International Standard **ISO** 5806

Information processing — Specification of single-hit decision tables

Traitement de l'information — Spécification des tables de décision à une réponse

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5806 was prepared by Technical Committee ISO/TC 97, *Information processing systems*.

Information processing — Specification of single-hit decision tables

1 Scope and field of application

This International Standard specifies the basic format of single-hit decision tables and the relevant definitions, together with recommended conventions for preparation and use.

NOTES

1   This International Standard is concerned with the use of decision tables in the context of the documentation of computer-based information systems. It is not concerned with other uses, such as for the representation of program statements.

2   The format and conventions for the preparation and use of "multiple-hit" decision tables are outside the scope of this International Standard.

2 References

ISO 2382, *Data processing — Vocabulary —*

Part 1: *Fundamental terms.*

Part 7: *Digital computer programming.*

3 Definitions

For the purpose of this International Standard the following definitions apply.

3.1   decision table: A table of all contingencies that are to be considered in the description of a problem together with the action to be taken (from ISO 2382/1).

3.2   "single-hit" decision table: A decision table where any set of conditions will be satisfied by one, and only one, rule.

3.3   "multiple-hit" decision table: A decision table where at least one set of conditions will be satisfied by more than one rule (see note 2 to clause 1).

3.4   rule: A single column through the condition and action entry parts of the table, defining a unique set of conditions to be satisfied and the actions to be taken in consequence. A rule is satisfied if all conditions meet the condition entries of the rule.

3.5   "ELSE"-rule: The actions to be taken for all combinations of conditions not covered by the other rules in the table.

NOTE — The use of the ELSE-rule facility is optional.

3.6   condition: A description of a contingency to be considered in the representation of a problem, or a reference to other procedures to be considered as part of the condition.

3.7   action: A description of an operation to be taken in the formulation of a solution.

3.8   condition entry: An indication of the relevance of a condition to a particular rule.

3.9   action entry: An indication of the relevance of an action to a particular rule.

3.10   condition stub: A list of all the conditions to be considered in the description of a problem.

3.11   action stub: A list of all the actions to be taken in the solution of a problem.

3.12   table heading: The symbolic name or other means of referencing a decision table from other documents. Alternatively, or in addition, a clear description of the table.

3.13   initialisation section: An optional list of unconditional actions to be executed sequentially before the first condition is examined; it may be written in the row which follows that of the table heading.

3.14   limited entry table: A decision table where all the conditions and actions are completely described without reference to the rules (see annex B, example 1).

3.15   extended entry table: A decision table where the conditions and actions are generally described but are incomplete: the specifications are completed by the values specified in the rules (see annex B, example 2).

3.16 mixed entry table: A decision table whose stub consists of rows in which limited and extended entries are written (see annex B, example 4).

3.17 complete table: A decision table where for all combinations of condition entries there exists a satisfying rule.

NOTE — In practical terms extended entry tables will include limited entries and are therefore mixed entry tables. Any extended or mixed entry table may be transformed into a limited entry table (see annex B, example 3).

4 Format

4.1 Decision tables

The general representation of a decision table is given in figure 1.

