1 IMP

IMP is a small lanuage of while programs, which called "imperative" lanuage. In the *programming paradigms*, *imperative lanuage* means program execution involves carrying out series of explicit commands to change state.

syntactic sets

Firstly, we give the syntactic sets associated with IMP:

- numbers **N:** the set of signed decimal numerals.
- truth value **T**
- location **Loc:** non-empty strings of letters or such strings follwed by digits.
- arithmetic expressions **Aexp**
- boolean expressions **Bexp**
- commands **Com**

We define the *formation rules* for **Aexp** by:

$$a ::= n|X|a_0 + a_1|a_0 - a_1|a_0 \times a_1.$$

The symbol "::=" should be read as "can be" (p.s. BNF isn't it?)
And for **Bexp**:

$$b ::= \mathbf{true}|\mathbf{false}|a\_0 = a\_1|a\_0 \leq a\_1|\neg b|b_0 \wedge b_1|b_0 \vee b_1$$