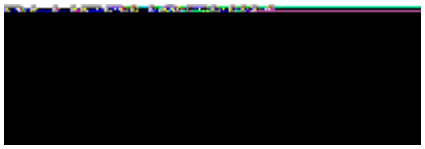


Steps to Create a File

DataGate file definitions are contained in DataGate projects. You may a new project, or a new project, using the DataGate Studio menu. When you open or create a project, Solution Explorer displays the solution in the IDE, showing a DataGate project, or a collection of projects. Source files in DataGate projects are used to create database and print files.

2.
Creates a Database File Definition for a Physical, Simple, Join, Multiformat or Print file that contains the collection of information regarding the type of file being created, and how data in the file will be accessed and stored. The record format will also be created, along with a field key, Join definition and Select/Omit node (for Join and Multiformat files only).

The database file definition designers show editable file definition parameters in several easy to use display panels. Or if you prefer, you may edit file definition XML code in the XML editor.

4.
Adds fields that make up a record format.

5.
Adds keys to the selected record format to determine the order and usage of how records will be retrieved from the file.

6.
For logical files only, adds Select/Omit Rules to define which records to Select and Omit.

7.
Creates a new file and a member by using a database file definition in the DataGate project and creating the described file in the selected library in the desired database.

8.
Adds members to a file in the database to store data in the format given by the database file definition. At least one member *must* be specified before a file can be used in a program.

Step 1 – Create or Open a DataGate Project

To use file definition source files to create database and print files, you must organize them into a DataGate project. The project is a list of source files and database references that should represent the file creation design and implementation portion of a particular database development task.

Projects can be opened directly, or can be opened as members of a Visual Studio solution. In the latter case, you open the solution file to access the projects of the solution.

1. Select from the File - New menu. The New Project dialog is displayed.
2. Select from the list of available Project Types.

   Depending on your installation options for DataGate Studio, you may have several Project Types listed in the New Project dialog. The DataGate project types are specific to DataGate tasks.

3. Select from the installed templates list.

   The DataGate File Definition Project may contain a sample database definition source file. You may use this as a starting point to begin your tasks, or simply delete the file and add your own.

4. Modify the name, location, and solution options, if desired, of the new project.

   The Name field names the project file. This name will be shown next to a project node when the project is open in Solution Explorer, and is also the name of your project file. The project file has the ". " extension (e.g., "MyProject.dgproj).

   The location of the project may be specified as a file path on the local computer. Click the browse button to navigate to a particular folder in which to add the project file.

   By default, DataGate Studio will create a solution for your new project. You may add a new DataGate project to an existing solution by first opening the solution, then creating the project. On the New Project dialog, select "Add to Solution" from the Solution drop-down box instead of "Create new Solution".

   If you have installed a Source Control provider that is compatible with DataGate Studio, you may elect to add your project to a source repository by selecting the "Add to Source Control" checkbox.

5. Click .

   After creating the project, DataGate Studio will open the project (and its solution) in Solution Explorer.

1. Select from the File>Open menu. The Open Project dialog is displayed.
2. Navigate to the containing the DataGate project or its solution.

   The Open Project dialog is a file browser for you to navigate among the project and solution files on your computer. By default, all solution files (extension ". " and project files are filtered). To filter only the DataGate project files (extension ". "), select from the "Objects of type" drop down box.
3. Select the project or solution.
4. Select to add the project to the currently open solution, or select Close Solution to close the open solution before opening the project.

   By default, the Open Project dialog closes any currently open solution before opening another project. Select as a way to add a selected project file to the currently open solution.
5. Click to open the project, or Cancel to close the dialog without opening a project.

