

FLCD Seminar 1: Programming Languages' Specification

Notations (meta-languages)

I.BNF (Backus-Naur Form)

Constructs:

1. Meta-linguistic variables (non-terminals) - written between < >
2. Language primitives (terminals) - written as they are, no special delimiters
3. Meta-linguistic connectors
 - a. ::= equals by definition
 - b. | alternative (OR)

General shape of a BNF definition:

`<construct> ::= expr_1 | expr_2 | ... | expr_n`, where `expr_i` is a combination of terminals and/or nonterminals, $i=1,n$

Ex.1: Specify, using BNF, all nonempty sequences of letters

Ex.2: Specify, using BNF, both signed and unsigned integers, with the following constraints:

- 0 does not have a sign
- numbers of at least two digits cannot start with 0

II.EBNF (Extended BNF)

Wirth's dialect

1. Changes to the concrete syntax of standard BNF
 - Nonterminals lose <> => they are written without delimiters
 - Terminals are written between " "
 - ::= becomes =
2. New constructs
 - {} - repetition 0 or more times
 - [] - optionality (0 or 1)
 - () - math grouping
 - (* *) - comments
 - rules end with .

Ex.3: Ex. 2 reloaded, in EBNF