Operation Manual

DB Manager

03.49.30

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Contents

The DB Manager client application is an integral part of the WAY4™ system and is used to configure the system and provide access to its resources.

The level of access to system resources depends on the access rights of the particular DB Manager user.

This document is intended for DB Manager users, bank or processing centre employees working on a regular basis with WAY4 modules or functioning as system administrators.

When working with this document, it is recommended to use the following reference material from OpenWay's documentation series:

- Menu Editor
- Form Builder
- Events
- DB Manager User Management

The following notation is used in this document:

- Field labels in screen forms are shown in *italics.*
- Screen form button labels are encased in square brackets, such as [Approve].
- Sequences for selecting user menu items are given with arrows, as in Issuing →Contracts Input & Update.
- Sequences for selecting system menu items, are given with a different type of arrow, for example Database => Change password.
- Key combinations used when working with DB Manager are shown in angular brackets as in <Ctrl>+<F3>.
- Values that vary for each local instance of the program, such as the names of directories and files, as well as file paths are displayed in angular brackets, such as <OWS_HOME>.

 Warnings about potentially hazardous situations or actions.

 Information about important features, additional options or the best use of certain system functions.

1 Starting DB Manager

DB Manager is started by the dbm.exe application located in the <OWS_HOME> system directory (see the "Standard WAY4 Directories" section of the "DB Manager User Management" document):

```
<OWS_HOME>\client\dbm\dbm.exe
```

WAY4 supports starting the DB Manager application via a remote desktop using the MS RDP protocol (for a detailed information, see the document "WAY4™ Main Technical Requirements").

When the program has started, the following system access dialogue window appears on the screen (see Fig. 1):

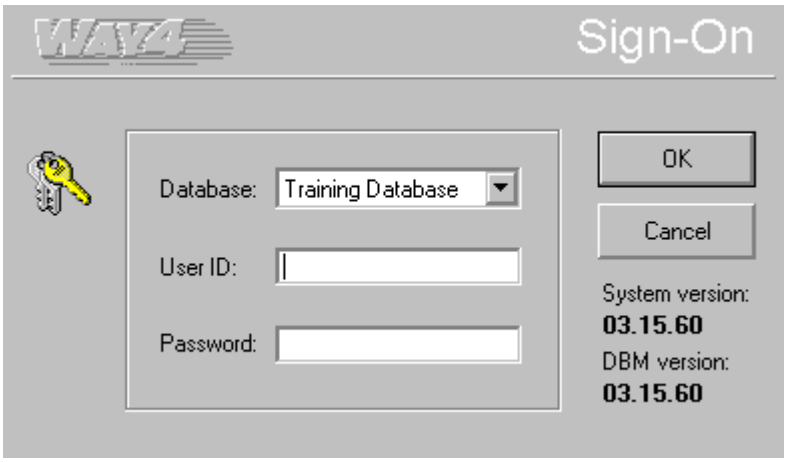

Fig. 1. The access dialogue window appearing at the start of DB Manager

System and DB Manager version information is displayed in the right lower corner of the dialogue window.

The *Database* field is used to select the required database from a drop-down list of databases configured earlier by the system administrator.

The *User ID* and *Password* fields are used to enter the user ID and password. It is mandatory to fill in these fields. If they are left empty, the system will display the following warning (see Fig. 2):

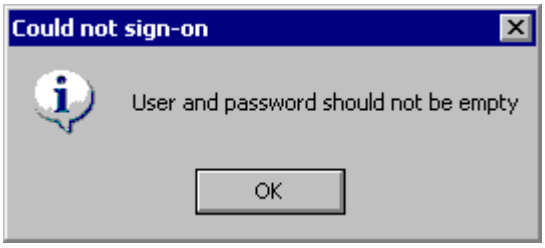

Fig. 2. Warning that user ID name and password must be entered

If an incorrect user ID and/or password is entered, the following error message will be displayed (see Fig. 3.):

Fig. 3. Error message notifying that the user ID and/or password are incorrect

According to the system's data security principles, each user is granted system access according to time parameters set for him/her (see the "User and Groups Dialogue Window" of the "DB Manager User Management" document). Any attempt by the user to obtain access to the system at any time other than that allowed is considered an unauthorized access attempt and is denied. In such cases, the following error message will be displayed (see Fig. 4.):

Fig. 4. Message that an attempt to obtain access at an unauthorized time has been denied.

When the DB Manager application is started for the first time, configuration parameters must be set for connecting the application to a database. To do so, the "setup" parameter is added to the start-up command:

```
<OWS_HOME>\client\dbm\dbm.exe setup
```

As a result, a window appears for specifying parameters for DB Manager to work with a particular database (See Fig. 6). For more details see the section ""Database" Item".

2 User Interface

When working with the DB Manager application, the following elements of control and management are used (see Fig. 5.):

- The system menu.
- The toolbar.
- The user menu.
- Form fields used for:
  - entering data from the keyboard:
    - text
    - numbers
    - dates
  - Selecting from drop-down lists.
- Screen form buttons.
- The status line.

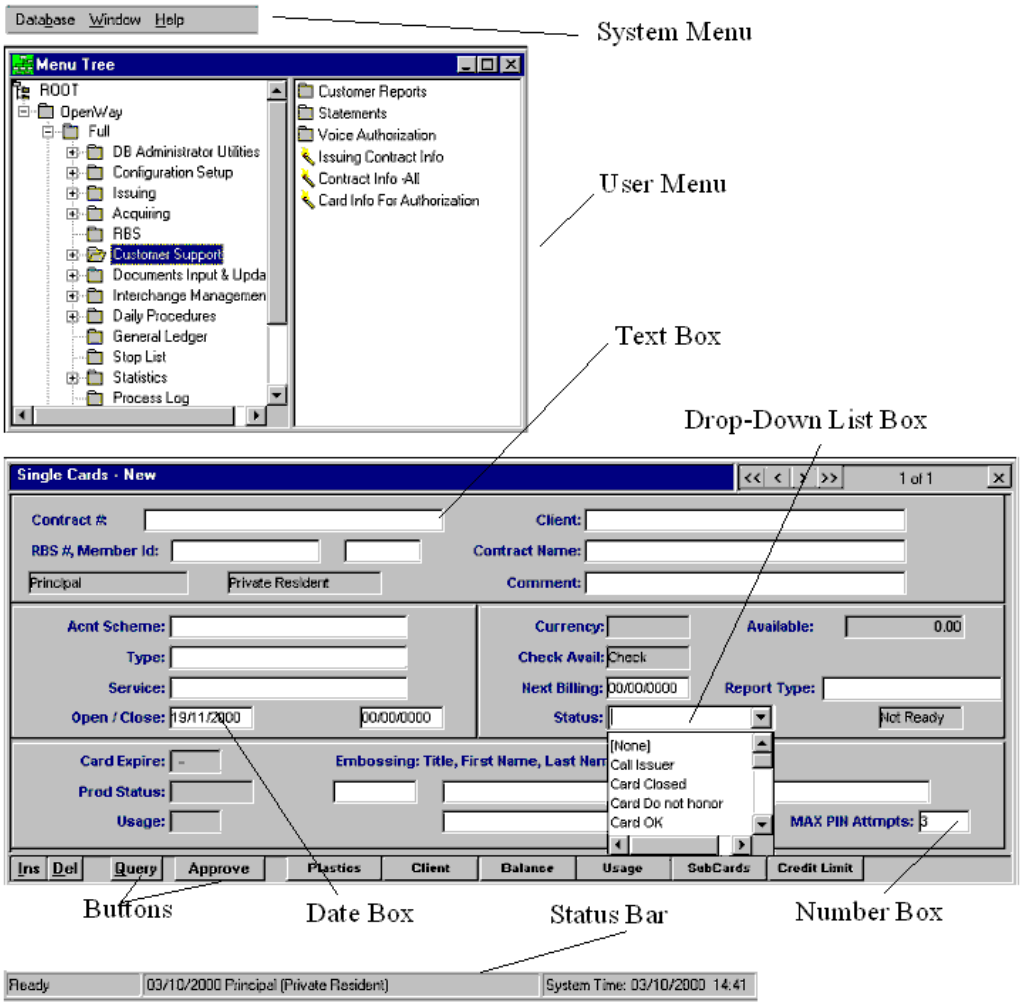

Fig. 5. The user interface controls

2.1 System Menu

The DB Manager system menu provides additional facilities for working with forms and the user menu.

Drop-down lists in menu items are accessed in standard MS Windows fashion. Click the required menu title the name of the command in the list or use the key combination: <Alt+the letter underlined in the title>.

The set of available system menu items is determined by the current mode of operation.

Different items are available in different modes of operation. They are as follows:

- "Database"
- "Form"
- "Data"
- "Special"

- "Links"
- "Hot Items"
- "Window"
- "Help"
- "Item Editor" - this item becomes available when editing user menu items (see the "Working with Menu Editor" chapter of the "Menu Editor" document).
- "Editor" - this item becomes available when Form Builder is started (see the "Saving an Edited Form" section of the "Form Builder" document).
- "Design" –this item becomes active when working in form design mode (see "Form Design Mode" section of the "Form Builder" document).

2.1.1 "Database" Item

The set of sub-items in this system menu item is the same for all modes of operation. It includes the following:

- "Database => Import Standard Menu" – an operation to import the standard menu; started after a system upgrade one time from any workstation (see the "Loading the Standard Menu" section of the "Menu Editor" document).

To avoid losing menu item configurations as well as all custom groups and items, custom groups and items must be created in a separate menu branch, parallel to the OpenWay way.

- "Database => Synchronize Forms" - an operation to synchronize custom forms; started after an update affecting the structure of a system database (see the "Synchronizing User-created Forms" section of the "Form Builder" document).
- "Database => Configure" - configuration of a local machine's DB Manager for operation with WAY4 (see Fig. 6).

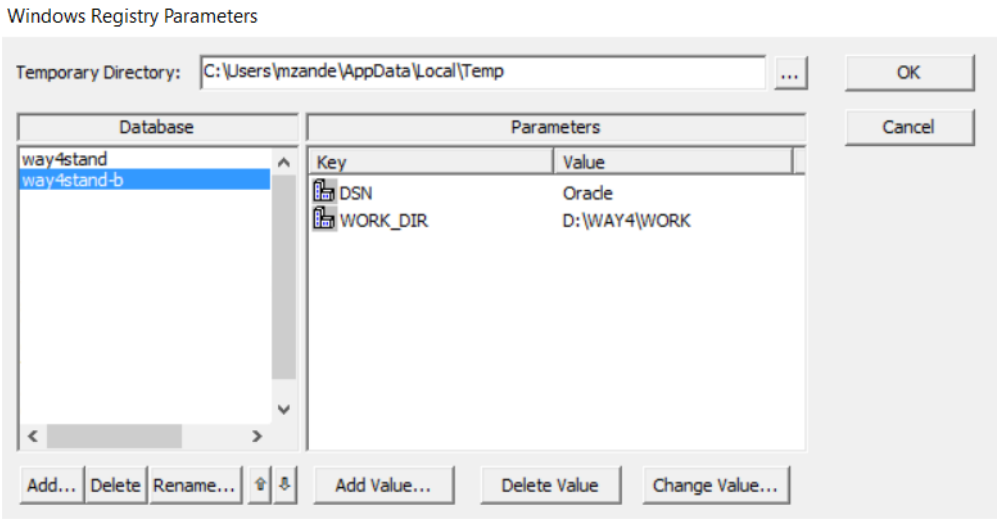

Fig. 6. Window for setting DB Manager parameters

Mandatory parameters include paths to the working directory and the temporary file directory (see "Privileges of Access to Standard WAY4 Directories" section of the "DB Manager User Management" document).

Parameters used to work with DB Manager can also be set in the "HKEY_CURRENT_USER" branch of the Windows registry, or in a separate general ".ini" file for all databases (for more information, see the section """.ini" General Configuration File"). Previously, parameters were stored in the "HKEY_LOCAL_MACHINE" branch.

- "Database => Forms" (<F2>) starts Form Builder (see the "Form Builder" document).
- "Database => Views" (<F3>) starts View Editor (see the "View Editor" section).
- "Database => Pipes" (<F6>) starts the application for working with pipes.
- "Database => Menu Items" (<F7>) starts Menu Editor (see the "Starting Menu Editor" section of the "Menu Editor" document).
- "Database => View Dependencies" opens the Dependencies window (see "Search by Reference (the "Dependencies" Window)").
- "Database => Execute SQL" (<F8>) opens the SQL Executer window.
- "Database => Change password" opens the Change Password window (see Fig. 7). To change the password, enter the old password in the *Old Password* field and the new password in the *New Password* field. The new password is then confirmed by entering it in the *Verify* field.

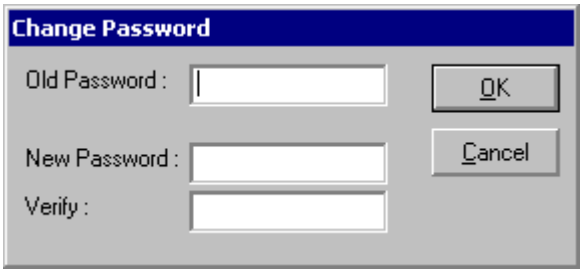

Fig. 7. Change Password dialogue window

- "Database => Exit" exits the program.

2.1.2 "Hot Items" Item

The lower section of this menu's item, may contain up to five links to the most recent user menu items started (see Fig. 8). The top part of the menu may contain the user menu items that are used most frequently, if they have been added to this list (see ""Window" Item").

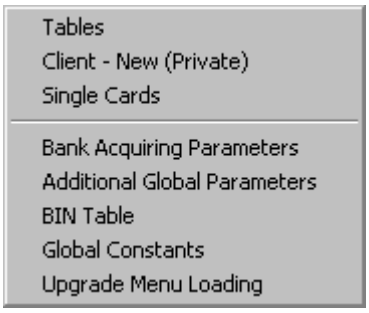

Fig. 8. Hot Items pull-down menu

For information about adding items to the hot list, see the section "Adding Menu Items to the Hot List" of the document "Menu Editor".

2.1.3 "Window" Item

This system menu item's set of sub-items includes the following (see Fig. 9):

- "Window => Show Toolbar" (<Ctrl>+<T>) displays the toolbar on the screen.
- "Window => Preferences" opens the "DB Manager Preferences" window (see Fig. 9) containing the following fields:
  - *Confirm exit* – if this flag is set, when an attempt is made to close the program, a dialog window with a request to confirm exit will be displayed.
  - *Show toolbar on startup* – if this flag is set, the toolbar will be displayed when DB Manager is started.
  - *Show icons in menu item list* – if this flag is not set, the list of menu items during editing will contain default icons; this optimises work with the list of menu items in Menu Editor (see the "Menu Editor" document).

- *Show user name in title bar* – if this flag is set, the title of the DB Manager window will include the name of the user.
- *Show text in toolbar* – if this flag is set, short text titles will be shown on toolbar buttons.
- *DBM locked after (min)* – field for entering the number of minutes after which the application will be locked when the DB Manager window is inactive. If the number is set to 0, the application will remain unlocked.
- *Hot Menu Items* – the list of menu items that are most frequently used by this user. The [Del] button will remove the selected item from the list. The [Up] and [Down] buttons move the cursor up and down the list.

