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**Identification cards — Integrated circuit  
cards —**

**Part 9:  
Commands for card management**

*Cartes d'identification — Cartes à circuit intégré —  
Partie 9: Commandes pour la gestion des cartes*  
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**Contents**

Page

Foreword .....	iv
Introduction .....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 Abbreviations and notation .....	1
5 Life cycle .....	2
5.1 File life cycle .....	2
6 Commands for card management .....	3
6.1 CREATE FILE command .....	3
6.2 DELETE FILE command .....	3
6.3 DEACTIVATE FILE command .....	4
6.4 ACTIVATE FILE command .....	5
6.5 TERMINATE DF command .....	5
6.6 TERMINATE EF command .....	6
6.7 TERMINATE CARD USAGE command .....	7
Annex A (informative) Examples of security attributes used for download .....	8
Bibliography .....	12

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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 7816-9 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and personal identification*.

This second edition, together with the second editions of ISO/IEC 7816-4, ISO/IEC 7816-5, ISO/IEC 7816-6 and ISO/IEC 7816-8, after an in-depth reorganization of these five parts, cancels and replaces ISO/IEC 7816-4:1995, ISO/IEC 7816-5:1994, ISO/IEC 7816-6:1996, ISO/IEC 7816-8:1999 and ISO/IEC 7816-9:2000. It also incorporates the Amendments ISO/IEC 7816-4:1995/Amd.1:1997, ISO/IEC 7816-5:1994/Amd.1:1996 and ISO/IEC 7816-6:1996/Amd.1:2000 and the Technical Corrigendum ISO/IEC 7816-6:1996/Cor.1:1998.

ISO/IEC 7816 consists of the following parts, under the general title *Identification cards — Integrated circuit cards*:

- *Part 1: Cards with contacts — Physical characteristics*
- *Part 2: Cards with contacts — Dimensions and location of the contacts*
- *Part 3: Cards with contacts — Electrical interface and transmission protocols*
- *Part 4: Organization, security and commands for interchange*
- *Part 5: Registration of application providers*
- *Part 6: Interindustry data elements for interchange*
- *Part 7: Interindustry commands for Structured Card Query Language (SCQL)*
- *Part 8: Commands for security operations*
- *Part 9: Commands for card management*
- *Part 10: Cards with contacts — Electronic signals and answer to reset for synchronous cards*
- *Part 11: Personal verification through biometric methods*
- *Part 15: Cryptographic information application*

## Introduction

ISO/IEC 7816 is a series of International Standards specifying integrated circuit cards and the use of such cards for interchange. These cards are identification cards intended for information exchange negotiated between the outside world and the integrated circuit in the card. As a result of an information exchange, the card delivers information (computation result, stored data), and/or modifies its content (data storage, event memorization).

- Five parts are specific to cards with galvanic contacts and three of them specify electrical interfaces.
  - ISO/IEC 7816-1 specifies physical characteristics for cards with contacts.
  - ISO/IEC 7816-2 specifies dimensions and location of the contacts.
  - ISO/IEC 7816-3 specifies electrical interface and transmission protocols for asynchronous cards.
  - ISO/IEC 7816-10 specifies electrical interface and answer to reset for synchronous cards.
  - ISO/IEC 7816-12 specifies electrical interface and operating procedures for USB cards.
- All the other parts are independent from the physical interface technology. They apply to cards accessed by contacts and/or by radio frequency.
  - ISO/IEC 7816-4 specifies organization, security and commands for interchange.
  - ISO/IEC 7816-5 specifies registration of application providers.
  - ISO/IEC 7816-6 specifies interindustry data elements for interchange.
  - ISO/IEC 7816-7 specifies commands for structured card query language.
  - ISO/IEC 7816-8 specifies commands for security operations.
  - ISO/IEC 7816-9 specifies commands for card management.
  - ISO/IEC 7816-11 specifies personal verification through biometric methods.
  - ISO/IEC 7816-15 specifies cryptographic information application.

