



Microsoft Business Solutions-Navision Developer's Toolkit

Microsoft Business Solutions-Navision Developer's Toolkit

NOTICE

This material is for informational purposes only. Microsoft Business Solutions ApS disclaims all warranties and conditions with regard to use of the material for other purposes. Microsoft Business Solutions ApS shall not, at any time, be liable for any special, direct, indirect or consequential damages, whether in an action of contract, negligence or other action arising out of or in connection with the use or performance of the material. This material is subject to change without notice.

According to Danish copyright legislation it is against the law to reproduce any part of this material in any form or by any means without the permission of Microsoft Business Solutions ApS.

The software described is supplied under license and must be used and copied in accordance with the enclosed license terms and conditions.

COPYRIGHT NOTICE

Copyright © 2003 Microsoft Business Solutions ApS, Frydenlunds Allé 6, DK-2950 Vedbæk, Denmark.
All rights reserved.

TRADEMARKS

The trademarks referenced herein and marked with either TM or ® are either trademarks or registered trademarks of Microsoft Business Solutions ApS. However, the trademarks Microsoft, Windows, Windows NT, SQL Server and BackOffice are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Any rights not expressly granted herein are reserved.

The trademarks of Microsoft Business Solutions ApS are listed on this Web site: <http://trademarks.navisision.com>.

Published by Microsoft Business Solutions ApS.

Published in Denmark 2003.

DocID: AT-301-DVG-002-v01.00-W1W1

PREFACE

This book is a manual for Microsoft Business Solutions-Navision Developer's Toolkit. It treats various aspects of using Navision Developer's Toolkit in your daily work.

The manual provides an overview of what Navision Developer's Toolkit contains, what it can do and how it works. All examples you will find in this manual are based on Microsoft Business Solutions-Navision version W1 3.60.

Because the book just gives you an overview, it does not cover every detail of Navision Developer's Toolkit. If you need to find out more about certain fields or windows that are not described in this book, you can use the online help, which provides guidance for all the windows in the program.

Using the Navision Developer's Toolkit manual will be easier if you are familiar with the symbols and typographical conventions used in them. The list below indicates how various fonts, type styles and symbols are used to refer to elements of the program:

Appearance	Element
CTRL	Keys on the keyboard. They are written in small capitals.
<u>Tools</u>	Menu items and buttons in windows. They always start with a capital letter, and the access key is underlined.
Description	Field names. They appear in medium bold and start with a capital letter.
<i>Source Finder</i>	Names of tables, windows, boxes and tabs. They appear in medium bold italics and start with a capital letter.
<i>Customer</i>	Text that you must enter, for example: "...enter Yes in this field." It is written in italics.
<code>fin.flf</code>	File names and commands. They are written with the Courier font and lowercase letters.
<i>User's Guide</i>	Names of manuals are written in italics.
<code>dfpotr</code>	The special symbols that can be seen in the windows on the screen.

Note, Tip or Warning

.....
Sections that look like this one, delimited by dotted lines, contain advice about what you should or should not do, or information about something to which you should pay special attention.
.....

TABLE OF CONTENTS

Chapter 1 Introduction to Navision Developer's Toolkit	3
The Concept of Navision Developer's Toolkit	4
The Features of Source Analyzer	6
The Features of Compare & Merge Tools	8
The Contents of This Book	9
Chapter 2 Navision Developer's Toolkit Database	11
Creating an Navision Developer's Toolkit Database	12
Importing Object Data	13
Setting up the Demonstration Database	20
Chapter 3 Source Analyzer	21
Overview of Source Analyzer	22
Object Administrator	24
Object Functions	26
Object Views	36
Object Tools	39
Chapter 4 Examples of How to Use	
Source Analyzer	47
Introduction	48
Viewing Object Data	49
Analyzing Objects	51
Searching for Object Data	59
Chapter 5 Compare & Merge Tool	65
Overview of Compare & Merge Tool	66
Merge Setup	70
Compare & Merge	73
Compare Two Versions	77
Export Objects	80
Chapter 6 Installing and Starting	
Navision Developer's Toolkit	81
Installing and Uninstalling Navision Developer's Toolkit	82
Starting The Program and Connecting to a Database	84

Chapter 1

Introduction to Navision Developer's Toolkit

Navision Developer's Toolkit is a collection of tools that allows you to analyze and update the design of a Microsoft Business Solutions-Navision database.

This chapter contains an introduction to the concept and features of Navision Developer's Toolkit and an overview of the contents of this book.

This chapter contains the following sections:

- The Concept of Navision Developer's Toolkit
- The Features of Source Analyzer
- The Features of Compare & Merge
- The Contents of This Book

1.1 THE CONCEPT OF NAVISION DEVELOPER'S TOOLKIT

Navision Developer's Toolkit is designed to help you analyze, customize and update Navision applications. Regardless whether you are working as a Navision project manager, developer, supporter, trainer or sales person you will have to look behind the application.

The complexity of connections and relations in the application modules and the source codes of Navision also requires a lot of time for all developers customizing, developing or updating a Navision database to get into the structure of a database. Especially in customized databases, architectural documentation frequently does not exist, and when it does, it is often out of sync with the implemented functionality.

Navision Developer's Toolkit provides you with a collection of analyzing and developing tools to reduce the time to get into the structure of a Navision database and to update customized solutions. The structure of a Navision database is defined by the objects and their properties used in this database.

Note

.....
Before you are using Navision Developer's Toolkit you should read and understand the *Navision Application Designer's Guide*.
.....

The Navision Developer's Toolkit Database

The Navision Developer's Toolkit database is the heart of the application. All information about object data is stored in this database. Navision Developer's Toolkit uses a Navision database.

If you want to work with object data from your application database, you have to export all objects from the application database in text format and import this object file into the Navision Developer's Toolkit database. You can also use a running Navision client connection to access the Navision application database directly.

You can access the Navision Developer's Toolkit database as a local or a server database. Navision Developer's Toolkit uses C/Front to access the database.

The Source Analyzer

The Source Analyzer is a graphical cross-reference tool. It provides you with a collection of tools to view and analyze object data from a Navision database. Source Analyzer gives you fast access to the object structure in your application database.

The Compare & Merge Tool

The Compare & Merge tool is designed to compare 3 different versions of Navision objects and to merge these versions into a 4th version. The Compare & Merge tool is based on the structure of a Navision object. This structure is used to apply compare and merge rules that will lead to an improved and structured merge result.

1.2 THE FEATURES OF SOURCE ANALYZER

Navision Developer's Toolkit - Source Analyzer is a graphical cross-reference tool, which makes it easy to view and analyze object data from a Navision database. It gives you fast access to the object structure in your application database.

