INTEGRATED TOOLKIT FOR PROGRAM DESIGN AND SYNTHESIS (IDS) AUTOMATED SYSTEM

Algebraic form (a formula)

$ALT = ([l > r \,|\, P] \; T(l, r \,|\, P) \; *R(P), R(P)).$

Flowgraph

Natural-linguistic (a text)

ALT =
= IF 'Elements $l > r$ at the pointer P in the array A'
    THEN "Transpose the elements l, r at the pointer
       P in the array A"
       THEN
      "Move the pointer P over the array A
       by one element to the right"
    ELSE "Move the pointer P over the array A
       by one element to the right""
    END IF
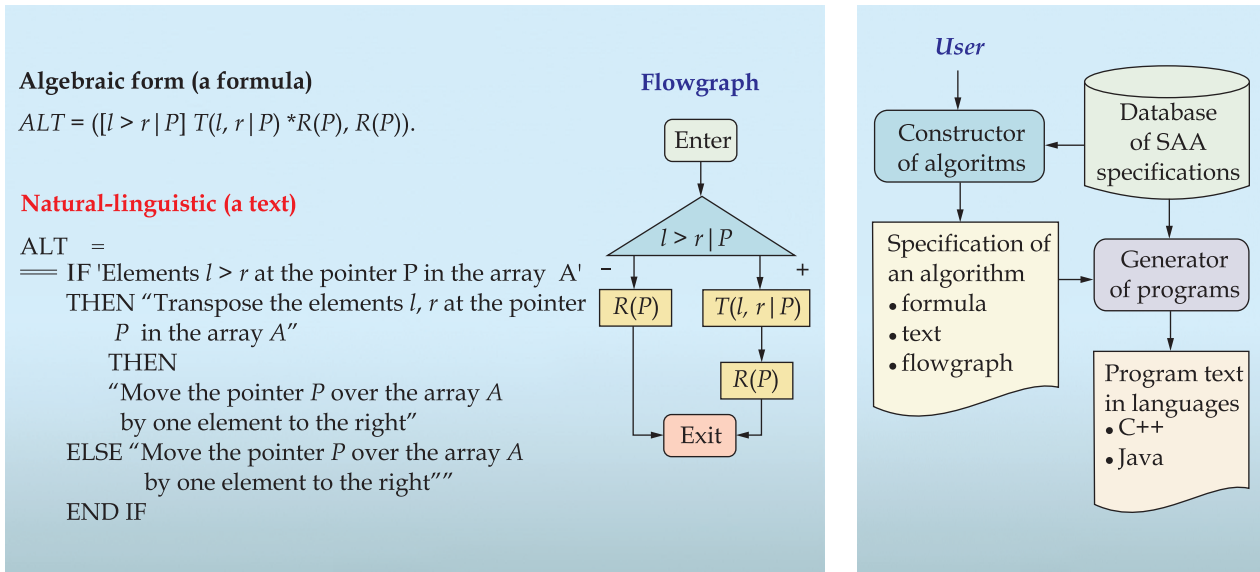
The forms of algorithm representation in IDS system (to the left), the process of program development in IDS system (to the right)

Specification

The toolkit is based on the systems of Glushkov algorithmic algebras (SAA) for formal design of algorithms in algebraic, natural-linguistic, and graph forms (the left-hand scheme). The process of software development in IDS is shown in the right-hand scheme

Areas of Application

The toolkit is to be used for automated construction of high-level specifications (schemes) of sequential and parallel algorithms and generation of programs in C++ and Java languages for various subject domains (for instance, weather forecasting)

Advantages

The system uses specifications of the algebra of algorithms represented in natural linguistic form, which facilitates understanding of algorithms and achievement of required program quality. The method for automated construction of syntactically correct algorithm schemes prevents syntax errors during algorithm design

Stage of Development. Suggestions for Commercialization

IRL7, TRL7
Toolkit installation files
and user training, upon request

IPR Protection

IPR3

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