

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
DIRECTORATE GENERAL OF CUSTOMS & EXCISE
MINISTRY OF FINANCE
REPUBLIC OF INDONESIA

**THE STUDY
OF
IMPROVEMENT OF CUSTOMS SYSTEM
IN
INDONESIA
FINAL REPORT**

VOLUME II CIS DESIGN

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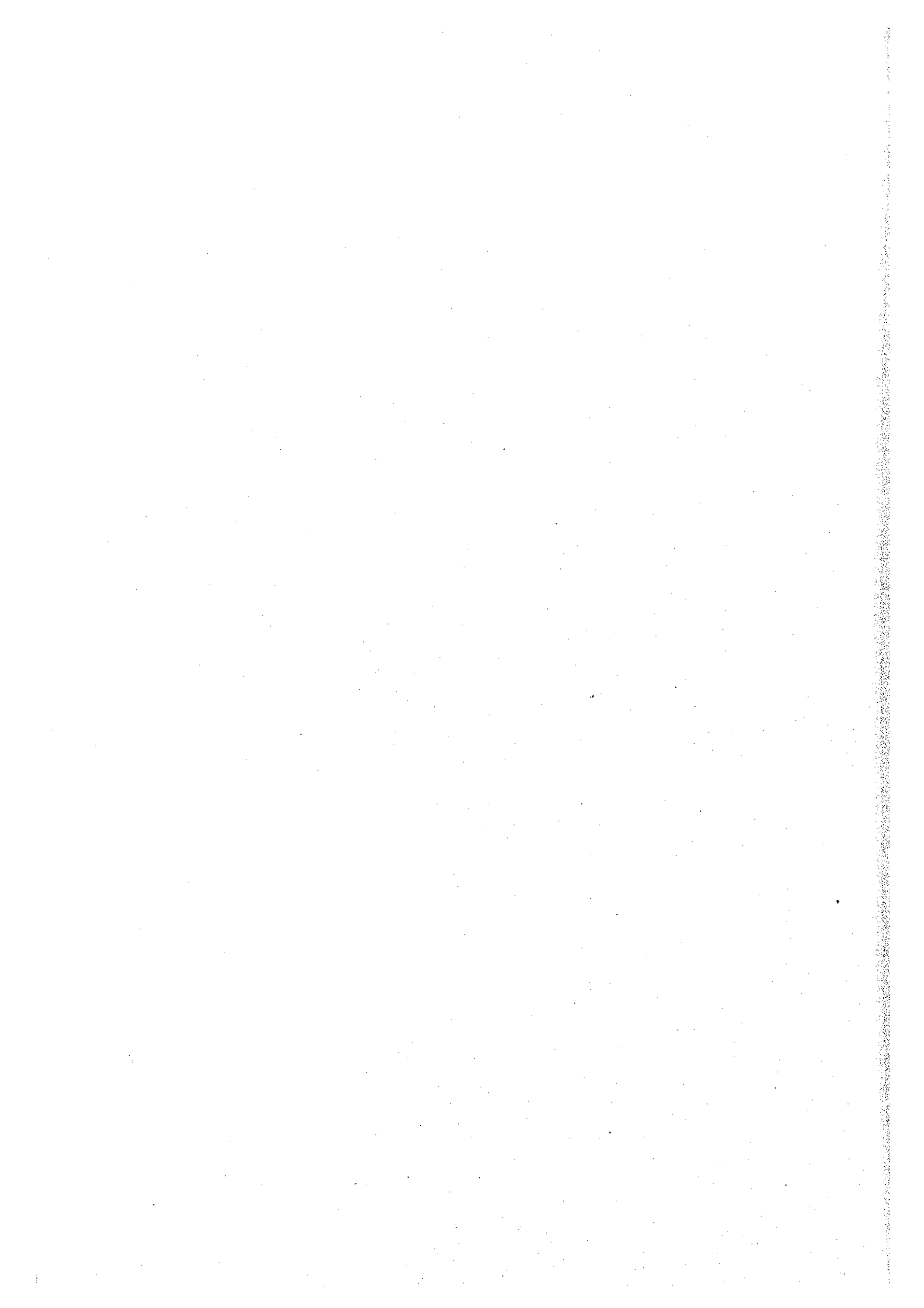


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MARCH, 1999

NTT DATA CORPORATION

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CHAPTER 1 Application Common and Standard Design

1.1 Code Design

1.1.1 Design policy and circumstances

The standards for the codes to be explained in this section are established considering:

- International standard codes, National standard codes, and DJBC Internal codes
 - International standard codes are taken from International Organization rules (e.g. United Nations, World Customs Organization) based on International Standardization Organization regulation.
 - National standard codes are taken from other institution/department codes that relate to CIS application.
 - Internal Customs-Excise codes are designed based on requirement of the business application.

- Simple and consistent structure

Codes are designed in simple and consistent structure, so it will be easy to understand.

- Number of data

Number of data affects to number of code figure.

- Usage of the codes

Based on usage of the codes, codes are divided into two categories :

 - Internal application codes

These codes are used in internal application only.
 - End user codes

These codes will be presented to application user, so it should be a familiar code for the user.

1.1.2 Code Classification

There are six types of code classification, such as Common codes, Customs Technique Job Group codes, Customs Facilitation Job Group codes, Prevention and Investigation Job Group codes, Verification and Audit Job Group codes, and Excise Job Group codes.

Tables 1.1.2-1 describes detailed information about code classification.

Table 1.1.2-1: Code Classification

| No | Code Classification | Description |
|----|--|---|
| 1 | Common codes | Codes are used by all Job Group in Customs-Excise |
| 2 | Customs Technique Job Group Codes | Codes from Customs Technique Job Group in Customs-Excise |
| 3 | Customs Facilitation Job Group codes | Codes from Customs Facilitation Job Group in Customs-Excise |
| 4 | Prevention and Investigation Job Group codes | Codes from Prevention and Investigation Job Group in Customs-Excise |
| 5 | Verification and Audit Job Group codes | Codes from Audit and Verification Job Group in Customs-Excise |
| 6 | Excise Job Group codes | Codes from Excise Job Group in Customs-Excise |

For detailed information, list of codes and structure of codes for each classification are described in Volume VI.

1.2 Standard Window design

1.2.1 Design policy and circumstances

The consistent human-machine interface is required to improve operational convenience of computer system.

The standards for the CIS application to be explained in this section are established considering:

- **Unified operation**

Standards for functions of windows are discussed: e.g. flow between several windows, function of components in a window, and so forth.

- **Consistent appearance**

Standards for appearance are discussed: e.g. layout of each component in a window, format of the data, and so forth.

1.2.2 Window attribute

CIS application is performed on the Microsoft Windows. Basic attributes of screen depend on the OS-level configuration.

The Standards for window attributes are established for resolution of screens and the maximum number of colors displayed concurrently on the screen. The possibility of the use of the CIS application on the notebook computers is taken into account.

- Screen resolution: 1024 x 768 pixel
- Color palette: 256 color

1.2.3 Window Classification

There are three types of window classification.

1.2.3.1 Top window, menu window, and application window

The window structure consists of top window, menu window for each directorate, and application window.

Figure 1.2.3.1 - 1 Shows the relation between each window.

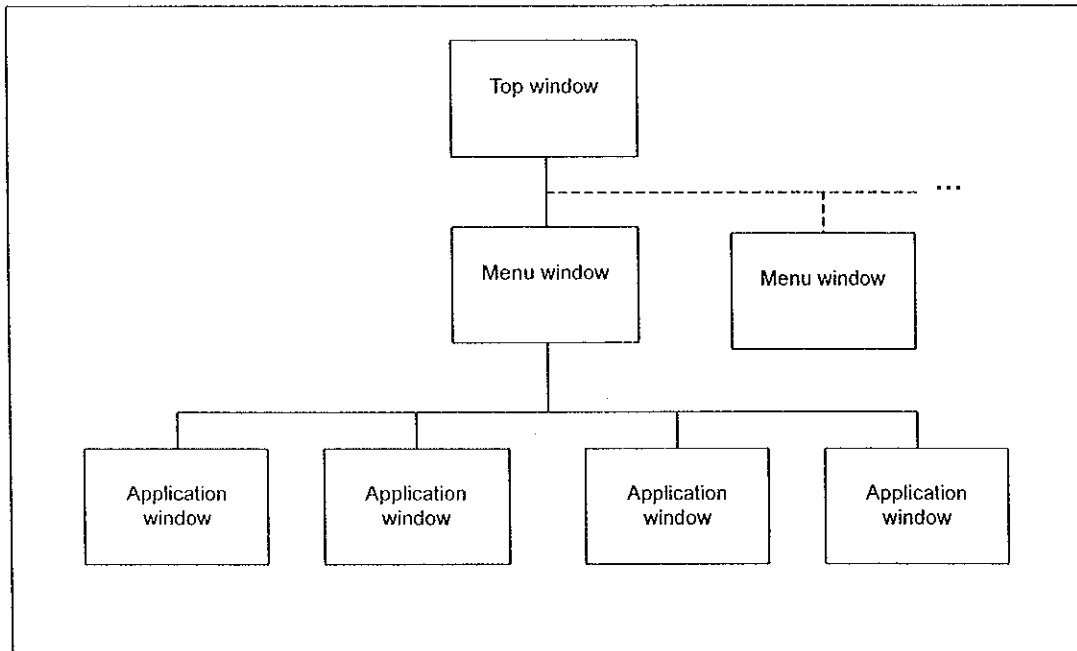


Figure 1.2.3.1-1: Window Structure

The top window is used for login window. In the login window, a user has to input the user ID and password.

The menu window provides specific processes for each directorate (Verification and Audit, Prevention and Investigation, Customs Technique, Customs Facilitation, Excise, or Revenue Planing Directorate). Each menu will be determined automatically when a user input the user ID in the login window.

The application window is a window for data processing which is registration, update, deletion, and retrieval.

1.2.3.2 Main window and popup window

The second classification of windows is “Main window” and “Pop up window.”

The Main window is used for data processing (e.g. registration, update, deletion, and retrieval).

The Pop up window is generated by the Main window for displaying messages or for requiring additional data input from users. Pop up window consists of message box and dialog box. For dialog boxes, users can input data.

Figure 1.2.3.2-1 and figure 1.2.3.2-2 show examples of main window and pop up window. Details of the parts in each window are discussed in the following development phase.

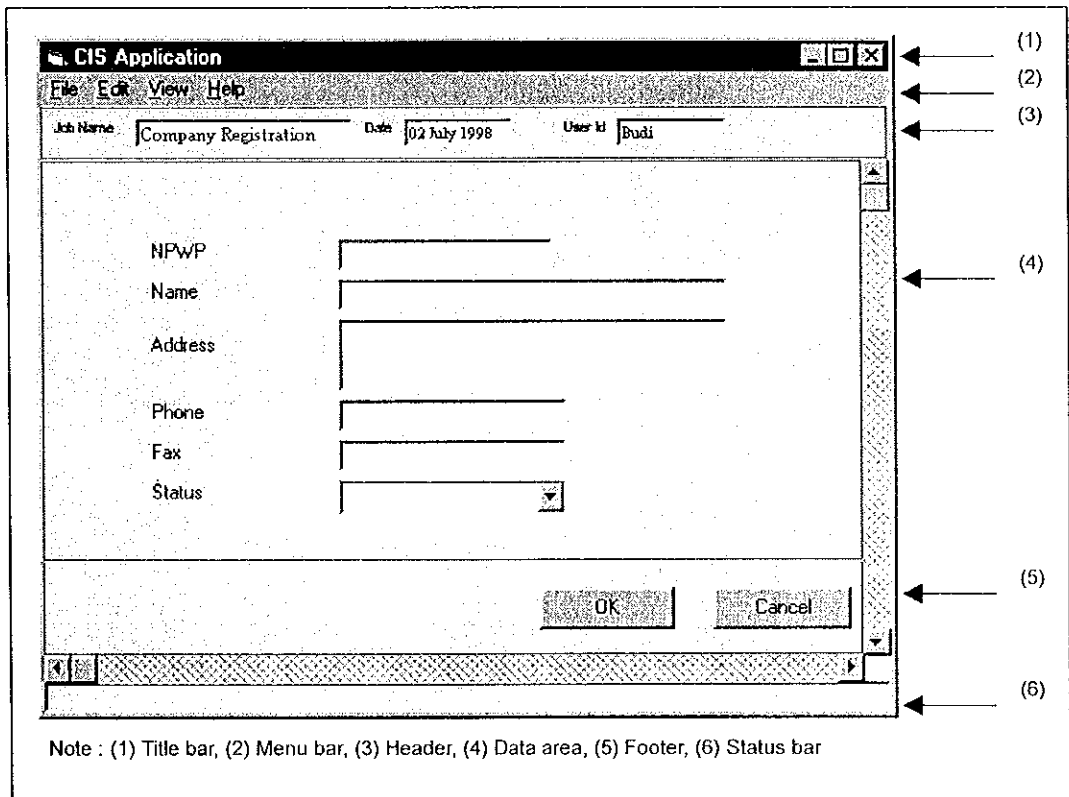


Figure 1.2.3.2-1: Main Window

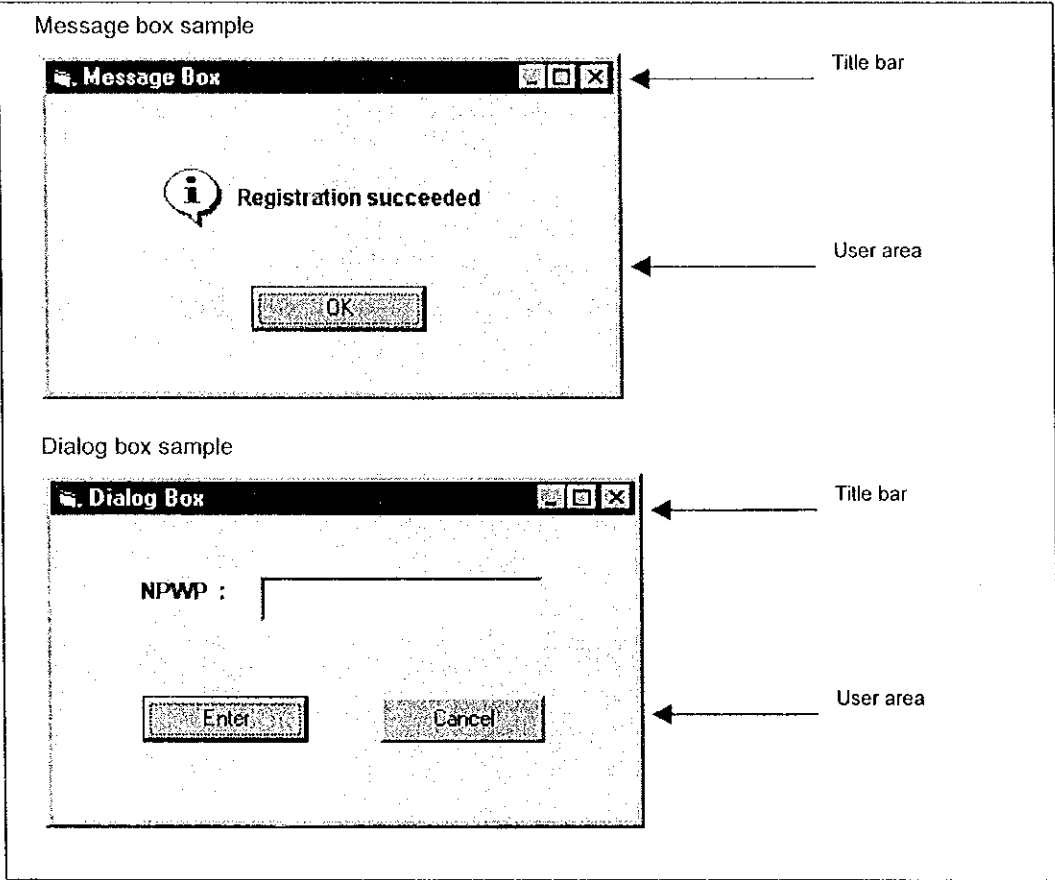


Figure 1.2.3.2-2: Pop Up Window

1.2.3.3 Types of application window

The last classification of window is list pattern, card pattern, and slip pattern.

- List Pattern

Data are presented in list format. It is possible to present more than one record in the window. In that case, each row displays one record data field in column direction and record in row direction.

Figure 1.2.3.3-1 shows the example of list pattern.

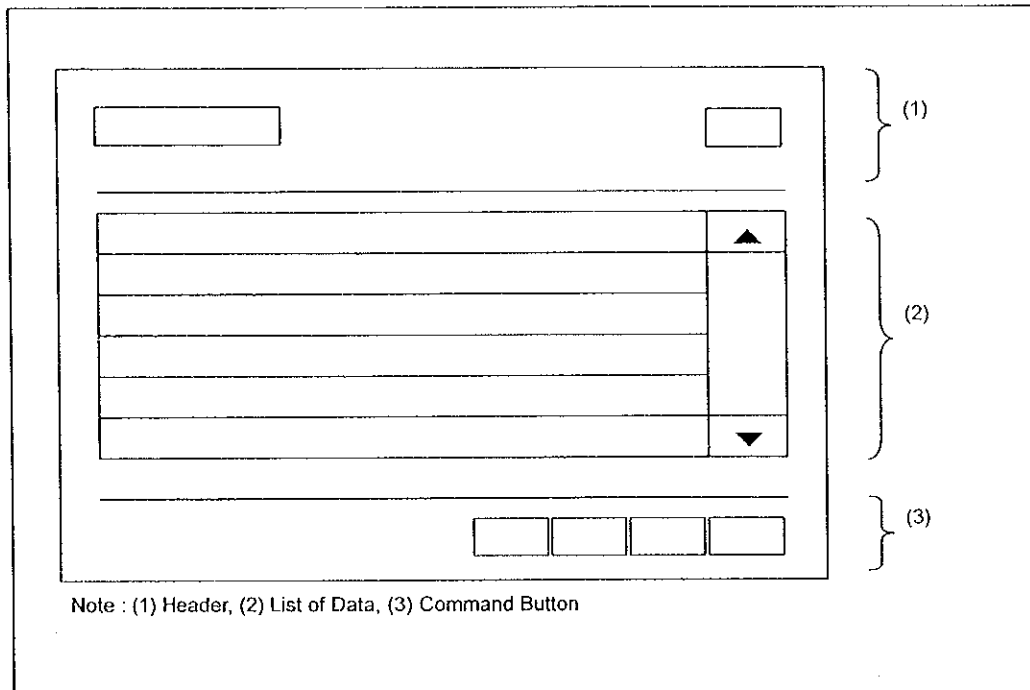


Figure 1.2.3.3-1 : List Pattern

- Card Pattern

Data are presented in card format, and one window is available for one record only.