The body of the table shall be divided into four parts by double lines, drawn close (or alternatively, single thick lines): this is to separate the condition parts from the action parts, and stubs from entries.
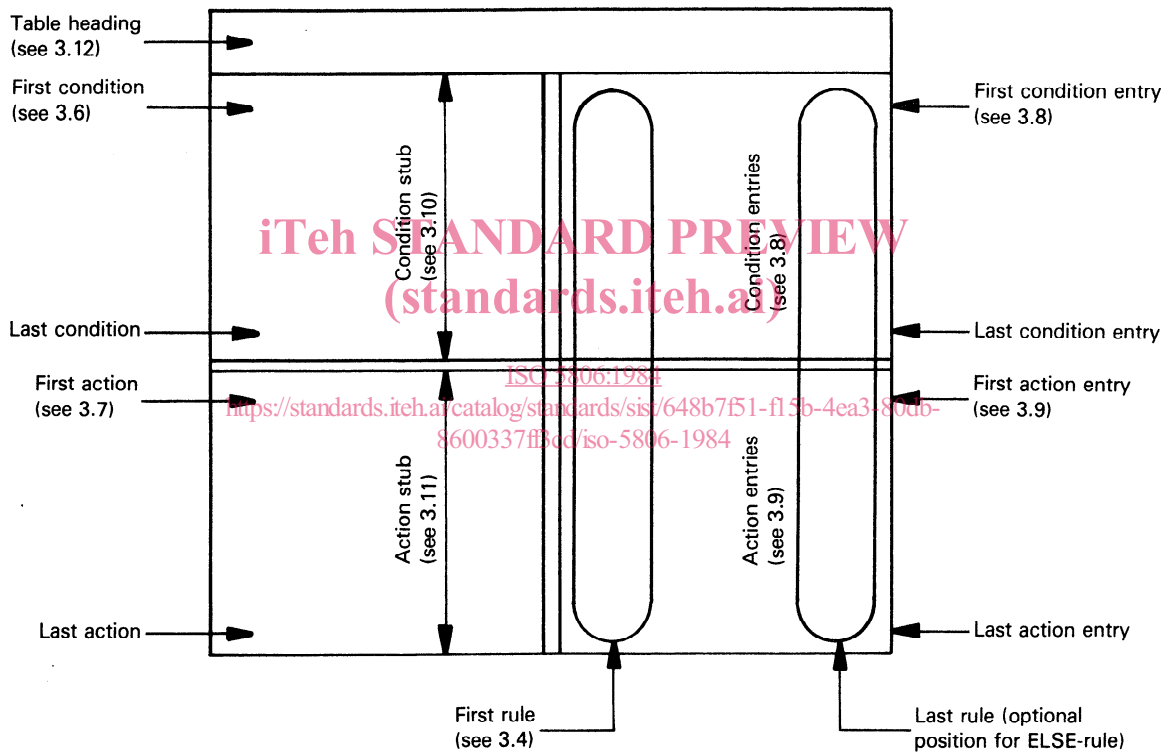

Figure 1 — General format

NOTE — The reading of a decision table may be facilitated by drawing: single thin horizontal lines between separate conditions, and similarly for separate actions; single thin vertical lines between separate rules. Conditions, actions and rules of a decision table may optionally be named, to allow a unique reference.

4.2 Condition entries

Form	Meaning within rule	Application
Y	The stated condition shall be fulfilled in satisfying this rule (Y = "Yes").	limited entries
N	The stated condition shall not be fulfilled in satisfying this rule (N = "No").	
Text, a value or a code	The text (or value or code) completes the specification of the otherwise incomplete condition for this rule; the condition shall then be fulfilled in satisfying the rule. If a code is used then it shall be described in a cross-referenced note.	extended entries
—	The stated condition is not relevant to the satisfaction of the rule: alternatively, the condition is logically impossible in the context of this rule; this may optionally be emphasized by the symbol "#" instead of "—".	any type of entry

NOTE — Any binary notation may be used to designate condition values.

4.3 Action entries

Form	Meaning within rule	Application
X	The stated action shall be taken when this rule is satisfied.	limited entries
Text, a value or a code	The text (or value or code) completes the specification of the otherwise incomplete action for this rule; the action shall be taken when the rule is satisfied. If a code is used then it shall be described in a cross-referenced note.	extended entries
—	The stated action shall not be taken when this rule is satisfied.	any type of entry

5 Relationships between table elements

5.1 Conditions

The relationship between successive conditions is the logical "AND": the first condition to be tested is assumed to be preceded by "IF". [Example: IF (first condition) AND (second condition), ..., AND (last condition)].

The order in which conditions are listed may be of importance. However, if the order is of no importance, tables may be easier to read if the more important, or "key" conditions are stated first: such a sequence might differ from the sequence preferred in programming.

5.2 Actions

The relationship between actions means successive execution: the first action to be taken is assumed to be preceded by "THEN", and the first action, the second action, ..., and the last action are successively executed.