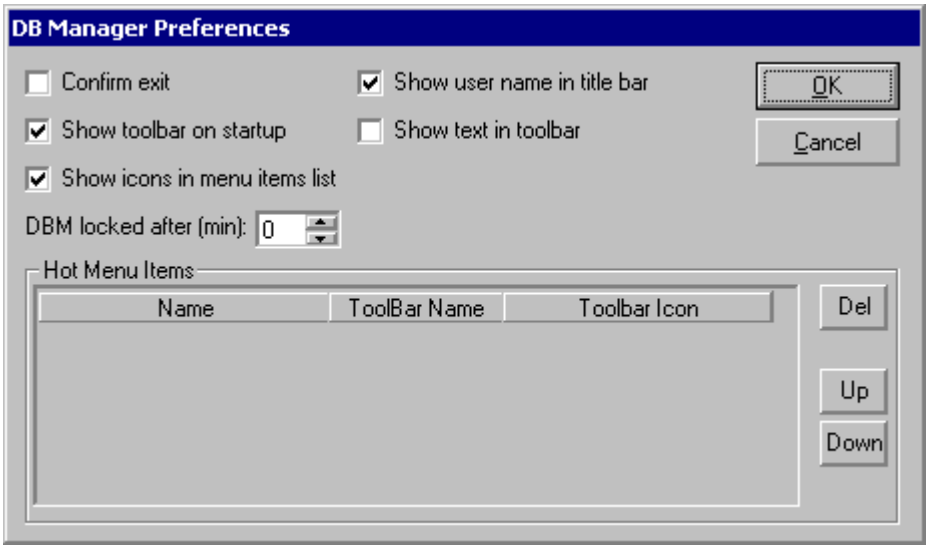

Fig. 9. The DB Manager Preferences window

- "Window => Lock DB Manager" – locks DB Manager and minimizes its window. The program can be returned to only after entering the user password.
- "Window => Menu" (<Ctrl>+<M>) – opens the user menu.

When working a form, a number of additional sub-items become available in the "Window" system menu item (see "System Menu").

2.1.4 "Help" Item

"Help => About" – shows information about the DB Manager version number and the name of the user.

To view information about the current version of the DB and all versions that were installed earlier, call the menu item "Full →DB Administrator Utilities →Upgrade Utilities →Version History". The "Version History" form will open. The current version of the DB has "True" in the *Is Valid* field.

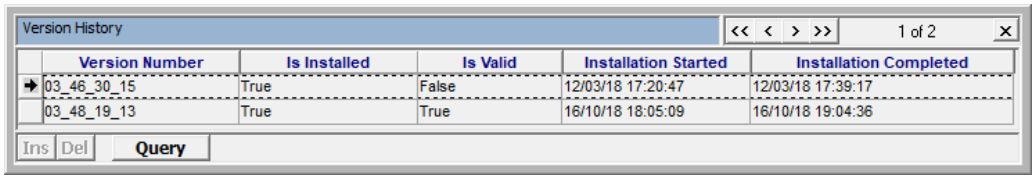

Fig. 10. Form with DB version numbers

2.1.5 Search by Reference (the "Dependencies" Window)

The "Dependencies" window is used for finding user menu paths to menu items, forms, pipes, reports and incorrect links such as references to a non-existent form. The window has the following tabs:

- "Menu Item" – hierarchical diagram showing the connections of a user menu item to higher-ranking items all the way up to the root level (see Fig. 11).

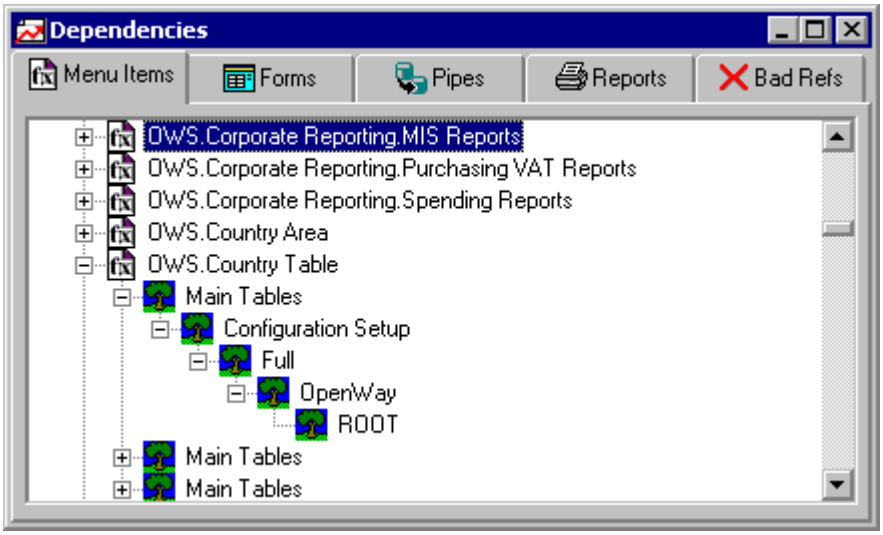

Fig. 11. A user menu item in the user menu hierarchy

- "Forms" – hierarchical diagram showing the connections of a form with higher-ranking forms or user menu items all the way up to the root level (see Fig. 12).

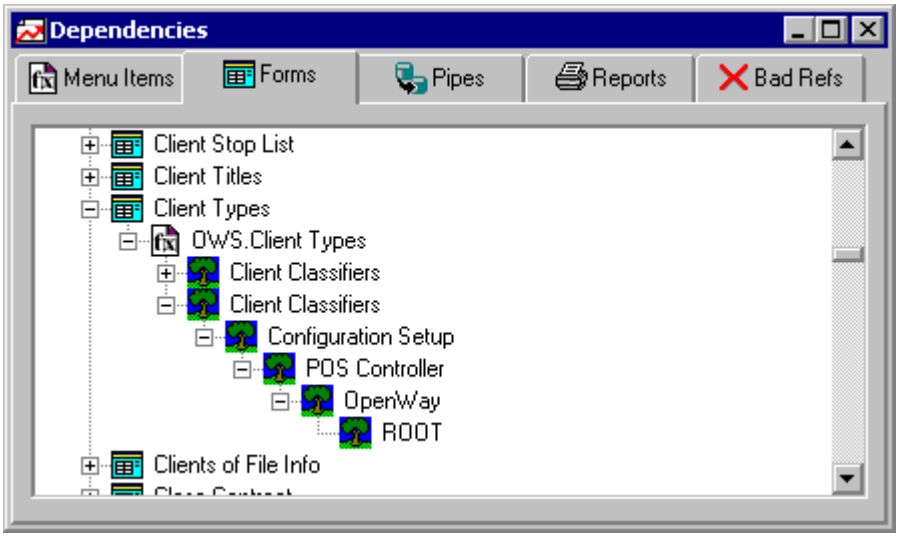

Fig. 12. A form in the user menu hierarchy

- "Pipes" –hierarchical diagram showing the connections of a pipe with a form and higher-ranking forms or user menu items, all the way up to the root level from which this pipe can be started. (see Fig. 13).

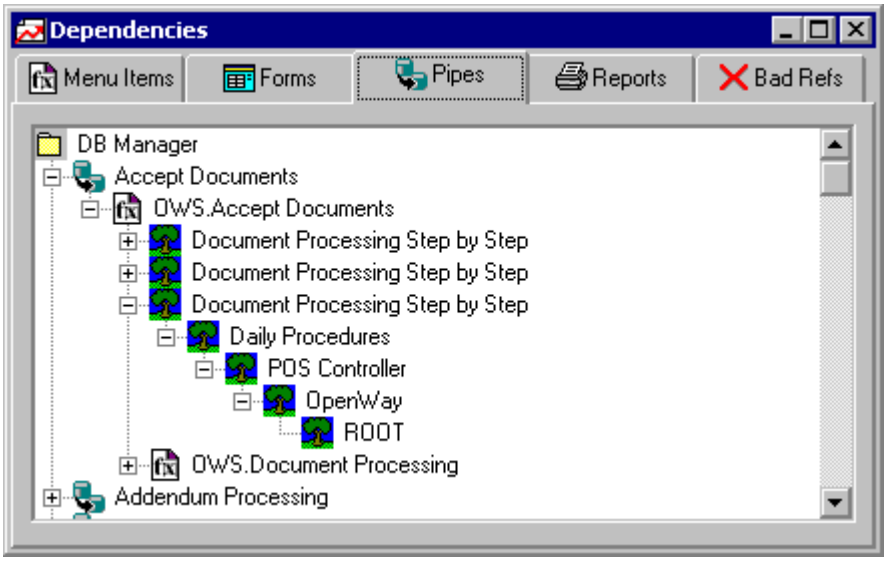

Fig. 13 A pipe in the user menu hierarchy

- "Reports" – hierarchical diagram showing the connection of a report with a form and higher-ranking forms or user menu items, all the way up to the root level from which this report can be generated (see Fig. 14).

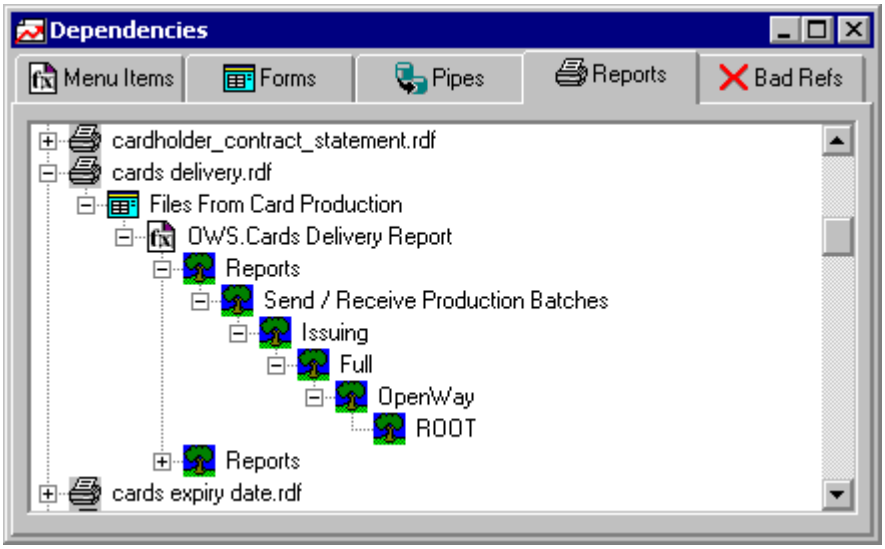

Fig. 14. A report in the user menu hierarchy

- "Bad Refs" – this tab contains a list of incorrect links from user menu items or forms, for example links to non-existent forms or procedures.

The list of bad references may also include links to "Oracle Report" type menu items (see the "Oracle Report Type" section of the "Menu Editor" document) in which, in addition to the report name, context variables from the "Local_constants" table are found. These context variables are specified in the report name where they are delimited by @ symbols, as in "risk_@command_text@".

The following icons are used for labeling various objects in these tabs.

- – menu group
- – menu item
- – form
- – pipe
- – report.

2.2 Toolbar

The toolbar (see Fig. 15) is an element of the DB Manager window, containing buttons corresponding to certain system menu commands.

Fig. 15. The DB Manager toolbar

The toolbar becomes available when DB Manager is started with the corresponding box checked in the "DB Manager Preferences" dialogue window (see "System Menu"). While DB Manager is running, the toolbar may be opened or closed on the screen by using the "Window => Show toolbar" command or the <Ctrl>+<T> key combination. The number of buttons on the toolbar is determined by DB Manager's current mode of operation.

2.3 User Menu

The user menu consists of groups and items (see Fig. 16). The available set of groups and items depends on the data access privileges of the particular user (see "Creating Workplaces" section of the "DB Manager User Management" document).

Menu items are used for opening forms and starting various processes. Menu groups are used for aggregating menu items and are indicated with the icon.

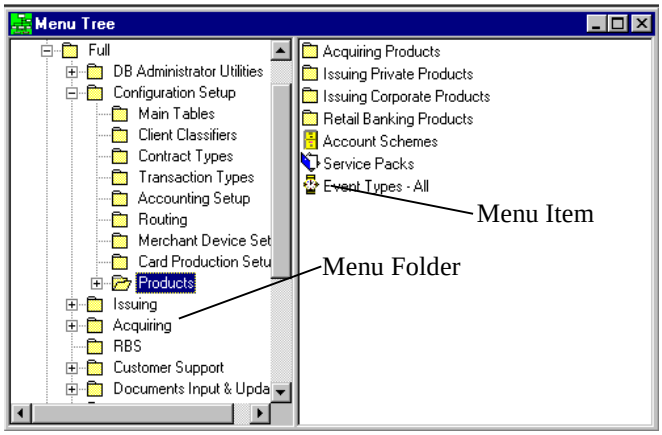

Fig. 16. The user menu

Groups are entered and menu items activated by double-clicking on them or pressing the <Enter> key after selecting the necessary name.

While working in the user menu, the "Window => Print" system menu item used for printing out the user menu tree, remains available.

While working with a large number of forms, a user can always go back to the user menu without closing the current form. To do so, use the "Window => Menu" system menu command or the <Ctrl>+<M> key combination.

2.4 Status Line

The status line is located at the bottom of the DB Manager window. It displays the most important parameters and the current status of the system. Normally, the status line has the following elements (see Fig. 17):

- Current status
- Banking date
- Name of the financial institution
- Client type
- System date and time

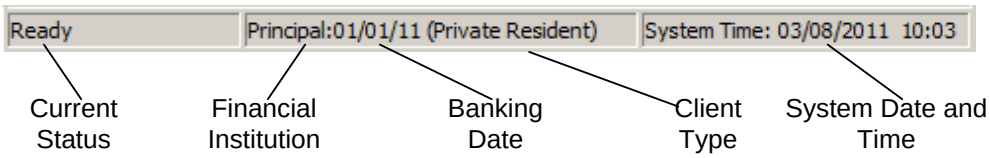

Fig. 17 Elements of the status line

2.5 Using the Keyboard in DB Manager

The following key combinations are available in all DB Manager's modes of operation:

- <Alt> or <F10> switches to the system menu
- <Ctrl>+<M> opens the user menu window
- <Ctrl>+<T> opens the toolbar.
- <Ctrl>+<Tab> shifts between the open windows of the program
- <Alt>+<F4> exits the program

3 Entering and Editing Data

Forms are used for entering and editing data in DB Manager (see "Forms").

Forms can be opened from the user menu or higher-ranking window by clicking the appropriate button or selecting a system menu item.

The procedure for opening a form from the user menu depends on the properties of the selected menu item, which are set when the menu is edited (see the "Form Type" paragraph of the "Menu Editor" document). Depending on the properties of the menu item, the following versions of the procedure are possible:

- The form opens right away.
- Before opening the form, the user may set arbitrary conditions for data selection.
- Before opening the form, the user must select a data selection scenario from a list.

3.1 Preliminary Selection of Records according to Arbitrary Criteria

In this case, the opening of a form is preceded by the opening of a dialog window for setting preliminary data selection criteria (see Fig. 18).

It is possible to do the following:

- Click the [OK] button without specifying selection criteria and begin editing, skipping preliminary selection.
- Click the [Cancel] button and leave the form without doing anything.
- Specify the criteria for preliminary data selection.

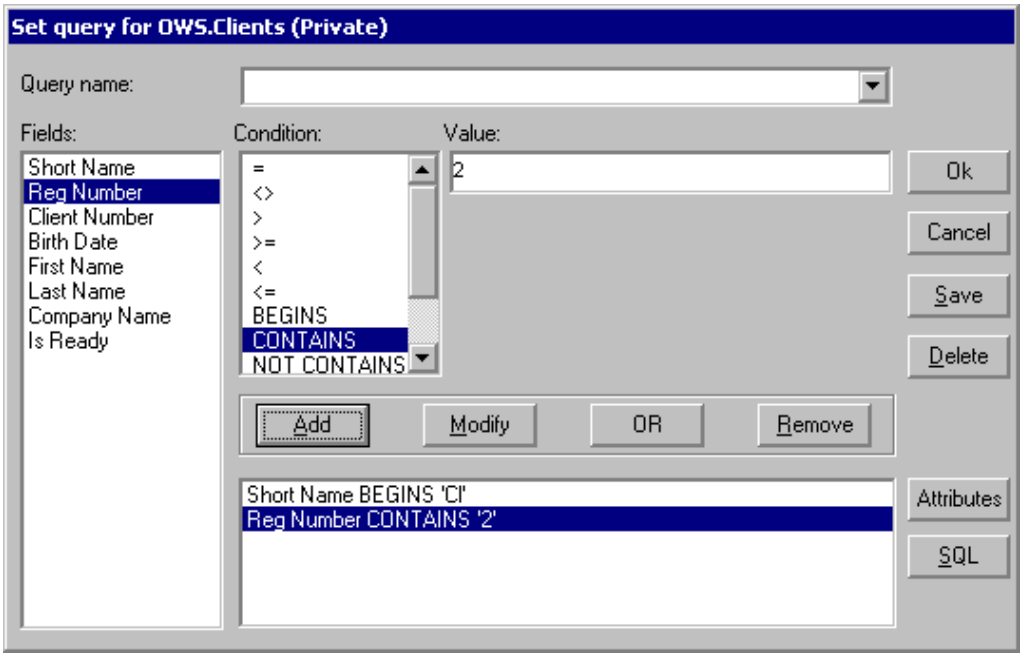

Fig. 18. Preliminary data selection window

Entering Simple Criteria for Data Selection

To specify a simple selection criterion:

- In the *Fields* list, select the field name whose values will be used for selection.
- In the *Condition* list, select the selection condition.
- Enter the required value in the *Value* field.
- Click the [Add] button.