Figure 1.2.3.3-2 shows the example of card pattern.

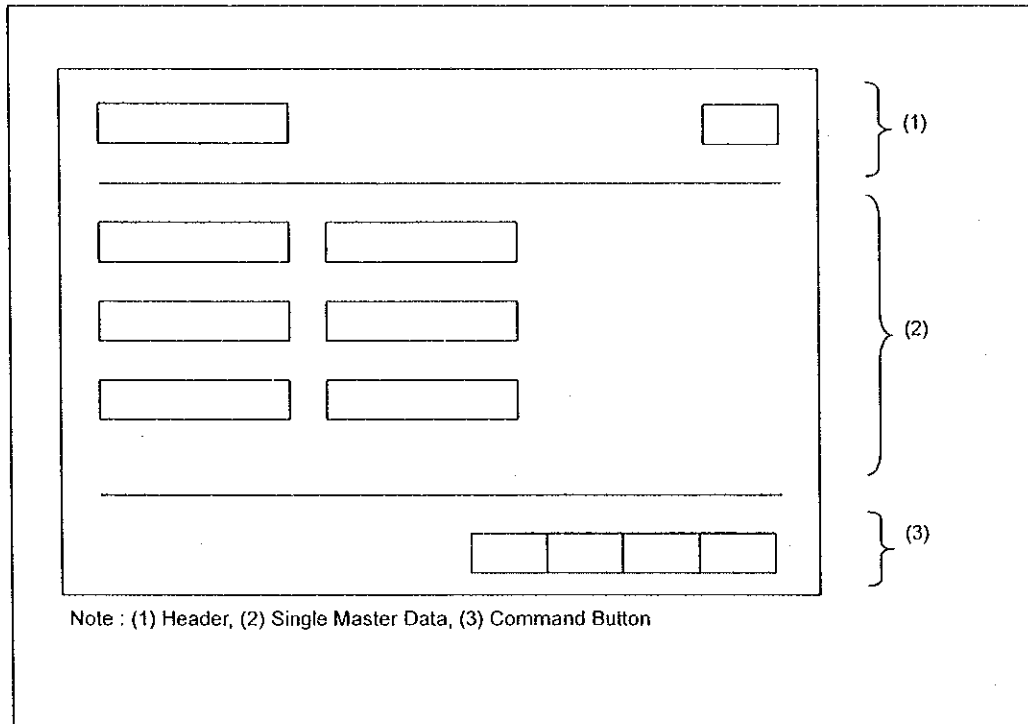


Figure 1.2.3.3-2 : Card Pattern

- Slip Pattern

Data are presented as a master-detail type. One master data record is shown in master data window part, and one or more detail data records are shown in list of detail data window part.

Figure 1.2.3.3-3 shows the example of slip pattern.

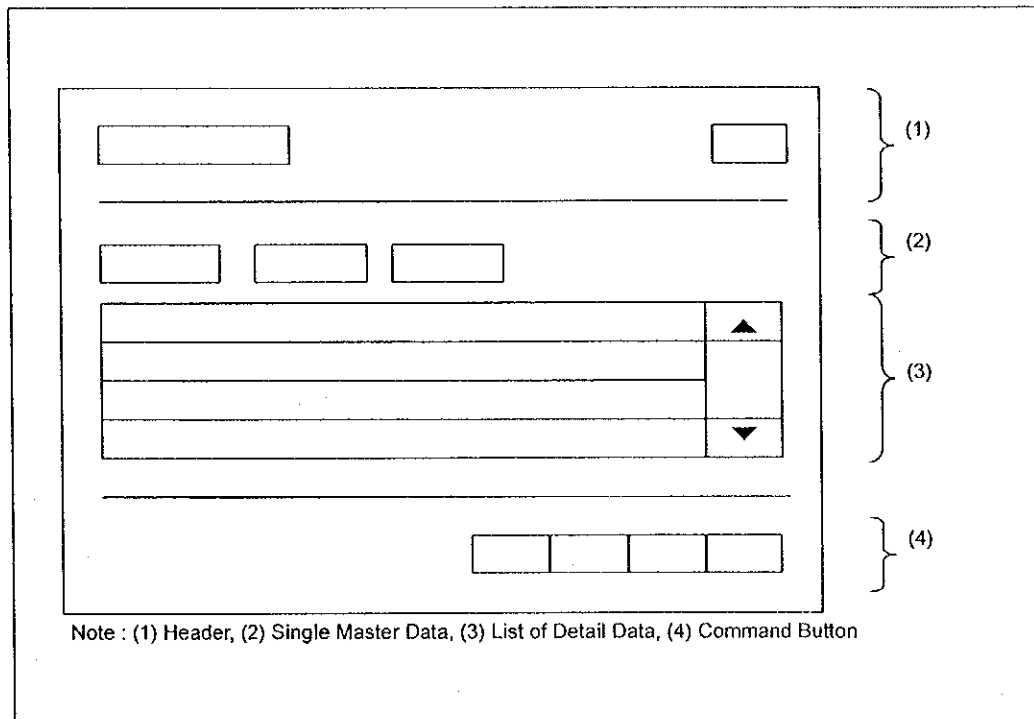


Figure 1.2.3.3-3 : Slip Pattern

1.2.3.4 Classification on Designer/2000 Templates

Each application window is designed on Designer/2000. The window templates, which involve common attributes of windows, are used for standardization. This subsection lists all window template classification as reference to design the application window.

Table 1.2.3.4-1 describes all Designer/2000 templates.

Table 1.2.3.4-1 : Designer/2000 Templates

| No. | Name | Name of Template | Usage |
|-----|---|----------------------------|--|
| 1 | Retrieval Window | CIS-RetTempl01.fmb | To input search keys to specify target record(s) for operation. |
| 2 | Registration Window (Master) | CIS-Reg Templ01.fmb | To register a new record in the database. |
| 3 | Update Window (Master) | CIS-UpdTempl01.fmb | To update an existing record in the database. |
| 4 | Deletion Window (Master) | CIS-DelTempl01.fmb | To delete an existing record from the database. |
| 5 | List Retrieval Window | CIS-LisRetTemp01.fmb | To list up all records matched with the condition input in the retrieval window. Operator selects one record in the list for detailed information. |
| 6 | Retrieval Result Window (Master) | CIS-RetResTempl01.fmb | To display one record selected either in retrieval window or list retrieval window. |
| 7 | Registration Window (Master-Detail) | CIS-RegTempl02.fmb | To register a new master record and/or new detail record(s) into the database. (Manage data in master-detail relationship.) |
| 8 | Update Window (Master-Detail) | CIS-UpdTempl02.fmb | To update an existing master record and/or existing detail record(s) in the database. (Manage data in master-detail relationship.) |
| 9 | Deletion Window (Master-Detail) | CIS-DelTempl02.fmb | To delete an existing master record and/or detail record(s) from the database. (Manage data in master-detail relationship.) |
| 10 | Retrieval Result Window (Master-Detail) | CIS-RetTempl02.fmb | To display an existing master record and/or detail record(s) in the database. (Manage data in master-detail relationship.) |
| 11 | Detail Window | CIS-DetailTempl02.fmb | To display single existing record selected in operation of data in master-detail relationship. In the case of registration and update, record can be edited. |
| 12 | Retrieval Result Window to Print | CIS-PrintRetResTempl01.fmb | To print one record selected in retrieval result window. |
| 13 | Detail Window to Print | CIS-PrintDetailTempl02.fmb | To print a single record selected in detail windows. (Manage data in master-detail relationship.) |

1.2.4 Window Layout

This subsection describes all window templates as reference to design the application window. Window templates consider common things regarding to window layout design, such as:

- Header: contains application title and window name information.
- User area: contains specific application item, depending on each job.
- Footer: contains application common button for controlling the application processes.

Following examples are intended to provide information regarding layout of each window and common command buttons. The window examples below are definition of each template on Designer/2000. Parameters listed in the following table are common to all types of templates.

Table 1.2.4-1 : Visual Attribute Name Properties

| VAN | Font | | | | | | Background |
|--------------|---------|---------|---------|---------|---------|---------|--------------|
| | Name | Size | Style | Width | Weight | Color | |
| Header_Title | Arial | 14 | Plain | Normal | Medium | White | r55g70b70 |
| Button_Title | Arial | 10 | Plain | Normal | Medium | Black | (VA) default |
| VAN (CG\$.) | default | default | Default | default | default | default | default |

In layout examples on the following pages, some changes described bellow will be made in the succeeding development phase :

- Scroll bars on the left side of record list will be moved to right side.
- Positions of command button on master part and detail part will be set to the top right of the master or detail part window.
- The different usages between combo boxes and LOVs are not clearly reflected on the deliverable of this phase. They will be used following the data structure.

1.2.4.1 CIS Main Window

Main window contains all the CIS application windows. Users select applications from menu bar based on their access right to CIS, then run the applications.

Figure 1.2.4.1-1 illustrates CIS main window and its components.

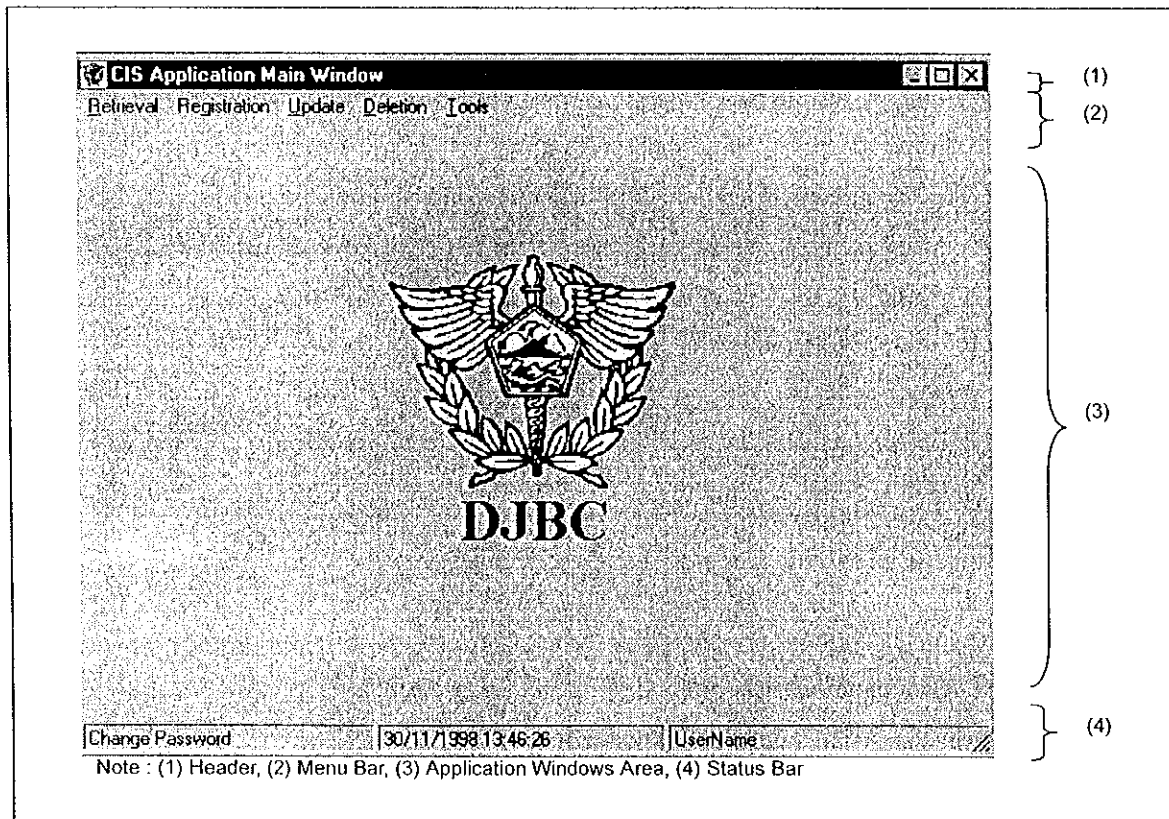


Figure 1.2.4.1-1 : Main Window

1.2.4.2 Retrieval Window

This type of window is used to input search keys. In addition to primary key, the operator can input several search keys to retrieve record(s) from the database.

Figure 1.2.4.2-1 illustrates retrieval window and its components.

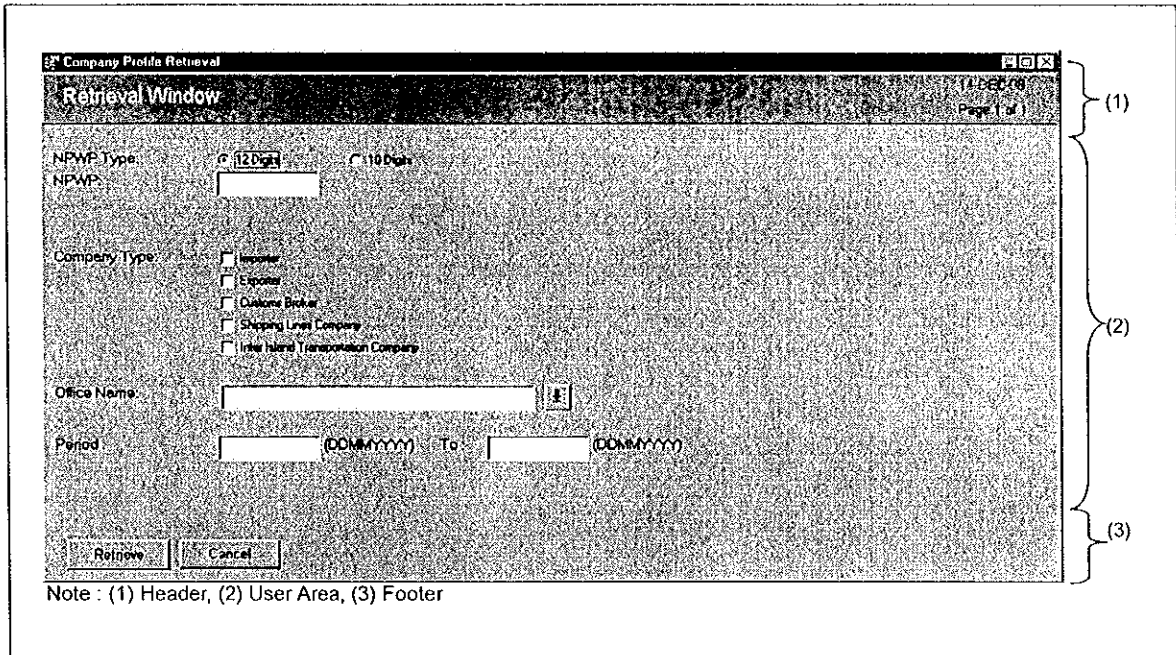


Figure 1.2.4.2-1 : Retrieval Window

Table 1.2.4.2-1 : Window Attributes

| Item | Value | |
|-------------------|--------------------|--------------|
| Template name | CIS-RetTempl01.fmb | |
| Used for | Retrieval Window | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Header | Item | VAN |
| | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| Footer | CG\$PM | Button_Title |
| | Retrieve | Button_Title |
| | Cancel | Button_Title |

1.2.4.3 Registration Window (Master)

This type of window is used to register a new record into the database.

Figure 1.2.4.3-1 illustrates registration window (master) and its components.

