

JIS

JAPANESE INDUSTRIAL STANDARD

**Program Constructs and
Conventions for
Their Representation**

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

1. Scope

This Japanese Industrial Standard specifies the following items concerning the manner of the expression⁽¹⁾ of the control structures of procedure-oriented algorithms:

- (1) The nature of program constructs (hereafter referred also to as "constructs") (see 5.)
- (2) The manner in which programs can be configured (see 4.)
- (3) Specifications for the structures of constructs (see 3.)
- (4) The manner in which a variety of subsets can be defined by the use of the set of the defined constructs (see 7.)

Note ⁽¹⁾ Pertaining to the symbolic representations, see Informative Reference Table.

2. Configuration of Program

The flows of all processings can generally be represented by means of a technique which appropriately combines a finite number of kinds of program constructs. A program founded on program constructs and their combining manner defined by this Standard is called a well-structured program.

A program can be viewed from several conceptual strata. In every stratum except the lowermost one, a program construct is composed of some program constructs of the lower strata.

3. Structure of Program Construct

A program construct in a certain stratum consists of a set of one or more procedure parts and a control part. The control part may be implicit. Each procedure part consists of one or more operations to be performed or may be null.

The control part, which consists of a directive and a set of conditions, specifies the manner in which the procedure parts are to be executed. The control part then activates or de-activates the procedure part(s) depending on the nature of the directive and the values of the conditions. A control part without any directive or condition is called an implicit control part.

4. Configuring of Well-Structured Program

The only way in which a well-structured program can be configured is by replacing a procedure part of one construct by a construct.

5. Kinds of Program Constructs

The kinds of program constructs shall be as follows:

5.1 Imperative Construct This construct consists of one procedure part and an implicit control part which specifies that the procedure part be executed only once;

5.2 Serial Construct This construct consists of two or more procedure parts and an implicit control part which execute these procedure parts only once in the sequence given;

5.3 Parallel Construct This construct consists of two or more procedure parts and a control part which initiates these procedure parts. Execution of the construct finishes when all the initiated procedure parts are fully executed;

5.4 Iterative Construct This construct shall be as follows:

- (1) Pre-tested Iteration This construct consists of a procedure part and a control part with one condition, and according to the value of the condition, the procedure part is executed zero or more times.

Corresponding International Standard:

ISO 8631 Information processing—Program constructs and conventions for their representation