



PRINCIPLES OF PROGRAMMING LANGUAGES

Influences on Language Design

Prafullata Kiran Auradkar

Computer Science and Engineering

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PRINCIPLES OF PROGRAMMING LANGUAGES

Influences on Language Design

- Computer Architecture
- Programming Methodologies

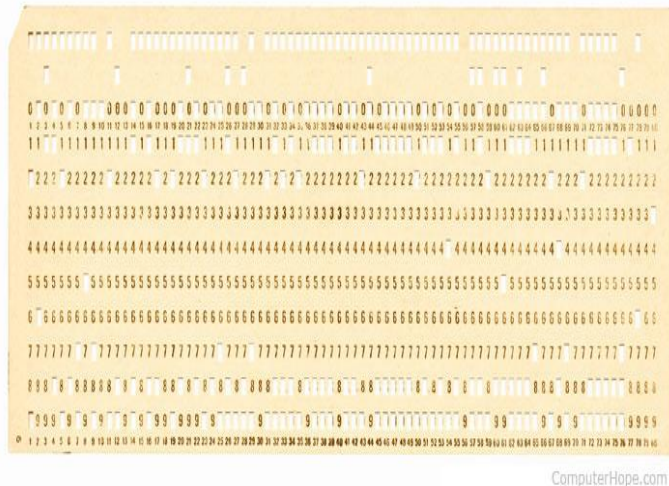


PRINCIPLES OF PROGRAMMING LANGUAGES

Influences on Language Design – von Neumann Architecture

- Haigh, T., 2013, July. 'Stored Program Concept' Considered Harmful: History and Historiography. In *Conference on Computability in Europe* (pp. 241-251). Springer, Berlin, Heidelberg.

Example of a punch card



ComputerHope.com

<https://www.computerhope.com/jargon/p/punccard.htm>

Punch Card in
Punch Card Machine



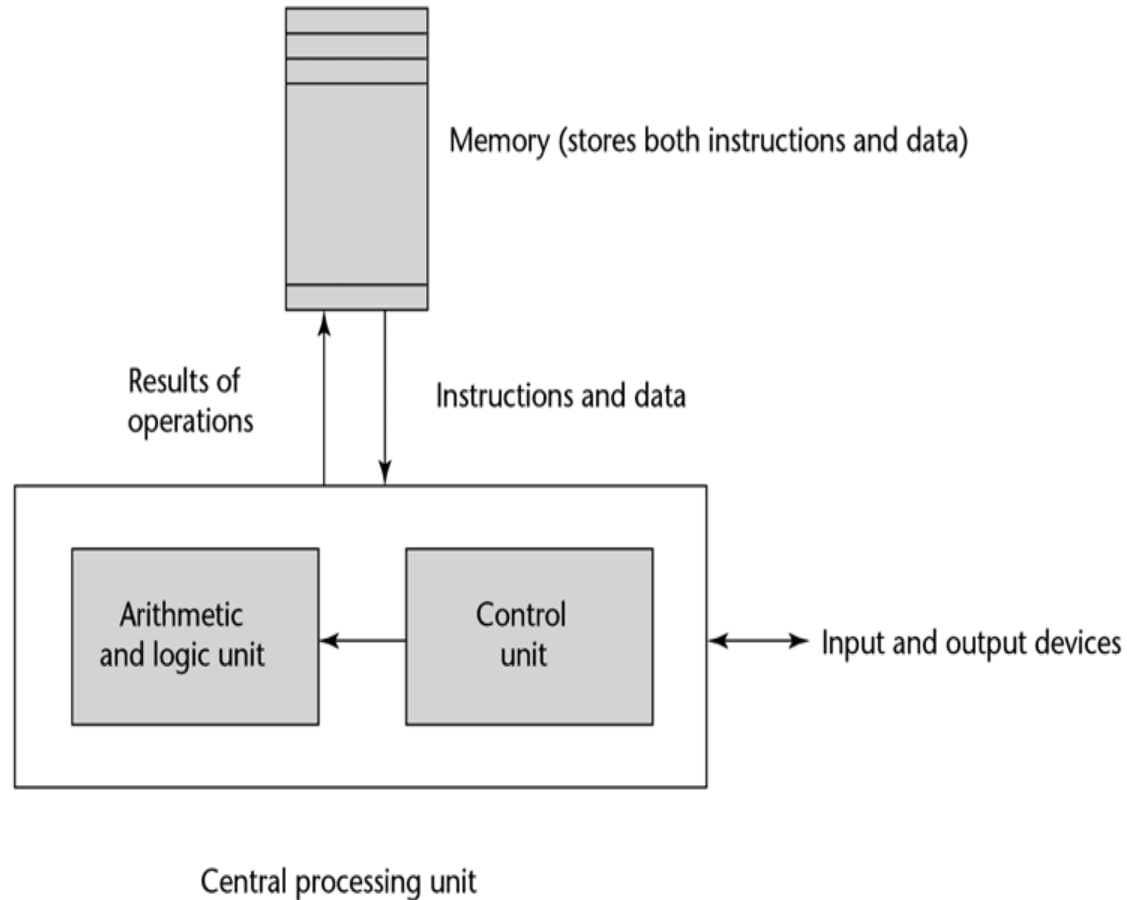
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Influences on Language Design – von Neumann Architecture

Figure 1.1

The von Neumann
computer architecture



PRINCIPLES OF PROGRAMMING LANGUAGES

Influences on Language Design – programming methodologies

- 1950s and early 1960s: Simple applications; worry about machine efficiency
- Late 1960s: Efficiency of humans became important;
 - readability, better control structures
 - structured programming
 - top-down design and step-wise refinement
- Late 1970s: Process-oriented to data-oriented
 - data abstraction
- Middle 1980s: Object-oriented programming
 - Data abstraction + inheritance + polymorphism

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Language Categories

- Imperative (Procedure oriented) Programming
- Functional Programming
- Object Oriented Programming
- Logic Programming



PRINCIPLES OF PROGRAMMING LANGUAGES

Language Design Trade-Offs

- Reliability vs. cost of execution
- Readability vs. Writability
- Writability (flexibility) vs. reliability





THANK YOU

Prafullata Kiran Auradkar
Computer Science and Engineering
prafullatak@pes.edu