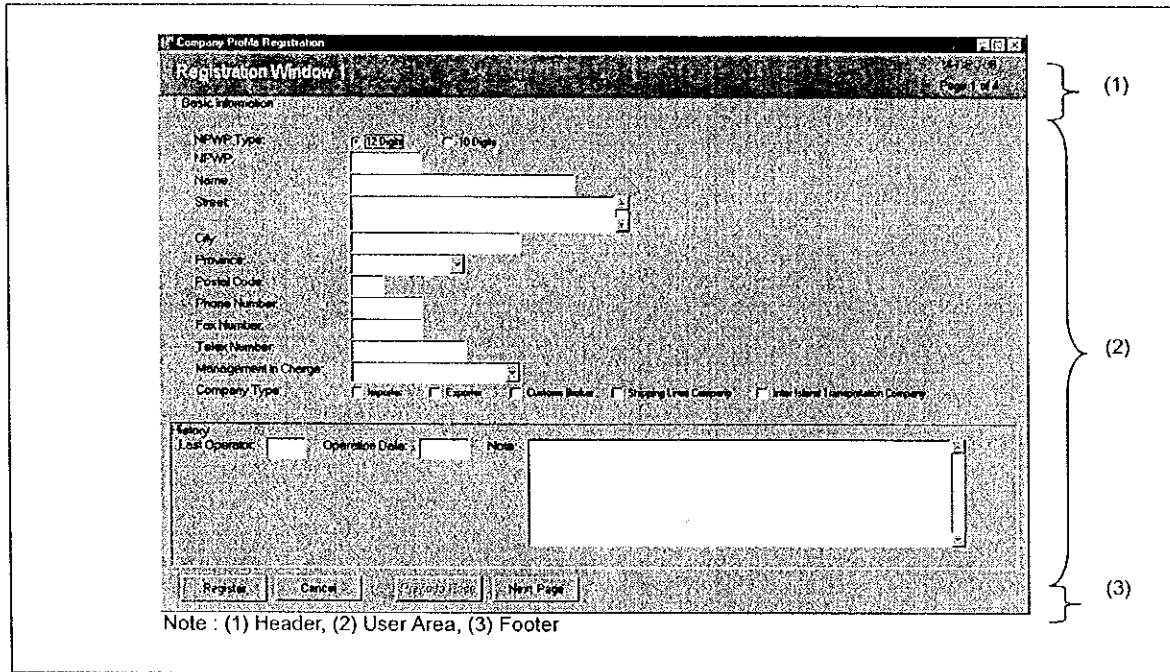


Figure 1.2.4.3-1 : Registration Window

Table 1.2.4.3-1 : Window Attributes

| Item | Value | |
|-------------------|---------------------|--------------|
| Template name | CIS-RegTempl01.fmb | |
| Used for | Registration Window | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Header | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Register | Button_Title |
| | Cancel | Button_Title |
| | Previous Page | Button_Title |
| | Next Page | Button_Title |

1.2.4.4 Update Window (Master)

This type of window is used to update an existing record in the database.

Figure 1.2.4.4-1 illustrates update window (master) and its components.

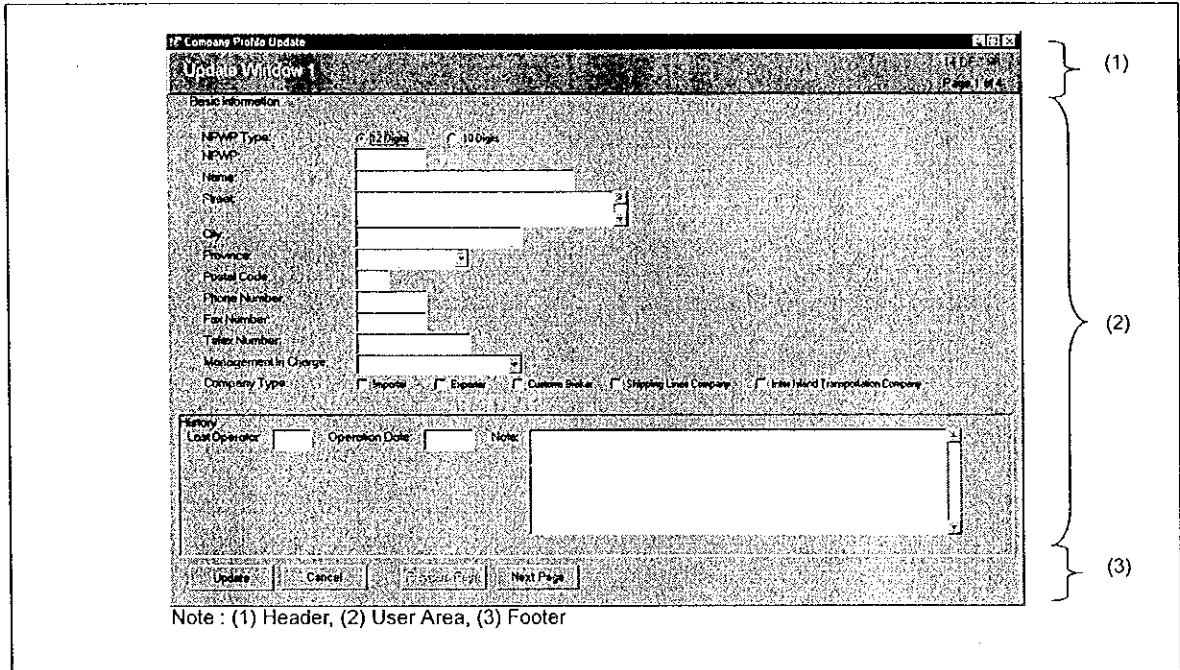


Figure 1.2.4.4-1 : Update Window

Table 1.2.4.4-1 : Window Attributes

| Item | Value | |
|-------------------|--------------------|--------------|
| Template name | CIS-UpdTempl01.fmb | |
| Used for | Update Window | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| | Items | VAN |
| Header | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Update | Button_Title |
| | Cancel | Button_Title |
| | Previous Page | Button_Title |
| | Next Page | Button_Title |

1.2.4.5 Deletion Window (Master)

This type of window is used to delete an existing record in the database.

Figure 1.2.4.5-1 illustrates deletion window (master) and its components.

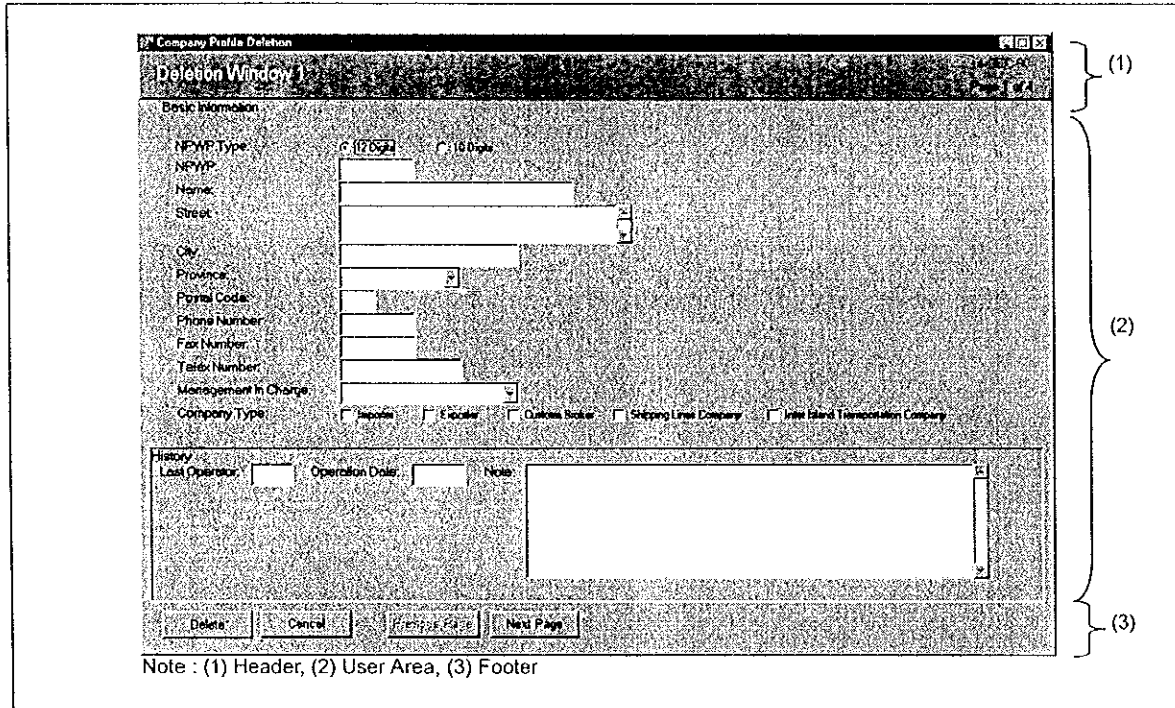


Figure 1.2.4.5-1 : Deletion Window

Table 1.2.4.5-1 : Window Attributes

| Item | Value | |
|-------------------|--------------------|--------------|
| Template name | CIS-DelTempl01.fmb | |
| Used for | Delete Window | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Header | Items | VAN |
| | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| Footer | CG\$PM | Button_Title |
| | Delete | Button_Title |
| | Cancel | Button_Title |
| | Previous Page | Button_Title |
| | Next Page | Button_Title |

1.2.4.6 List Retrieval Window

This type of window is used to list up all records matched with the condition input in the retrieval window. Operator selects one record in the list for detailed information.

Figure 1.2.4.6-1 illustrates list retrieval window and its components.

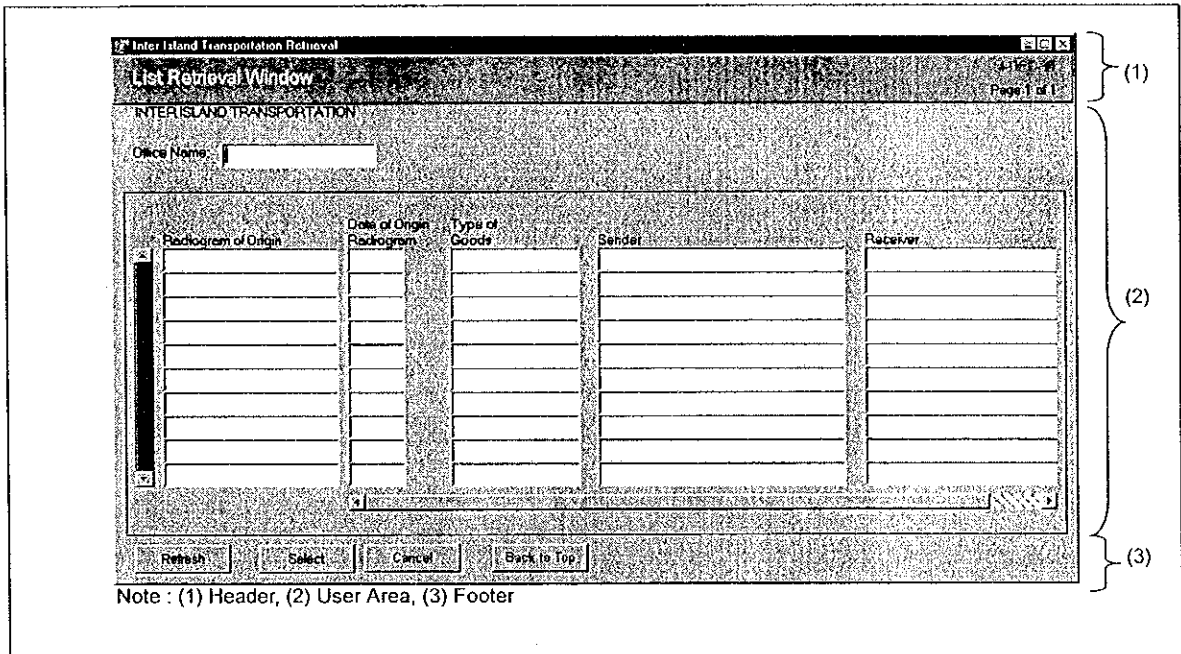


Figure 1.2.4.6-1 : List Retrieval Window

Table 1.2.4.6-1 : Window Attributes

| Item | Value | |
|-------------------|-----------------------|--------------|
| Template name | CIS-LisRetTemp01.fmb | |
| Used for | List Retrieval Window | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | Items | VAN |
| Header | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Refresh | Button_Title |
| | Select | Button_Title |
| | Cancel | Button_Title |
| | Back to Top | Button_Title |

1.2.4.7 Retrieval Result Window (Master)

This type of window is used to display one record selected either in retrieval window or list retrieval window.

Figure 1.2.4.7-1 illustrates retrieval result window (master) and its components.

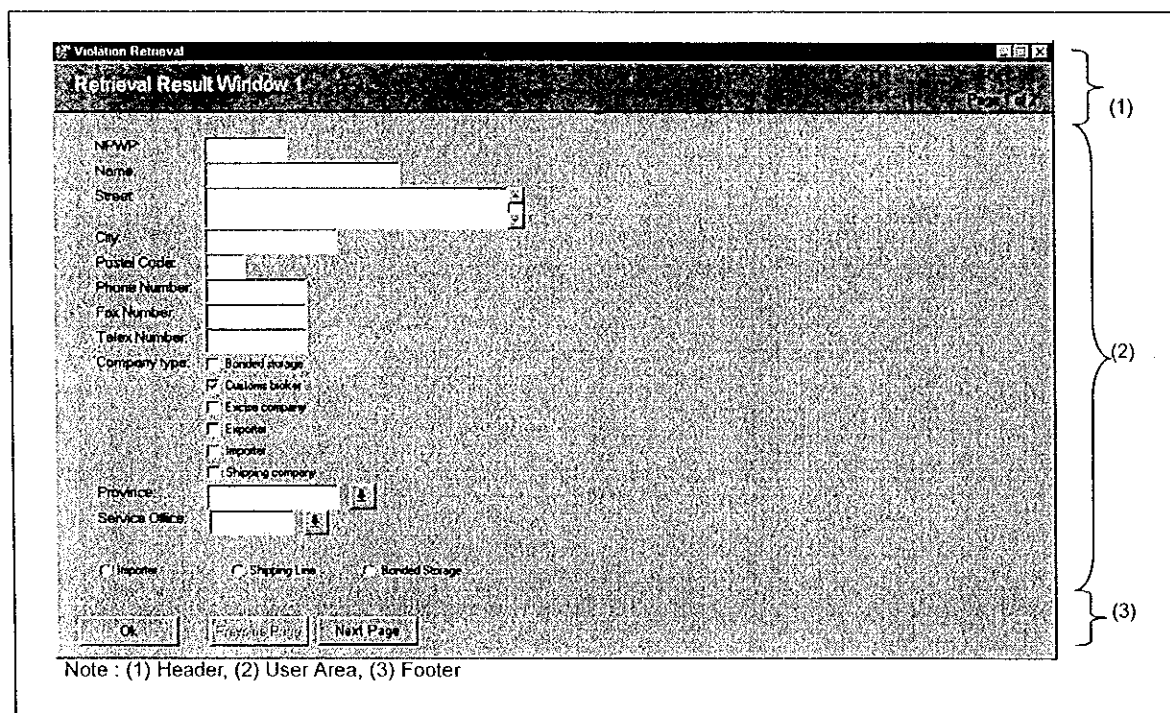


Figure 1.2.4.7-1 : Retrieval Result Window

Table 1.2.4.7-1 : Window Attributes

| Item | Value | |
|-------------------|-------------------------|--------------|
| Template name | CIS-RetResTempl01.fmb | |
| Used for | Retrieval Result Window | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Header | Items | VAN |
| | Header | --- |
| Footer | Ok | Button_Title |
| | Previous Page | Button_Title |
| | Next Page | Button_Title |

1.2.4.8 Registration Window (Master-Detail)

This type of window is used to register a new master record and/or new detail record(s) into the database. (Manage data in master-detail relationship.)

Figure 1.2.4.8-1 illustrates registration window (master-detail) and its components.

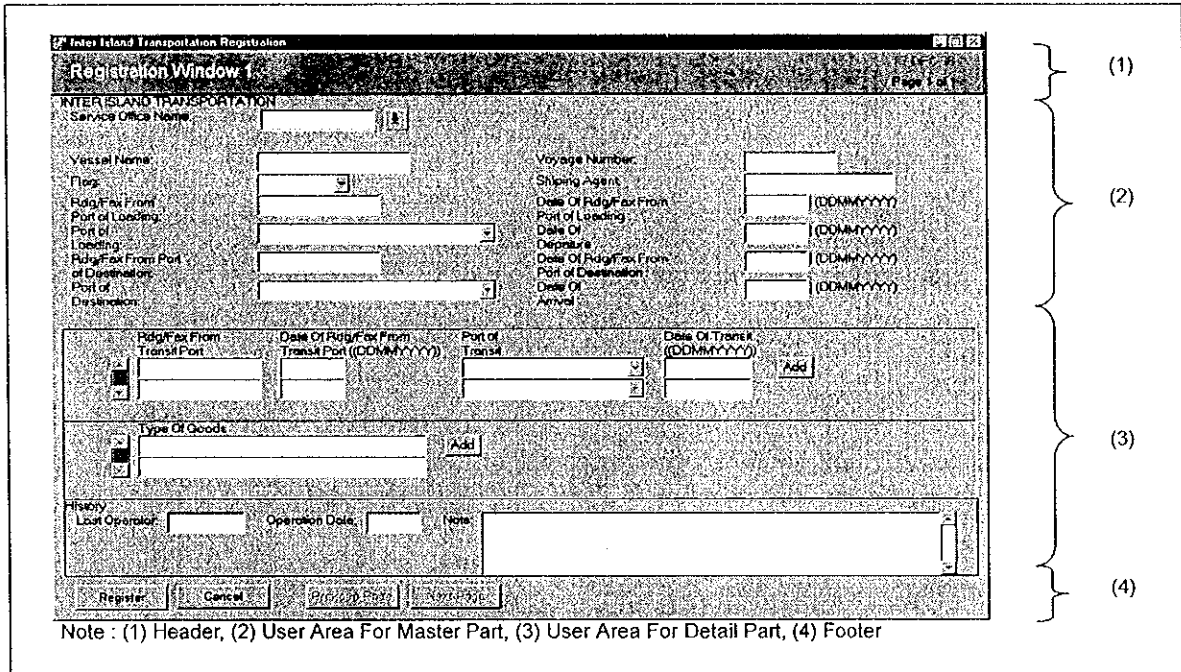


Figure 1.2.4.8-1 : Registration Window (Master-Detail)

Table 1.2.4.8-1 : Windows Attributes

| Item | Value | |
|-------------------|------------------------------|--------------|
| Template name | CIS-RegTempl02.fmb | |
| Used for | Registration Window (Master) | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | Items | VAN |
| Headers | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Register | Button_Title |
| | Cancel | Button_Title |

1.2.4.9 Update Window (Master-Detail)

This type of window is used to update an existing master record and/or existing detail record(s) in the database. (Manage data in master-detail relationship.)