DB Manager supports the following selection:

- The "=" condition is supported for all fields. This is the correspondence of the field value and the value set in the value field.
- The following conditions are applicable to all fields except additional ones (see "Use of Additional Fields (Attributes)"):
  - "<>", ">", ">=", "<", "<=" respectively mean "not equal", "greater than", "greater than or equal", "less than" and "less than or equal".
  - "IS NULL" search for empty (not filled in) field values.
  - "IS NOT NULL" search for not empty (filled in) field values.
- For strings, including those in additional fields (see "Use of Additional Fields (Attributes)").
  - "BEGINS" search for coinciding values at the beginning of the field.

  - "CONTAINS" search for any fields containing the value specified in the *Value* field.
  - "NOT CONTAINS" search for any fields not containing the value specified in the *Value* field.
- For dates:
  - ">= TODAY - " search for records where the date is either equal to or later than the system date by the number of days specified in the *Value* field.
  - "< TODAY - " search for records where the date is earlier than the system date by the number of days specified in the *Value* field.
  - "LAST MIN" - search for records where field value is either equal to or less than the system time by the number of minutes specified in the *Value* field.
- Only for additional fields (see "Use of Additional Fields (Attributes)"):
  - "SET" – a value is specified in the additional field.
  - "SET AFTER" – the date and time specified in the additional field are later than the date and time shown in the *Value* field.
  - "NOT SET" – no value is specified in the additional field.

Clicking the [Attributes] button in the dialogue window for preliminary data selection adds the names of additional fields to the list of fields that can be used for preliminary data selection, if these fields are used for the corresponding form (see "Use of Additional Fields (Attributes)").

The [SQL] button opens the window for entering arbitrary SQL expressions for data selection in a form (see "Using SQL Expressions for Data Selection").

Entering Complex Criteria for Data Selection

Simple criteria for data selection may be aggregated with the use of "AND" and "OR" operators.

To create a complex criterion using the "AND" operator:

- Select the first criterion.
- Click the [Add] button.
- Select the second criterion.
- Click the [Add] button.

To create a complex criterion using the "OR" operator:

- Select the first criterion.
- Click the [Add] button.

- Click the [OR] button.
- Select the second criterion.
- Click the [Add] button.

Complex criteria may be created with the use of both "AND" and "OR" operators. In this case, first all the "AND" statements are executed, and then the "OR" statements.

Priorities may be assigned to operations involving complex criteria with the use of "(" and ")" symbols (bracket operators). For instance, "(<condition A>OR<condition B>)<condition C>". In this case, conditions in brackets are executed first. Priority-assigning brackets are entered in a special window (see Fig. 19). The window is opened by right-clicking in the bottom of the preliminary data selection dialogue window.

To add or delete "(" and ")" symbols, in the bottom of the preliminary data selection dialogue window select the required string with the condition, right-click, and select the appropriate command in the list that opens:

- "(– Add" – adds an opening bracket to the beginning of the string.
- ") – Add" – adds an opening bracket to the end of the string.
- "(– Delete" – deletes the opening bracket.
- ") – Delete" – deletes the closing bracket.

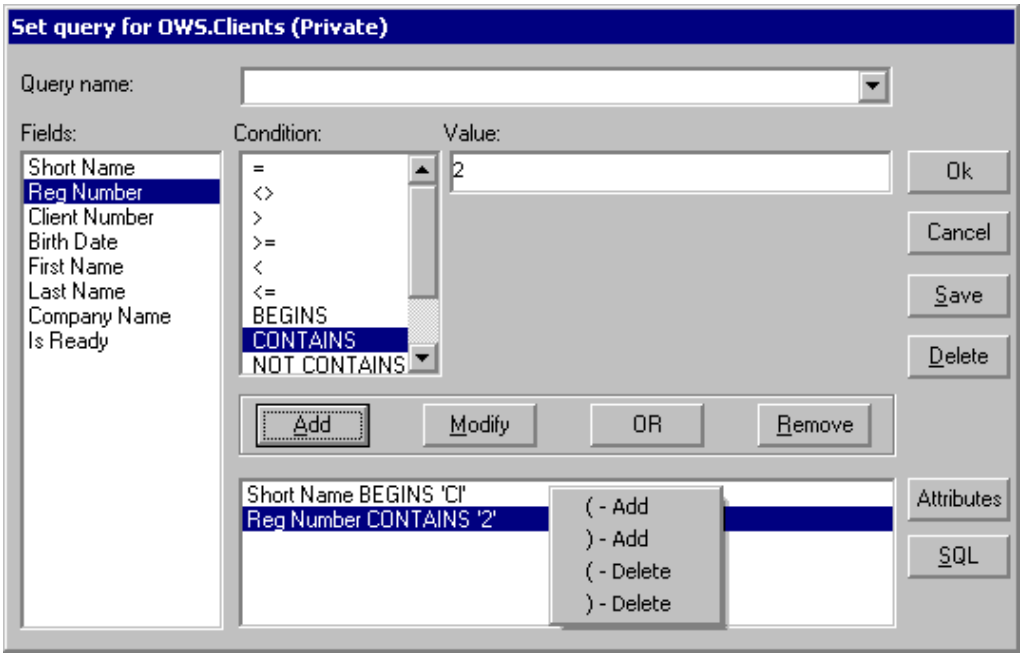

Fig. 19. Preliminary data selection window for the creation of complex criteria

The entered criteria are saved as a list in the bottom part of the preliminary data selection dialogue window.

If necessary, these criteria may be:

- Modified – select the necessary criterion from the list, change the selection conditions and click the [Modify] button.
- Removed – select the necessary criterion from the list and click the [Remove] button.

3.1.1 Using SQL Expressions for Data Selection

The [SQL] button in the window for entering preliminary data selection criteria (see Fig. 18 in section "Preliminary Selection of Records according to Arbitrary Criteria") opens the window for entering arbitrary SQL expressions to select data (see Fig. 20). Before the window is opened, a warning with a prompt to confirm switching to this data selection mode is displayed.

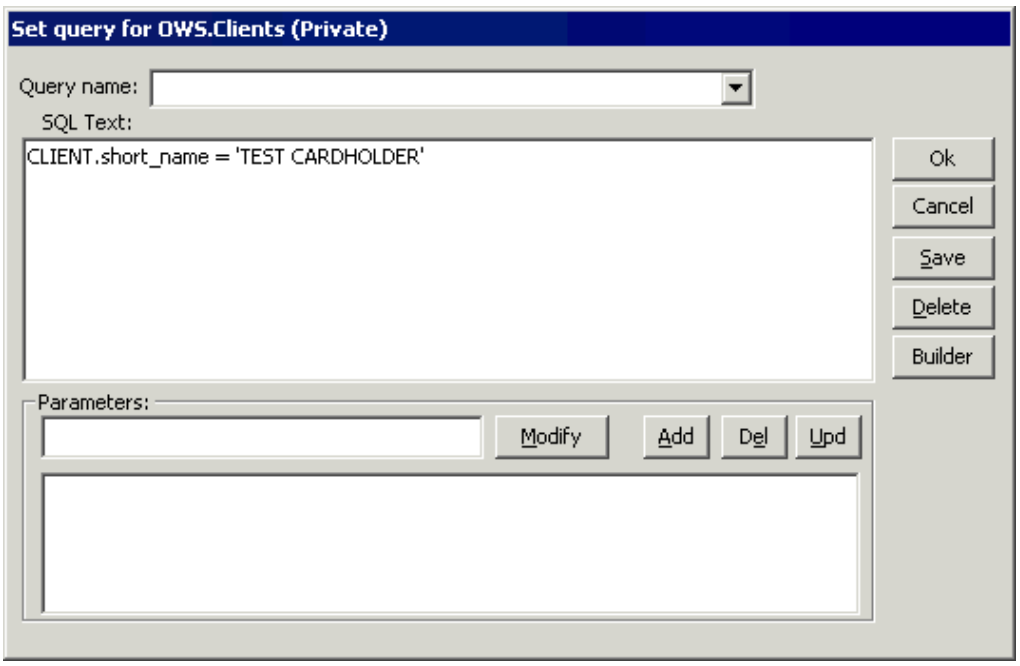

Fig. 20. Window for preliminary data selection using SQL expressions

The *SQL Text:* field is used to enter the condition part (the WHERE operator) of an SQL expression "SELECT * FROM <current table> WHERE".

To make query generation more usable, the window supports a mechanism for determining parameters that can be used in SQL expressions.

The *Parameters:* group is used to define the list of parameters and their values.

The [Add] button is used to add parameters to the list. Clicking the button will open the corresponding window (see Fig. 21), where a parameter name must be specified in the *Name* field and its type in the *Type* field.

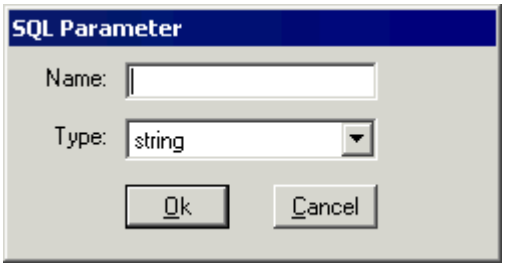

Fig. 21. Window for adding a parameter to the list

After clicking the [OK] button in the "SQL Parameter" window, a new parameter is added in the list in the lower field of the *Parameters:* group of the "Set query for <name of form>" window.

To edit parameters, select the necessary parameter by clicking its name in the list.

The upper field in the *Parameters:* group is used to enter new parameter values, and the [Modify] button is used to set new values.

The [Del] button is used to delete parameters from the list.

The [Upd] button is used to edit parameter names.

To use a parameter, specify its name between two "@" symbols in an SQL expression.

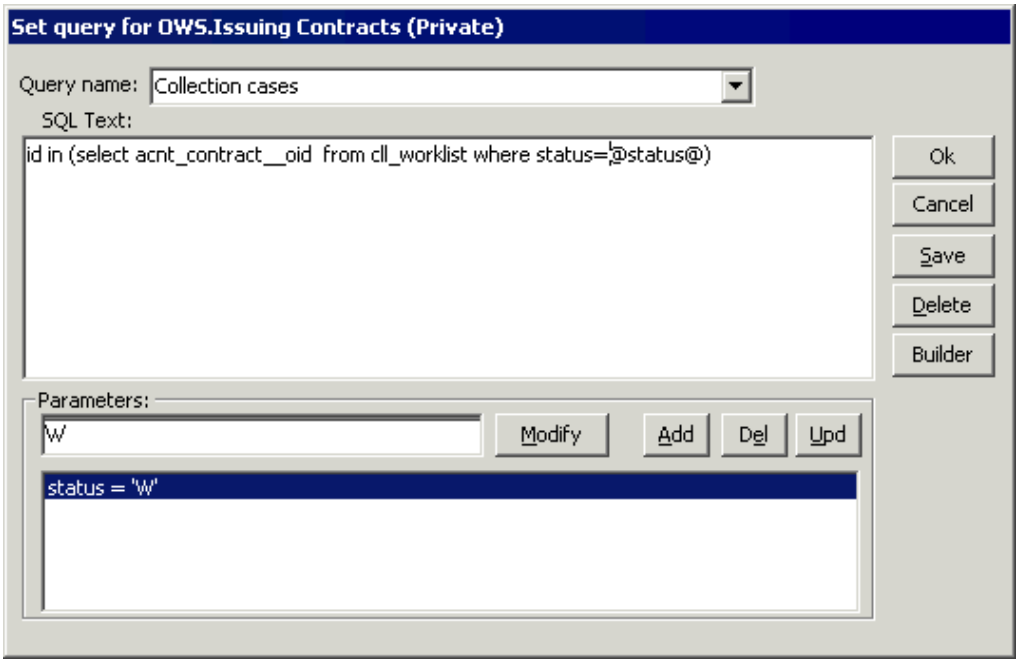

Fig. 22. Example of an expression for preliminary data selection

To automatically insert a parameter in an SQL expression, place the cursor in the necessary position in the expression and double-click the parameter name in the list.

Use of Data Selection Scenarios

Complex or frequently used selection criteria may be saved as scenarios for future use.

To save a scenario, enter its name in the *Query Name* field and click the [Save] button. If the entered name is not unique, a warning message to this effect will pop up on the screen (see Fig. 23.).

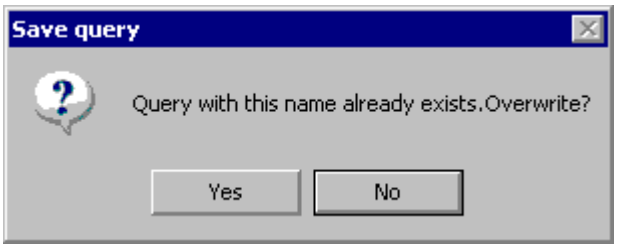

Fig. 23. Warning message when attempting to save a scenario under an existing name

To load a data selection scenario, select its name from the list that opens in the *Query Name* field when the button is clicked. If necessary, the selection criteria in a scenario may be altered and the scenario re-saved.

To delete a scenario, select its name from the list that opens in the *Query Name* field, click the [Delete] button and confirm deletion in the "Delete Query" confirmation window (see Fig. 24.).

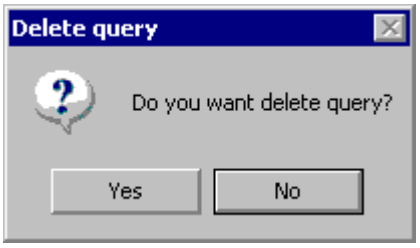

Fig. 24. "Delete Query" confirmation window

3.2 Preliminary Data Selection according to a Set Scenario

The opening of a form may be preceded by a dialogue window for selecting pre-saved scenarios (see Fig. 25).

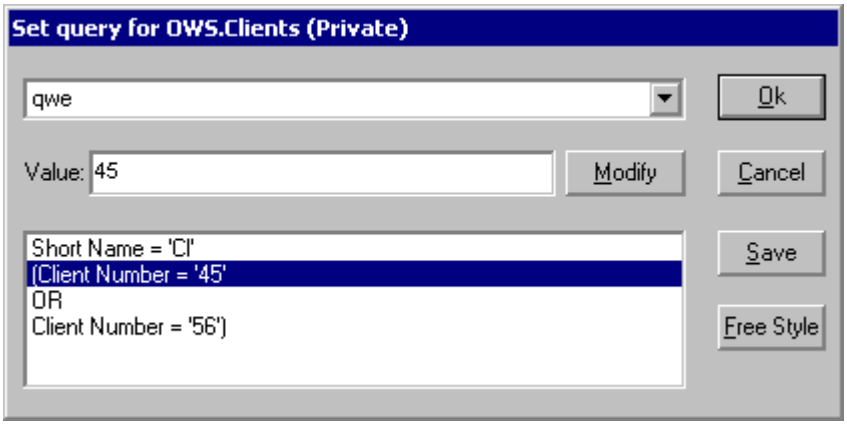

Fig. 25 Window for selecting pre-saved scenarios

To do so, the user menu item needs to be reconfigured (see the "Menu Editor window" section of the "Menu Editor" document) so the "Prepared" value is specified for the menu item in the *Query* field of its sub-item properties window (see Fig. 26)

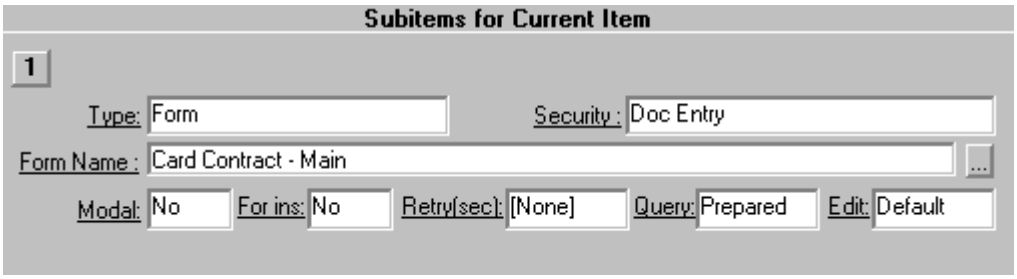

Fig. 26 Window for selecting pre-saved scenarios

In this case, the user may do the following:

- Reconfigure the sub-item for data selection according to a set scenario – by clicking the [Ok] button.
- Select a different data selection scenario, if any.
- Decline the opening of the form by clicking the [Cancel] button.
- Modify the scenario by selecting the required condition, entering the necessary value in the *Value* field and clicking the [Modify] button (the modified scenario may be saved by clicking the [Save] button).
- Switch to the data selection according to arbitrary criteria mode (see "Preliminary Selection of Records according to Arbitrary Criteria") – by clicking the [Free Style] button.