These are the major features of Source Analyzer:

Analyze Object Structure

The Object Administrator shows you the data of all imported objects. You can use the Object Administrator to view information about an object on all levels such as fields, keys, properties, triggers, controls and procedures. Based on this data you can analyze the relations between objects by using one of the 3 basic functions:

- Relations to Tables
- Relations from Objects
- Where Used

You can see the results either in an Object Tree or an Object Diagram window. Based on this result you can continue your analyses.

View C/AL Code

The C/AL Code Viewer shows you the code lines of an object. Especially in Forms and Reports you can have a lot of C/AL Code in different triggers. In the Code Viewer you will always see all code lines in one window. This gives you a very quick and easy access to code lines even in large objects.

The Method Flow shows you C/AL code lines grouped into blocks by keywords. In the Method Flow window you can explore these blocks by expanding them even if these lines contain a trigger or procedure call to another object.

Source Finder

The Source Finder is a powerful tool to find any specific character string in all object data. You can in- and exclude data areas to search for example only in properties or field names. You can use either the objects from the Object Administrator or the result of another Source Finder as data reference.

Documentation

Use Print and Preview in nearly all windows to print the results of your analyzes or object data, like C/AL code lines.

You can save all Object Views to store the results and to load and print them without processing the whole analyses again.

Additionally you can export all results of your analyzes in bitmap or text format, or you can use the clipboard to copy the information into other applications for further documentation or training issues.

1.3 THE FEATURES OF COMPARE & MERGE TOOLS

Navision Developer's Toolkit - Compare & Merge Tool is a collection of tools designed to help Navision Solution Centers document, compare, upgrade and maintain modified customer solutions. This tool can also be used for implementing or upgrading add-on solutions in a modified customer version.

These are the major features of Compare & Merge Tool:

Merge Setup

The Merge Setup contains all information that is needed to compare 3 reference versions and to merge a 4th version. No matter if the objects from reference versions are already imported in the database or you want to import one or more versions before you start the merge process, the Merge Setup is your general entry point for a new merge process. A special Merge Wizard will also guide you through the Merge Setup.

Compare & Merge Versions

The compare & merge process is based on 3 reference versions, that are compared in order to create a 4th version. The Compare & Merge window shows you all 4 versions in one window. The objects for each object type are listed in a tree structure similar to the existing Object Administrator window. Differences are colored and the 4 columns are synchronized to always show the same detail in each window. This window shows you the automatic merge result and enables you also to edit the merged version.

A separate Compare & Merge Code Lines window also shows you C/AL code lines for one object for all 4 versions. This window offers you code line editor functions to do manual changes in C/AL code lines.

Compare 2 Versions

This is a special tool to compare 2 versions in the Navision Developer's Toolkit database. The objects for each object type are also listed in a tree structure to make differences visible not only on a detail level but also on a group or object level.

C/AL code lines are compared in a separate window that shows only the code lines of one object in two versions.

Export Objects

In the Export Worksheet, you can export all objects from Navision Developer's Toolkit database either into a Navision format text file or directly into a Navision application database.

1.4 THE CONTENTS OF THIS BOOK

This book contains a short description and some examples of how to use Navision Developer's Toolkit. It does not cover every detail of Navision Developer's Toolkit. If you need to find out more about certain fields or windows that are not described in this book, you can use the online help, which provides guidance for all the windows and functions in the program.

This book is divided into the following chapters:

- Chapter 1, "Introduction to Navision Developer's Toolkit".
- Chapter 2, "Navision Developer's Toolkit Database", describes how to create an Navision Developer's Toolkit Database and how to import object data.
- Chapter 3, "Source Analyzer", describes the basic windows and functions of the Navision Developer's Toolkit - Source Analyzer.
- Chapter 4, "Examples of How to Use Source Analyzer", describes some typical cases from your daily work and how to work with the Source Analyzer.
- Chapter 5, "Compare & Merge Tool", describes the basic windows and functions of the Navision Developer's Toolkit - Compare & Merge Tool
- Chapter 6, "Installing and Starting Navision Developer's Toolkit", describes how to install Navision Developer's Toolkit and how to start the program.

Chapter 2

Navision Developer's Toolkit Database

The Navision Developer's Toolkit database is the heart of the application. All information about object data is stored in this database. Navision Developer's Toolkit uses a Navision database. This chapter will show you how to create an Navision Developer's Toolkit database and how you can import the object data of your application database.

If you have installed Navision Developer's Toolkit with example files, you can read more about how to create the Navision Developer's Toolkit demonstration database in this chapter.

This chapter contains the following sections:

- Creating an Navision Developer's Toolkit Database
- Importing Object Data
- Setting up the Demonstration Database

2.1 CREATING AN NAVISION DEVELOPER'S TOOLKIT DATABASE

You must have a database to be able to work with Navision Developer's Toolkit. The installation program does not provide an Navision Developer's Toolkit database automatically. Because Navision Developer's Toolkit uses a Navision database you need at least a single-user installation of Navision version 3.70 or higher to create and manage the database.

Creating a New Database

You have to start Navision to create and manage the Navision Developer's Toolkit database. If you want to create a completely new database, you will need to:

- 1 Start the Navision client.
- 2 Create a new Navision database in the directory where you have installed Navision Developer's Toolkit. If you want to import the object data of a standard Navision application database later on, you should use at least 450 MB as file size for this new database.
- 3 Open the **Object Designer** and import the file `DevTool.fob` from the directory where you have installed Navision Developer's Toolkit.
- 4 Create a new company. You can use different companies to store object data from different application databases in one Navision Developer's Toolkit database.

Copying a Database

If you have already created an Navision Developer's Toolkit database, you can also copy the database. If this database has one or more companies, you must delete these companies in order to have a new and empty database. You do not need to import the file `DevTool.fob` again.

2.2 IMPORTING OBJECT DATA

Usually you will have an application database with different object types. To analyze the structure of this database and the relations between the application objects, you must import the object data from the Navision application database into the Navision Developer's Toolkit database.

You can either import these objects from an object file in text format or you can use a running Navision client that is connected to the application database to transfer objects directly into Navision Developer's Toolkit database.

Before you can import object data from a text file you must export these objects from the Navision application database into an object file in text format.

Exporting Application Objects

To create an object file with all object data, you have to follow the steps below:

- 1 Start the Navision client.
- 2 Connect to your application database and open the **Object Designer** window.
- 3 Click on All on the left side of the **Object Designer** window and mark all objects.
- 4 Export these objects in an object file using text format.