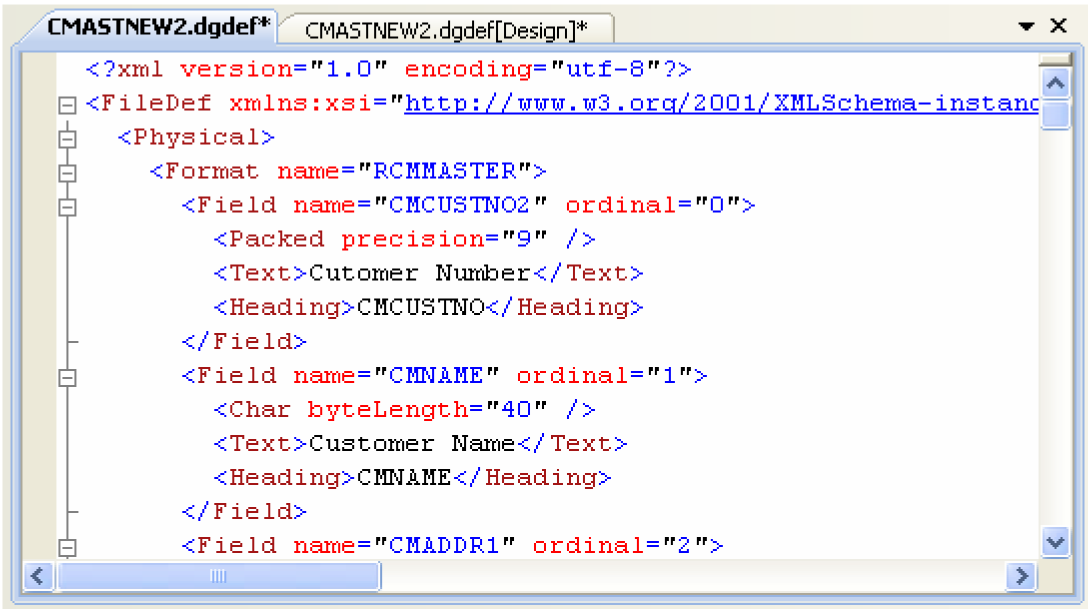
There are two options for creating new solution files. By default, DataGate Studio creates a new solution when you create a new DataGate project (see To Create a New DataGate Project above). However, you may also create an empty solution file to which you can add existing or new project files.

1. Select from the File - New menu. The New Project dialog is displayed.
2. Expand the " " node under Project Types. Select Visual Studio Solutions under Other Project Types.
3. Select under installed templates.
4. Modify the name, location, and source control options of the new solution; if desired.
5. Click to create the solution.

   The new solution will be opened in Solution Explorer. Notice that it contains no projects. To add a project, you may create a new project or open an existing project as detailed above, making sure to use the " " options when doing so.

The designer allows you to make changes to an underlying source file. This source file is an XML document, which adheres to the DataGate File Definition XML Schema. If you wish, you can edit the document directly, using the DataGate Studio XML editor. You can even have your file definition open in both the designer and XML editor simultaneously – changes made in one are reflected immediately in the other.

When the file definition is open in the designer view window, you may use the Code command on the View menu to open the definition in the XML editor view, as shown below. You can alternately open the source file in the XML editor view by right-clicking on the source file in the DataGate project in Solution Explorer, and selecting the View Code command.



DataGate Studio uses the File Definition XML Schema to provide integrated file definition syntax error checking, highlighting, and IntelliSense® features when editing the file definition in the XML editor.

Note that if you make changes in the XML editor that result in an invalid XML document, or a violation of the schema, the design view of the source file may be disabled, since the designer cannot interpret the document. Even so, the XML editor can be handy for making large, "cut & paste"-style changes to a file definition.

File Definition Root View
Reference File View
Physical Record Format View
Logical Record Format View
Join Record Format View
Creation Attributes View

Other Database File Definition Topics

Create a Database File

Step 2 - Add Database File Definitions

DataGate projects are composed of file definition source files. These may be used to design and create database and print files. To do so you must add file definition source files to your project. You may add new file definitions based on DataGate project templates, or you may add existing file definitions source files. You can also import the definitions of existing database files via .

1. or a DataGate project/solution.
2. In Solution Explorer, select the in which the new file definition will be added.

   Note that if the solution is composed of only one project, Solution Explorer may only show that project node, and no solution node. If more than one project exists in the solution, the project nodes will be shown under the root solution node.
3. from the Project menu. The Add New Item dialog is displayed.

   The Add New Item command is shown on the Project menu only when a project is selected in Solution Explorer. If you don't see the command, make sure you have a project or solution open in Solution Explorer, and that the correct project is selected.
4. Select the new corresponding to the file definition type to be added to the project (see File Types).

   DataGate items will only be shown if the Add New Item command is executed while a DataGate project is selected in Solution Explorer.

- A file that contains data and only one record format.

A file that contains no data. Simple logical files are used to arrange data from one physical file into different formats and sequences.

A file that contains data "joined" from two or more physical files into a single record format.

A file that contains data and more than one record format.

A SQL file that allows you to enter SQL statements to query the file.

A file used to create printable reports.

Occasionally, you may want to add a copy of a file definition from a previous project to your current project.

1.

A common task is to modify or create a new file based on the definition of an existing database file. DataGate Explorer makes it easy to import file definitions into your DataGate project.