3.3 Forms

In DB Manager, data are entered and edited using forms.

3.3.1 Form Types

In DB Manager, two types of windows are used for displaying and editing database records. They are as follows:

- Tables where records are represented as rows and fields as columns (see Fig. 27) (grid forms).
- Forms (see Fig. 28) corresponding to one database record (free forms).

Fig. 27 A form represented as a table

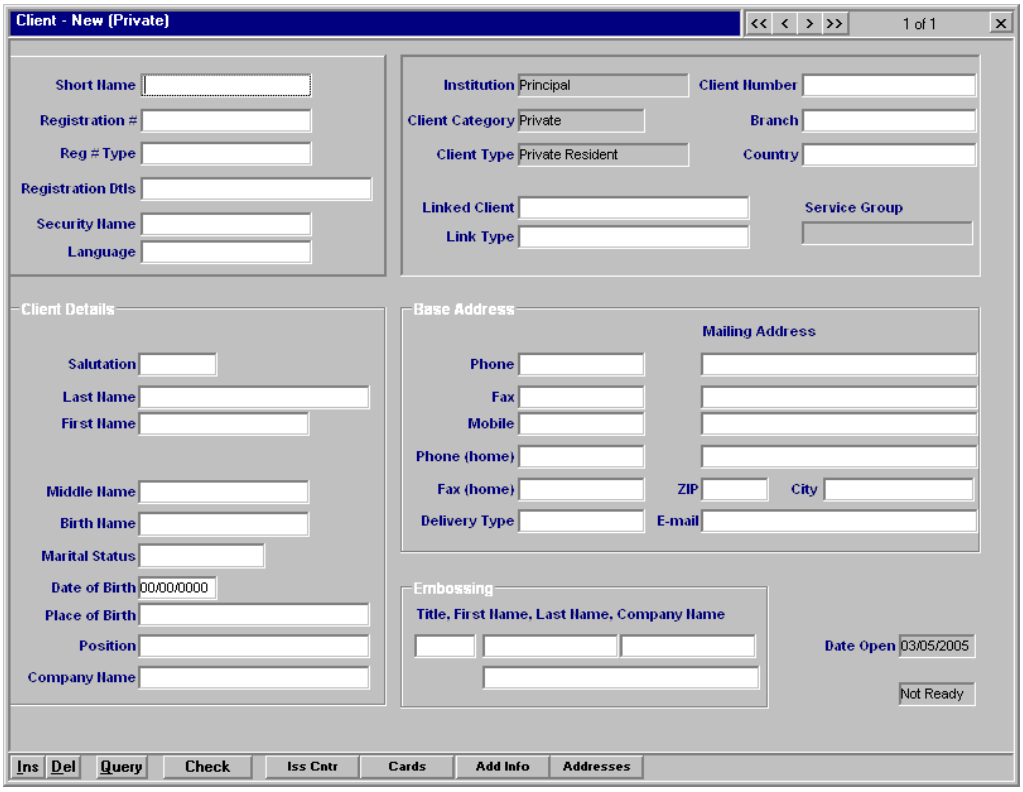

Fig. 28 A form represented as a dialogue window

3.3.2 Form Fields

Fields belong to forms and are used for entering, displaying and editing data.

The following types of fields are used in DB Manager (see Fig. 5.):

- Text. These fields (blank until filled in) are used for typing in either text or numbers.

- Number. These fields (containing a digit by default) can accept only numeric data.
- Date. These fields (containing a zero date "00/00/0000" by default) are used only for entering numeric data in date format.
- Fields for entering values from a drop-down list. When the cursor is placed in such a field, the  icon will appear in it.

3.3.3 Form Controls

The following controls are used for editing data (see Fig. 29):

- Navigation buttons, such as () used for skipping to the first record, () for moving to the previous record, () for moving forward to the next record and () for skipping all the way forward to the last record in the database.
- The [Ins] button is used for inserting new records.
- The [Del] button deleted a selected record. When this button is clicked, the system requires confirmation of the action.
- The button for calling an associated procedure. This button is not present in every form. It is used for verifying the correctness of the entered data.
- The data selection [Query] button is used when it is necessary to modify data selection conditions for the form.
- The window closing button. This button, used for closing a form, is standard for MS Windows.
- Buttons used to open child windows for entering additional data for the selected record (for example, to view and enter contract data for the selected client).

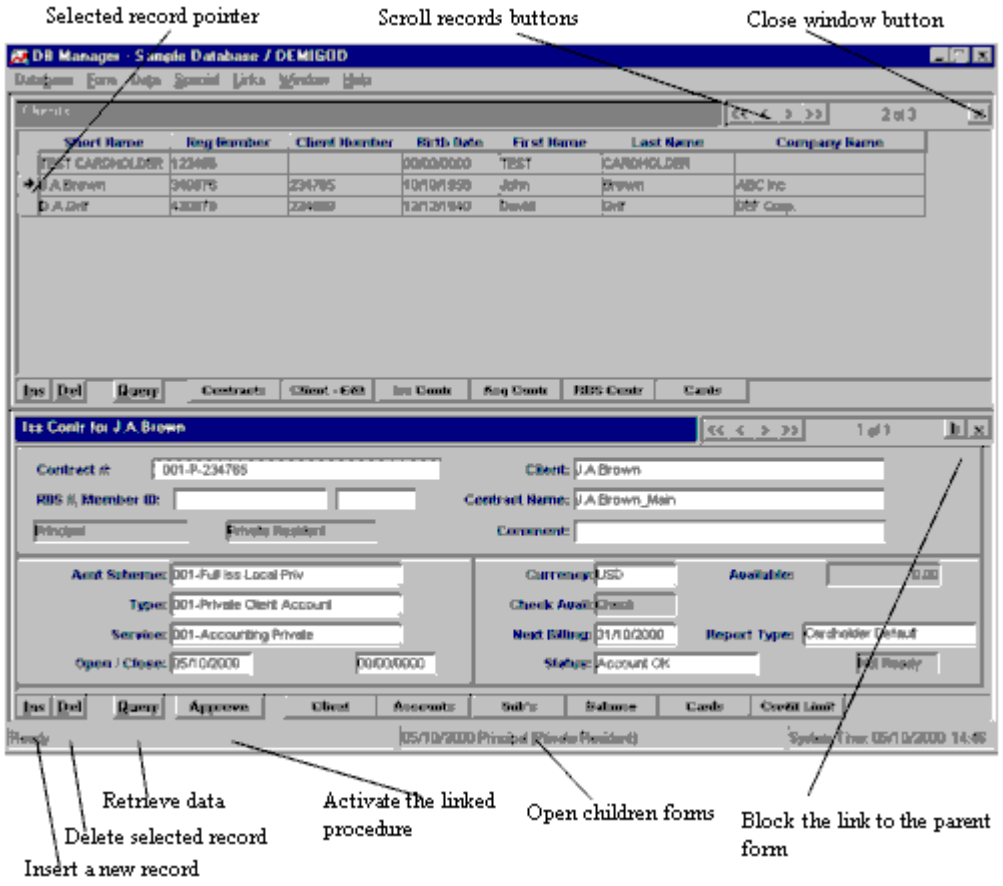

Fig. 29 Form controls

3.3.4 Child Forms

Child forms are called either from a form by clicking the appropriate buttons located at the bottom of the form window (see Fig. 29) or using the the "Links => <name>" system menu item.

Note that the number of buttons used for bringing child forms to the screen depends on the selected screen resolution. If there is a large number of child forms (Links system menu items) and screen resolution is low, not all these buttons will be displayed. In this case, use the Links system menu to open child forms.

After opening, a child form is linked with its parent form (from which it was called) and its content will dynamically when another record is moved to in the higher-ranking window. It will close when the higher-ranking window closes. The b button located in the right upper corner of the child form (see Fig. 29) informs the user of this link. When this button is clicked, it disappears from the screen and the connection between the windows is severed; as a result, shifting between records in the parent form closing it will no longer affect the content of the child form.

Press the <Esc> key to return to the parent form from its child form.

3.3.5 Using the System Menu

While working in a form window, the following system menu items become available:

- "Form"
  - "Form => Save" (<Ctrl>+<ALT>+<S>) – saves forms in the work directory (see "The Concept of Storing Forms in WAY4 Standard Directories", Appendix 1 of the "Form Builder" document).
  - "Form => Save as" – saves forms or tables in the work directory under a new name.
  - "Form => Design Mode" (<Ctrl>+<D>) – switches a form into editing mode (see "Form Design Mode" section of the "Form Builder" document).
  - "Form => Field Labels" – opens the window for defining field labels and the order in which fields/columns appear in the preliminarily data selection window (see Fig. 18). Field labels may be selected from a list set when the form is designed, or the user may specify desired names. In the latter case, labels in the *Label* field will be shown in red.

    This window is also used for creating *Microhelp* prompts appearing in the status line when the mouse pointer touches a field/row in a table (see Fig. 30).

    To change the order in which columns/fields appear, click on the required field label, move the mouse pointer, which will assume the shape of a bold arrow (⬅), to the desired position and click again.
  - The [Reset order] button is used for restoring the default order in which columns/fields appear.

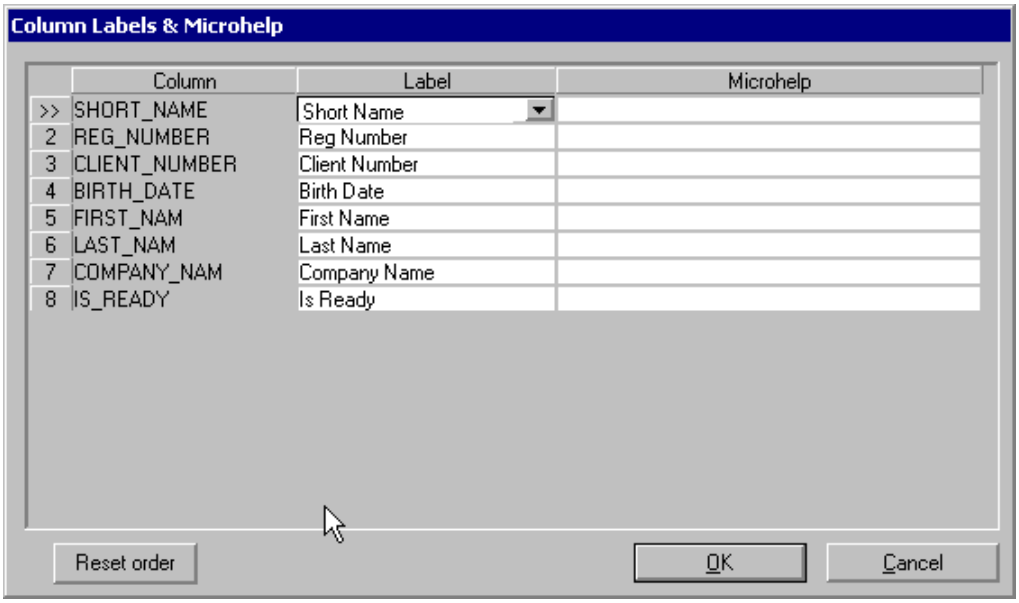

Fig. 30. Window for labelling form fields

- "Form => Links" (<Ctrl>+<L>) – opens the "Select Links for ..." window showing connections between a form and other forms (see the "Links to Other Forms" section of the "Form Builder" document).
- "Form => Options" (<Ctrl>+<O>) – opens the window used for configuring the current form (see the "Configuring a Form" section of the "Form Builder" document).
- "Form => Close" closes the form.

All items of the Form menu, with the exception of "Form => Close", are used when working with Form Builder (see the "Form Builder" document).

- "Data"
  - "Data => Retrieve" (<Ctrl>+<R>) – updates data in a form according to selection criteria.
  - "Data => Print" (<Ctrl>+<P>) – sends the current selection to a printer (see Sending Data to a Printer).
  - "Data => Export" – exports the current selection to a text file.
  - "Data => View Attributes" (<Ctrl>+<A>) – opens tabs with additional fields (attributes) of a form (see "Use of Additional Fields (Attributes)").
  - "Data => Edit Multiline" <F9> – opens the multi-line text editor window.
  - "Data => Retrieve All" (<Ctrl>+<Shift>+<A>) – updates all data in the window, regardless of the selection criteria.
  - "Data => Sort" (<Ctrl>+<S>) – sorts data (see "Sorting Data in a Form").

- "Data => Query" (<Ctrl>+<Q) – opens the preliminary data selection window, where data selection criteria can be changed (see Fig. 18).

- "Special"
  - "Special => Change Downwards" – in every record following the current one, replaces the field value with the field value of the current record (requires confirmation in an additional dialogue window see Fig. 31).

It is not recommended to use this menu item for lists of objects that belong to different financial institutions. For example, when copying the "Next Event" field value from the "Event Types" table using the "Change Downwards" menu item, the ID of a record's financial institution will be copied along with the field value. Accordingly, the "Next Event" field value that is copied will not be used for Events that belong to the other financial institutions.

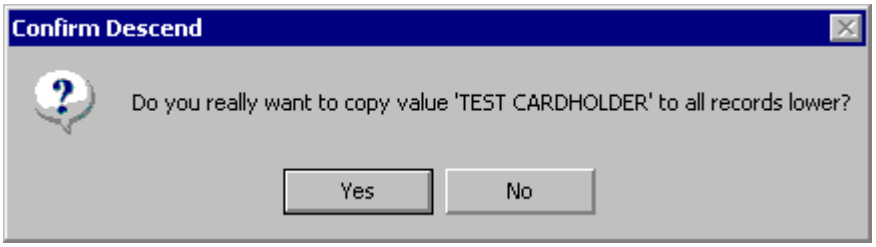

Fig. 31 Confirmation window that opens when the value of a field is about to be replaced in all records selected for editing

- "Special => Copy with Children" – creates copies of a record and all its child records; for example the copying of a risk management scheme complete with its set of parameters (see the "Risk Management" document).

Note that adding records in this way may have serious consequences as it distorts the information contained in a database. Consult the developers before using this menu item.

- "Special => Insert Many" – adds a specified number of records.

It is recommended to consult the developers before using this menu item.

- "Special => View History" – opens a window with a table whose columns correspond to the fields of the current form, and where the number of rows is the same as the number of changes to field values (for more information, see the section "Logging Changes in Grid Form Records" of the document "DB Manager User Management"). To restore previous

data, select the table row with desired values and click the [Undelete] button.

- "Special => Delete All" – deletes all selected records (requires confirmation in an additional dialogue window).

Note that deletion of records may cause the loss of information contained in the database.

- "Special => System Fields" – shows hidden fields.
- "Special => Deleted" – opens a table containing deleted records. To restore a deleted record, select the table row containing that record and click the [Undelete] button (see Fig. 32).