You do not always need to export all objects of your application database. If you have changed for example only some objects and you want to analyze them, you can select and export only these objects.

Note

.....
 If you want to use objects in a Compare & Merge process, you must export all object versions with the same Navision client version (For example Navision 3.60), because of changes in the Navision text file format.

Importing Object Data

Before you can analyze the application database objects, you must import the object data from a Navision application database into the Navision Developer's Toolkit database.

You must always have an import version before you can import object data in the Navision Developer's Toolkit database. You can import the object data into an existing import version, or you can create a new import version.

Creating a New Import Version

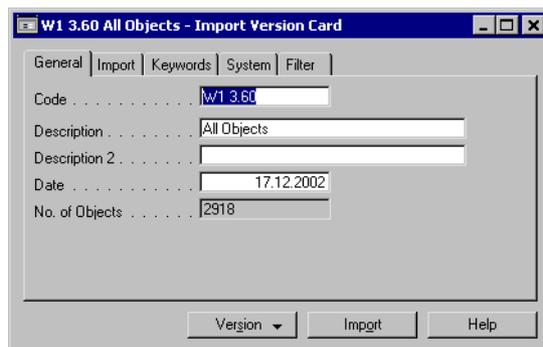
In the import version you must define some settings before you can start the object import.

Note

.....
 Before you can create an import version in a new database you have to create a company in the Navision Developer's Toolkit database. You should at least use one company per customer database or different application languages. You can also use different databases, each with one company.

To create a new import version follow the steps below:

- 1 Start Navision Developer's Toolkit.
- 2 Click File, Database, Open to open a Navision Developer's Toolkit database or click File, Server, Connect to connect to a Navision Developer's Toolkit server database.
- 3 Click File, Import. The **Import Version Card** window appears:



Fill in the fields as necessary according to the guidelines below. Some fields have no guideline because they are self-explanatory or because they are already filled in:

Field	Comments
General Tab:	
Code	Enter a unique number
Description	

Field	Comments
Description 2	
Date	
No. of Objects	The program automatically fills in this field with the number of objects which you have already imported in this version.
Import Tab:	
Import Filename	If you want to import object data from an object file, you must enter the name of the object file in this field.
Import from Navision Client	Check this option, if you want to import the objects directly from a Navision application database. After you start the import, you must select a running Navision client instance in the Select Navision Client window. After you have selected the Navision client instance, a window appears, where you can set object filters. The program will automatically transfer all filtered objects from the Navision application database to the Navision Developer's Toolkit database and store them in the current version.
New Version	Check this option, if the import should treat these objects as a complete new version. New version means that this version can be selected in the Object Administrator window and can be used in the compare & merge process.
Base Version Code	In this field you can select an existing version of objects. If the option New Version is checked the program will copy all objects from the selected Base Version and replace existing objects with the objects from the import file. If the option New Version is not checked, you can update this Base Version. You must select the corresponding Update Option.
Update Option	With this option you can select the update method, when you have already imported object data in this company. If you select Add and the current object already exists in this company, the existing object data will be saved as an older data version and the new object imported will be added as current data version. If you select Replace, an existing object will be deleted before the new object data is imported. Your choice in this field is used as default in the Import Worksheet window.
Date	This field shows the date of the last import. It is always the system date from the computer where you start the import used
Duration	The program automatically fills in this field with the duration of the last import in this version.

Field	Comments
Keywords Tab:	
STX Filename	You can select a Navision STX file, which belongs to the version of the application database from which you have exported the object file. After you have entered the STX Filename , the program automatically fills in the other fields on this tab.
Version List Expression	The country specific expression for the keyword Version List in the object file.
Date Expression	The country specific expression for the keyword Date in the object file.
Time Expression	The country specific expression for the keyword Time in the object file.
Modified Expression	The country specific expression for the keyword Modified in the object file.
Yes Expression	The country specific expression for the keyword Yes in the object file.
No Expression	The country specific expression for the keyword No in the object file.
System Tab:	
Date in Import File	This field is filled in automatically when you enter the field Import Filename . You can see the date format of the first object in the import object file.
Date Format	Enter the date format for the date field in the import file. You can use your country specific shortcuts for day, month and year but you have to make sure that the delimiters are the same as in the field Date in Import File .
Time in Import File	This field is filled in automatically when you enter the field Import Filename . You can see the time format of the first object in the import object file.
Time Format	Enter the time format for the date field in the import file. You can use your country specific shortcuts for hour, minute and second, but you have to make sure that the delimiters are the same as in the field Time in Import File .
Filter Tab:	
Object Type	You can enter filters in these fields to reduce the number of objects that will be transferred during the import through a Navision client.
Object ID	
Date	This field are only editable if you have selected the Import from Navision Client field on the <i>Import</i> tab.
Time	
Version List	
Modified	

Using an Existing Import Version

You can use an existing import version, if you have already created an import version. If you use an existing import version you have to make sure that the settings in the **Import Version Card** window correspond to the object file you want to import.

Note

.....
 If you only want to analyze the current object version of your application database, you should use the Replace option in the field **Update Option**. This option always deletes the old data version of an object before the new object is imported. This will reduce the duration of the import and the space needed in the Navision Developer's Toolkit database.

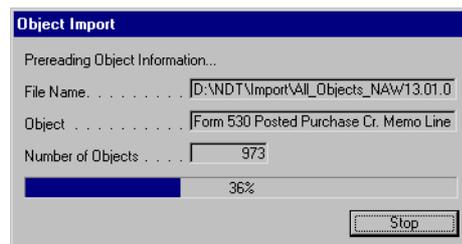
Starting the Object Import

After you have filled in and checked the fields in the **Import Version Card** window, click **Import** to import the object data from the object file. Depending upon the contents of the file, one of these things will happen:

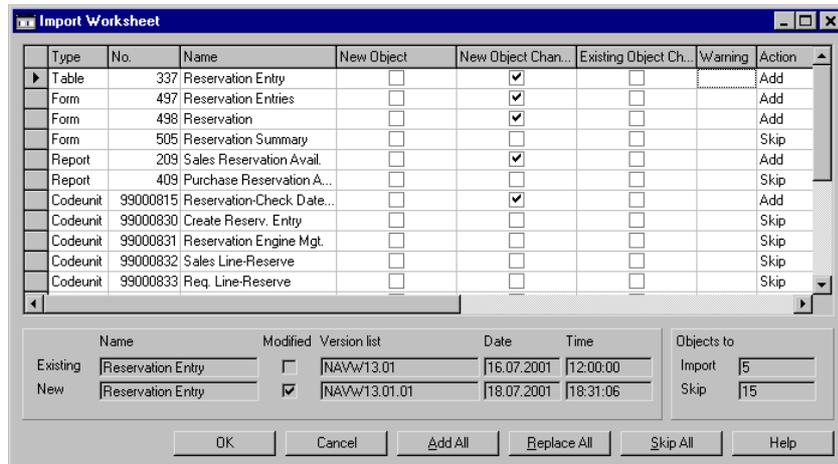
- If the company is empty, you will be asked if you want to import the objects now. If you choose Yes, the objects will be imported. If you choose Cancel, the import will be aborted. If, however, you choose No, the Import Worksheet (described below) will appear.
- If the file contains new or updated objects only, you will be asked if you want to import it now. If you choose Yes, the objects will be imported. If you choose Cancel, the import will be aborted. If, however, you choose No, the Import Worksheet (described below) will appear.
- If there are conflicts, you will be informed of this, and you can choose either to cancel the import, or to go to the Import Worksheet (by choosing OK from the dialog).