Figure 1.2.4.9-1 illustrates update window (master-detail) and its components

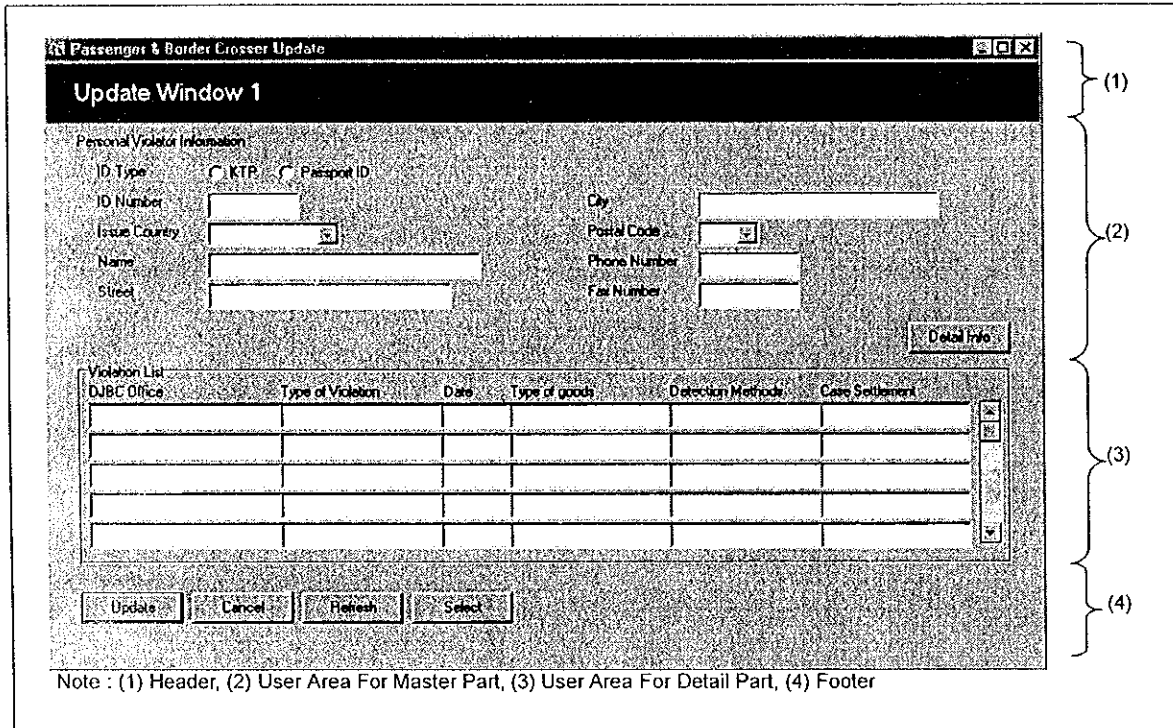


Figure 1.2.4.9-1 : Update Window (Master-Detail)

Table 1.2.4.9-1 : Windows Attributes

| Item | Value | |
|-------------------|------------------------|--------------|
| Template name | CIS-UpdTempl02.fmb | |
| Used for | Update Window (Master) | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Headers | Items | VAN |
| | CG\$MI | Header_Title |
| | CG\$DT | Button_Title |
| Footer | CG\$PM | Button_Title |
| | Update | Button_Title |
| | Cancel | Button_Title |

1.2.4.10 Deletion Window (Master-Detail)

This type of window is used to delete an existing master record and/or detail record(s) from the database. (Manage data in master-detail relationship.)

Figure 1.2.4.10-1 illustrates deletion window (master-detail) and its components.

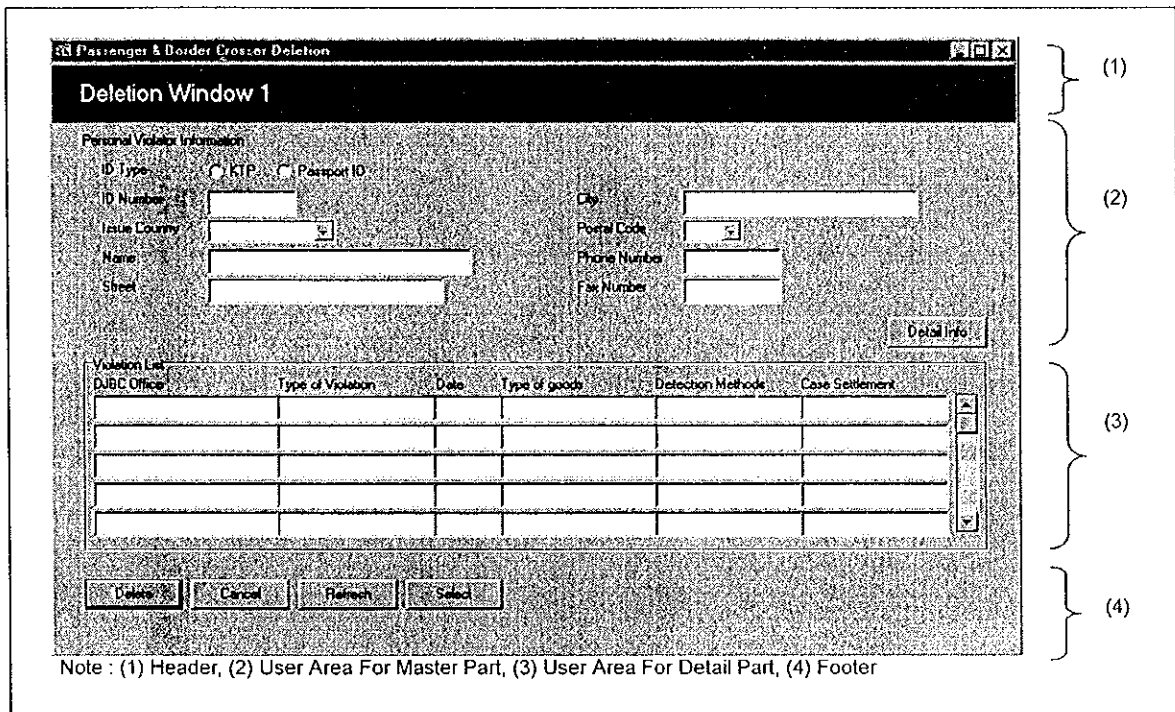


Figure 1.2.4.10-1 : Deletion Window (Master-Detail)

Table 1.2.4.10-1 : Windows Attributes

| Item | Value | |
|-------------------|------------------------|--------------|
| Template name | CIS-DelTemp102.fmb | |
| Used for | Delete Window (Master) | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | Items | VAN |
| Header | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Delete | Button_Title |
| | Cancel | Button_Title |

1.2.4.11 Retrieval Result Window (Master-Detail)

This type of window is used to display an existing master record and/or detail record(s) in the database. (Manage data in master-detail relationship.)

Figure 1.2.4.11-1 illustrates retrieval result window (master-detail) and its components.

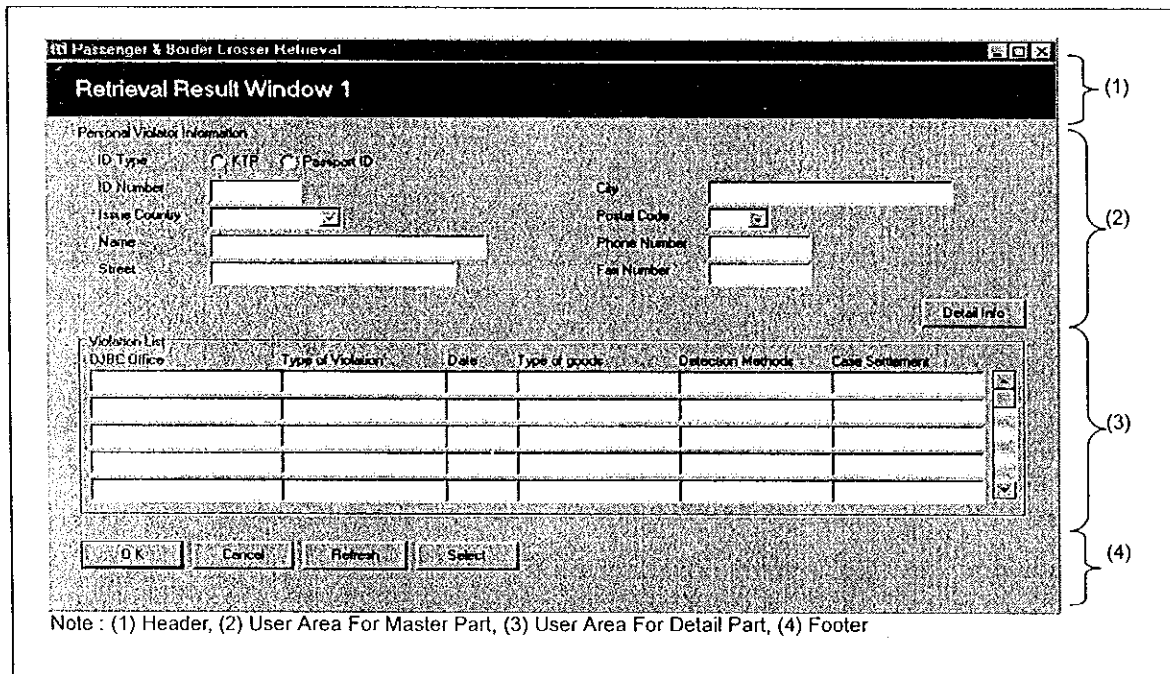


Figure 1.2.4.11-1 : Retrieval Window (Master-Detail)

Table 1.2.4.11-1 : Windows Attributes

| Item | Value | |
|-------------------|---------------------------|--------------|
| Template name | CIS-RetTemp102.fmb | |
| Used for | Retrieval Window (Master) | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Headers | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Select | Button_Title |
| | Cancel | Button_Title |

1.2.4.12 Detail Window

This type of window is used to display detailed information about single detail or master record selected in operation of data in master-detail relationship. In the case of registration and update, record can be edited.

Figure 1.2.4.12-1 illustrates detail window and its components.

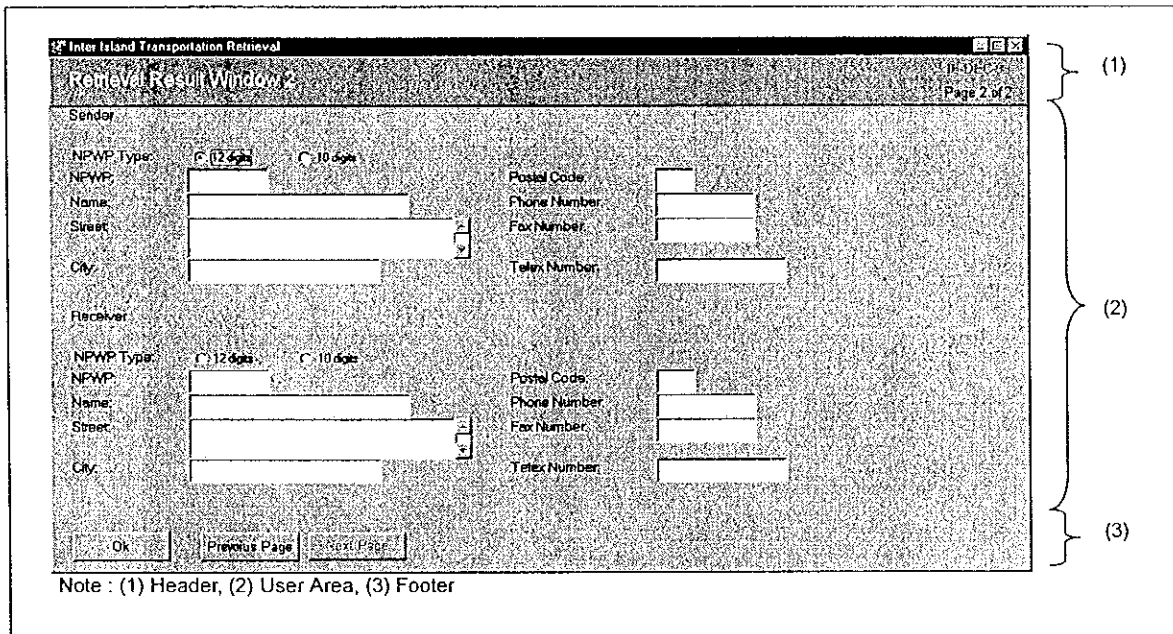


Figure 1.2.4.12-1 : Detail Window

Table 1.2.4.12-1 : Windows Attributes

| Item | Value | |
|-------------------|------------------------|--------------|
| Template name | CIS-DetailTempl02.fmb | |
| Used for | Detail Window (Master) | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Header | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Ok | Button_Title |
| | Cancel | Button_Title |
| | Previous Page | Button_Title |
| | Next Page | Button_Title |

1.2.4.13 Retrieval Result Window to Print

This type of window is to print one record selected in retrieval result window. Operator selects one record in the list for printing.

Figure 1.2.4.13-1 illustrates retrieval result window to print and its components.

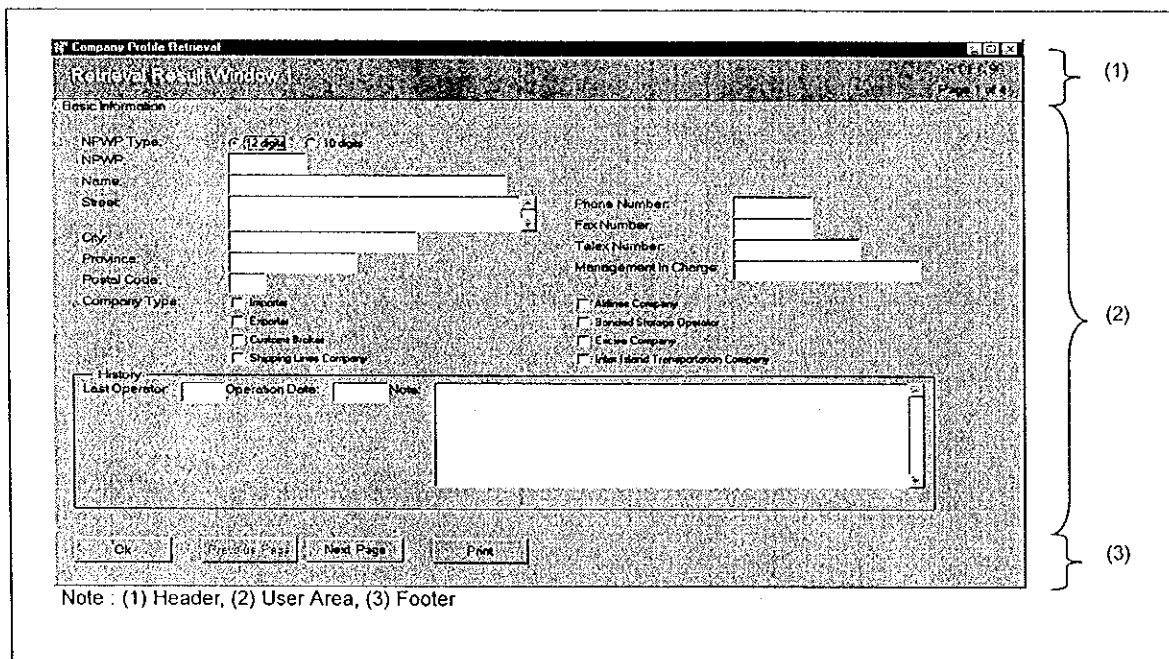


Figure 1.2.4.13-1 : List Retrieval Window to Print

Table 1.2.4.13-1 : Windows Attributes

| Item | Value | |
|-------------------|--------------------------------|--------------|
| Template name | CIS-PrintRetResTempl01.fmb | |
| Used for | List Retrieval Window to Print | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Header | CG\$M1 | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Ok | Button_Title |
| | Previous Page | Button_Title |
| | Next Page | Button_Title |
| | Print | Button_Title |

1.2.4.14 Detail Window to Print

This type of window is to print a single record selected in detail windows.

1.2.4.14-1 illustrates detailed window to print and its components.