ISO/IEC 10536 specifies access by close coupling. ISO/IEC 14443 and 15693 specify access by radio frequency. Such cards are also known as contactless cards.

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# Identification cards — Integrated circuit cards —

## Part 9: Commands for card management

### 1 Scope

This document specifies interindustry commands for card and file management. These commands cover the entire life cycle of the card and therefore some commands may be used before the card has been issued to the cardholder or after the card has expired.

It does not cover the internal implementation within the card and/or the outside world.

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 7816-4:—<sup>1)</sup>, *Identification cards — Integrated circuit cards — Organization, security and commands for interchange*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **secure messaging**

set of means for cryptographic protection of [parts of] command-response pairs

[ISO/IEC 7816-4]

### 4 Abbreviations and notation

For the purposes of this document, the following abbreviations apply.

APDU	application protocol data unit
FCP	file control parameters
LCS	life cycle status

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1) To be published.

## 5 Life cycle

A life cycle status may be associated with any object in the card and with the card itself. The card shall use the life cycle status in combination with additional security attributes, to determine whether an operation on an object is in accordance with a security policy. The life cycle status reflects the use of objects according to the following rules.

- If an object is in creation state, then no security attribute for that object shall apply.
- If an object is in initialisation state, then any security attribute specific to this state may apply.
- If an object is in operational state, then every associated security attribute shall apply.
- If an object is in termination state, then the value of the object shall not be modified but the object may be used as specified by its associated security attributes, e.g., it may be deleted.

Transitions between primary life cycle states are irreversible and occur only from creation to termination. In addition, the application may define secondary life cycle states: each primary state may have reversible secondary states. Changes are controlled by the card and may be performed in a pre-defined order, reflecting reversible or irreversible changes in states. The following commands for card and file management may be used for initiating a life cycle state transition.

CREATE FILE  
DELETE FILE

ACTIVATE FILE  
DEACTIVATE FILE  
TERMINATE CARD USAGE

TERMINATE EF  
TERMINATE DF

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Commands may set the value of the life cycle status when they execute. However the card shall maintain the integrity of this value in accordance with this document.

### 5.1 File life cycle

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Figure 1 is a conceptual representation of the file life cycle states and the commands that invoke a transition upon successful completion. It does not show the conditions of execution of those commands (see ISO/IEC 7816-4).