There are two kinds of conflicts: The first may occur if object name, date, time, version list of the new and the existing objects are not the same. Another type of conflict arises if you have canceled a processing import and restart this import again. You can see an "i" in the Warning field and the Action will be set to Skip.

If you have decided to open the **Import Worksheet** window, the status window below appears:



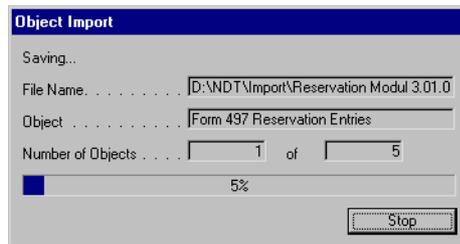
After the program has scanned the object file, the **Import Worksheet** window appears:



Each line in the Import Worksheet displays information about one object and lets you decide how to handle the object (by setting the Action option).

Click OK to start the import.

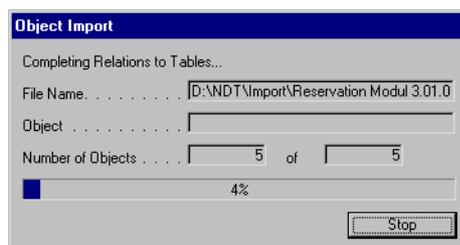
While the object import is being performed, the following status window is displayed:



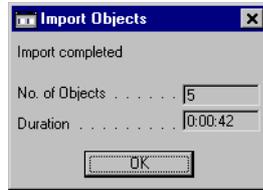
Note

.....
 If an import error occurs, the program stops and displays an error message indicating in what object the error is. In the error message you can check the areas that have not been imported to find the corresponding line in the object file to correct the error. All objects that have been imported before the import error occurs will remain in the database.

After the object import has finished, the information about the relations between objects is being updated. During this process, the following status window is displayed:



After the update has finished, the objects in the **Object Administrator** window are updated and the following window appears:



Attention

.....
The import process uses a lot of the processor resources. Other applications might work slower during the import.
.....

2.3 SETTING UP THE DEMONSTRATION DATABASE

When you have installed Navision Developer's Toolkit with example files, the installation program has already copied a Navision backup file in the directory where you have installed Navision Developer's Toolkit.

If you want to setup the Navision Developer's Toolkit demonstration database, follow this procedure:

- 1 Start the Navision client.
- 2 Create a new Navision database (for example with the database name `DevTool.fdb`) in the directory where you have installed Navision Developer's Toolkit. You should use 450 MB as file size for this new database.
- 3 Restore the Navision backup file `DevTool.fbk` from the directory where you have installed Navision Developer's Toolkit into this database.
- 4 After the restore is finished, close Navision.
- 5 Start Navision Developer's Toolkit and click File, Database, Open to open the previous created Navision Developer's Toolkit database.

The demonstration database includes one company with an import of all objects from Navision application database version W1 3.70.

Chapter 3

Source Analyzer

The Navision Developer's Toolkit - Source Analyzer is a graphical cross-reference tool for Navision databases. Based on the imported object data you can use various windows and functions to view and analyze the structure of an application database.

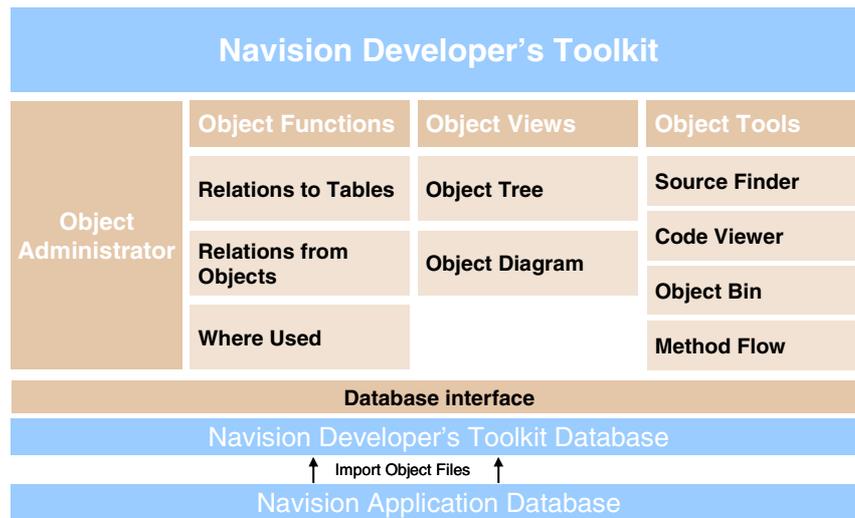
This chapter contains basic information about the components of the Source Analyzer. It contains the following sections:

- Overview of Source Analyzer
- Object Administrator
- Object Functions
- Object Views
- Object Tools

3.1 OVERVIEW OF SOURCE ANALYZER

Navision Developer's Toolkit - Source Analyzer is a collection of tools to view and analyze object data from a Navision database. It gives you fast access to the object structure in your application database. The picture below shows the structure and the elements of the Navision Developer's Toolkit - Source Analyzer:

Source Analyzer - Overview



Navision Developer's Toolkit Database

The Source Analyzer is based on the object data which you have imported from the application database into the Navision Developer's Toolkit database. During the object import all information about an object is divided into different areas in the Navision Developer's Toolkit database. These areas are:

- Fields & Controls
- Variables & Parameters
- Functions & Triggers
- Property Values
- Keys
- C/AL Code
- Table Relations

The Source Analyzer offers you different views, tools and functions to analyze the object data in these areas. Depending on the information you are looking for, you will use the Object Administrator, Object Views, Object Tools or Object Functions.

Object Administrator

The **Object Administrator** window always shows you the objects you have imported in the Navision Developer's Toolkit database.