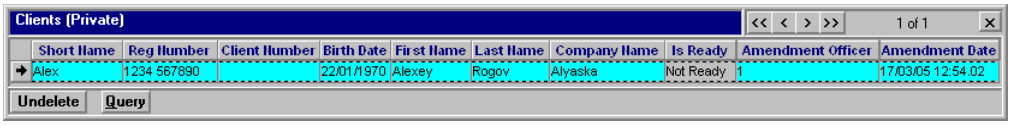

Fig. 32 Form for restoring deleted records

- "Links"
  - "Links => <Form name>" opens a child form. This item is the same as the button for opening child forms.

Sometimes, the list of child forms is so large that there may not be enough space for buttons to open them. If this is the case, use the appropriate system menu to do so.

- "Window"
  - "Window => Arrange Two" – arranges two open windows on the screen. This command is used in form design mode (see the "Form Builder" document).
  - "Window => Layer" – switches the active window to full screen mode.
  - "Window => Close All" – closes all open windows.
  - "Window => Restore" – restores the size of the active form window and its default location.
  - "Window => <Window name>" – switches between open widows.

3.3.6 Editing Fields

Use the mouse or the <Tab> key (or <Shift>+<Tab>) to move from field to field.

Fields available for editing have a white background. Unavailable fields are gray.

For text, number and date fields data is entered from the keyboard (see "Form Fields").

For fields with drop-down lists, values are entered by clicking on them in the list.

For some fields, the user is shown a dialogue window to select field values (see Fig. 33).

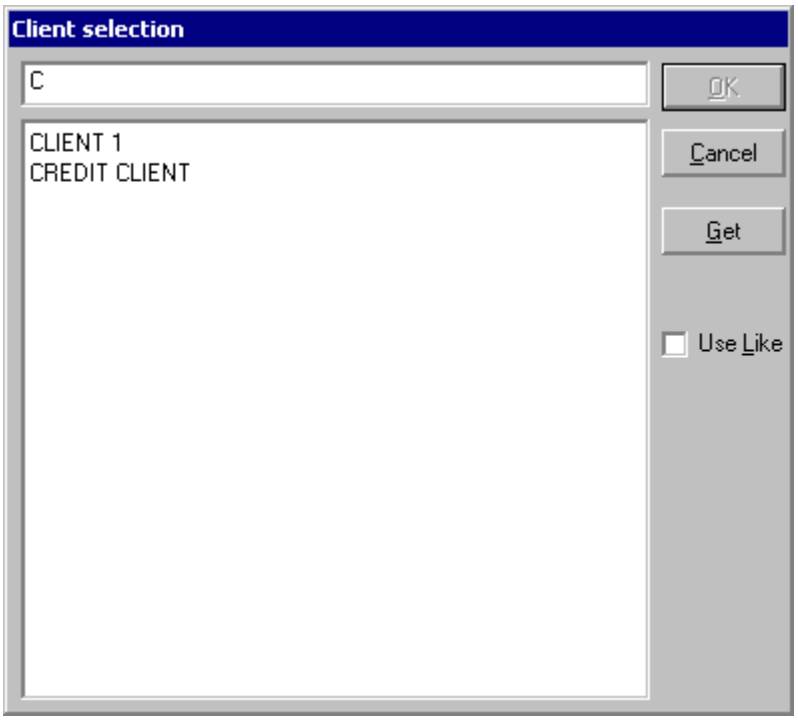

Fig. 33 Dialogue window for selecting field values

This dialogue window is used for selecting field values from large lists, such as client lists.

In order to select a field value:

- Enter the initial characters of the required field value in the top section of the window.
- Click the [Get] button.
- Click the desired field value in the list that opens in the lower section of the window.
- Click the [OK] button.

A selection may also be made by a partial field value. To do so:

- Check the *Use Like* box.
- In the upper section of the window, enter a partial value, using the "%" sign (any number of arbitrary symbols, the same as rules for using special symbols in PL/SQL queries), like "%ABC%".

- Click the [Get] button.
- Click on the appropriate value in the list that opens in the lower section of the window.
- Click the [OK] button.

To open the whole list into the dialogue window:

- Enter the "%" symbol into the upper section of the window.
- Click the [Get] button.

3.3.7 Using the Keyboard when Working with Forms

The following keys and their combinations are used while working with forms:

- <Tab> or <Enter> – moves to the next field.
- <Shift>+<Tab> – moves to the previous field.
- <Alt>+<↓> (in a field with a list of values) – chooses from a list.
- <Shift>+<←>, <Shift>+<→> – selects text.
- <Ctrl>+<C> – copies the selection into the clipboard.
- <Ctrl>+<X> – cuts the selection out and copies it into the clipboard.
- <Ctrl>+<V> – inserts the contents of the clipboard.
- <Alt>+<I> – inserts a new record.
- <Alt>+<D> – deletes a record.
- <Ctrl>+<End> – skips to the end of the list.
- <Ctrl>+<Home> – skips to the beginning of the list.

The following keys may also be used in table forms:

- <Tab> or <Enter> (in the last field) – moves to the next record (row).
- <Shift>+<Tab> (in the first field) – moves to the previous record (row).
- <PgUp>, <PgDn> – moves up/down one screen.

The following keys may also be used in free-format forms:

- <PgUp> – moves to the previous record (form).
- <PgDn> – moves to the next record (form).
- <Esc> – returns from the child form window to the parent form window from which the child form was opened.
- <Enter> (in the last field) – moves to the next record (form).

3.3.8 Sorting Data in a Form

While working with forms, it is possible to select the "Data => Sort" item of the system menu or click on the [Sort] button in the toolbar and sort the data. Doing so displays the data sort dialogue window (see Fig. 34).

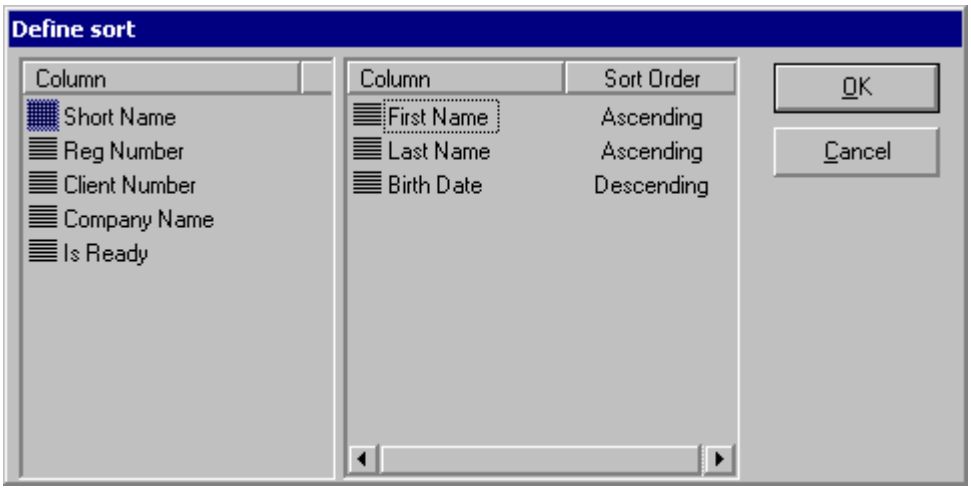

Fig. 34 Data sort dialogue window

In the left-hand section of the data sort dialogue window, the field (column) labels of the form are listed. In the middle section, the fields to be sorted and sorting order options are listed.

To select fields for sorting and a sorting order:

- Drag the label of the field (column) to sort from the left-hand side to the middle section of the dialogue window. By default, the field will be assigned an ascending order of sorting.
- If necessary, repeat the action for other fields (columns).
- Select the order in which these fields will be sorted by dragging the labels to their desired positions on the list.
- Set the sort order, ascending or descending, by double-left-clicks on the field labels where ascending sort order needs to be replaced with descending.
- Click the [Ok] button.
- To cancel sorting, drag the field (column) labels back into the left-hand section where the form fields are listed.

3.3.9 Use of Additional Fields (Attributes)

DB Manager allows additional fields (attributes) to be added to forms. The number and names of attributes are determined by users with administrator privileges. These additional fields are intended for entering additional data the user may need while working with a form.

Additional fields appear as tabs located in the bottom part of the window (see Fig. 35). They are opened using the "Data => View Attributes" system menu item or by pressing <Ctrl>+<A>.

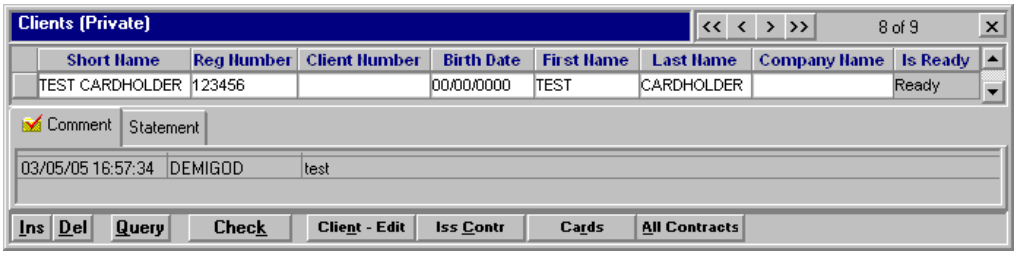

Fig. 35 Form with additional field tabs

To replace the value of an additional field, open its "Specify additional value..." window by clicking on the required tab (see Fig. 36).

New values are added and the old ones deleted by clicking the [Insert] and [Delete] buttons respectively. Beside the current value of an additional field, each row contains the date it was updated and the name of the user who updated it.

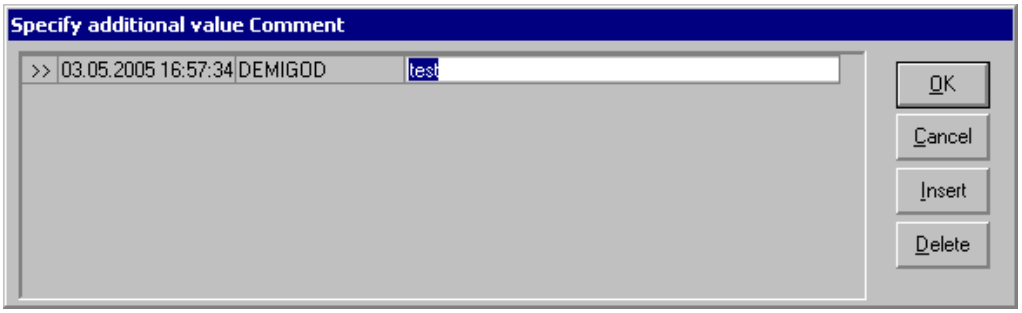

Fig. 36 "Specify additional value..." window

The tabs of additional fields whose values have been updated are marked with a special sign.

Additional form fields are created with the "Full →DB Administrator Utilities → System Utilities →Additional Fields" item of the user menu.

When this item is selected, the "Additional Fields" window (see Fig. 37) pops up on the screen. It contains a list of forms where additional fields (attributes) have been created.

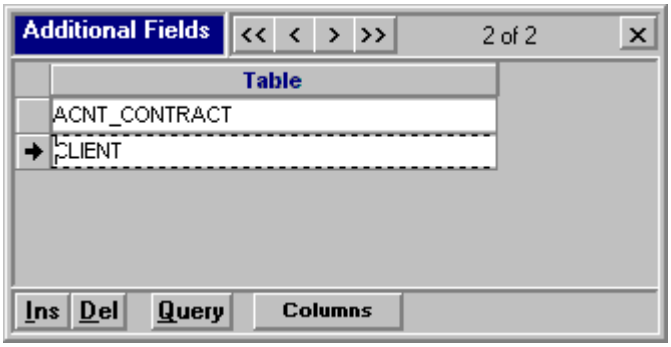

Fig. 37 "Additional Fields" window

New labels are added by clicking the [Ins] button and selecting from the list of forms that opens in the added blank field.

The child window containing a list of additional form fields (see Fig. 38) is opened by clicking the [Columns] button.

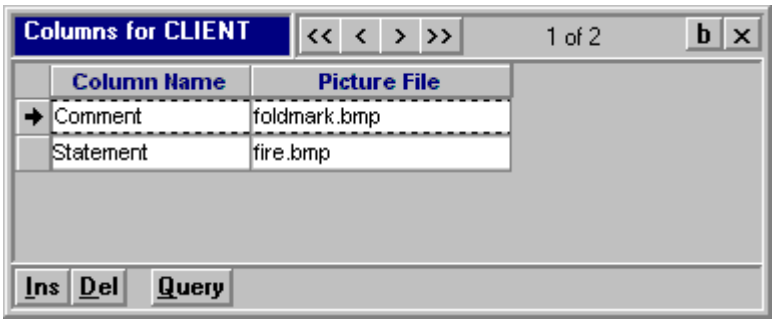

Fig. 38 Window for creating additional form fields

New additional fields are added to a form by clicking the [Ins] button and adding a label in the *Column Name* field. In the *Picture File* field, the user may also specify the name of the file containing the picture to be used as the sign that, when placed on the tab, will show that a value has been specified. The picture file must be located in the "<OW_Home>\Client\Shared\Bmp" directory

3.3.10 Sending Data to a Printer

The content of a form is sent to a printer either by selecting the "Data => Print" system menu item (<Ctrl>+<P>) or clicking the [Print] button on the toolbar. This opens the print preview window with horizontal and vertical rulers (see Fig. 39) opens.

In the print preview window, the user can change the sizes of the fields on the page by dragging the "↔" and "↕" symbols located on the rulers to either side. The *Title* field contains the title of the form that is also printed out. Before sending the form to the printer, this title can be edited. The *Zoom* field is used for altering the size of the page while previewing.

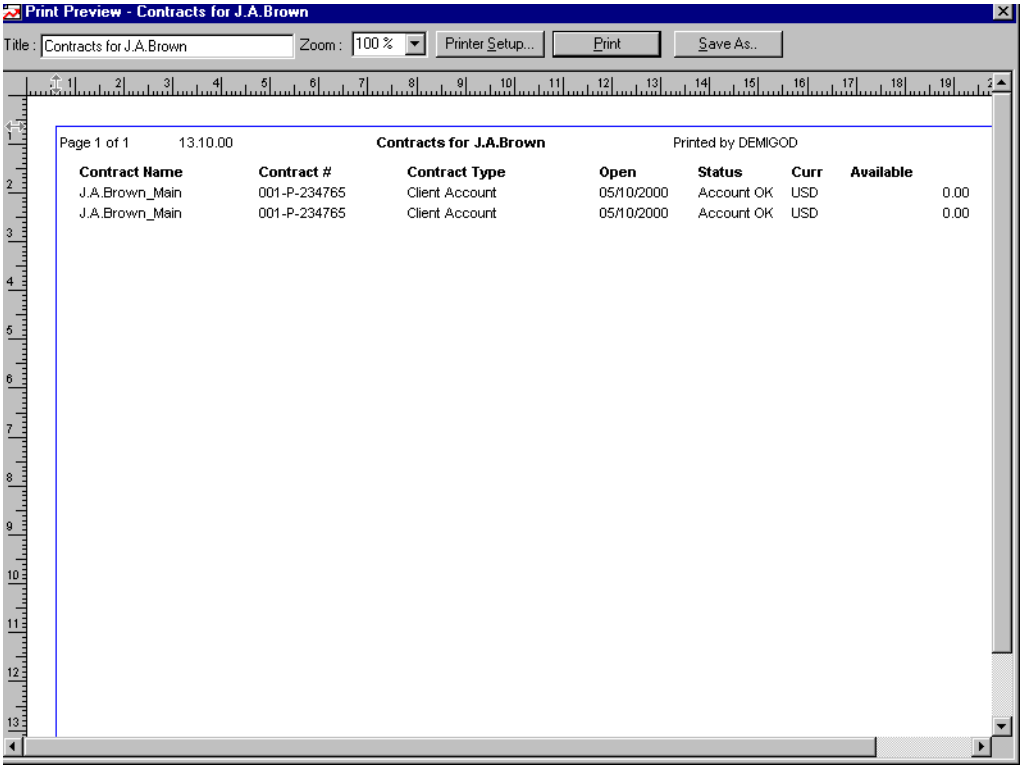

Fig. 39 Print preview window

The print preview window has the following buttons:

- [Printer Setup] opens the dialogue window for setting printing parameters (see Fig. 40).