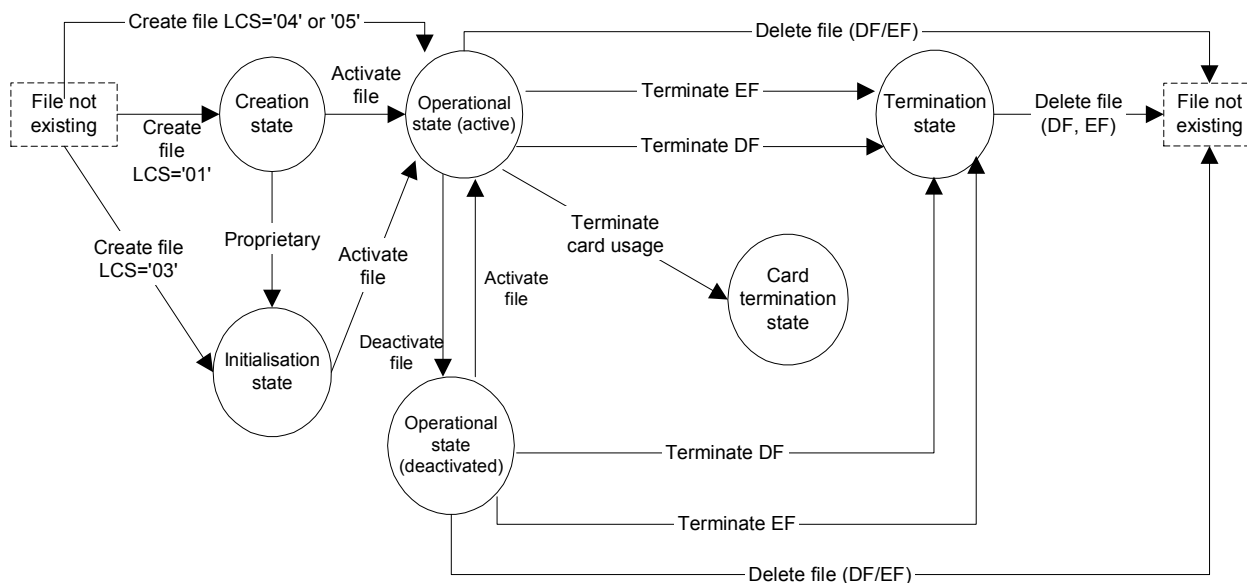


Figure 1 — Diagram for file life cycle



## 6 Commands for card management

It shall not be mandatory for all cards complying with this document to support all those commands or all the options of a supported command.

The commands can be performed only if the security status satisfies the security attributes for the command.

For these commands, bits 4 and 3 have no meaning and shall be ignored.

For each command, a non-exhaustive list of status conditions is provided, (see also ISO/IEC 7816-4).

### 6.1 CREATE FILE command

The CREATE FILE command initiates the creation of a file (DF or EF) placed immediately under the current DF. The command may allocate memory to the file it creates. The created file shall be set as the current file, unless otherwise specified.

When more than one EF with a given short EF identifier exists in the same DF, the behaviour of the card is not defined in this document.

The command can be performed only if the security status satisfies the security attributes for the current DF.

The file descriptor byte is mandatory. It indicates whether a DF or an EF is to be created.

- If a DF is created, then a DF name and / or a file identifier shall be specified.
- If an EF is created, then a file identifier and / or a short EF identifier shall be specified.

**Table 1 — CREATE FILE command-response pair**

CLA	As defined in ISO/IEC 7816-4
INS	'E0'
P1-P2	'0000' File identifier and file parameters encoded in the command data field P1 not equal to '00': File descriptor byte P2 Short EF identifier on bits 8 to 4; bits 3 to 1 proprietary
Lc field	Absent for encoding $N_c = 0$ , present for encoding $N_c > 0$
Data field	FCP template (tag '62') and possible further templates or absent
Le field	Absent for encoding $N_e = 0$

Data field	Absent
SW1-SW2	See ISO/IEC 7816-4, Tables 5 and 6 where relevant, e.g. 6982, 6A84, 6A89, 6A8A

NOTE — If number  $N_c$  is zero, then the created file has default file control parameters.

### 6.2 DELETE FILE command

The DELETE FILE command initiates the deletion of a referenced EF immediately under the current DF, or of a DF with its complete sub-tree. After successful completion of this command, the deleted file can no longer be selected. The current file after deletion of an EF is the current DF. The current DF after deletion of a DF is the parent DF, if not otherwise defined. The resources held by the file shall be released and the memory used by this file shall be set to the logical erased state.

The deletion of the file may additionally depend on the file life status. The MF shall not be deleted.

If P1-P2 = '0000' and the command data field is absent, then the command applies to a file that has been selected by the command executed directly before. Furthermore, if the selected file is selected on another logical channel the execution of the command is aborted and an appropriate error is returned in the response.

Other meanings of P1-P2, including the rules defining the uniqueness of file identifiers, are defined in the SELECT command.

**Table 2 — DELETE FILE command-response pair**

CLA	As defined in ISO/IEC 7816-4
INS	'E4'
P1-P2	'0000' Deletes current file Other values: as defined for the SELECT command (see ISO/IEC 7816-4)
L <sub>c</sub> field	Absent for encoding Nc = 0, present for encoding Nc > 0
Data field	As defined for the SELECT command (see ISO/IEC 7816-4)
L <sub>e</sub> field	Absent for encoding Ne = 0
Data field	Absent
SW1-SW2	See ISO/IEC 7816-4, Tables 5 and 6 where relevant, e.g. 6982, 6985

**6.3 DEACTIVATE FILE command**

The DEACTIVATE FILE command initiates a reversible deactivation of a file. After a successful completion of the command, in addition to the SELECT command, only the ACTIVATE FILE, DELETE FILE, TERMINATE EF and, in the case of a DF, TERMINATE DF commands shall be allowed.