1. Create or open a DataGate project/solution.
2. Open DataGate Explorer, and connect to the database containing the file to import. Navigate to the file in DataGate Explorer.

   You may need to first add a database name and connection to connect to the database containing the file.
3. Right-click on the file, and select .

   The Copy Filedef Source To Project command is only one way to import a file definition from a database. A "drag & drop" shortcut is described below.
4. If the solution consists of more than one DataGate project, the Project Chooser dialog will appear. Select the target project for the import operation, and click , or click Cancel to abort the import.

   Note that if the solution contains only one DataGate project, the file definition is imported directly into that project without the Project Chooser dialog.
5. A file definition source file is added to your project with a name corresponding to the name of the database file it was imported from.

---

1. or a DataGate project/solution.
2. Open , and to the database containing the file to import. Navigate to the file in DataGate Explorer.

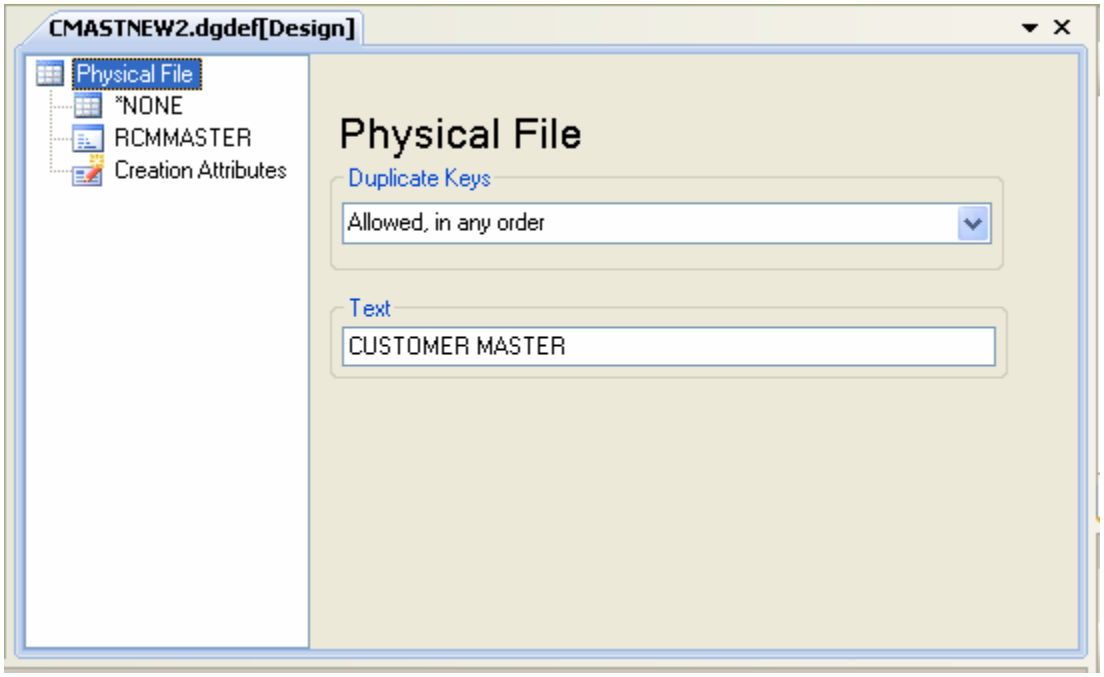
   You may need to first add a database name and connection to connect to the database containing the file.
3. Click on the in DataGate Explorer, and drag to the Solution Explorer window.
4. the file onto the DataGate project node into which the file definition should be imported.
5. A file definition source file is added to your project with a name corresponding to the name of the database file it was imported from.

The file definition designers in DataGate Studio allow you to quickly find, view, and edit file definition features. DataGate Studio provides two designers: the Print File Designer and the Database File Designer. Each designer operates as a standard document window in the IDE.