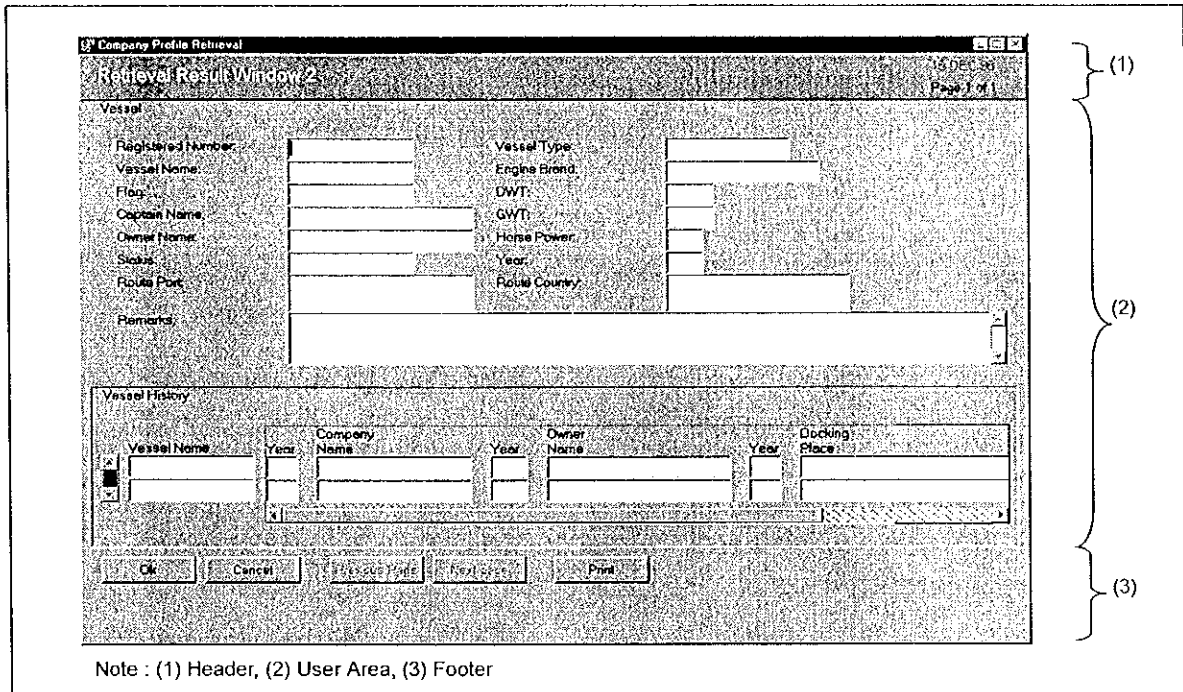


Figure 1.2.4.14-1 : Detail Window to Print

Table 1.2.4.14-1 : Windows Attributes




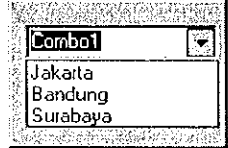

| Item | Value | |
|-------------------|----------------------------|--------------|
| Template name | CIS-PrintDetailTempl02.fmb | |
| Used for | Detail Window to Print | |
| Width | 100 | |
| Coordinate System | | |
| Type | Real | |
| Unit | Inch | |
| Width | 0.1 | |
| Height | 0.25 | |
| Common Parts | | |
| Header | CG\$MI | Header_Title |
| | CG\$DT | Button_Title |
| | CG\$PM | Button_Title |
| Footer | Ok | Button_Title |
| | Cancel | Button_Title |
| | Previous Page | Button_Title |
| | Next Page | Button_Title |
| | Print | Button_Title |




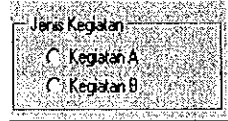
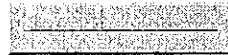
1.2.5 GUI Items

Designer/2000 has some types of GUI items or object that can be used in designing a window application.

Table 1.2.5-1 describes the standard types of GUI items that are available in window application design.

Table 1.2.5-1 : Standard GUI Item Type

| No | GUI Item Name | Sample | Remark |
|----|---------------|---|---|
| 1 | Check Box |  | A check box is a two-state GUI item that indicates whether a certain condition or value is on or off, true or false. The display state of a check box is always either checked or unchecked. |
| 2 | Radio button |  | A radio button is displayed as small, circle with a text label on the right. The display state of a radio button is always either empty or not empty that shows selected or deselected condition or value is on or off, true or false. One set of radio buttons represents a fixed number of options that are mutually exclusive. Each option is represented by an individual radio button. At any time, only one radio button can be selected in the set. Selecting another radio button will deselect the currently selected one. |
| 3 | Text box |  | Text box is an interface GUI item that displays operator-enterable text in a field in either single or multi-line display. |
| 4 | Combo box |  | Combo box appears as an empty box with an icon on the right. The user can enter text directly into the combo field or click the list icon that displays a list of available values. |
| 5 | LOV |  | LOV stands for List of Values. An LOV is a scrollable popup window that provides the operator with either a single or multi-column selection list. LOV are used to display columns with relation to other table. |

| No | GUI Item Name | Sample | Remark |
|----|----------------|---|--|
| 6 | List box |  | <p>List box item appears as a rectangular box which displays a fixed number of values. When the list box contains values that cannot be displayed (due to the displayable area of the item), a vertical scroll bar appears, allowing the operator to view and select undisplayed values.</p> |
| 7 | Command button |  | <p>Command button is an interface item that an operator selects to execute commands or initiates actions. Command buttons can be used to initiate navigation, display List of Value (LOV), invoke an editor or window, commit data in a form, issue a query, or virtually any other operation that can be coded with PL/SQL. A command button is displayed as a rectangle with a text label inside that describes the button's action.</p> |
| 8 | Prompt |  | <p>Prompt specifies the text label that displays for a text box, command button, check box, or radio button in a radio group.</p> |
| 9 | Item group |  | <p>An item group is collected items in one located area. The grouping is done by items that have a relation or similar purposes.</p> |
| 10 | Line |  | <p>A line is used to distinguish master part items from the detail of master part items in a Master-Detail window layout.</p> |

1.2.6 Standards of Window Flow

A window flow is movement or changing process of the window.

There are two things to be considered regarding the design of the window flow:

- Types of window flow

This defines several types of flow from one window to the other (between two windows).

- Flow within suites of window related to transaction type, data structure, and requirements from business process.

- Standard flow following types of transaction

Based on transaction type, window flow is divided into four, i.e. registration, update, deletion, and retrieval.

- Registration

This operation adds new record(s) into the database.

- Update

This operation overwrites the existing record(s) in the database.

- Deletion

This operation removes the existing record(s) from the database.

- Retrieval

This operation extracts information of the existing record(s) from the database.

- Standard flow following data structure

Standard flow is divided into two categories in accordance with the structure of data to be managed and master and master-detail types.

Figure 1.2.6-1 shows E-R diagrams of master type and master-detail type data structure.

For detailed explanation of E-R diagrams, please refer to 1.8.3.1.

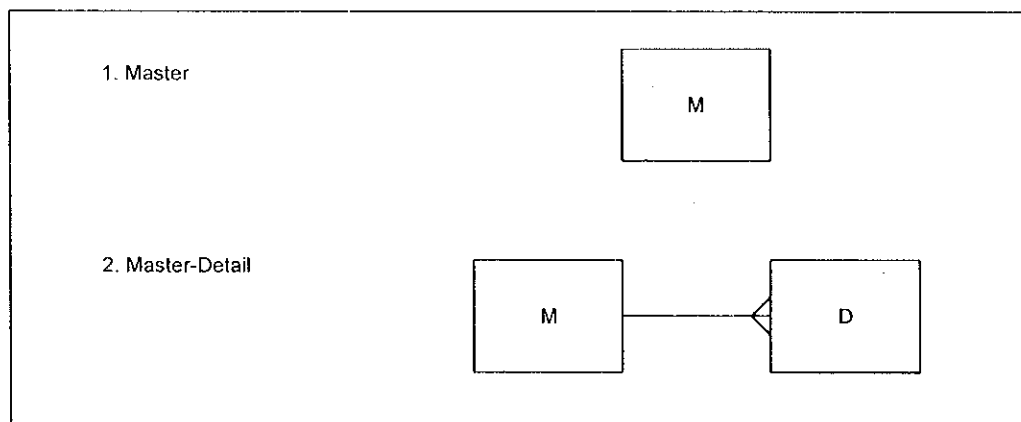


Figure 1.2.6-1 : Master and Master-Detail Data Structure

The structures of target data are divided into two categories :

- Master Type

The suite of windows operates information within single table.

- Master-Detail type

The suite of windows operates information of master-detail type relationship. For this type of data, the flow is divided into two more types in accordance with requirements of whether to maintain (modify) the master table or not.

Table 1.2.6-1 shows established standards of flows within the suites of windows in view of the above discussion. Each content of the table shows the section where each type of flow is explained.

Table 1.2.6-1: Standards of window flow

| Object of the Operation | Registration | Update | Deletion | Retrieval |
|--|--------------|------------|------------|------------|
| Master | 1.2.6.2 1) | 1.2.6.3 1) | 1.2.6.4 1) | 1.2.6.5 1) |
| Master-detail (without maintenance of master record) | 1.2.6.2 2) | 1.2.6.3 2) | 1.2.6.4 2) | 1.2.6.5 2) |
| Master-detail (with Maintenance of master record) | 1.2.6.2 3) | 1.2.6.3 3) | 1.2.6.4 3) | (*1) |

Note : (1) Maintenance of table does not exist in retrieval operation.

1.2.6.1 Types of window flow

There are three types of window flows, i.e. basic flow, modeless flow, and modal flow.

1) Basic Flow

Screen A makes screen B active. While screen B is active, Screen A is not active.

Figure 1.2.6.1-1 illustrates the basic flow type.

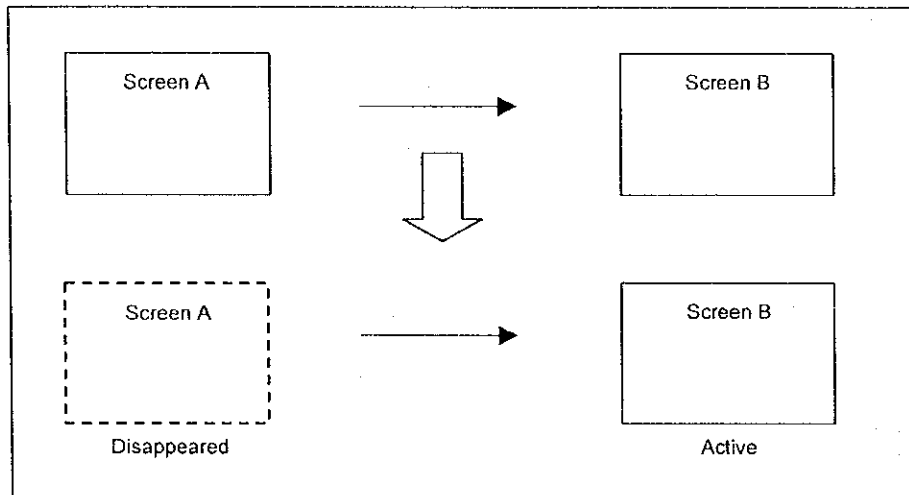


Figure 1.2.6.1-1 : Basic Flow

2) Modeless Flow

Both screen A and screen B can be opened together at the same time. Both screens are active. Even if screen B is closed, screen A is still active.

Figure 1.2.6.1-2 illustrates the modeless flow type.

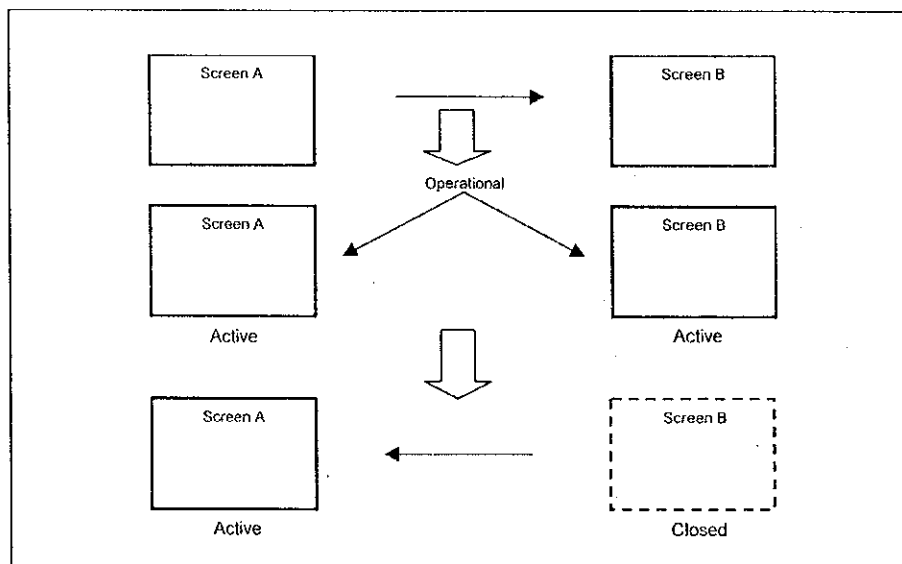


Figure 1.2.6.1-2 : Modeless Flow

3) Modal Flow

Screen A makes screen B active. While screen B is active, screen A is not active but remains. Screen A will be active when screen B is closed.

Figure 1.2.6.1-3 illustrates the modal flow type.

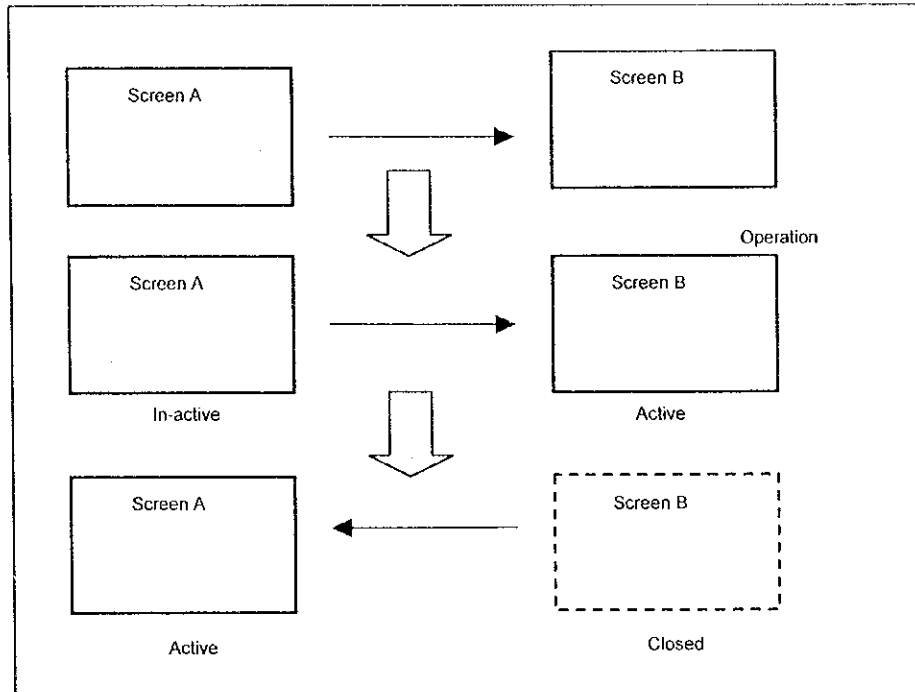


Figure 1.2.6.1-3 : Modal Flow

1.2.6.2 Registration

A registration is a transaction for registering one or more records to a table. Inputting the primary key of the record to be registered is required.

Based on data structure and application requirement, registration transaction window flow is divided into three, i.e. registration for master table, registration for the data of master-detail type without maintenance of master record, and registration for the data of master-detail type with maintenance of master record.

1) Registration (Master)

This type of flow is used for registering new record into single master table.

Figure 1.2.6.2-1 illustrates the flow and table 1.2.6.2-1 explains each action triggered by buttons in the figure.

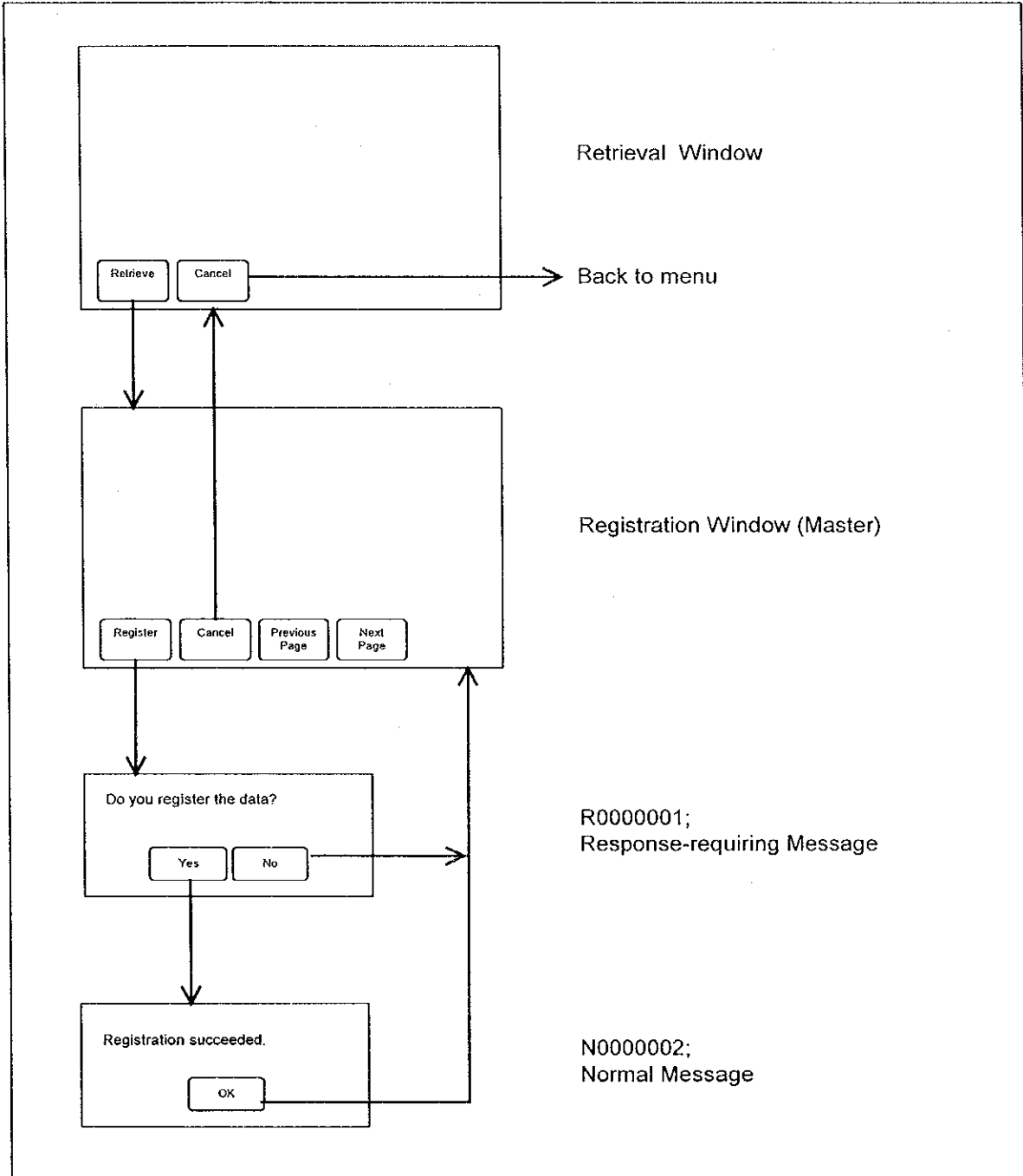


Figure 1.2.6.2-1 : Registration window flow for master

Table 1.2.6.2-1 : Button Function

| Process | Window/Message Box | Button Name | Function |
|-----------------------|--------------------------------------|---------------|--|
| Registration (Master) | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Registration Window (Master). |
| | | Cancel | Back to Menu Window. |
| | Registration Window (Master) | Register | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |
| | R0000001; Response-requiring Message | Yes | Access to the database, insert the data and commit. Then display Normal Message. |
| | | No | Back to Registration Window (Master) without accessing to the database. |
| | N0000002; Normal Message | OK | Back to Registration Window (Master). |

2) Registration (Master-Detail) without maintenance of master record

This type of flow is used for registering record into a detail table of master-detail data structure.

