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Australian Standard®

Information technology—Program constructs and conventions for their representation

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PREFACE

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Information technology—Program constructs and conventions for their representation

1 Scope

This International Standard is concerned with the expression of procedure oriented algorithms. It

a) defines the nature of program constructs;

b) indicates the manner in which constructs can be combined;

c) provides specifications for a set of constructs;

d) permits the definition of a variety of subsets of the defined constructs.

See annex A for symbolic representations.

2 Definition of program construct

A program construct consists of a set of one or more procedure parts and a control part which may be implicit.

Each procedure part consists of one or more operations to be performed or may be null.

The control part determines the manner in which the procedure parts are to be executed. It can consist of a directive and a set of conditions. 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. If there is neither directive nor condition, control is called implicit.

3 How constructs may be combined

The only way in which constructs can be combined to build a well-structured program is by replacing a procedure part of one construct by a complete construct.

4 Specification of constructs

4.1 Imperative construct

This construct contains one procedure part and an implicit control part which determines that the procedure part is executed exactly once.

4.2 Serial construct

This construct contains two or more procedure parts and an implicit control part which determines that the procedure parts are to be executed exactly once in the sequence given.

4.3 Parallel construct

This construct consists of two or more procedure parts and a control part which initiates these procedure parts. Execution of the construct is finished when all initiated procedure parts are completely executed.

4.4 Iterative construct

a) Pre-tested iteration

This construct consists of a procedure part and a control part with one condition, the value of which determines whether the procedure part is executed zero or more times.

b) Post-tested iteration

This construct consists of a procedure part and a control part with one condition, the value of which determines whether the procedure part is executed more than once.

c) Continuous iteration

This construct consists of a procedure part and a control part with an implicit condition which specifies that the procedure part will be repeated indefinitely.

4.5 Selective choice construct

a) Monadic selective

This construct consists of a single procedure part and a control part with one condition, the value of which determines whether or not the procedure part is to be executed.

b) Dyadic selective

This construct consists of two procedure parts and a control part with one condition, the value of which determines which one of the two procedure parts is to be executed.