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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, ...



◆ 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*



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



◆ 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**