Actions shall be stated in the order in which they are to be taken: where the execution sequence differs between rules then the actions shall be described as many times as necessary to show the various sequences. The use of sequence numbers is not recommended due to possible confusion with extended entry codes (see 4.3).

In any rule the last action to be taken should indicate where the next procedure is described unless the table is complete in itself.

5.3 Rules

The relationship between successive rules is the logical exclusive "OR".

The sequence of rules in a decision table is irrelevant: note, however, the convention that if an ELSE-rule is used then, to aid readability, it generally appears as the last rule in the table (see figure 1).

6 Relationships between decision tables

A large, and/or complex, problem may be described by a set of decision tables. There are four types of relationship, which may be combined:

    a) sequence;

    b) selection;

    c) repetition;

    d) nesting.

3

When decision tables are related then each shall be logically complete. The conditions in one table shall be tested independently of the results of condition tests in another: the effect of this requirement is that there is no relationship between the rules of related tables. This does not preclude such practices as the result of a condition test in one table being indicated through an action in that table (for example setting a flag) so that the indication may be inspected through a condition test in a subsequent table.

6.1 Sequence relationship

Two decision tables form a sequence if the first table has an immediate successor, as shown in figure 2. More than two decision tables may also form a sequence if the same general rule applies, that is, the nth is the only immediate successor to the $(n-1)$th.

It is recommended that in a sequence the preceding table shall include an action providing a pointer to the succeeding table.

This action will be the last to be taken in any rule where the succeeding table must be subsequently interpreted.

6.2 Selection relationship

Decision tables form a selection if the first table has more than one alternative immediate successor, as shown in figure 3.

It is recommended that in a selection the preceding table shall include actions providing pointers to the successive tables. The appropriate action will be the last to be taken in any rule where one of the succeeding tables must be subsequently interpreted.