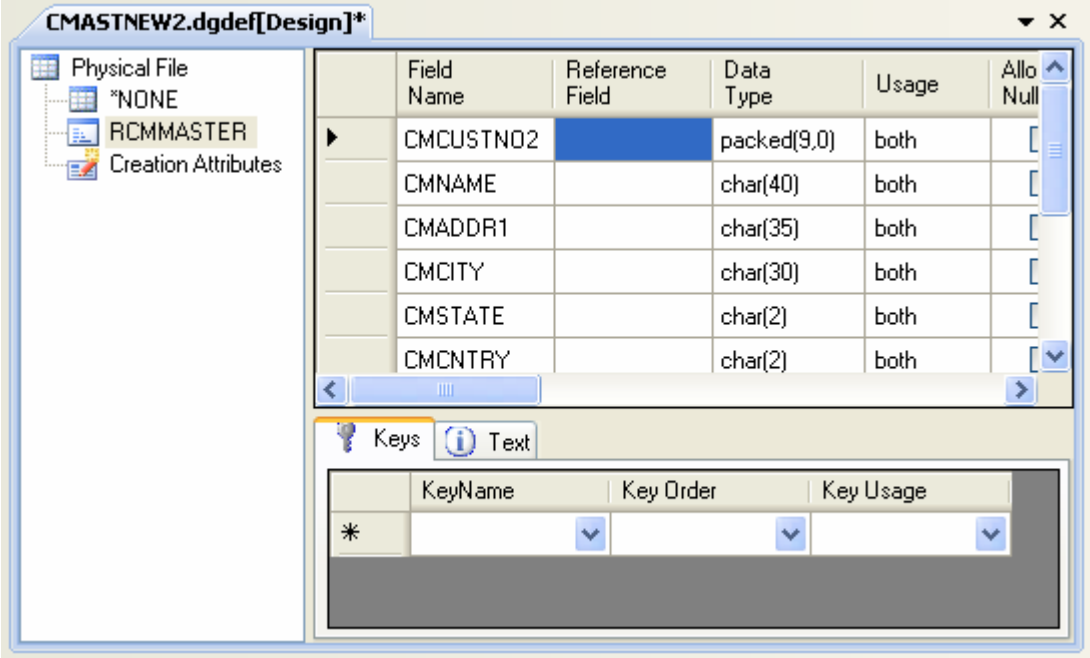
The "code behind" for these designers is an XML document, which you may also edit directly using the DataGate Studio XML editor. The XML schema for file definition documents is installed with DataGate Studio, so the XML editor features schema validation checking and IntelliSense® support.

The Database File Definition Designer is DataGate Studio's graphical user interface for simplifying the development of DataGate database files. It presents database file definitions in a set of organized property groups, allowing you to quickly drill down to focus on each of the main functional areas of the file. The Database File Definition Designer is invoked by opening a database file definition source file (extension ".dgdef") in a DataGate project.

The designer is strictly for editing file definition source files. When you make changes in the designer, you are changing a file definition source file in your DataGate project, not a DataGate database file. You cannot directly create or modify database files in the File Definition Designer. After designing a file definition, you save changes to the source file in the DataGate project, which can then be used with a separate project command to create a database file.



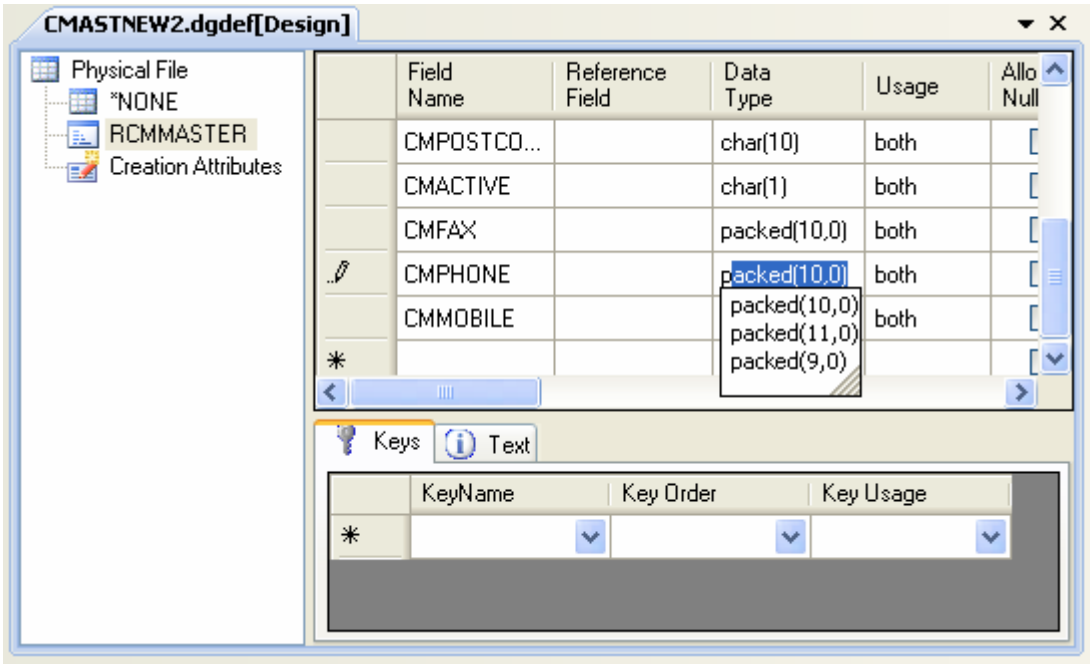
The primary layout of the designer features a tree view on the left, and details panel on the right. The tree view displays a high-level view of the file definition. The root node represents the file type (physical, simple logical, multiformat, join, or SQL logical) and the file-level attributes of the definition. Under the root node, you will see nodes representing major functional components of the file. In the case of the physical file definition shown above, three tree nodes are displayed under the root node,