Figure 1.2.6.2-2 illustrates the flow and table 1.2.6.2-2 explains each action triggered by buttons in the figure.

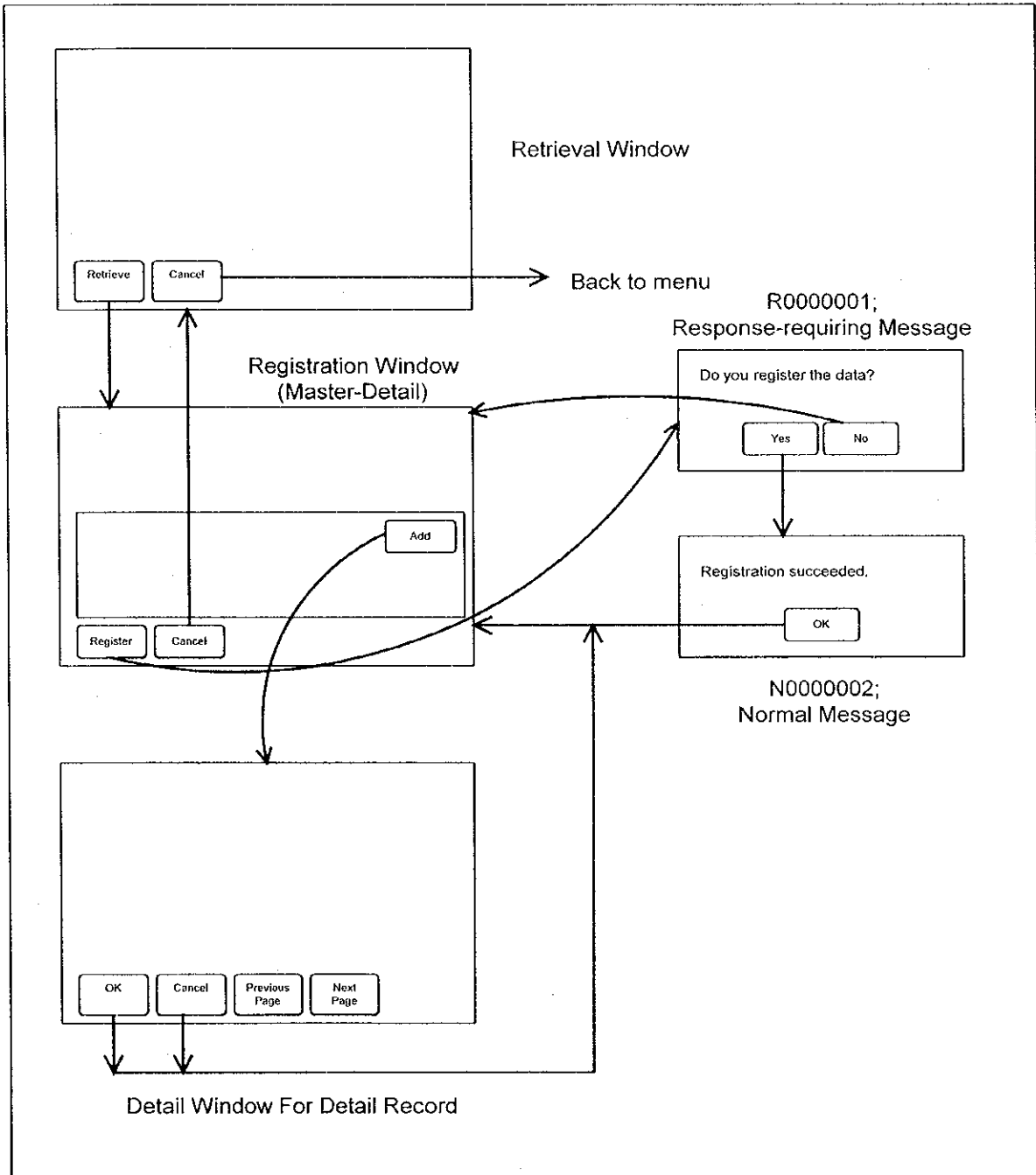


Figure 1.2.6.2-2 : Registration window flow for master-detail without maintenance of master record

Table 1.2.6.2-2 : Button Function

| Process | Window/Message Box | Button Name | Function |
|--|--------------------------------------|-------------------|---|
| Registration (Master-Detail) without master record maintenance | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Registration Window (Master-Detail). |
| | | Cancel | Back to Menu Window. |
| | Registration Window (Master-Detail) | Add (Detail part) | Display Detail Window for detail record. |
| | | Register | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | Detail Window For Detail Record | OK | Access to the database and insert the data. Then back to Registration Window (Master-Detail). |
| | | Cancel | Back to Registration Window (Master-Detail) without accessing to the database. |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |
| | R0000001; Response-requiring Message | Yes | Access to the database and commit the data. Then display Normal Message. |
| | | No | Roll back. Then back to Registration Window (Master-Detail). |
| | N0000002; Normal Message | OK | Back to Registration Window (Master-Detail). |

3) Registration (Master-Detail) with maintenance of master record

This type of flow is used for registering record into both master and detail table of master-detail data structure.

Figure 1.2.6.2-3 illustrates the flow and table 1.2.6.2-3 explains each action triggered by buttons in the figure.

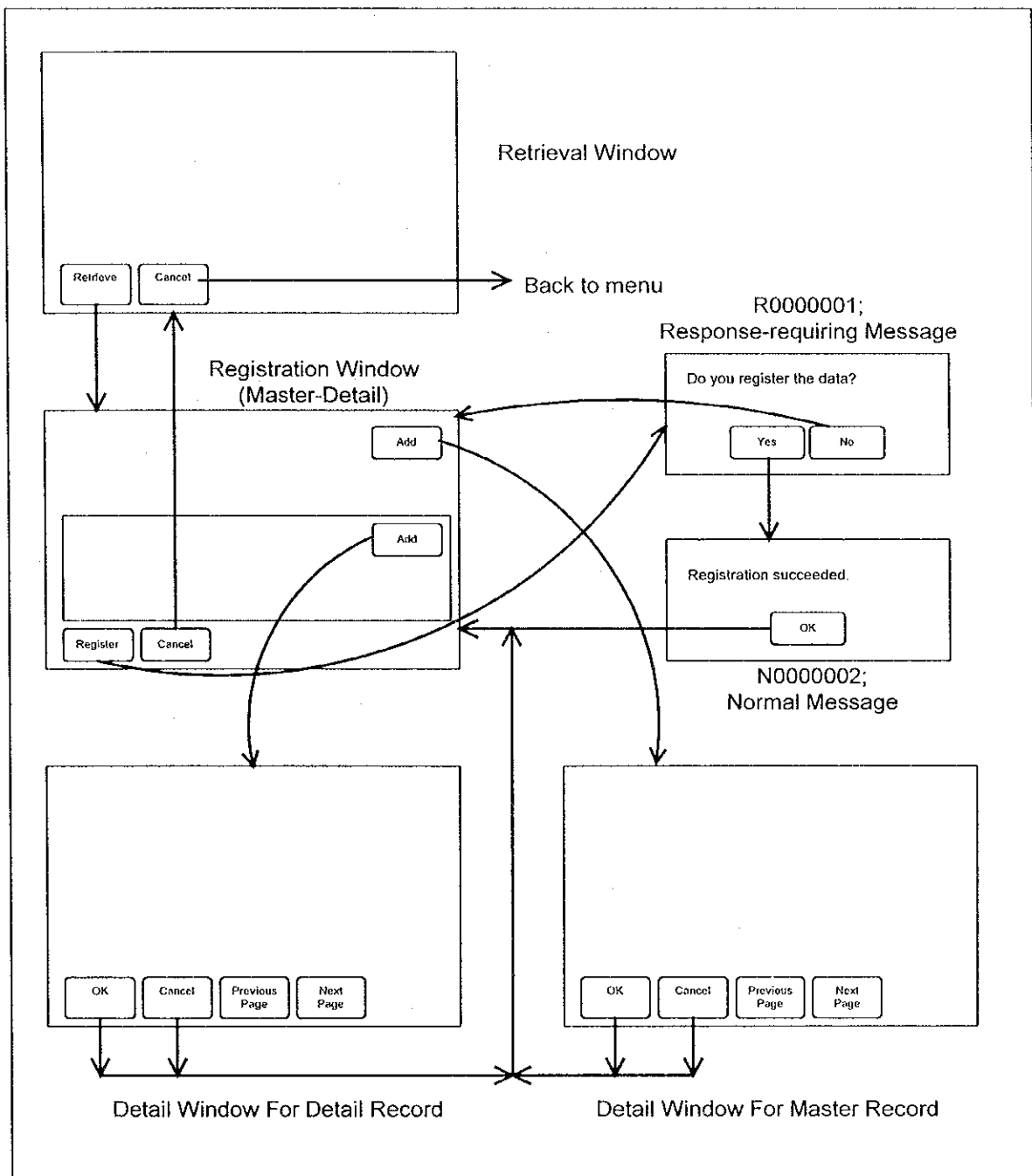


Figure 1.2.6.2-3 : Registration window flow for master-detail with maintenance of master record

Table 1.2.6.2-3 : Button Function

| Process | Window/Message Box | Button Name | Function |
|---|--------------------------------------|-------------------|---|
| Registration (Master-Detail) with master record maintenance | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Registration Window (Master-Detail). |
| | | Cancel | Back to Menu Window. |
| | Registration Window (Master-Detail) | Add (Master part) | Display Detail Window For Master Record. |
| | | Add (Detail part) | Display Detail Window For Detail Record. |
| | | Register | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | Detail Window For Master Record | OK | Access to the database and insert the data. Then back to Registration Window (Master-Detail). |
| | Detail Window For Detail Record | Cancel | Back to Registration Window (Master-Detail) without accessing to the database. |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |
| | R0000001; Response-requiring Message | Yes | Access to the database and commit the data. Then display Normal Message. |
| | | No | Roll back. Then back to Registration Window (Master-Detail). |
| | N0000002; Normal Message | OK | Back to Registration Window (Master-Detail). |

1.2.6.3 Update

An Update is a transaction for updating one or more records in a table. Inputting the primary key of the record to be updated is required.

Based on data structure and application requirement, update transaction window flow is divided into three, i.e. update master table, update the data of master-detail type without maintenance of master record, and update the data of master-detail type with maintenance of master record.

1) Update (Master)

This type of flow is used for updating a record in a single master table.

Figure 1.2.6.3-1 illustrates the flow and table 1.2.6.3-1 explains each action triggered by buttons in the figure.

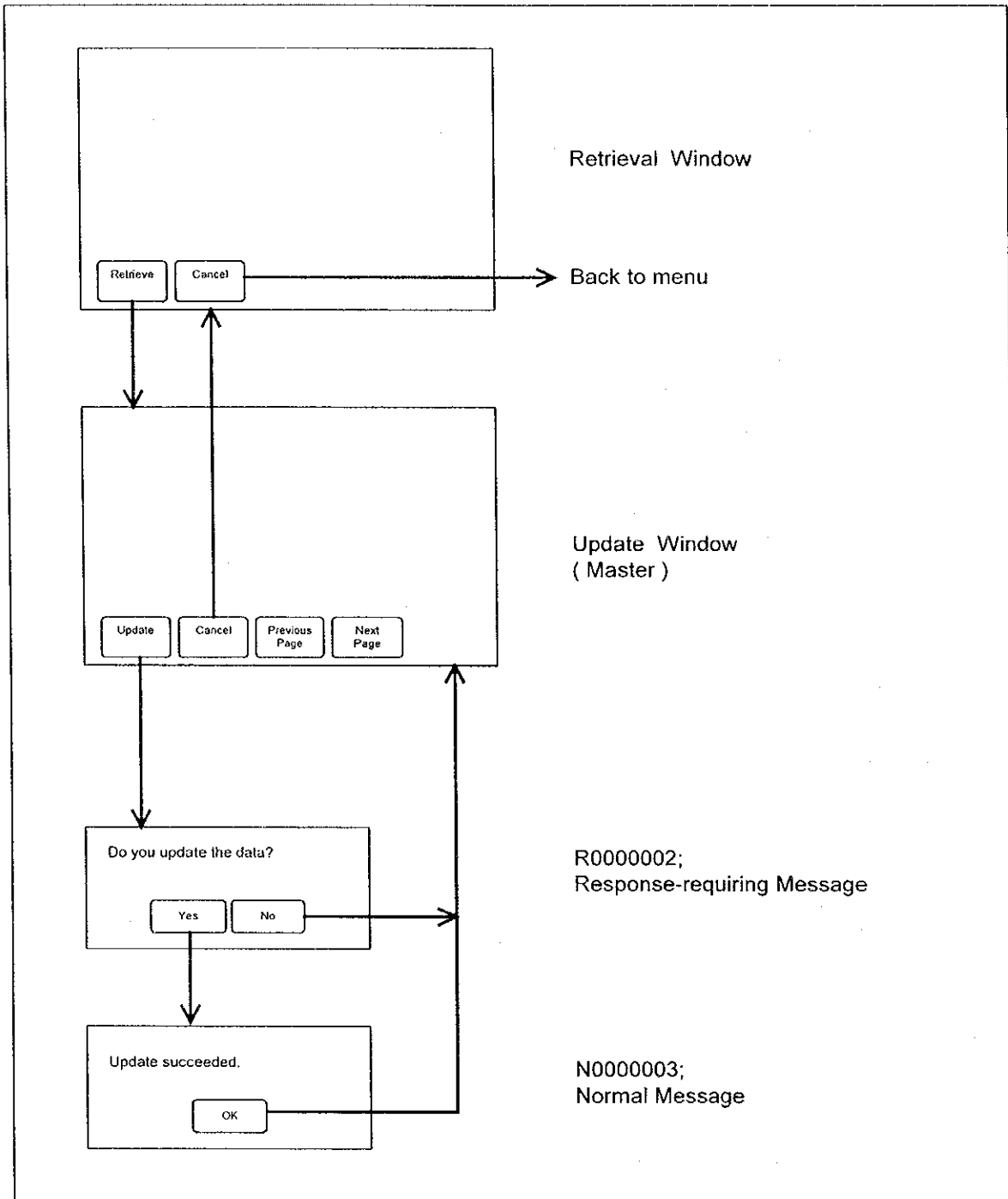


Figure 1.2.6.3-1 : Update window flow for master

Table 1.2.6.3-1 : Button Function

| Process | Window/Message Box | Button Name | Function |
|-----------------|--------------------------------------|---------------|--|
| Update (Master) | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Update Window (Master). |
| | | Cancel | Back to Menu Window. |
| | Update Window (Master) | Update | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |
| | R0000002; Response-requiring Message | Yes | Access to the database, update the data and commit. Then display Normal Message. |
| | | No | Back to Update Window (Master) without accessing to the database. |
| | N0000003; Normal Message | OK | Back to Update Window (Master). |

2) Update (Master-Detail) without maintenance of master record

This type of flow is used for updating a record in detail table of master-detail data structure.

Figure 1.2.6.3-2 illustrates the flow and table 1.2.6.3-2 explains each action triggered by buttons in the figure.