Object Functions

You can use the functions below to analyze the structure of the database and the relations between objects:

- Relations to Tables
- Relations from Objects
- Where Used

This chapter describes the main purpose of each window and function. It shows you also an example of how to access each window and function.

Object Views

Object Views are used to show the results of the Source Analyzer functions. There are two different windows available:

- Object Tree
- Object Diagram

Object Tools

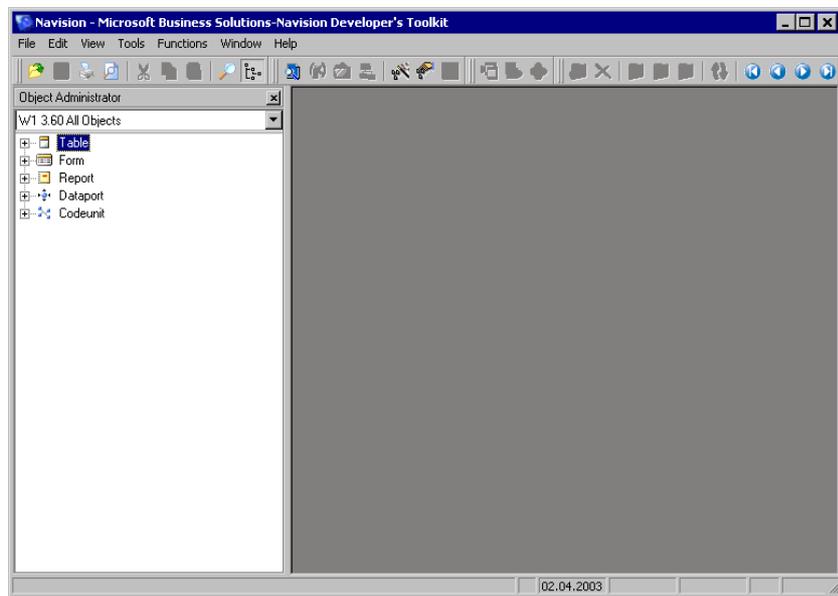
The Object Tools are designed to explore the object data, like searching for a text string, viewing C/AL code or collecting objects. The following Object Tools are available:

- Source Finder
- Code Viewer
- Object Bin
- Method Flow

3.2 OBJECT ADMINISTRATOR

The **Object Administrator** window shows all objects that have been imported to the Navision Developer's Toolkit database. The **Object Administrator** is the backbone of Navision Developer's Toolkit. All activities are based on the data of the objects in the **Object Administrator**. These objects are grouped according to Navision object types (Table, Form, Report, Dataport and Codeunit).

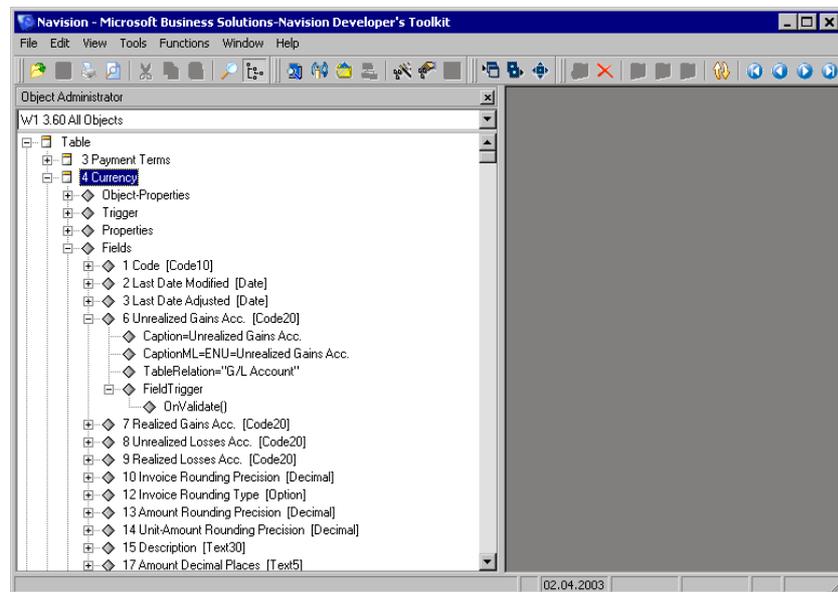
After you have connected to a database the **Object Administrator** window appears automatically. In the header of the **Object Administrator** window you can select a version of objects that are already imported. The **Object Administrator** window always appears on the left side of the Navision Developer's Toolkit desktop and looks like this:



Using the Object Administrator

If you want to see the data of an object you can expand the different levels of this object. For example if you want to see the imported data for the **Unrealized Gains Acc.** field in the **Currency** table, follow this procedure:

- 1 Click on the "+" sign in front of object group Table to expand this group. Now you can see all tables.
- 2 Click on the "+" sign in front of the **Currency** table to expand the first level of this object.
- 3 Click on the "+" sign in front of Fields. You can see a list of all fields in this table.
- 4 Click on the field **Unrealized Gains Acc.** to mark this field.
- 5 On the menu bar, click **View**, **Expand All** to expand all levels below this field. The result in the **Object Administrator** window looks like this:



You can also use the right mouse menu to access some basic functionality for the currently marked line in the **Object Administrator** window.

3.3 OBJECT FUNCTIONS

You can use the Object Functions to see the relations between objects or to find out where an object or a part of an object is used.

Note

.....
If you start one of the Object Functions the result is displayed in an Object View. The Object Views are described in detail later.
.....

Relations to Tables

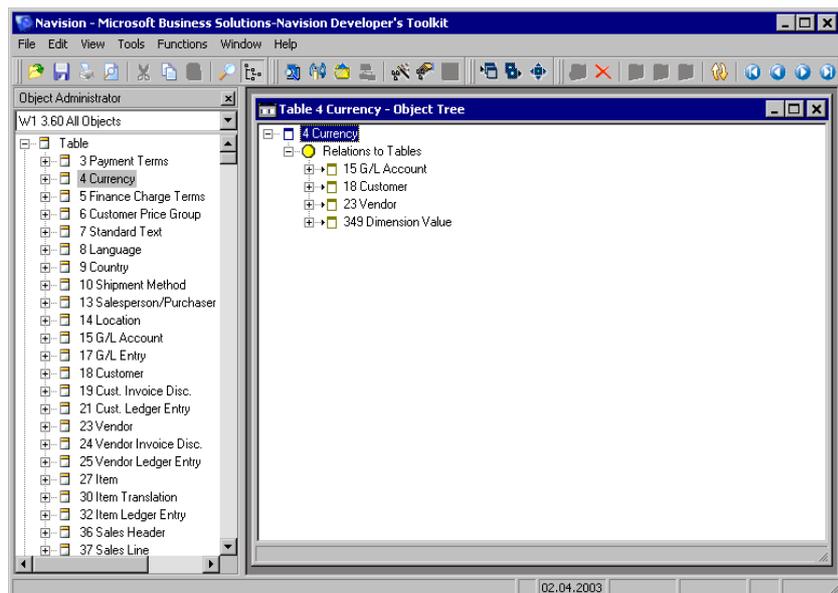
The **Relations to Tables** function shows you all table relations in the current object pointing to other tables.