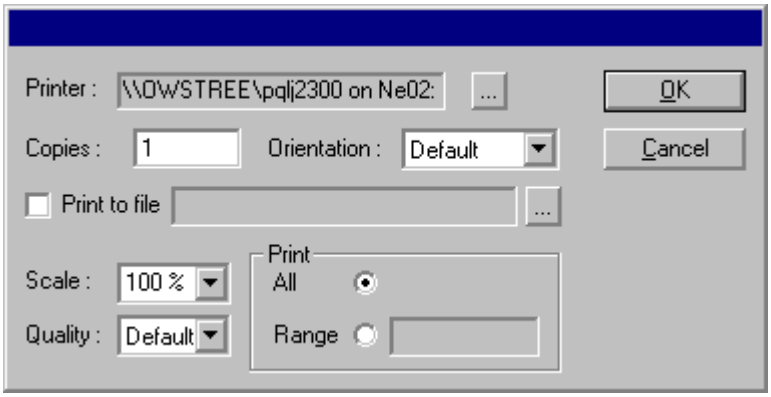

Fig. 40 Print setup dialogue window

The fields of this window are filled in according to MS Windows standards. The default values of the *Orientation* and *Quality* fields correspond to the parameters of the selected printer.

- The [Save As] button of the print preview window saves the data being printed in the Powersoft Reports format (*.PSR).
- The [Print] button starts the printer.

4 DB Manager Processes

Besides opening forms, the user may also start various processes by selecting menu items.

With regard to user control, there are two kinds of DB Manager processes:

- Uninterruptible processes are those that users cannot stop. During execution of such processes, they started at time and elapsed time are displayed in the Create Statistics window (see Fig. 41). The completion of an uninterruptible process is followed by a message that it has been completed or an error message.

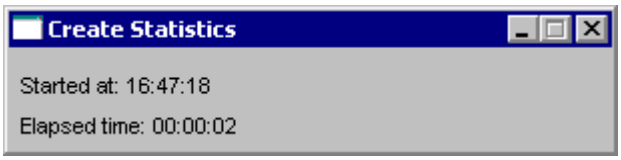

Fig. 41 Create Statistics window of an uninterruptible process

- Interruptible processes are those accompanied by a progress indicator in a dialogue window (see Fig. 42). These can be stopped by clicking the [Cancel] button.

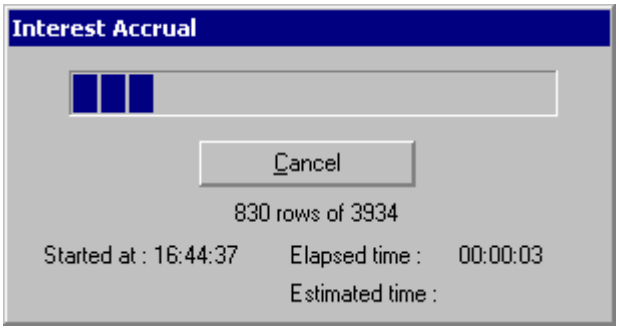

Fig. 42 Interruptible process dialogue window

With regard to execution, processes are:

- Independent, that is, processes that run as stand-alone MS Windows tasks, meaning all the functions of DB Manager are independently available while such processes last.
- Child processes. These make the use of DB Manager functions impossible until their completion.

4.1 Process Log

Forms used for working with the process log are opened by the "Full →Process Log" user menu item (see Fig. 43).

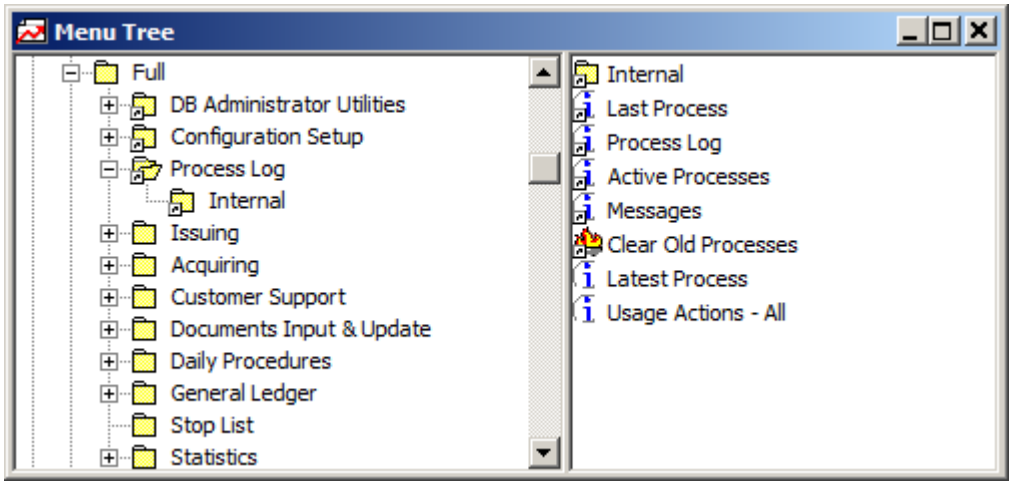

Fig. 43 Process Log group of the user menu

4.1.1 "Process Log" Menu Item

The "Process Log" form contains information about all processes taking place in the system since the latest housekeeping. This form is available through the "Full → Process Log →Process Log" user menu item (see Fig. 44).

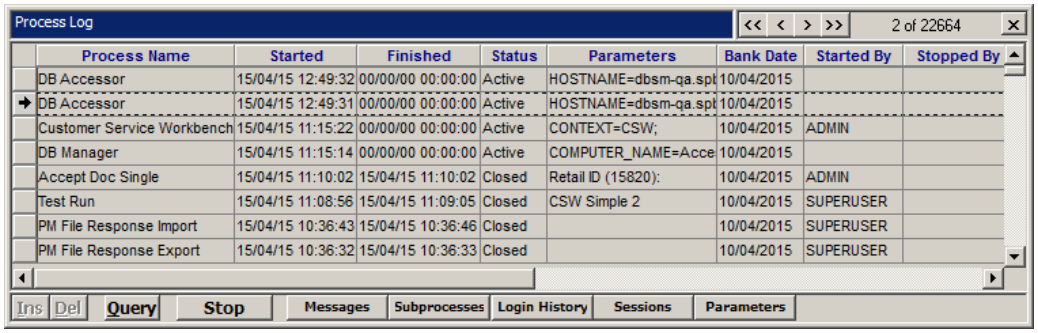

Fig. 44 Process Log form

The form specifies the parameters of each process, such as its name, start date and time, completion or termination date and time, current status, etc.

A system process can have one of four statuses:

- "Active – the process is being executed.
- "Closed" – the process was successfully completed.

Note that a file can be downloaded successfully if the file was found, but contains logic and format errors. To reveal these errors, check the "Error Level" field.

- "Rejected" – rejected (not completed) due to errors that occurred during its execution.
- "Suspended" – the process was stopped by the user.
- "Stopped" – interrupted (terminated) by the system administrator. This process is not considered successfully completed until its status changes to "Closed", which will happen automatically when the process has completed correctly.

When the [Stop] button is clicked in the "Process Log" form, a context menu will be shown with the following items:

- "Stop" – stop a process being executed. This item is available for processes with the "Active" and "Suspended" statuses. If a process cannot be stopped correctly with the "Stop" item, it can be terminated by changing the status to "Rejected". This action is performed with the "Clear" menu item.
- "Suspend" and "Resume" – suspend and resume a process being executed. When the "Suspend" item is selected, execution of a process will be suspended and the "Suspended" value will be specified in the *Status* field. To resume a process that has been suspended, select the "Resume" item.

Note that it only makes sense to select the "Suspend" and "Resume" items for processes with a non-null value of the *Current Number* field (for example, contract processing, calculating predicted interest, etc.).

In WAY4 it is possible to suspend all processes being executed with a non-null value of the *Current Number* field. To do so, set the global parameter "SUSPEND_ALL_PROCESSES=Y" (see the section "SUSPEND_ALL_PROCESSES" of the document "WAY4™ Global Parameters").

If the global parameter "SUSPEND_ALL_PROCESSES" is set ("Y" value), the "Suspend" and "Resume" context menus will not function (since processes will be suspended). Therefore, to resume processes suspended with the global parameter, set the value of the "SUSPEND_ALL_PROCESSES" parameter to "N".

- "Stop and Clear" – stop a process being executed and change its status to "Rejected". This item is the same as sequential execution of the "Stop" and "Clear" items.
- "Change Debug Level" – temporary change in the process logging level written to the log file. When this item is selected, the "Set Tmp Debug Level" form is shown (see Fig. 45).

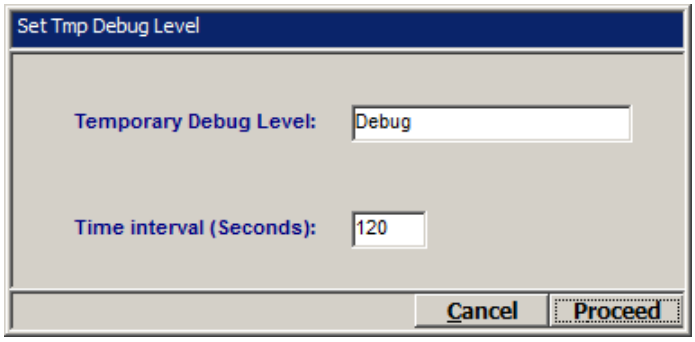

Fig. 45. Temporary change in process logging level

In the *Temporary Debug Level* field, select a logging level from the list: "DEBUG" – debugging information is saved; "TRACE" – debugging information is saved that is more detailed than for the "DEBUG" value; "ALL" – all information about the execution of the process; "NONE" – no information is saved about the execution of the process. In the *Time interval (Seconds)* field, specify the time interval (in seconds) during which the selected logging level will be applied. After clicking the [Proceed] button, information about execution of the process (corresponding to the selected logging level) will be saved to the log during the specified interval; when the interval ends, the logging level will be changed to that used before the "Change Debug Level" item was executed.

- "Terminate Jobs" – terminate execution of all jobs being executed in this process. This item can be executed only for processes containing jobs, for example, document processing.
- "Clear" – change the status of a process that was terminated incorrectly to "Rejected". If a process cannot be terminated correctly with the "Stop" item, it can be terminated by changing the status to "Closed". This action is performed using the "Clear" menu item. The action can be executed for several processes at the same time (see "Clear Old Processes" Menu Item").

Before stopping a process using the "Clear" button, the system administrator must be sure that the process cannot be stopped using the operating system's administrative tools.

The [Messages] button of the "Process Log" form (see Fig. 44) is used to open messages generated by the system during the execution of a process, including error messages (see "Messages" Menu Item").

4.1.2 "Last Process" Menu Item

The "Last Process" form, available by selecting the user menu item "Full →Process Log →Last Process", supplies information about the latest started process in the current DB Manager session (see Fig. 46).

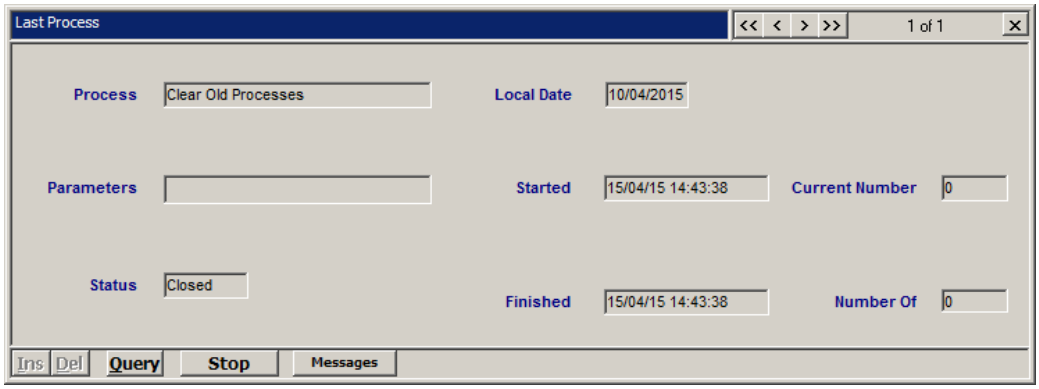

Fig. 46 Information on the latest process started in the current DB Manager session

The [Stop] button is used for terminating a process being executed. If the process has the "Closed", "Rejected" or "Stopped" status, clicking the [Stop] button opens a window with the message "Process is not active."

The [Messages] button is used to open messages generated by the system during process execution, including error messages.

4.1.3 "Active Processes" Menu Item

The "Active Processes" user menu item, available by selecting "Full →Process Log → Active Process", supplies information about processes currently running in the system (see Fig. 47).

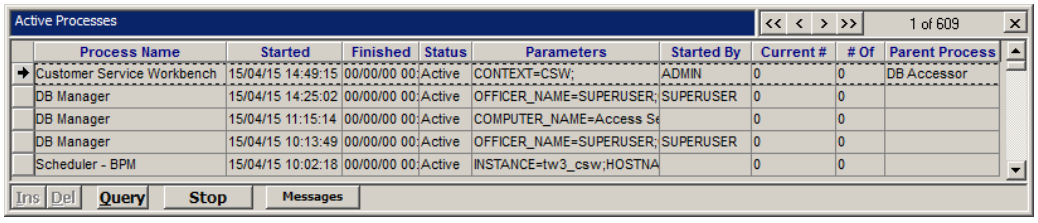

Fig. 47 Information about currently active processes

The [Stop], [Clear], and [Messages] buttons are the same as the context menu items and button, respectively, described in the section "Process Log" Menu Item".

4.1.4 "Messages" Menu Item

The [Messages] menu item, available by selecting "Full →Process Log →Messages" in the user menu, is used for opening messages generated by the system during process execution, including error messages (see Fig. 48).

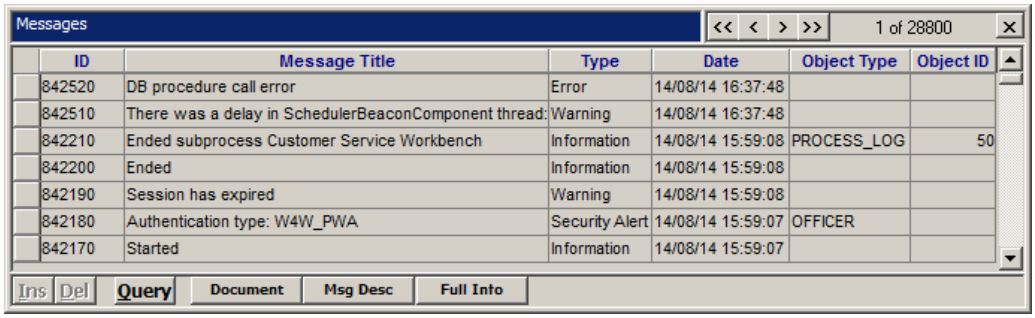

Fig. 48. Process Log

Use the [Document] button to open the form containing information about a document whose processing resulted in a message.

Use the [Msg Desc] and [Full Info] buttons to open detailed information about messages.

4.1.5 "Clear Old Processes" Menu Item

If processes cannot be terminated correctly, their status may be changed to "Closed". To do so, select the user menu item "Full → Process Log → Clear Old Processes". In the "Date To" window that opens, specify the date until which the status of all incorrectly terminated processes must be changed to "Closed" and click the [Proceed] button. To continue, click [Yes] in the form that opens with the question "Are you sure that all processes with inactive status up to this date have already finished?".

Before using the "Clear Old Processes" menu item for terminating a process, the system administrator must ensure that this cannot be achieved using administrative tools of the operating system.

4.1.6 "Events Log – All" Menu Item

The "Full →Process Log →Events Log – All" menu item is used to open the Events form for a contract (see the "Contract Events Log" section of the "Events" document).

