming Languages

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pgp Key ID: 0xBE42584D, Algorithm: DSA/ELG, Size: 1024/1792
fingerprint: 8D67 19C6 70C7 14D0 E33D 42AA AA36 42F3 BE42 584D

Literature

Mitchell, John C.: Concepts in Programming Languages
Cambridge University Press, 2003

Forbrig, P., Kerner, I.O.: Programmierung, Paradigmen und Konzepte
Fachbuchverlag Leipzig, 2006
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2. Logical/Relational Programming
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   selected topics
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   selected topics
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**Programming Paradigms**

- **imperative**: How to calculate?
  - statement sequence $\Rightarrow$ state oriented, assignment (variable=memory)
- **procedural** (Pascal, C):
  - algorithmic decomposition (sequence, loop, switch)
  - data structures (array, record, …)
- **object-oriented** (Smalltalk, Java, C++, C#, Scala):
  - encapsulation, classes, objects, messages, inheritance, dynamic binding
- **declarative**: What to calculate?
- **logical/relational** (Prolog, SQL):
  - relations among variables, unification, recursion
- **functional/applicative** (Lisp, ML, Haskell, Hope)
  - composition of stateless functions
Genealogy of Programming Languages

without script languages

2000
1995
1990
1985
1980
1975
1970
1965
1960
1955

Haskell
Oberon
Miranda
Fortran90
Basic
Hope
Eiffel
Modula
MLFP
C++
Smalltalk
Ada95
Ada
BCPL
Java
Scala
Simula
Oberon
C#
D

Assembler

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