**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
     1. ::= equals by definition
     2. | alternative (OR)

General shape of a BNF definition:

<construct> ::= expr\_1 | expr\_2 | ... | expr\_n, where expr\_i is a combinaton 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