4.2 Stopping DB Manager Processes

If a DB Manager process must be stopped, this can be done by clicking on the [Cancel] button if dealing with an interruptible process (see "DB Manager Processes"); or, if the process is uninterruptible, by pressing <Alt>+<F4>. The same may be done using the [Stop] button and "Stop" and "Clear" context menu items in Process Log forms (see "Process Log").

4.3 Temporary Files Directory

The <OWS_TEMP> standard directory in the system is used for storing temporary files. The hierarchy of this directory includes directories created for each user and new DB Manager session. Their names include a user name, date of creation and number of the session. These directories hold Error Log files and temporary files, which exist only until the DB Manager application has successfully completed running. Examples of such files are "message.pkm", "pipe.tmp" and "pipe.err".

In addition, the <OWS_TEMP> hierarchy includes the LOG directory, which contains various logs.

Take note of the following files in the LOG directory:

- "menu_upgrade.log" – a file containing the log of importing and exporting user menu items using DB Manager tools (see the "Importing and Exporting User Menus" section of the "Menu Editor" document).
- "/CLIENT/dbm.log" – a file showing the start of various processes, such as report generation or a pipe execution as well as errors occurring during execution of such processes or when starting forms or menu items.

4.4 Report Generation Principles

Report Generation Principles are described in the document "Generating Reports in WAY4™".

5 Installing the Client Side of the System (DB Manager)

To install the client part of the system, edit the parameters described in the "<OWS_WORK>\db.ini" file and configure workstation parameters.

5.1 Settings for Every Database

It is necessary to edit the file "<OWS_WORK>\db.ini".

5.1.1 Section [Client.DBM.Default]

```
DSN=<Default name of ODBC Data Source>
```

In this string it is necessary to specify the DSN that will be correct for the majority of workstations. It is recommended to use the same ODBC Data Source for all WAY4 databases. As a rule, "DSN=Oracle" (the name of the DSN created when installing ODBC drivers).

The value of DSN can subsequently be redefined for each workstation separately.

```
NAME=<Name of the database>
```

In this string it is necessary to specify the name of the databases that the user will select from a list in the DB Manager startup window (see Fig. 1 of the section "Starting DB Manager").

Later, this value can be redefined for each workstation separately.

5.1.2 Section [Client.DBM.Params]

```
CONNECT_STRING=DBQ=<SQL-Net name of Oracle database>
```

The value in this string cannot be redefined for separate workstations, meaning SQL-Net on all workstations must be configured in the same way. To do so, it is recommended to use LDAP server (for example, Oracle Internet Directory).

```
OWS_OWNER=<OWS owner name>
```

The name of the owner of the WAY4 scheme in the database (OWS Owner) must be specified in this string.

```
DBMS=Oracle
```

The value of this parameter should not be changed.

```
ENCRYPTED_COLUMS=<TABLE_NAME1.COLUM_NAME1,TABLE_NAME2.COLUM_NAME2>
```

For some fields, the user is shown a dialog window to select field values from a list.

The value in the "ENCRYPTED_COLUMS" string is used to configure selection of encrypted field values. The name of the table and name of the column from which an encrypted value will be selected is set in the parameter (see the section "Editing Fields"). Values in the "ENCRYPTED_COLUMS" string are specified in capital letters and are separated by commas.

5.2 DB Manager Additional Parameters

Values of additional parameters are set in the "db.ini" file ([Client.DBM.Params] section).

These parameters can be redefined using the system menu item "Database => Configure". Note that the settings of parameters made in DB Manager on a local computer will have a higher priority than settings in the "db.ini" configuration file.

```
HANDLE_MOUSE_WHEEL_BY_DBM=true
```

The parameter is used if DB Manager ignores mouse wheel scrolling settings in OS parameters.

5.3 ".ini" General Configuration File

If centralised management of the DB Manager configuration is required; that is, management of settings for attached databases, a general configuration .ini configuration file can be created. In this file, parameters can be specified that are common to all databases in the [GENERAL] section, as well as parameters for each DB in the section with the name of the DB [<DB_name>].

```
[GENERAL]
<global_parm1>=....
...
[<profile1>]
parm1=....
...
[<profile2>]
 ...
```

In this case, DB Manager must be started using an executable file with the parameter "DB_PROFILES_FILE=<ini-file_path>". Specify the full name of the file in the parameter value.

```
<OWS_HOME>\client\dbm\dbm.exe DB_PROFILES_FILE=C:\OWS_WORK\dbmanager.ini
```

5.4 Configuring Workstation Parameters

Workstation parameters must be configured for the Installation Workstation. Other workstations may be configured later.

5.4.1 Preparation

When preparing for parameter configuration, observe the following:

- Ensure that Oracle client is installed on the workstation, and that SQL-Net is properly configured.
- Ensure that all users of the operating system who are granted access to Oracle ODBC have the privilege to read and execute executable files of the <ORACLE_HOME> directory, as well as of all its subdirectories and files.
- Check the connection with the <SQL-Net name of Oracle database> databases specified in the "db.ini" files of all the databases. Use SQL-Plus and tnsping to check the connection.
- Ensure that at least one ODBC Oracle data source is installed and configured on the workstation.
- Ensure that the user making the configurations has read only access to the directories <OWS_HOME> and <OWS_WORK> of all databases on the files server. The ability for mapping is not mandatory.
- Create a directory for temporary WAY4 files (<OWS_TEMP>) on the local disk. If this temporary file directory was created earlier, it is recommended that it be used. Next, start DB Manager with the "setup" parameter.

```
<OWS_HOME>\client\dbm\dbm.exe setup
```

In the *Temporary Directory* field of the "Local Machine Parameters" window, specify the path to the <OWS_TEMP> directory.

- For correct operation of pipes written in C and using parameters that contain national characters, national language support must be set in the MS Windows operating system. For example, for MS Windows 7, execute "Start–> Control Panel–> Region and Language", and in the "Region and Language" window that opens, select the "Administrative" tab, after which select the national language in the field *Current language for non-Unicode programs*.

5.4.2 Adding WAY4 Databases

To add databases, in the "Local Machine Parameters" window, click the [Add...] button.

As a result, the "Add Database" form will be displayed. In the *Directory for Custom Part of Files* field, specify the path to the <OWS_WORK> directory. It is

recommended to use UNC-style paths (selection though Network Neighborhood) instead of specifying them on network disks.

In the *Database Name* field, specify the name of the database. Note that the name must be unique for this workstation.

After filling in the form fields, click [OK].

If necessary, change the DSN value for this database.

5.4.3 Checking

After adding a WAY4 database, in the "Local Machine Parameters" window, click the [OK] button and enter the system as the scheme owner <OWS_OWNER> (in a one-user version of the database) or the main administrator <OWS_ADMIN> (in a multi-user version of the database),

5.5 Completing Configuration (executed for all WAY4 databases)

After the user has entered the database through DB Manager, the standard menu must be imported by selecting the system menu item "Database => Import Standard Menu".

6 Composition and Use of DB Manager Files

WAY4 has the following standard directories:

- <OWS_HOME> – main system directory, containing the standard structure of subdirectories and files, that is the same for all main system directories of the same version; the structure of this directory cannot be changed in the process of system operation.

Changes in the content of the <OWS_HOME> directory are only permitted during a system upgrade.

- <OWS_WORK> – system directory containing a structure similar in part to that of the <OWS_HOME> directory, including various configuration files, data files specific for the particular WAY4 configuration, custom screen form and report files, etc,
- <OWS_TEMP> – system directory used to store temporary files created during DB Manager operation, as well as error log files (see the section "Temporary Files Directory").

When setting up standard directories, the following recommendations should be considered:

- The <OWS_HOME> directory can be located on the file server, on the local disk of the workstation or CD/DVD ROM. Several programs running on one or on different workstations, as well several different instalments of the same version of WAY can use the same <OWS_HOME> directory.
- The <OWS_WORK> directory can only be located on the file server. Several programs running on one or on different workstations operating in the same WAY4 system use the same <OWS_WORK> directory. If the programs are working in different WAY4 systems, the <OWS_WORK> directories must be different. Therefore, each installed WAY4 system has one and only one <OWS_WORK>.
- The <OWS_TEMP> directory is located on the local disk of the workstation. Several programs running on the same workstation, including several instances of the same program regardless of whether they are working in the same system or a different one, use the same <OWS_TEMP> directory.

6.1 Client Side Components

- The client side of the system is separated into components. Each component has a name. WAY4 has the following components:
  - DBM – DB Manager (Power Builder)
  - Soft – Remote Workplace (Java).
- Constant specific files for a component are located in the subdirectories "<OWS_HOME>\Client\<component name>". Files whose contents can vary from system to system are located in the subdirectories "<OWS_WORK>\Client\<component name>".
- Files used by several components are located in the subdirectories "<OWS_HOME>\Client\Shared" and "<OWS_WORK>\Client\<Shared>".
- Files whose contents rarely change from system to system are located in the <OWS_HOME> directory (by default) and in the <OWS_WORK> directory. The component looks for a file first in the <OWS_WORK> directory and then in the <OWS_HOME> directory.
- Data generated during the process of system operation is located in subdirectories of the directory "<OWS_WORK>\Data".

6.2 Joint Use of File Directories

- Components can use the <OWS_HOME> directory only for reading, not blocking access to open files by other components.
- Components use the <OWS_WORK> directory in read/write mode. It is possible to block access during writing.
- To exclude the possibility of collision when several instances of the same program are operating on one workstation, temporary files are not created in the <OWS_TEMP> file, but in numbered temporary subdirectories created when the component is started and deleted when work is completed. For example, the first instance of a component will use the directory "<OWS_TEMP>\00000001*.*", the second - "<OWS_TEMP>\00000002*.*", the third (if by the time it starts the first has already finished) "<OWS_TEMP>\00000001*.*" again, etc.
- For the <OWS_HOME>, <OWS_WORK> and <OWS_TEMP> directories, UNC-style paths and long filenames must be supported.

6.3 Log Files

- Component log files are saved in the file "<OWS_TEMP>\Log\Client\<component_name_user_name_session_date>.log" or "<OWS_TEMP>\Log\Client\<component_name.subcomponent_name_user_name_session_date >.log".
- All instances of a program save a log in different files.
- Messages located in the log file must contain identifying information about the system and the particular instance of the program.
- A log file opens only at the time a message is written. A message is always written to the end of the file.
- Log files can be deleted at any time. This does not cause problems in operation of the component: files are created again the next time a message is written.

6.4 Component Configuration Information

- Configuration information, specific to a particular system, but not dependant on the workstation, is located in the file "<OWS_WORK>\db.ini" in the sections [Client.component_name.*].
- Configuration information specific to a given workstation (for example, the path to the <OWS_TEMP> directory) is located in the System Registry.
- When configuring a component, the systems it can work with are specified. System names, the path to the <OWS_WORK> directory of each system and other system-dependant information (for example entry password) is also located in the System Registry (passwords are encrypted).
- The program must be able to run several instances on one workstation. During startup, system names are sent either through a command string or interactively though a special window.

6.5 Creating File Directories

- The <OWS_HOME> directory is created by OpenWay when releasing a system version. Then, the system distribution kit is copied onto a file server or local disks of workstations.
- The <OWS_WORK> directory is created during system installation, by using the executable file "<OWS_HOME>\Install\MkWork\MkWork.bat".

- If a component can't create subdirectories in the <OWS_WRK> directory during operation, the OWS_HOME>\Install\MkWork\<component_name>.bat" file that is called from the "<OWS_HOME>\Install\MkWork\MkWork.bat file is used to create all required subdirectories for the component.
- In addition to subdirectories, the component may also require several files in the <OWS_WORK> directory. In this case, the instructions must clearly dictate the procedure for their creation (for example, copy a file template and edit it, or start a program that will create the required subdirectories or files in the <OWS_WORK> directory).
- The <OWS_TEMP> directory and all its subdirectories must be created by components during the time of their execution.
- The system is installed according to the following scenario:
  - Copy the distribution kit of the <OWS_HOME> directory to the file server.
  - For each system being installed it is necessary to:
    - Create the <OWS_WORK> directory using the executable file "<OWS_HOME>\Install\MkWork\MkWork.bat".
    - If necessary, for components take specific actions to create subdirectories and files in the <OWS_WORK> directory.
  - For each workstation and components it is necessary to:
    - Configure the path to the <OWS_TEMP> directory.
    - For each system, configure the path to the <OWS_WORK> directory and other system-specific parameters.

6.6 Updating File Directories with a New WAY4 Version

- The <OWS_HOME> directory is updated in one of two ways:
  - By copying the <OWS_HOME> directory from the distribution kit of the new version of the system.
  - Installing a patch for the previous version of the <OWS_HOME> directory.
- To update the <OWS_WORK> directory, restart the executable file "<OWS_HOME>\Install\MkWork\MkWork.bat". By doing so, new subdirectories will be created; old files and directories will not be replaced.
- No update of the <OWS_TEMP> directory is required, since components of the new version automatically create the necessary subdirectories.

7 View Editor

Creating custom views may affect WAY4 performance and normal operation. This functionality should be used only after approval of OpenWay. Custom views can be created and changed only when installing and updating WAY4 with scheme owner privileges and after approval of the DB administrator.

View Editor makes it possible to create logical tables on the basis of data from several DB tables.

In the DB Manager system menu, select the item "Database => Views" or press the <F3> button to start View Editor.

The "Views" window will open (see Fig. 49) with a field for creating and editing a list of database views.

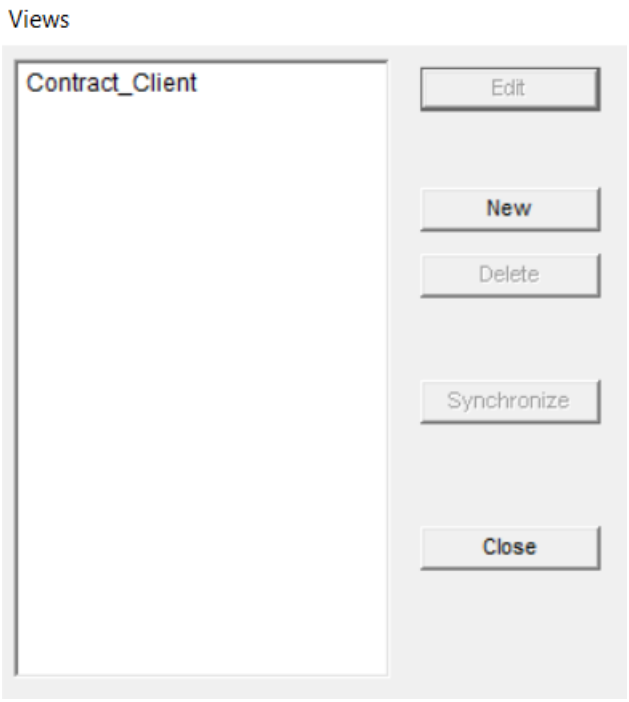

Fig. 49. The window to select a view for editing

To add a new view, do as follows:

- Click on the [New] button in the "Views" window.
- In the "View Editor" window that opens, select the "Free SQL" checkbox in the "SQL" tab (see Fig. 50).

- Enter a prepared SQL query into an input field to create a view. Use the SQL Executor (Database > Execute SQL (F8)) to write and debug the SQL query.

Note that a query must not contain the ";" symbol, otherwise an error may occur when saving a view.

