





machine language

operation

$$V_1 \times V_2 \rightarrow V_3$$

mul V₁, V₂, V₃

Assembly



Programming languages

not ambiguity

a few words + punctuation w/ defined meaning

Variables

in math: ^{one letter} X that means some number
simple

in programming: ^{one word} X
bazzle
: that means a location in memory
can change value

Selection

pick one of several options



Repetition

repeat

actions

Loop

iteration

while

for

Functions

in math

$$f(x) = mx + b$$

in computing:

also have

side

effects

routine
Subroutine
Procedure
Method
:

Programming languages

- Python — easy to write small programs can call C
- Java — easy to read large programs C#
- R — Domain-specific (statistics) mostly in FORTRAN
- C — fast to run, no constraints on programmer

COBOL

Easy for humans
to read
Programs

FORTRAN

Easy to create
fast running
math programs

LISP

Easy to analyze
with advanced
math
Slow to run

- A. Fast to create programs
- B. Fast to run program
- C. Easy to read large programs
- D. Specialize to my domain
- E. Popular