The asterisk indicates that un-saved changes have been made to the file definition. You should save your changes often using one of the DataGate Studio Save commands on the File menu. When you successfully save your changes, the editor removes the asterisk from the tab, indicating that all changes are saved.

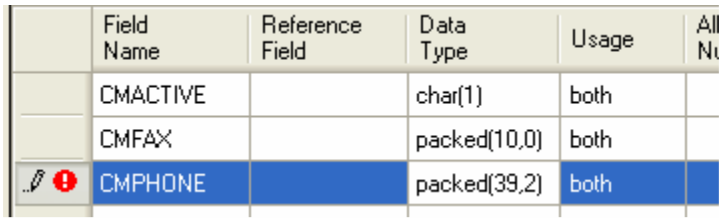
The Database File Designer also supports the Undo and Redo commands. Thus if you change your mind about one or more changes, simply invoke the Undo command on the Edit menu (or Ctrl-z) for each change you wish to reverse. Note that you can Undo or Redo changes even after you save them to the source file. Thus, the un-saved changes asterisk may disappear and reappear as you invoke Undo and Redo.

To set the data type of a field in Database File Definition Designer, you must enter a data type keyword, and optional parameters corresponding to the type, in the Data Type cell of the field row, as shown below.

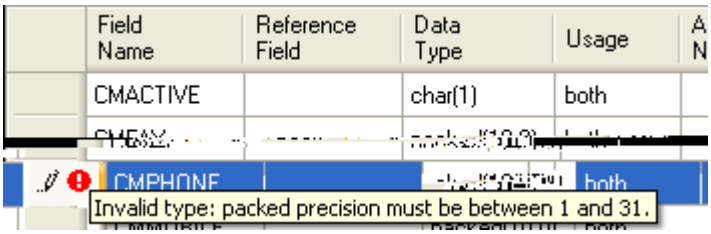


As you enter the type, a "most recently used" list of similarly named types may be shown, as with the Packed type in the above example, which can help you quickly enter the type definition.

Also, the Data Type grid cell validates your entry, and displays an error icon on the row if your data type selection is invalid, as shown below.



Placing your mouse cursor over the error icon will display a pop-up panel detailing the problem, as shown below. The error in this case is that the user has entered an invalid value for the precision of the Packed field.