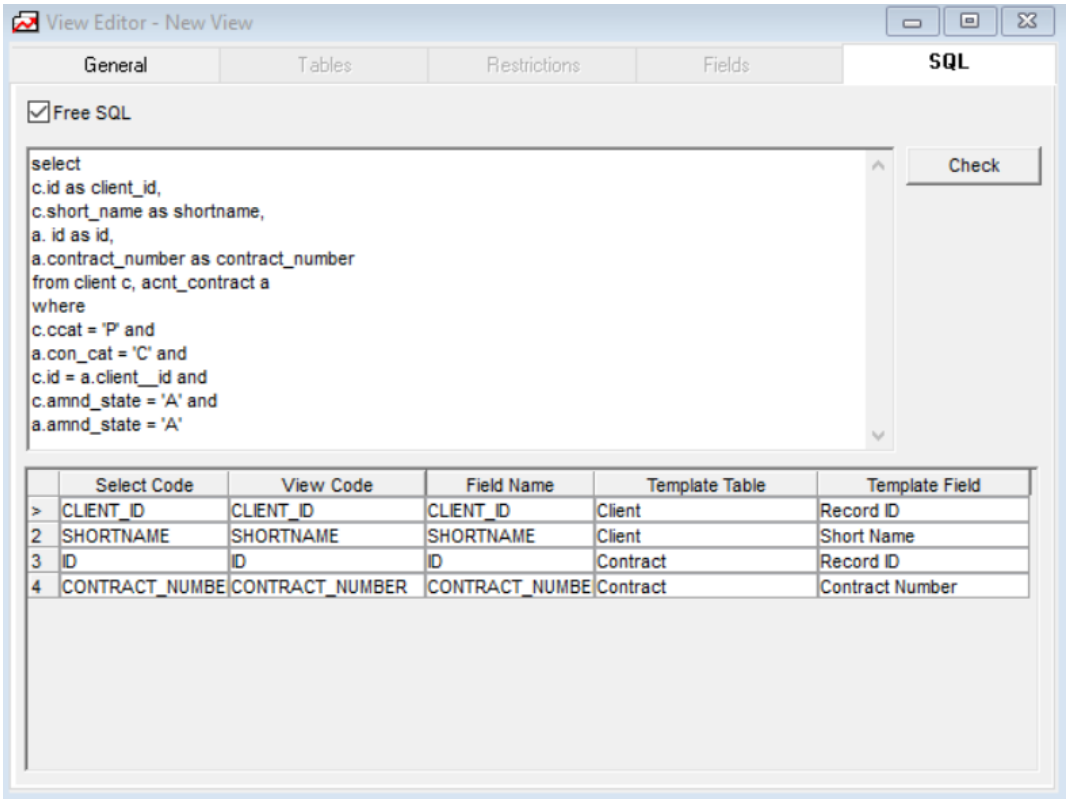

Fig. 50. The window for creating and editing a view

- Click on the [Check] button. The "View Editor" form will show the result of the SQL query.
- In each table row, specify the original table's name in the *Template Table* field and the field name from the table that is used to call the field selected in the *Template Field* field. In the *Template Table* and *Template Field* fields, logical names of tables and fields are used that differ from the names in the DB structure.
- After the view has been prepared, close the "View Editor" window. WAY4 will prompt to save the prepared view. In the uppermost field of the "Save View As" window that opens, enter the name of the view that was created and click on the [OK] button (see Fig. 51). When creating a new form, this name will be shown in the list of available tables.

A view's name must be entered without spaces or using an underscore.

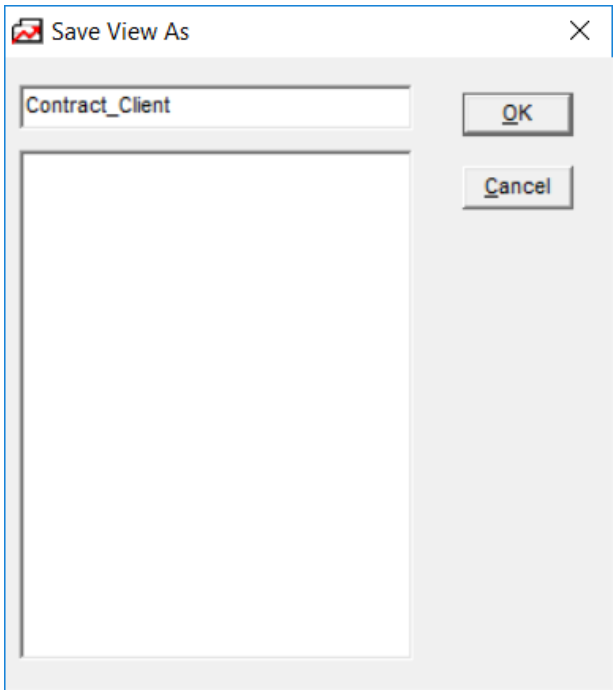

Fig. 51. The "Save View As" window

- Then, in the "Save custom view as" window enter the view code in the *View code* field – this is the name that will be used with the "OPT_" prefix in the DB (see Fig. 52).

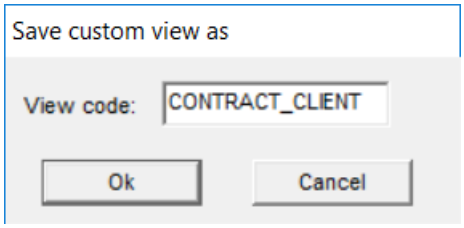

Fig. 52. The "Save custom view as" window

To create a form based on a prepared view, in the DB Manager system menu select the "Database => Forms" item or press the <F2> button and click on the [New] button (for detailed information, see the document "Form Editor"):

- In the window that opens, select the view created earlier from the "Table" list and select the fields from the list of available fields that are required for the form being created (see Fig. 53).

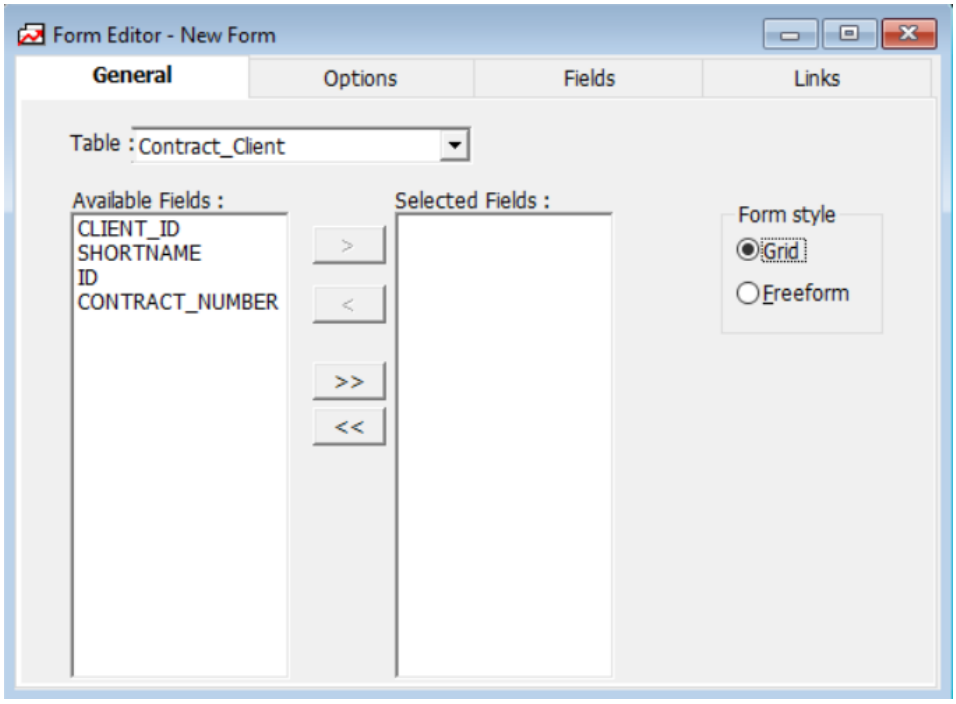

Fig. 53. The "Form Editor – New Form" window

- When the form is ready, close the "Form Editor" window. WAY4 will prompt to save the form. In the topmost field of the "Forms" window that opens, enter the name of the form and click on the [OK] button.

After views have been changed, view-based forms must be synchronized. The system menu "Database => Synchronize Forms" is used to start the process.

The menu editor can be used to create a menu item based on the form and view that was created (for detailed information, see the document "Menu Editor"), see Fig. 54.

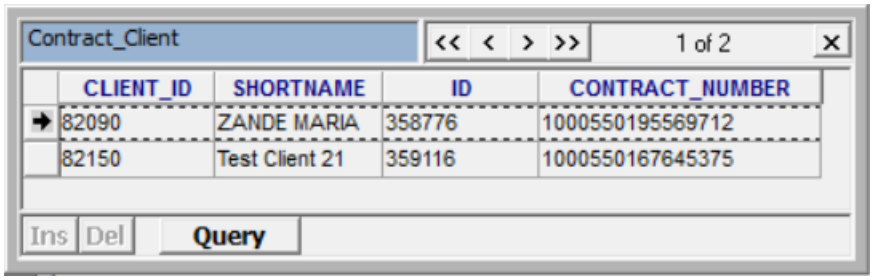

Fig. 54. Example of a view-based form

7.1 Exporting custom views

To export a custom view, select "Full → DB Administrator Utilities → Upgrade Utilities →Export View" in the user menu (see Fig. 55).

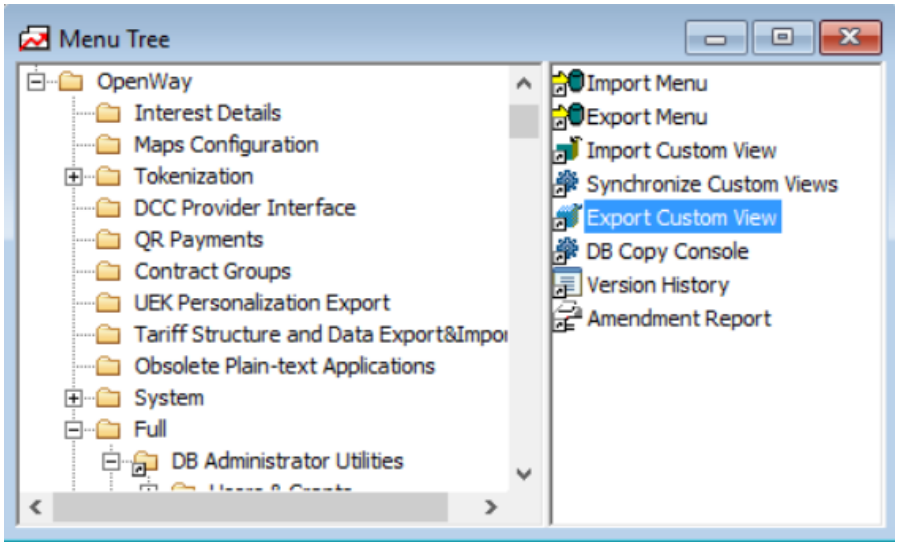

Fig. 55. "Export View" menu item

Selecting this menu item opens the "Select Custom View" window (see Fig. 56), in which custom views can be selected for export.

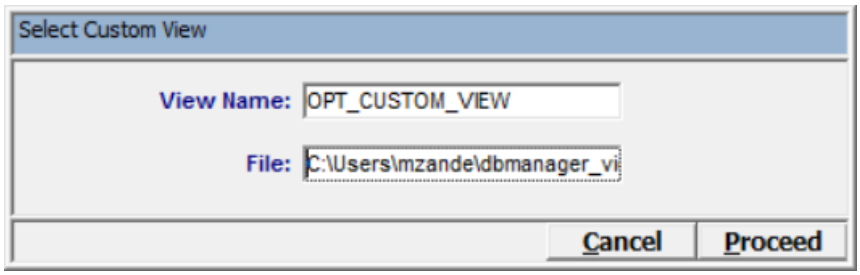

Fig. 56. "Select Custom View" window

In the *View Name* field, enter the code of the custom view with the "OPT_" prefix that must be exported or select "All views" from the drop-down list if all custom views must be exported.

In the *File* field, specify the path to the file where the custom view must be saved.

Next, click the [Proceed] button. If export is successful, the message "Copying process completed" will be displayed (see Fig. 57).

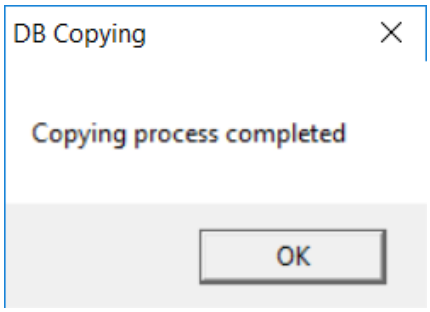

Fig. 57. Message that export of a custom view was successful

To ensure that export was successful, check the content of the exported file. If the custom view code in the *View Name* field is incorrect, the file will be empty or will contain an insignificant number of rows. In this case, it is necessary to repeat export with the correct code specified in the *View Name* field.

7.2 Importing custom views

To import a custom view's metadata, select "Full → DB Administrator Utilities → Upgrade Utilities →Import View" in the user menu (see Fig. 58).

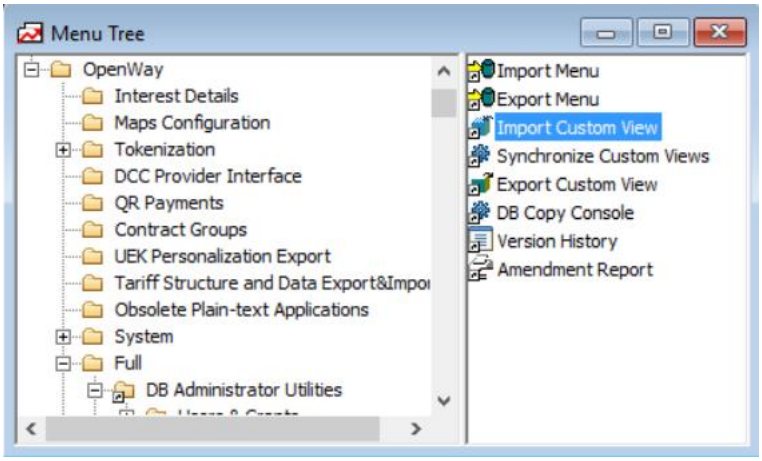

Fig. 58. "Import View" menu item

Selecting this menu item opens the "Select File" window (see Fig. 59) in which custom views can be selected for import.

Fig. 59. Select File window

In the *File Name* field, enter the file path to the custom view whose data must be imported.

Next, click the [Proceed] button. If import is successful, the message ""Copying process completed" will be displayed.

To create a custom view whose data were imported, do as follows:

- Select "Database => Views" or press <F3> to open the "Views" window (see Fig. 60).

- In the "Views" window, select an imported custom view from the list of editable custom views and click the [Edit] button.
- If necessary, edit the custom view and save it (and enter the schema owner's password).

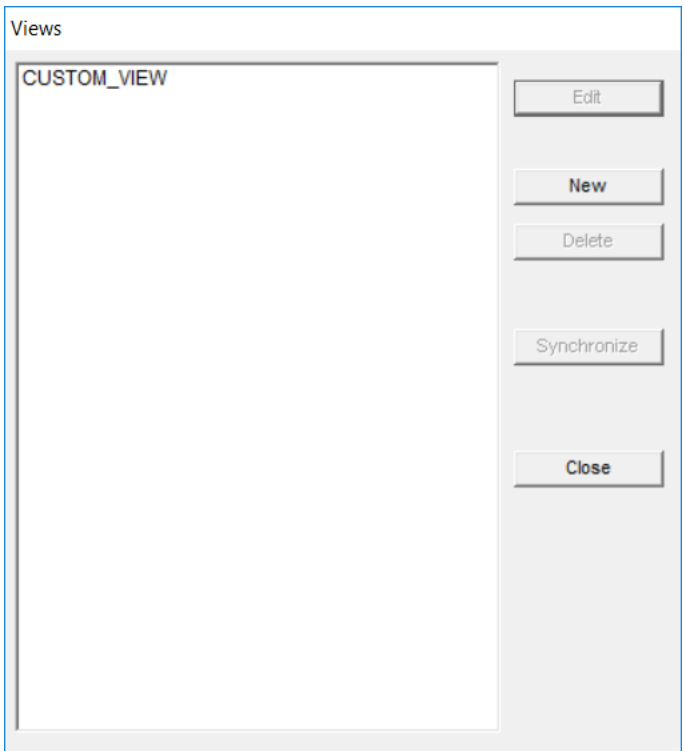

Fig. 60. "Views" window

Further, based on the custom view that was created, it is possible to prepare a form and create a menu item (for more information, see the section "View Editor").