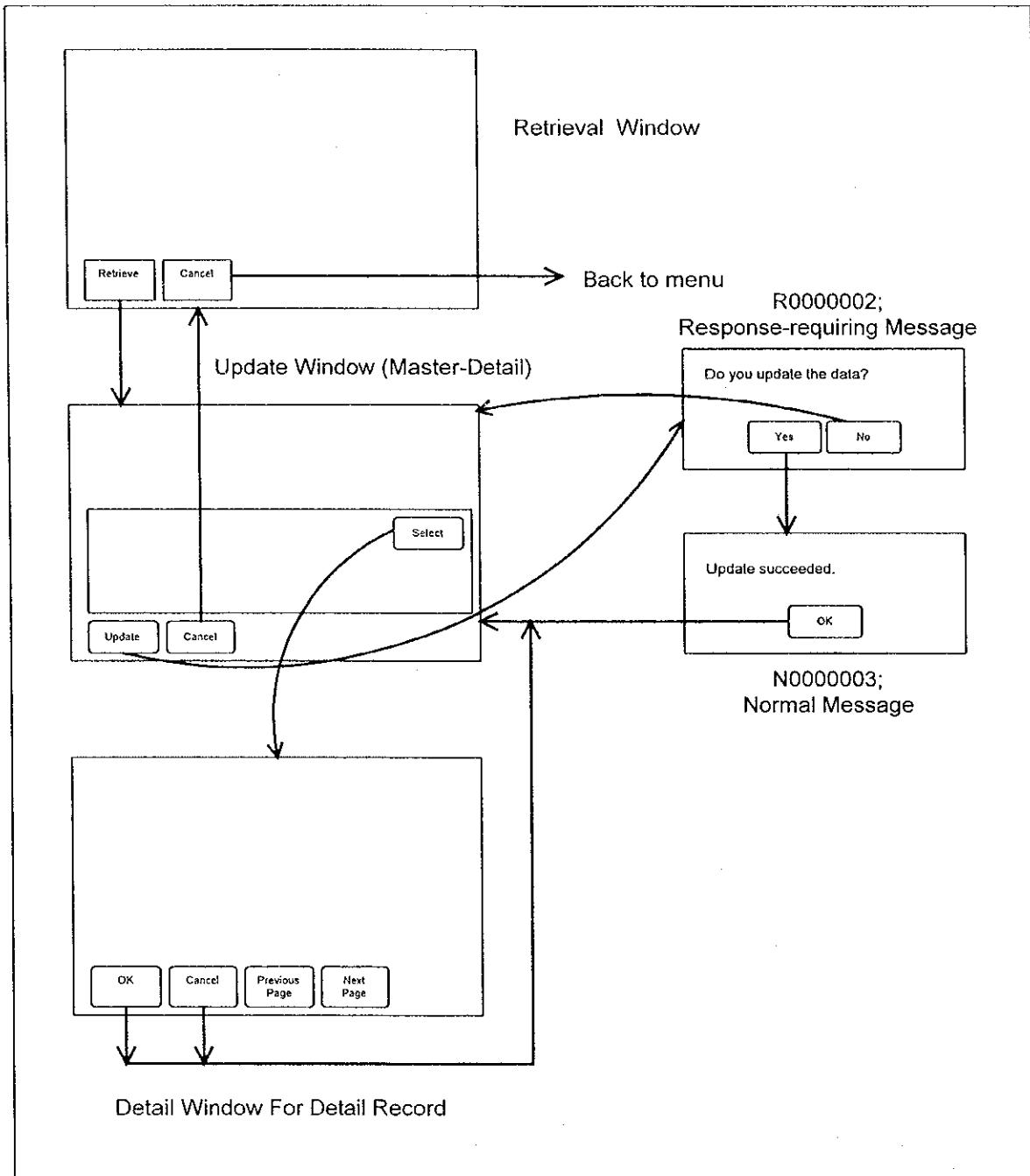


Figure 1.2.6.3-2 : Update window flow for master-detail without maintenance of master record

Table 1.2.6.3-2 : Button Function

| Process | Window/Message Box | Button Name | Function |
|--|--------------------------------------|----------------------|---|
| Update (Master-Detail) without master record maintenance | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Update Window (Master-Detail). |
| | | Cancel | Back to Menu Window. |
| | Update Window (Master-Detail) | Select (Detail part) | Display Detail Window for detail record. |
| | | Update | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | Detail Window For Detail Record | OK | Access to the database and update the data. Then back to Update Window (Master-Detail). |
| | | Cancel | Back to Update Window (Master-Detail) without accessing to the database. |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |
| | R0000002; Response-requiring Message | Yes | Access to the database and commit the data. Then display Normal Message. |
| | | No | Roll back. Then back to Update Window (Master-Detail) . |
| | N0000003; Normal Message | OK | Back to Update Window (Master-Detail). |

3) Update (Master-Detail) with maintenance of master record

This type of flow is used for updating a record in master and detail table of master-detail data structure.

Figure 1.2.6.3-3 illustrates the flow and table 1.2.6.3-3 explains each action triggered by buttons in the figure.

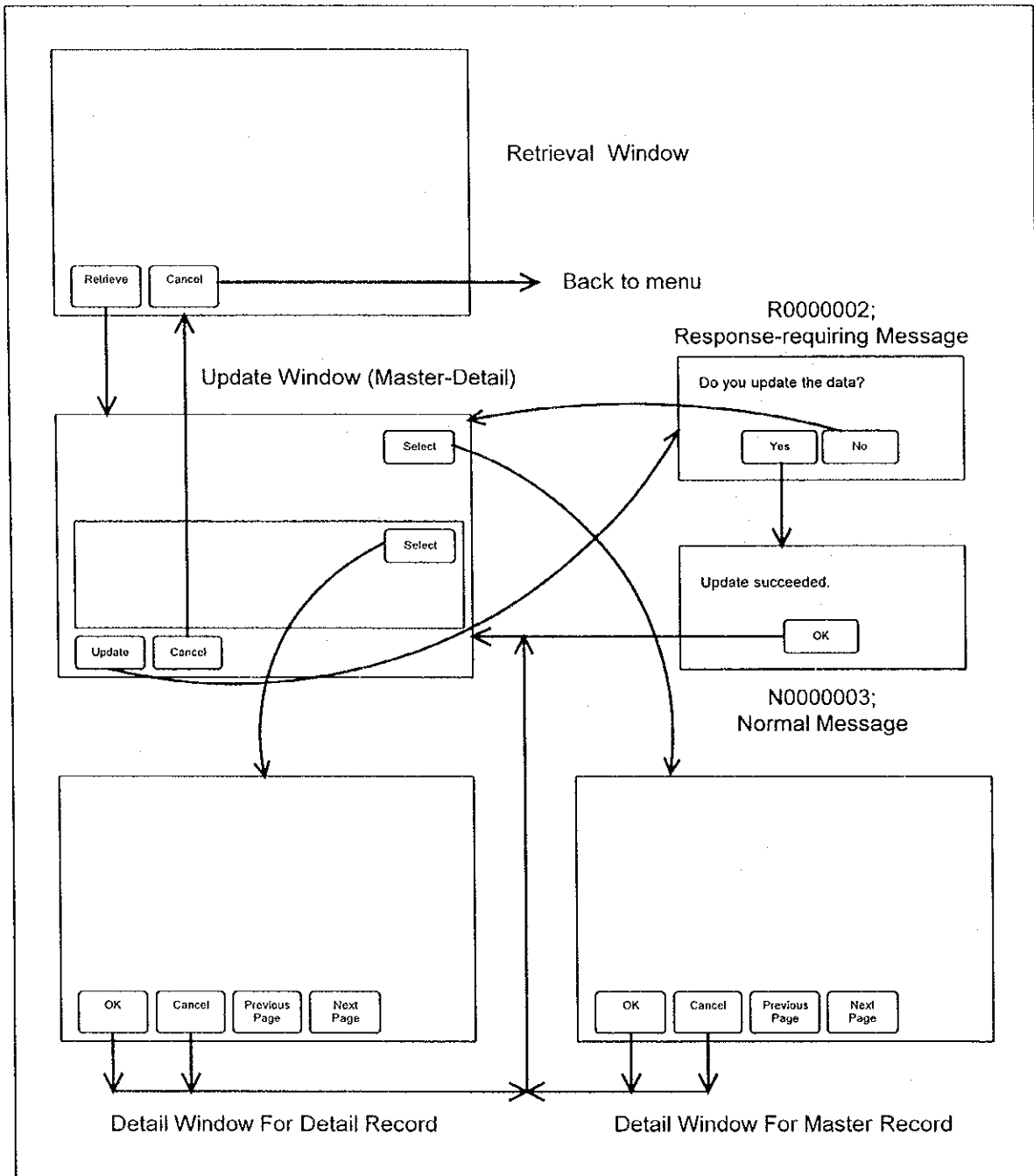


Figure 1.2.6.3-3 : Update window flow for master-detail with maintenance of master record

Table 1.2.6.3-3 : Button Function

| Process | Window/Message Box | Button Name | Function |
|---|--------------------------------------|----------------------|---|
| Update (Master-Detail) with master record maintenance | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Update Window (Master-Detail). |
| | | Cancel | Back to Menu Window. |
| | Update Window (Master-Detail) | Select (Master part) | Display Detail Window For Master Record. |
| | | Select (Detail part) | Display Detail Window For Detail Record. |
| | | Update | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | Detail Window For Master Record | OK | Access to the database and update the data. Then back to Update Window (Master-Detail). |
| | | Cancel | Back to Update Window (Master-Detail) without accessing to the database. |
| | Detail Window For Detail Record | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |
| | R0000002; Response-requiring Message | Yes | Access to the database and commit the data. Then display Normal Message. |
| | | No | Roll back. Then back to Update Window (Master-Detail) . |
| | N0000003; Normal Message | OK | Back to Update Window (Master-Detail). |

1.2.6.4 Deletion

A deletion is a transaction for deleting one or more records after determining the record to be deleted.

Based on data structure and application requirement, deletion transaction window flow is divided into three, i.e. deletion of master, deletion of the data of master-detail type without maintenance of master record, and deletion of the data of master-detail type with maintenance of master record.

1) Deletion (Master)

This type of flow is used for deleting a single master table.

Figure 1.2.6.4-1 illustrates the flow and table 1.2.6.4-1 explains each action triggered by buttons in the figure.

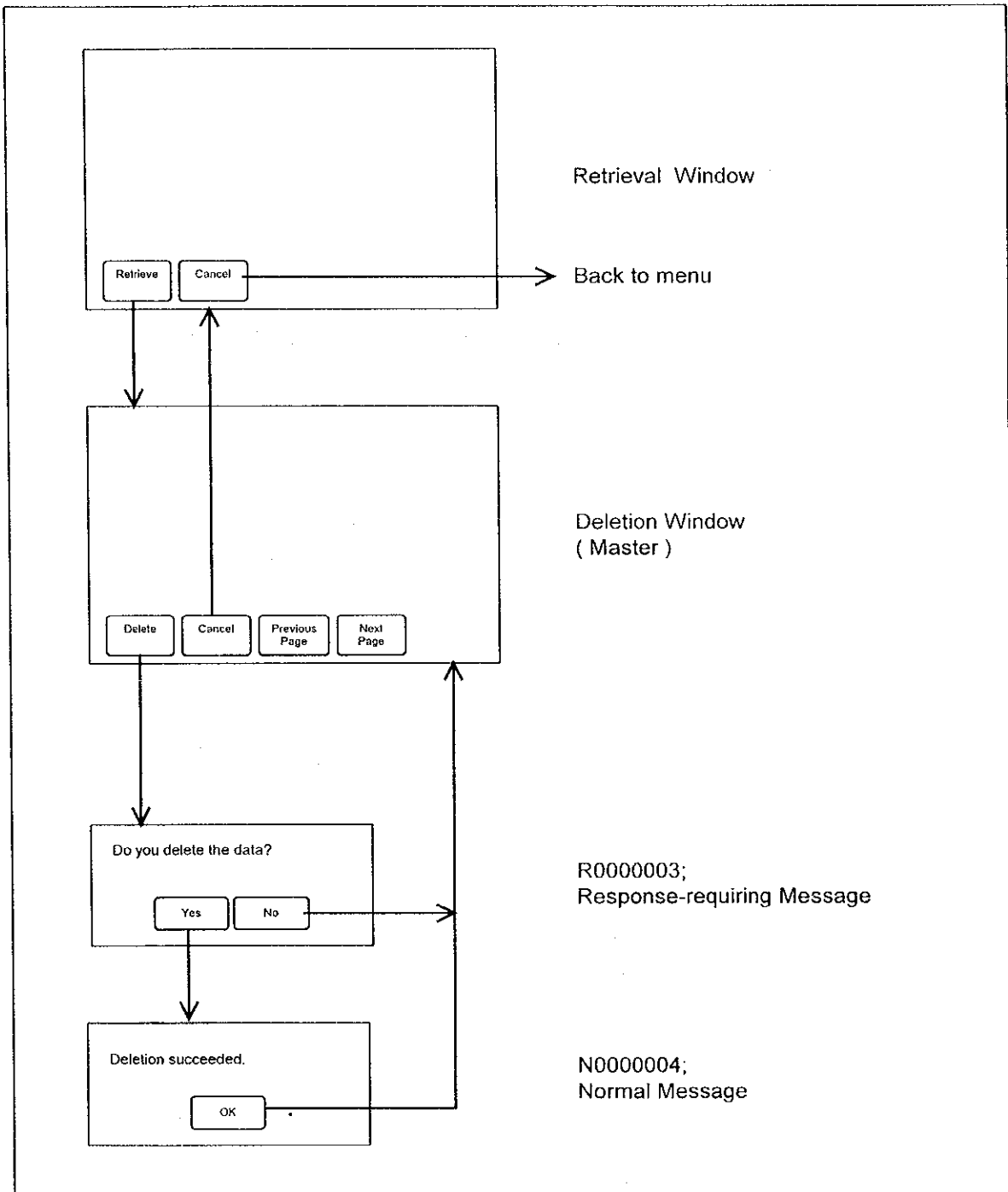


Figure 1.2.6.4-1 : Deletion window flow for master

Table 1.2.6.4-1 : Button Function

| Process | Window/Message Box | Button Name | Function |
|----------------------|--|--------------------|--|
| Deletion (Master) | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Deletion Window (Master). |
| | | Cancel | Back to Menu Window. |
| | Deletion Window (Master) | Delete | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | | Previous Page | Back to the previous page. |
| | R0000003; Response-requiring Message | Next Page | Go to the next page. |
| | | Yes | Access to the database, delete the data and commit. Then display Normal Message. |
| | | No | Back to Deletion Window (Master) without accessing to the database. |
| | N0000004; Normal Message | OK | Back to Deletion Window (Master). |

2) Deletion (Master-Detail) without maintenance of master record

This type of flow is used for deleting a record in the detail table of master-detail data structure.

Figure 1.2.6.4-2 illustrates the flow and table 1.2.6.4-2 explains each action triggered by buttons in the figure.

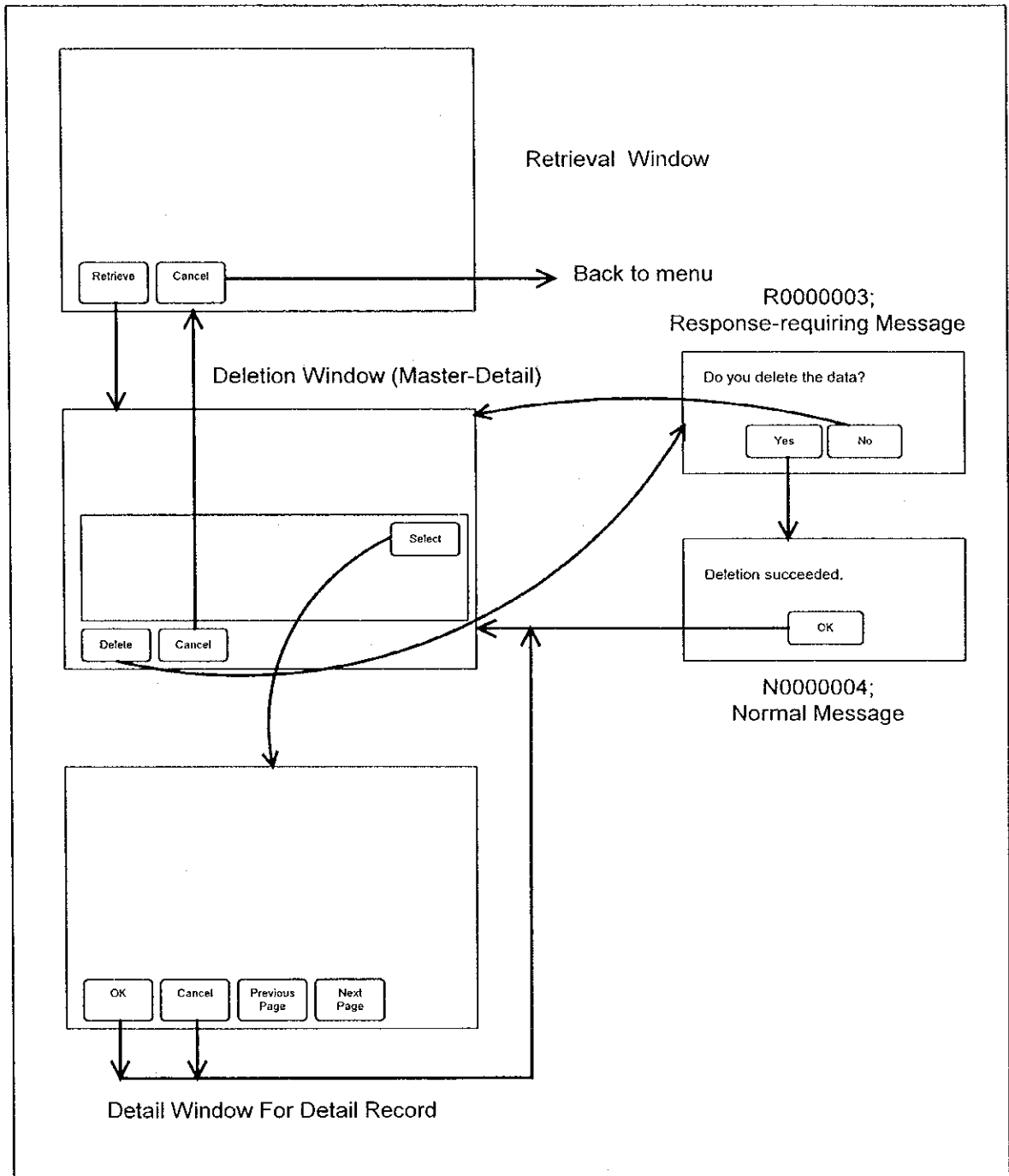


Figure 1.2.6.4-2 : Deletion window flow for master-detail without maintenance of master record

Table 1.2.6.4-2 : Button Function

| Process | Window/Message Box | Button Name | Function |
|--|--------------------------------------|----------------------|---|
| Deletion (Master-Detail) without master record maintenance | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Deletion Window (Master-Detail). |
| | | Cancel | Back to Menu Window. |
| | Deletion Window (Master-Detail) | Select (Detail part) | Display Detail Window for detail record. |
| | | Delete | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | Detail Window For Detail Record | Cancel | Back to Retrieval Window. |
| | | OK | Access to the database and update the data. Then back to Deletion Window (Master-Detail). |
| | | Cancel | Back to Deletion Window (Master-Detail) without accessing to the database. |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |
| | R0000003; Response-requiring Message | Yes | Access to the database and commit the data. Then display Normal Message. |
| | | No | Roll back. Back to Deletion Window (Master-Detail). |
| | N0000004; Normal Message | OK | Back to Deletion Window (Master-Detail). |

3) Deletion (Master-Detail) with maintenance of master record

This type of flow is used for deleting record of both master and detail table.