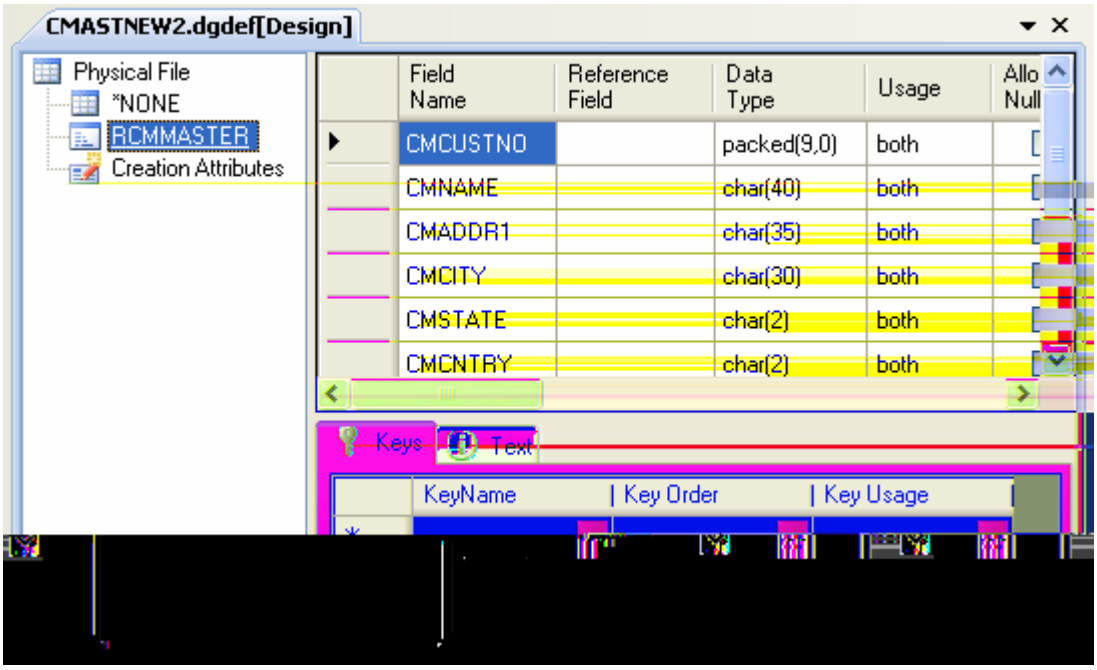


The following table gives the list of available data type keywords, their qualifying parameters, and example usages.

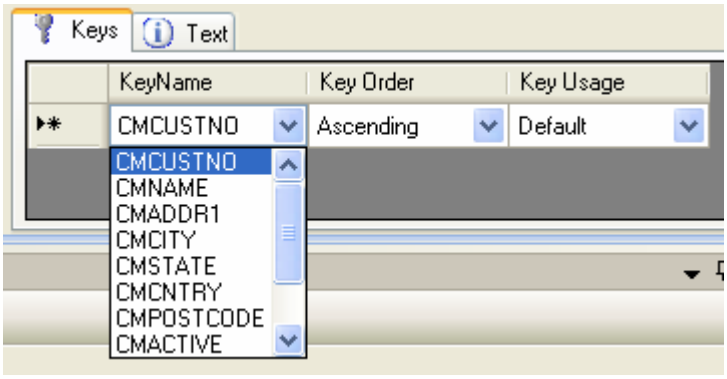
Step 5 – Adding a Key

A key determines the order in which records will be retrieved from the file.

1. Open the physical file definition source file in the Database File Definition Designer.
2. In the details tree view of the designer, select the record format node as shown below with the RCMMASTER record format.
3. Select the Keys tab in the lower right panel to display the keys grid as shown below.



4. Scroll to the bottom of the keys grid, if necessary. Select the (the last row of the grid) by clicking on the leftmost column of the row.
5. Select the name of the key part to add by clicking on the drop-down box in the KeyName cell as shown below. Modify the remaining default column values of the New Row to reflect the attributes of the key part to be added to the record format. Note that a key part will not be added to the format until you select a field or make a change to the default data.



You can change attributes of the key part by modifying the following column parameters.

Click on the arrow on the right of the key name cell and select one of the available fields to designate as a key field. A key name is required.

Click on the arrow on the right of the key order cell to select the order in which the key field will be sorted. The default is ascending order.

Ascending - Alphabetical order, from A to Z.

Descending - Alphabetical order, from Z to A.

Select a usage by clicking the arrow on the right of key usage cell. The following are the available usage types.

– Absolute value numeric sequence.

- Algebraic numeric sequence.

- Ignore the sign when sorting.

- The low nibble of each byte of the key field.

– A numeric type where there is a byte per digit, divided into a low and high nibble.

You can add a maximum of 32 key fields. The total length of the key can be up to 250 Bytes.

1. the new key part as detailed above.
2. Select the , then click and drag the row to the key part row in the grid where you want to insert the new key part.
3. the new key part on top of the existing key part. The new key part is inserted before the existing key part.

