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软件工程

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7.1 Programming Language

Four Generation Languages

- **First generation languages**
  - **Machine languages (0 / 1)**
- **Second generation languages**
  - **Assembly languages (symbolic machine statement)**

Four Generation Languages

- **Third generation languages**
  - **High-level languages (COBOL, Fortran, C++, Java, C, Basic, …)**
  - **One 3GL statement is equivalent to 5-10 assembler statements**
- **Fourth generation languages**
  - **Each 4GL statement intended to be equivalent to 30-50 assembler statements**
  - **VB, VC, Delphi, DBaseIV, SQL, …**

Programming Languages

- **Application domain**
  - **Scientific & Engineering Calculating**
    - ***Fortran***
    - ***Pascal***
    - ***C***
    - ***PL/1***
    - ***C++***

Programming Languages

- **Data Processing & DB Application**
  - ***COBOL***
  - ***SQL***
  - ***4GL***
- **Real-time Processing**
  - ***Assembly Language***
  - ***Ada***

Programming Languages

- **System Software**
  - ***Assembly Language***
  - ***C***
  - ***Pascal***
  - ***Ada***
- **Artificial Intelligence**
  - ***LISP***
  - ***Prolog***

Programming Languages

- **Application domain**
  - **Virtual Reality & Game & Mobile apps**
    - ***HTML5***
    - ***Java***
    - ***Objective C***
    - ***C++***
    - ***Javascript***

Choose Programming Language

- **Choice of Programming Language**
  - **Language is usually specified in contract**
- **How to choose the “most suitable” programming language?**
  - **Cost-benefit**
  - **Risk**