Figure 1.2.6.4-3 illustrates the flow and table 1.2.6.4-3 explains each action triggered by buttons in the figure.

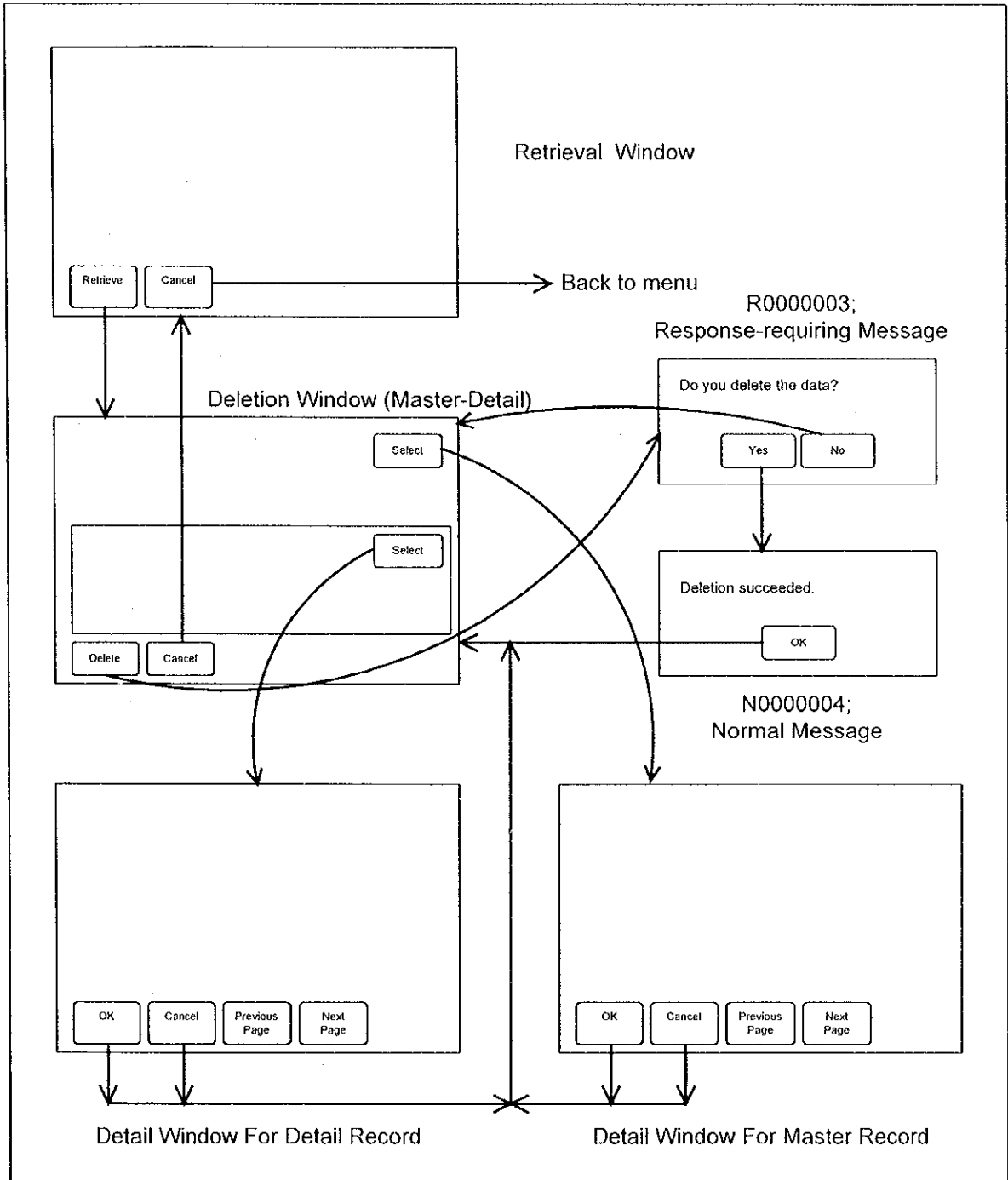


Figure 1.2.6.4-3 : Deletion window flow for master-detail with maintenance of master record

Table 1.2.6.4-3 : Button Function

| Process | Window/Message Box | Button Name | Function |
|---|--------------------------------------|----------------------|---|
| Deletion (Master-Detail) with master record maintenance | Retrieval Window | Retrieve | Access to the database and retrieve the data. Then display Deletion Window (Master-Detail). |
| | | Cancel | Back to Menu Window. |
| | Deletion Window (Master-Detail) | Select (Master part) | Display Detail Window For Master Record. |
| | | Select (Detail part) | Display Detail Window For Detail Record. |
| | | Delete | Display Response-requiring Message. |
| | | Cancel | Back to Retrieval Window. |
| | Detail Window For Master Record | Cancel | Back to Retrieval Window. |
| | | OK | Access to the database and update the data. Then back to Deletion Window (Master-Detail). |
| | Detail Window For Detail Record | Cancel | Back to Deletion Window (Master-Detail) without accessing to the database. |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |
| | R0000003; Response-requiring Message | Yes | Access to the database and commit the data. Then display Normal Message. |
| | | No | Roll back. Back to Deletion Window (Master-Detail) . |
| | N0000004; Normal Message | OK | Back to Deletion Window (Master-Detail). |

1.2.6.5 Retrieval

A retrieval is a transaction for retrieving one or more records. In addition to primary key, the operator can input several search keys to retrieve one record from the master table.

Based on data structure and application requirement, retrieval transaction window flow is divided into two, i.e. retrieval from master and retrieval from the data of master-detail type without maintenance of master record.

1) Retrieval (Master)

This type of flow is used for retrieving a record from a single master table.

Figure 1.2.6.5-1 illustrates the flow and table 1.2.6.5-1 explains each action triggered by buttons in the figure.

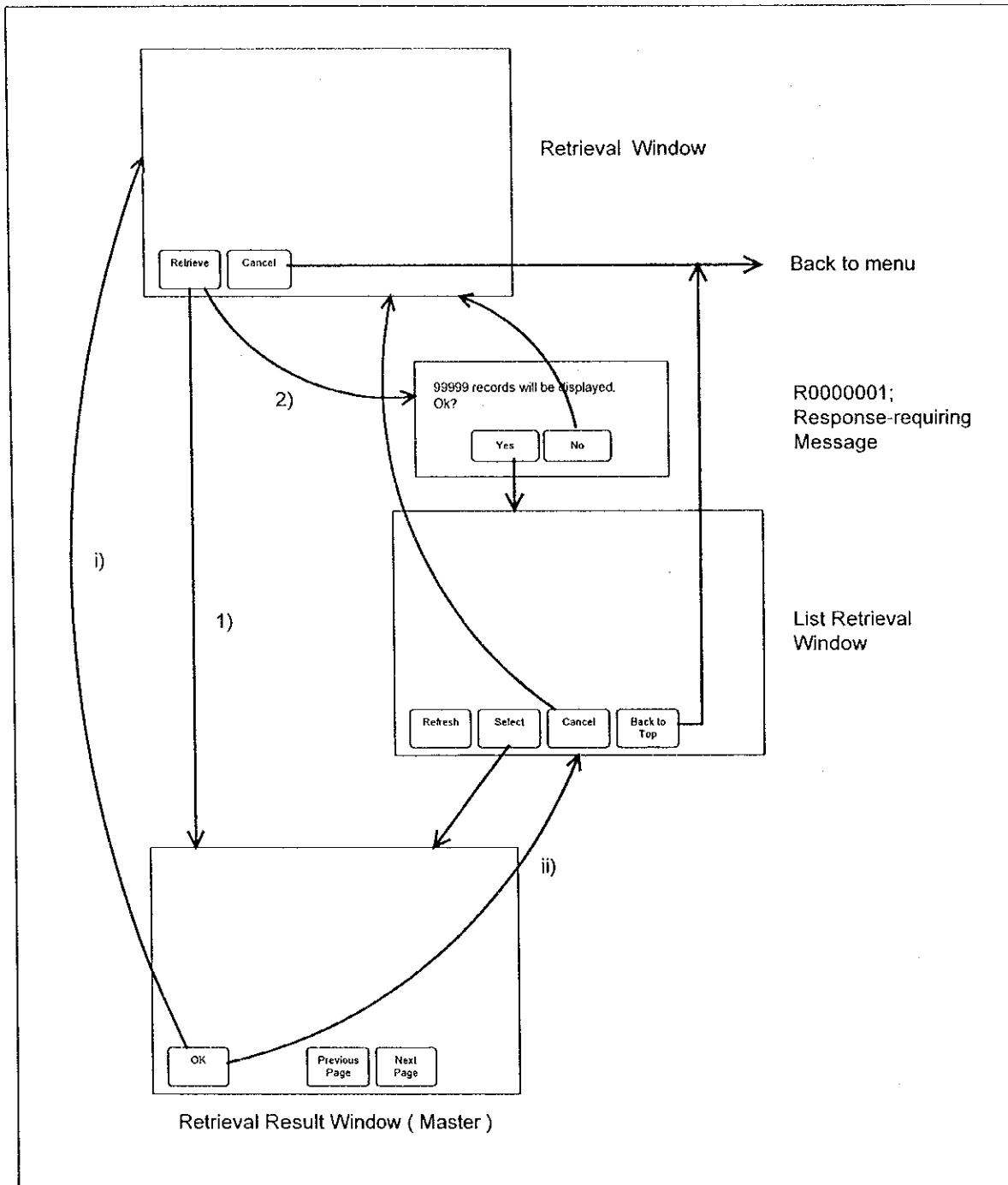


Figure 1.2.6.5-1 : Retrieval window flow for master

Table 1.2.6.5-1 : Button Function

| Process | Window/Message Box | Button Name | Function |
|--------------------|---|---------------|---|
| Retrieval (Master) | Retrieval Window | Retrieve | 1) When the primary key is inputted, access to the database and retrieve the data. Then display Retrieval Result Window (Master). 2) When the other key is inputted, access to the database and retrieve the number of countered records. Then display Response-requiring Message. |
| | | Cancel | Back to Menu Window. |
| | R0000004; Response-requiring Message | Yes | Access to the database and retrieve the data. Then display List Retrieval Window. |
| | | No | Back to Retrieval Window (Master) without accessing to the database. |
| | List Retrieval Window | Refresh | Access to the database and retrieve the data again under the same condition. Then display List Retrieval Window again. |
| | | Select | Access to the database and retrieve the data. Then display Retrieval Result Window (Master). |
| | | Cancel | Back to Retrieval Window. |
| | | Back to Top | Back to Menu Window. |
| | Retrieval Result Window (Master) | OK | i) Back to the Retrieval Window, if the record is retrieved by specifying its primary key. ii) Back to the List Retrieval Window, if the record is selected from the List Retrieval Window |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |

3) Retrieval (Master-Detail) without maintenance of master record

This type of flow is used for retrieving a record from master-detail table.

Figure 1.2.6.5-2 illustrates the flow and table 1.2.6.5-2 explains each action triggered by buttons in the figure.

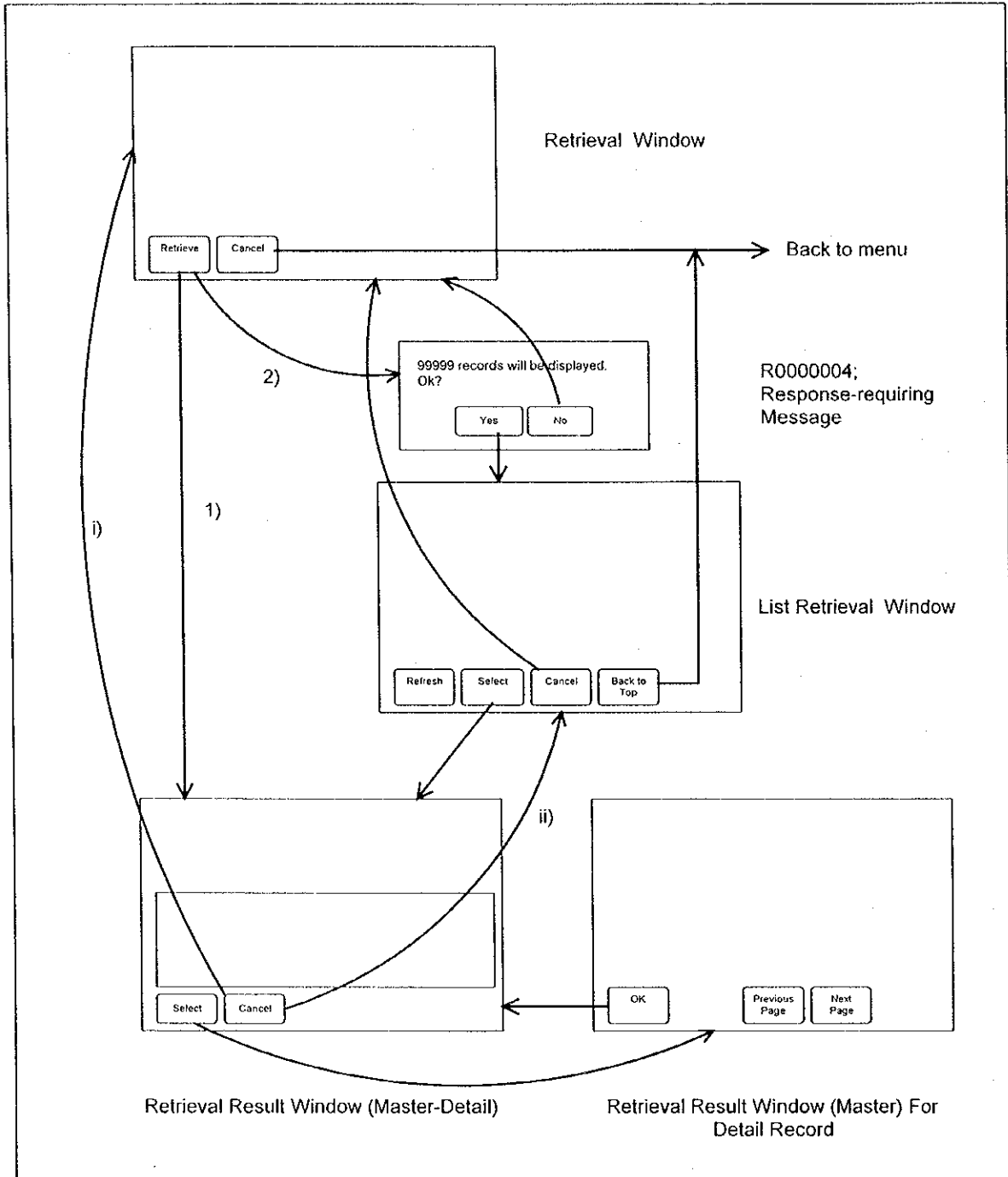


Figure 1.2.6.5-2 : Retrieval window flow for master-detail without maintenance of master record

Table 1.2.6.5-2 : Button Function

| Process | Window/Message Box | Button Name | Function |
|---|---|---------------|--|
| Retrieval (Master-Detail) without master record maintenance | Retrieval Window | Retrieve | 1) When the primary key is inputted, access to the database and retrieve the data. Then display Retrieval Result Window (Master-Detail). 2) When the other key is inputted, access to the database and retrieve the number of countered records. Then display Response-requiring Message. |
| | | Cancel | Back to Menu Window. |
| | R0000004; Response-requiring Message | Yes | Access to the database and retrieve the data. Then display List Retrieval Window. |
| | | No | Back to Retrieval Window without accessing to the database. |
| | List Retrieval Window | Refresh | Access to the database and retrieve the data again under the same condition. Then display List Retrieval Window again. |
| | | Select | Access to the database and retrieve the data. Then display Retrieval Result Window (Master-Detail). |
| | | Cancel | Back to Retrieval Window. |
| | | Back to Top | Back to Menu Window. |
| | Retrieval Result Window (Master-Detail) | Select | Display Retrieval Result Window (Master) For Detail Record. |
| | | Cancel | Back to the previous window (Retrieval Window or List Retrieval Window). i) If the record is retrieved by specifying its primary key, back to the retrieval window. ii) If the record is selected from list retrieval window, back to the list retrieval window. |
| | Retrieval Result Window (Master) | OK | Back to Retrieval Result Window (Master-Detail). |
| | | Previous Page | Back to the previous page. |
| | | Next Page | Go to the next page. |