In Navision table relations can be defined in the properties of table fields and data controls (e.g. textbox). That means you can use these functions for Tables, Forms, Reports and Dataports.

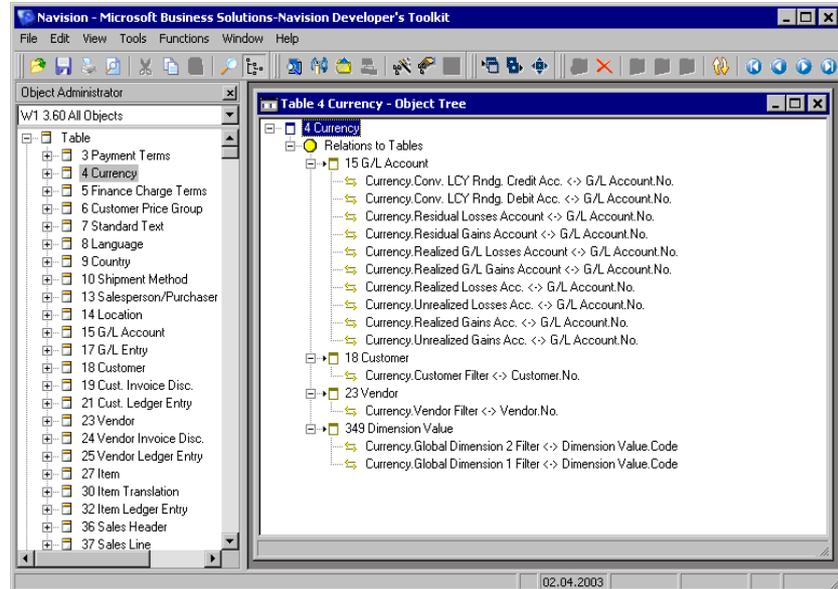
Using Relations to Tables

To see the relations that are defined in the **Currency** table, follow this procedure:

- 1 Click on the **Currency** table in the **Object Administrator** window to mark this table.
- 2 Click **F**unctions, **R**elations to Tables on the menu bar, or use the right mouse button to start the function. The **Object Tree** window appears showing you the objects defined as table relations in the **Currency** table:



- 3 Click on the **Currency** table in the **Object Tree** window to mark this table and click View, Expand All on the menu bar, or use the right mouse button to expand all levels below. The **Object Tree** window will look like this:



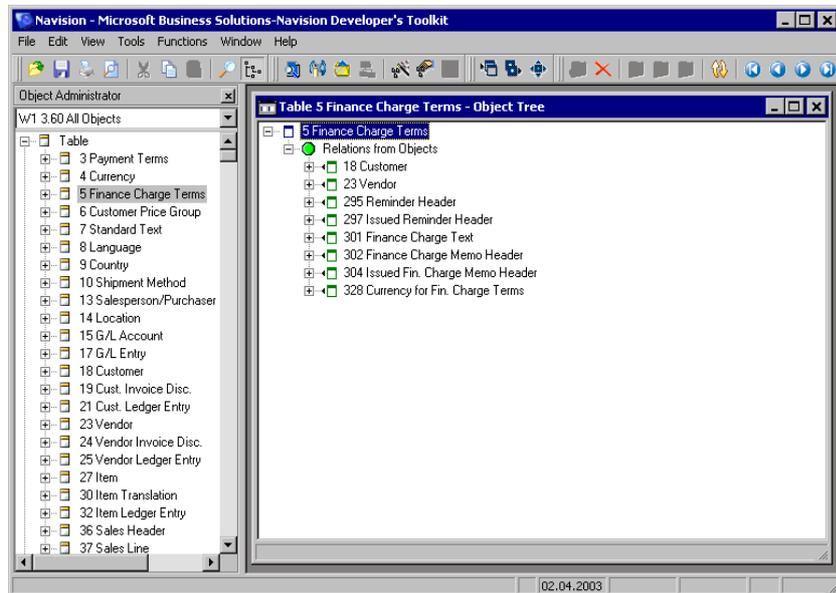
Relations from Objects

The **Relations from Objects** function shows you all relations from other objects that point to the current object. In Navision, you can only define a relation to a table. Consequently you can only use this function for tables.

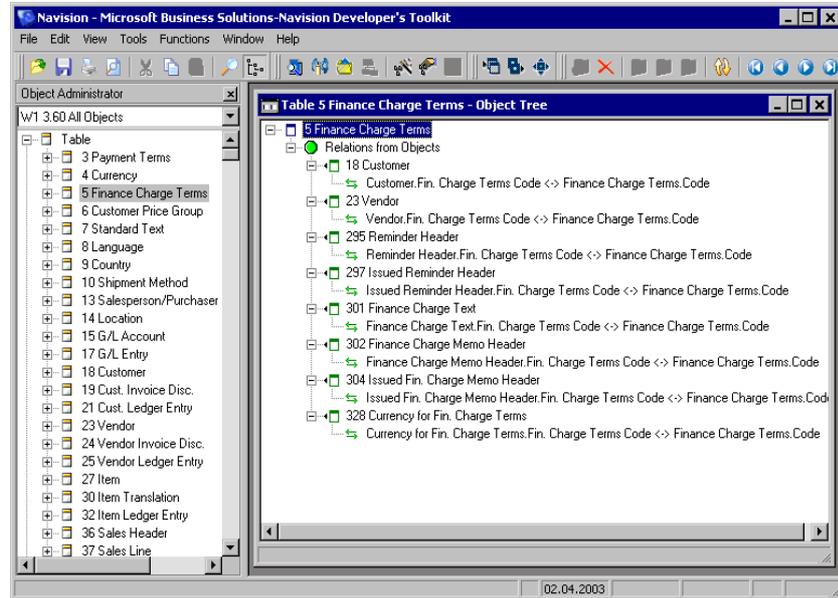
Using Relations from Objects

To see from which objects table relations are pointing to the **Finance Charge Terms** table, follow this procedure:

- 1 Click on the **Finance Charge Terms** table in the **Object Administrator** window to mark this table.
- 2 Click **F**unctions, **Relations from Objects** on the menu bar, or use the right mouse button to start the function. The **Object Tree** window appears showing you from which objects table relations are pointing to the **Finance Charge Terms** table:



- 3 Click on the **Finance Charge Terms** table in the **Object Tree** window to mark this table and click View, Expand All on the menu bar, or use the right mouse button to expand all levels below. The **Object Tree** window will look like this:



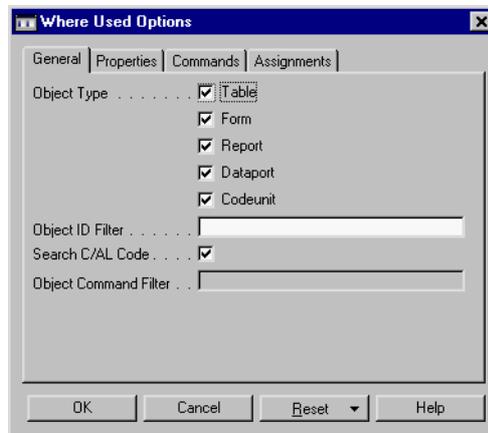
Where Used

The **Where Used** function shows you all the places where an object or a part of an object is used. The **Where Used** function will search in properties and C/AL code of all object types.

Setting up Where Used Options

You can use the **Where Used Options** window to define object types, object ID's, C/AL code, properties, commands and assignments to be searched by the **Where Used** function.

To set up the Where Used options, click Tools, Where Used Options on the menu bar. The **Where Used Options** window appears:



If you use the **Where Used** function the first time, the default values are used. After you have changed the values in the **Where Used Options** window, click on OK to save these options. The next time you start the **Where Used** function, the previous settings are used. Click on Reset, Default to reset all options to their default values.

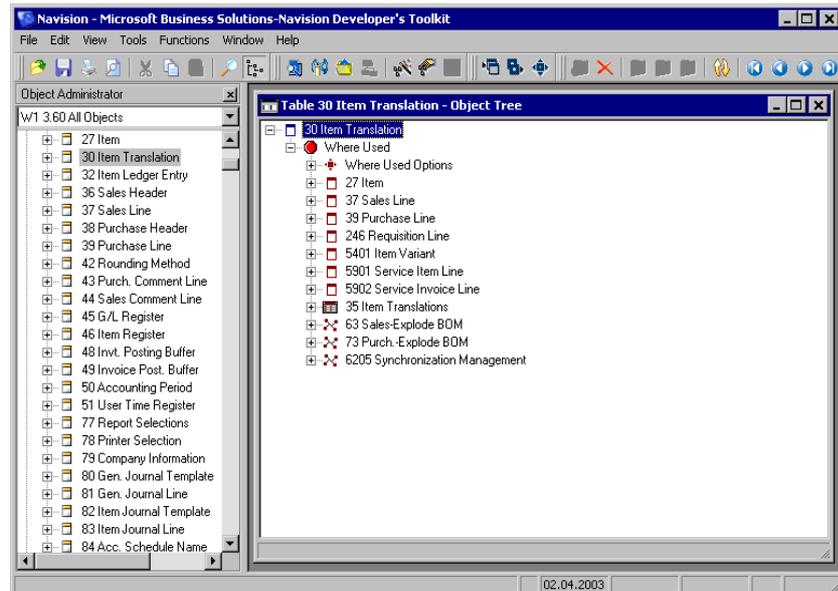
Note

.....
The changed values in the **Where Used Options** window are saved if you click OK in this window. This setting is also used after you restart Navision Developer's Toolkit.
.....

Using Where Used

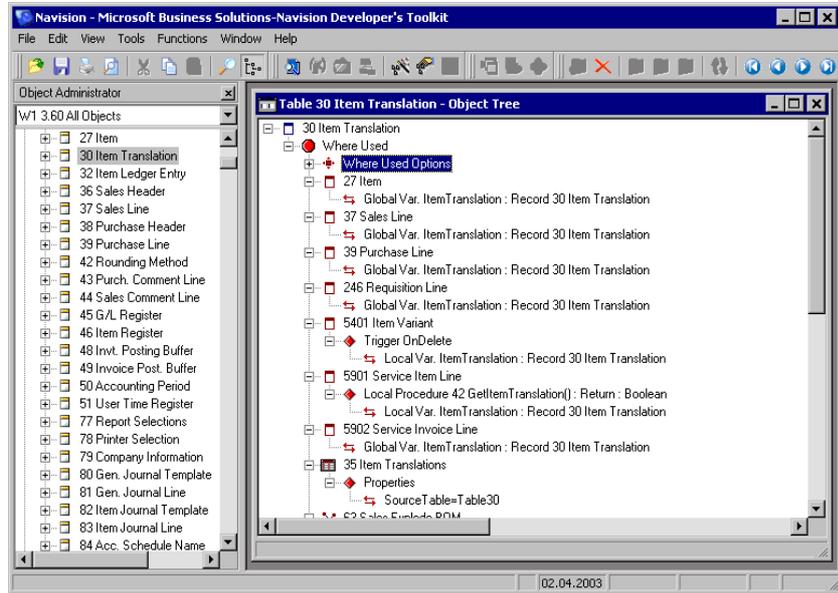
To see where the **Item Translation** table is used, follow this procedure:

- 1 Click on the **Item Translation** table in the **Object Administrator** window to mark this table.
- 2 Click **Functions**, **Where Used** on the menu bar, or use the right mouse button to start the function. The **Object Tree** window appears showing you where the **Item Translation** table is used:



- 3 Click on the **Item Translation** table in the **Object Tree** window to mark this table and click **View**, **Expand All** on the menu bar, or use the right mouse button to expand all levels below.

- 4 Click on the Where Used Options in the **Object Tree** window to mark this entry and click View, Collapse All on the menu bar, or use the right mouse button to collapse all levels below. The **Object Tree** window will look like this:



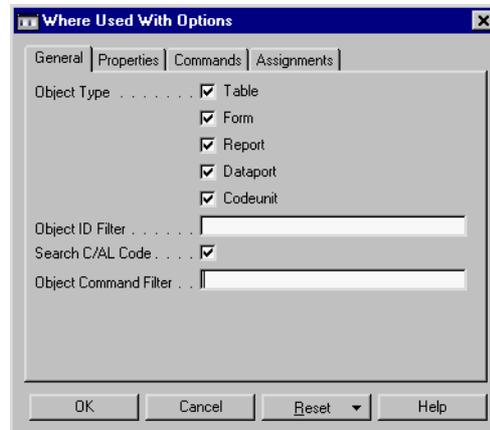
Where Used With

The **Where Used With** function is based on the **Where Used** function. If you start the **Where Used With** function, the **Where Used With Options** window appears automatically. You can change these options specifically for the current search.