6.3 Repetition relationship

A decision table may be interpreted by repetition if at least one rule requires re-examination of the condition in that table (see figure 4). Such a rule, or rules, require(s) to take as a last action some pointer to the same table.
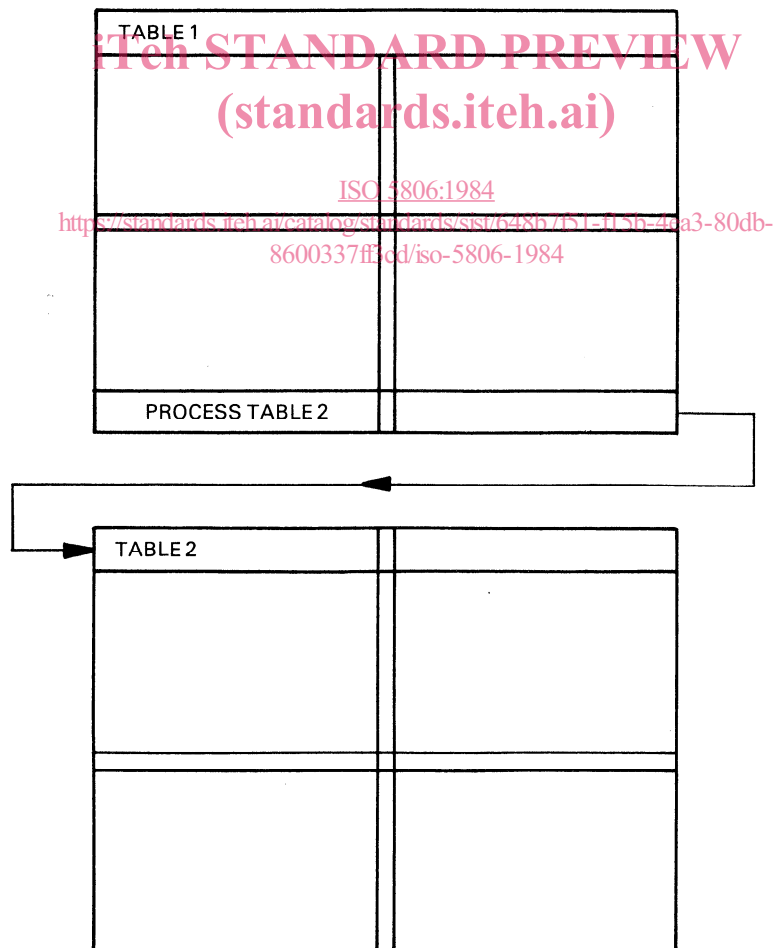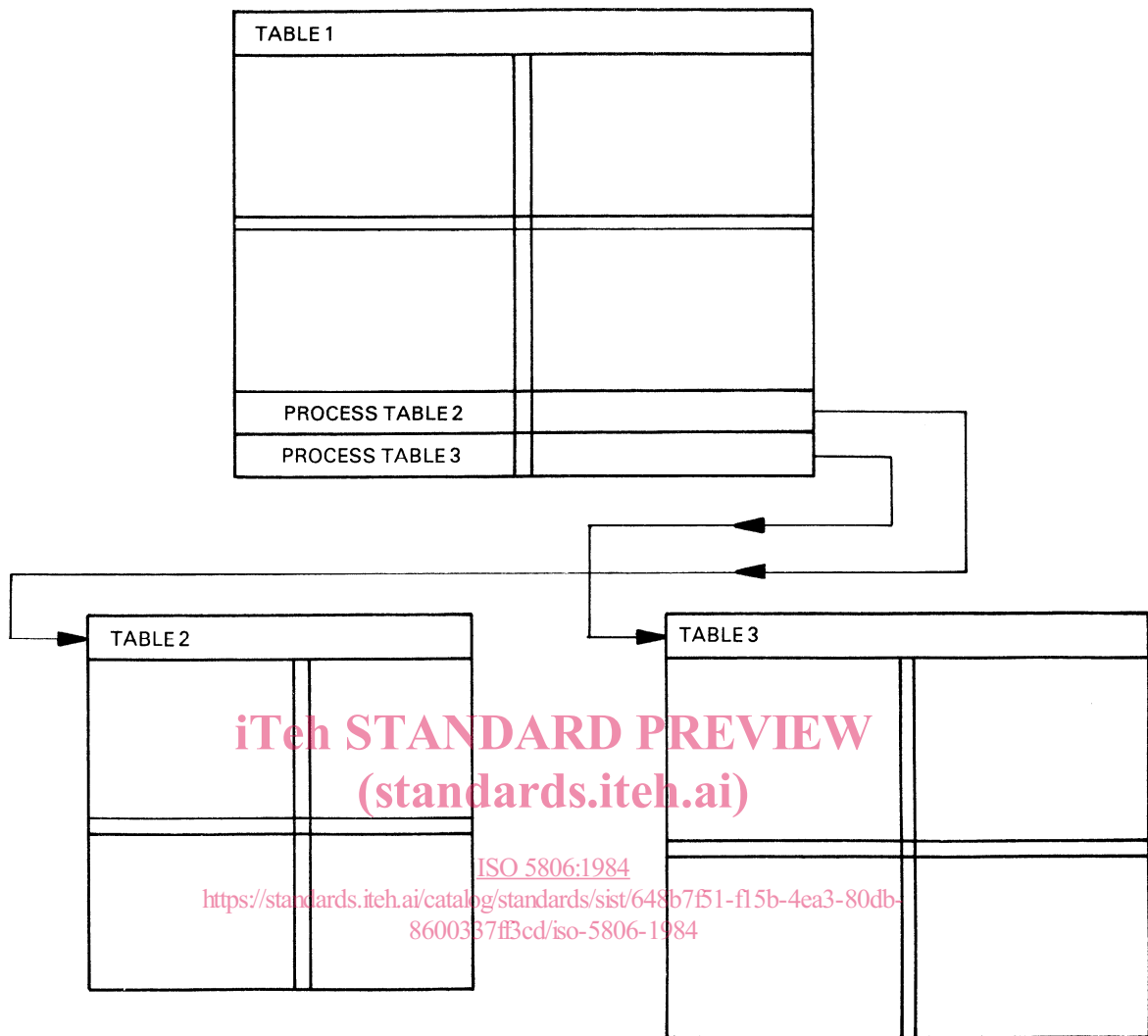