Step 6 – Adding a Select/Omit Rule

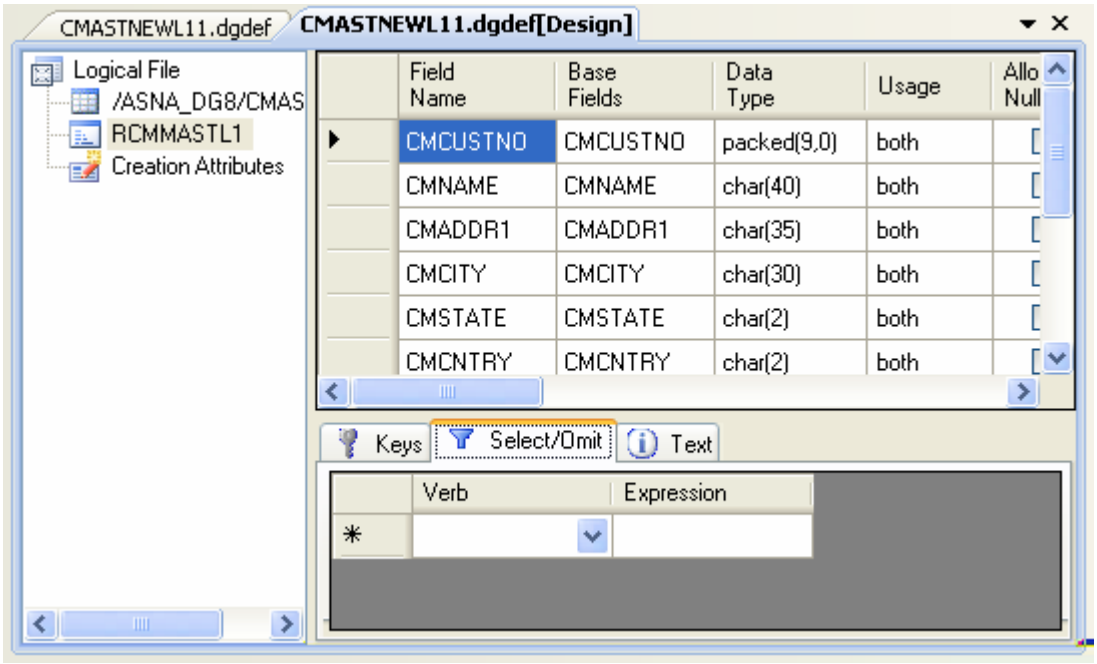
When a logical file record is to be accessed by a program, the select/omit rules are evaluated sequentially by the database until an expression is found to be true, then the related action (Select or Omit) is taken.

Use the *TRUE keyword to specify the action to be taken after all other Select/Omit statements have been processed. Specify "Select: *TRUE" to direct the database to select any records that do not meet any of the previous Select/Omit rules. Conversely, specify "Omit: *TRUE" to omit any records that do not meet any of the previous Select/Omit rules.

If the *TRUE rule is omitted, the default action is to presume you want all remaining records to be either selected or omitted depending upon the last Select/Omit statement. That is:

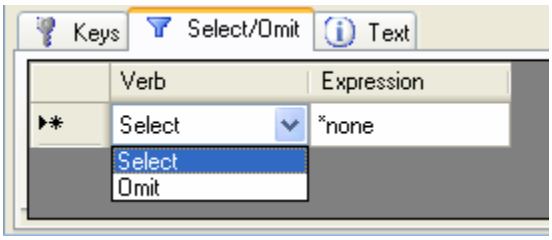
- If the last statement was a , the default is to assume "Omit: *TRUE" wherein all records that did not meet the any of the previous Select/Omit rules will be omitted.
- If the last statement was an , the default is to assume "Select: *TRUE" wherein all records that did not meet the any of the previous Select/Omit rules will be selected.

1. Open the physical file definition source file in the Database File Definition Designer.
2. In the details tree view of the designer, select the record format node as shown below with the RCMMASTL1 record format.
3. Select the in the lower right panel to display the select/omit grid as shown below.



4. to the bottom of the select/omit grid, if necessary. Select the New Row (the last row of the grid) by clicking on the leftmost column of the row.

5. Select the verb by clicking on the drop-down box in the Verb cell as shown below. Change the rule expression from the default "*none" to a logical expression pertaining to the rule. Note that the rule will not be added to the format until you select a verb and enter an expression.



A logical expression consists of a field name, an operator, and a constant. The valid relational operators are: >, >=, <, <=, =, !=,. Refer also to the illustration below comparing AS/400 and DataGate coding of rules.

The Select/Omit Rules below compare the rule implementation in DDS and DataGate .