When applied to a deactivated file, the SELECT command will select the file and return SW1-SW2 = '6283' as a warning status: selected file invalidated, i.e., deactivated.

If an EF is selected then the command shall only apply to the EF and not to the parent DF.

If P1-P2 = '0000' and if the command data field is absent, then the command applies to the file that has been selected by the command executed directly before. Other meanings of P1-P2, including the rules defining the uniqueness of file identifiers, are defined in the SELECT command.

Secure messaging should be used. If the response APDU is not protected, then the way to check that the function has been properly executed is not defined within the scope of ISO/IEC 7816.

For security reasons, the same functionality may be achieved by proprietary means.

**Table 3 — DEACTIVATE FILE command-response pair**

CLA	As defined in ISO/IEC 7816-4
INS	'04'
P1-P2	'0000' Deactivates current file Other values: as defined for the SELECT command (see ISO/IEC 7816-4)
L <sub>c</sub> field	Absent for encoding Nc = 0, present for encoding Nc > 0
Data field	As defined for the SELECT command (see ISO/IEC 7816-4)
L <sub>e</sub> field	Absent for encoding Ne = 0
Data field	Absent
SW1-SW2	See ISO/IEC 7816-4, Tables 5 and 6 where relevant, e.g. 6982, 6A80

## 6.4 ACTIVATE FILE command

The ACTIVATE FILE command initiates the transition of a file state from either the creation state or the initialisation state or the operational state (deactivated) to the operational state (activated).

Activating a correctly created file is always allowed. Activating a deactivated file can only be performed if the security status satisfies the security attributes defined for this file for the activation function.

If the response APDU is not protected by secure messaging, then the way to check that the function has been properly executed is not defined within the scope of ISO/IEC 7816.

If P1-P2 = '0000' and if the command data field is absent, then the command applies to the file that has been selected by the command executed directly before. Other meanings of P1-P2, including the rules defining the uniqueness of file identifiers, are defined in the SELECT command.

**Table 4 — ACTIVATE FILE command-response pair**

CLA	As defined in ISO/IEC 7816-4
INS	'44'
P1-P2	'0000' Activates current file Other values: as defined for the SELECT command (see ISO/IEC 7816-4)
L <sub>c</sub> field	Absent for encoding N <sub>c</sub> = 0, present for encoding N <sub>c</sub> > 0
Data field	As defined for the SELECT command (see ISO/IEC 7816-4)
L <sub>e</sub> field	Absent for encoding N <sub>e</sub> = 0
Data field	Absent
SW1-SW2	See ISO/IEC 7816-4, Tables 5 and 6 where relevant, e.g. 6400, 6982

## 6.5 TERMINATE DF command

The TERMINATE DF command initiates the irreversible transition of a DF into the termination state. After a successful completion of the command, the DF is in a terminated state and the functionality available from the DF and its sub-tree is reduced. The DF shall be selectable and if selected the warning status SW1-SW2 = '6285' (selected file in termination state) shall be returned. Further possible actions are not defined in ISO/IEC 7816.

NOTE — The intent of DF termination is generally to make the application unusable by the cardholder.

For security reasons, the same functionality may be achieved by proprietary means.

If P1-P2 = '0000' and if the command data field is absent, then the command applies to the file that has been selected by the command executed directly before. Other meanings of P1-P2, including the rules defining the uniqueness of file identifiers, are defined in the SELECT command.

Secure messaging should be used. If the response APDU is not protected by secure messaging, then the way to check that the function has been properly executed is not defined within the scope of ISO/IEC 7816.