Figure 2 — Sequence of decision tables

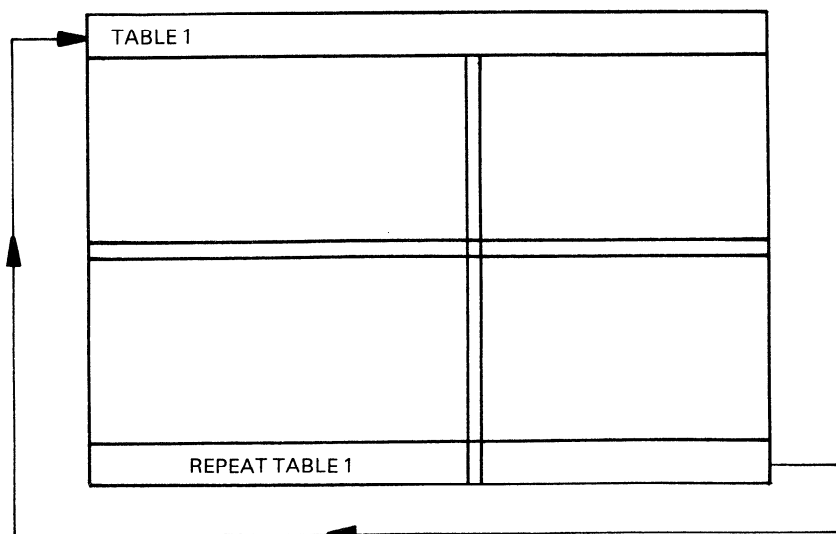Figure 3 — Selection of decision tables

Figure 4 — Repetition of a decision table

6.4 Nesting relationship

Two decision tables have a nesting relationship if one table is completely interpreted whilst testing a condition (see figure 5) or taking an action (see figure 6) in the other. The relationship is as defined for nesting routines (see ISO 2382/7).

The nesting table will require some appropriate form of pointer in the relevant condition, or action, to the nested table. The nested table will require an action which similarly points back to the nesting table. This action shall be the last taken for any rule in the nested table which is to continue the nesting relationship. The point indicated in the nesting table will be: for a condition, the condition from which the original exit was made, since the results of interpreting the nested table will be relevant to the test of that condition; for an action, the next relevant action.
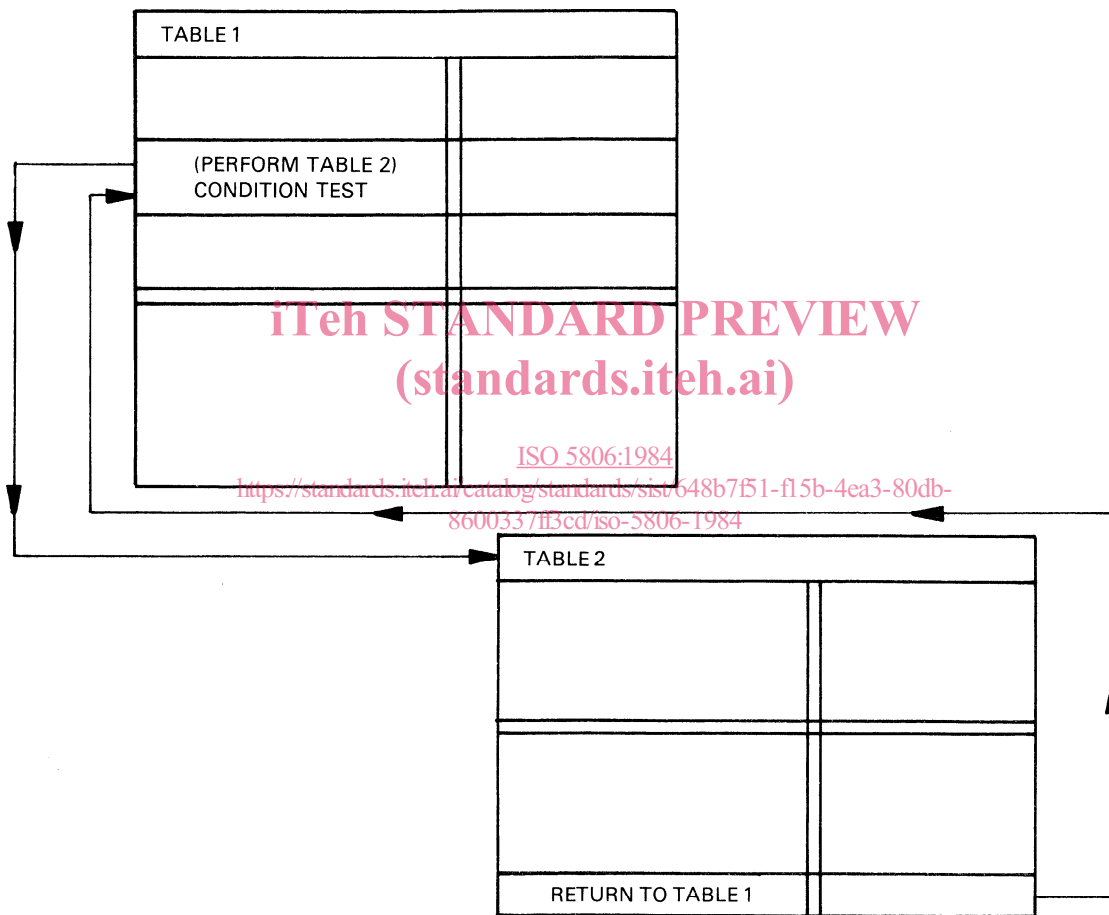
NOTE — In this example, before CONDITION TEST in TABLE 1 is tested, TABLE 2 is executed and then CONDITION TEST in TABLE 1 is tested.