O PRTDSC COMP(EQ 'HAMMER')
S UNTPRC COMP(GT PRCLVL)
ONHAND COMP(LT 10)
O ALL

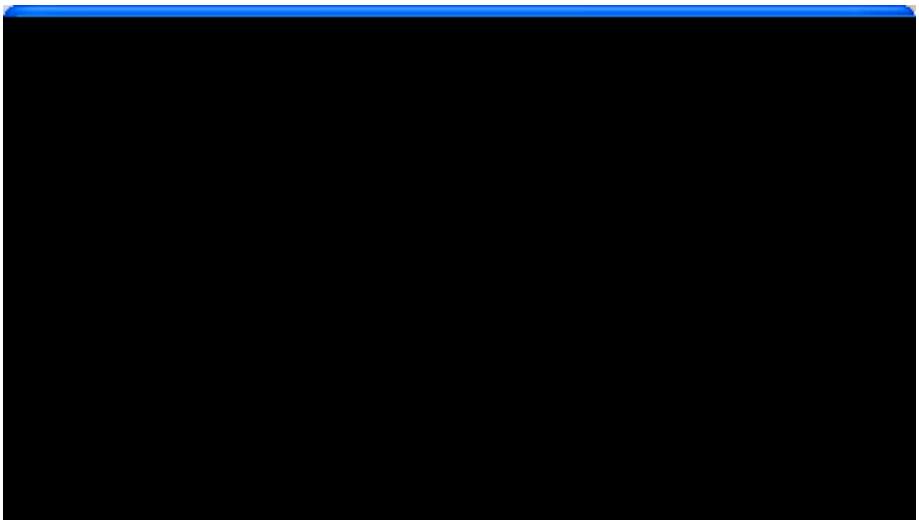
The same rules as above coded for DataGate :

```
Omit:  PRTDSC = 'HAMMER'
Select: UNTPRC > PRCLVL & ONHAND < 10
Omit:  *TRUE
```

If the expression is incorrectly constructed, an error may occur when creating the file.

Step 7 – Creating a File

1. or create the DataGate project in Solution Explorer containing the file definition source file from which you will create the database or print file.
2. After editing the file definition in Database File Definition Designer, Print File Definition Designer, or the XML editor, your changes.
3. Select the from the DataGate project in Solution Explorer.
4. on the file node, and select from the context menu. The Create DataGate File dialog is displayed as shown below.



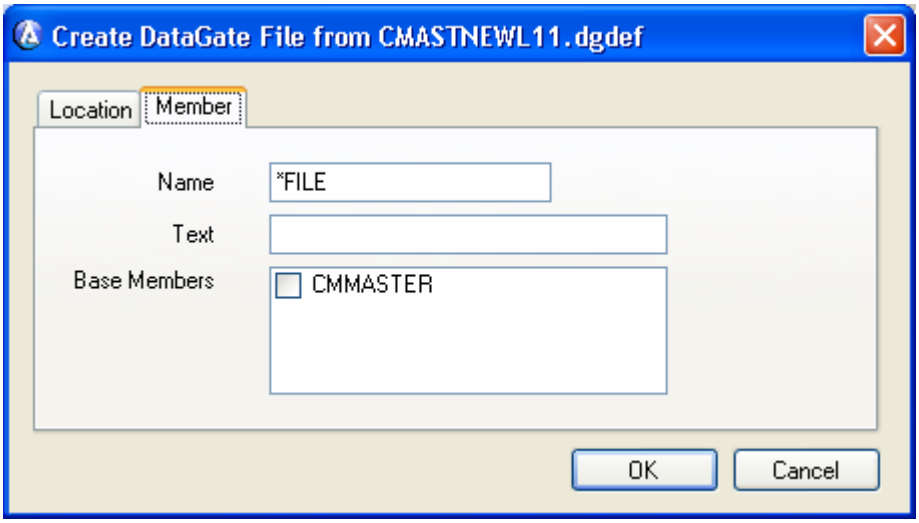
5. On the , as shown above, enter the name of the new file, the library it should reside in, the database connection to use, and text comments to associate with the created file.

6. The following attributes can be set on the Location tab.

   The name of the selected database file definition source file node will display by default. You can however, change the name of the file to create. Note that some databases, notably the iSeries, restrict file name length.

   By default, no text comments are displayed. If you want to associate a comment with the created file object, you can enter it at this time.

7. On the tab, you may specify a member name, (as shown below). If a member name is specified, a member object will be added to the file with that name, upon successful creation of the file. You may also indicate text comments to associate with the member, and, for logical members, the base member(s) of the logical member.



   The following attributes can be set on the Member tab.

   *FILE will display as the default member. *FILE is a keyword indicating that the member name should be the same as the file name. You can change the default member name, or leave the Name field blank to indicate that no member should be added to the created file. A file must contain at least one member to be used in a program.

   If the file definition defines a logical file, and the base file in the format is verified on the target database, you may select one or more of the members of the base file as base members for the logical member. Place a check next to each member which is to be a base member for the logical member added.

Enter a text description of the contents the member will contain.

8. Click to begin creating the file, or Cancel to close the dialog without creating a file. Observe progress and any errors produced by the command in the DataGate Studio Output and Error List windows.