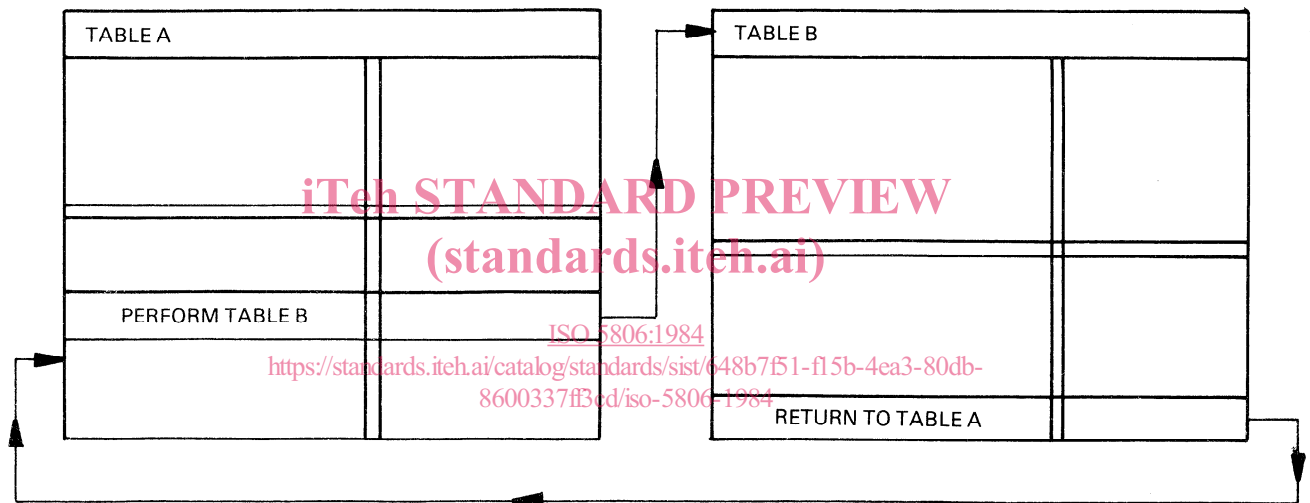Figure 5 — Nested tables (exit at condition)

Figure 6 — Nested tables (exit at action)