Setting up Where Used With Options

You can use the **Where Used With Options** window to define object types, object ID's, C/AL code, properties, commands and assignments to be searched by the **Where Used With** function. If you start the **Where Used With** function on an object, you can also set an object command filter.

The **Where Used With Options** window appears automatically, if you start the **Where Used With** function:



If you want to change the general **Where Used Options**, click **Tools, Where Used Options** on the menu bar. These general Where Used options are used as presetting for the **Where Used With** function.

Note

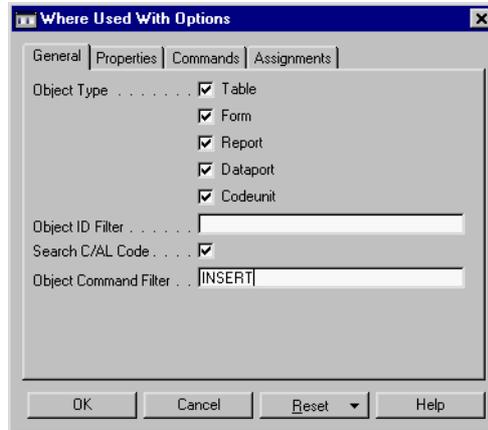
.....
 The changes in the **Where Used With Options** window will not change the general Where Used options.

Using Where Used With

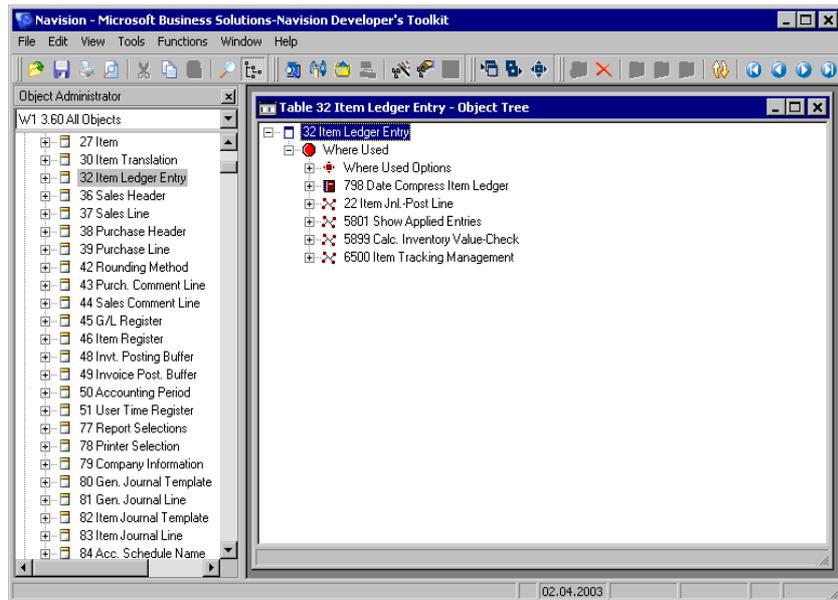
To see where the **Item Ledger Entry** table is inserted, follow the procedure below:

- 1 Click on the **Item Ledger Entry** table in the **Object Administrator** window to mark this table.
- 2 Click **Functions, Where Used With** on the menu bar, or use the right mouse button to start the function. The **Where Used With Options** window appears.

- 3 Click in the **Object Command Filter** field and enter *INSERT* in this field. The **Where Used With Options** window looks like this:

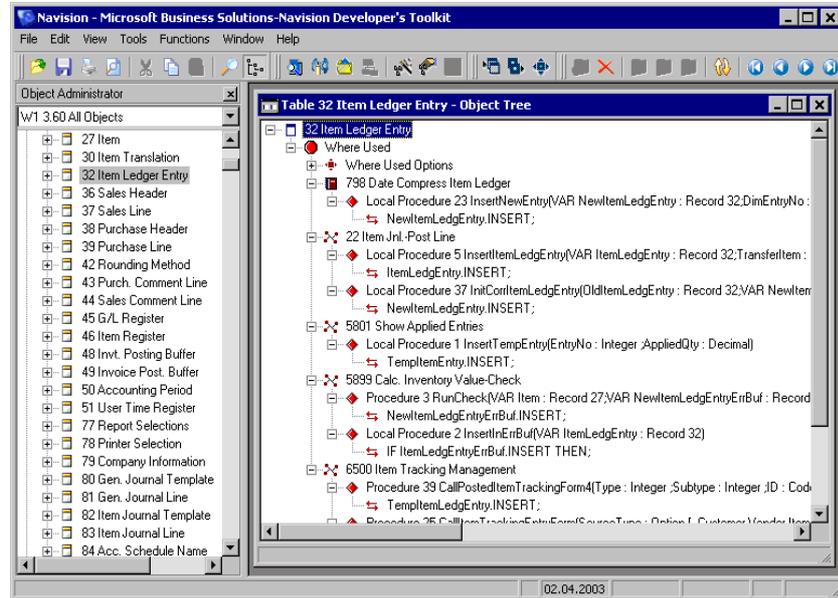


- 4 Click OK to start the **Where Used With** function. The **Object Tree** window appears showing you where the **Item Ledger Entry** table is inserted:



- 5 Click on the **Item Ledger Entry** table in the **Object Tree** window to mark this table and click View, Expand All on the menu bar, or use the right mouse button to expand all levels below.

- 6 Click on the Where Used Options in the **Object Tree** window to mark this entry and click View, Collapse All on the menu bar, or use the right mouse button to collapse all levels below. The **Object Tree** window will look like this:



3.4 OBJECT VIEWS

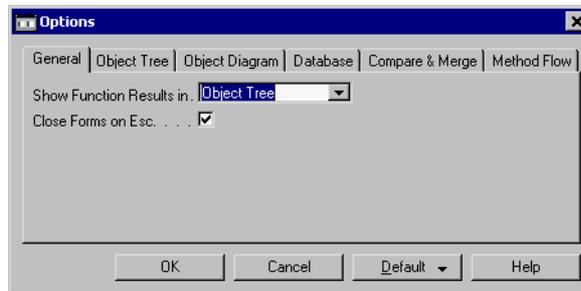
Usually Object Views are used to show results of the Source Analyzer functions. There are two different views:

- Object Tree window
- Object Diagram window

Setting up the Default Object View

To select either an **Object Tree** window or an **Object Diagram** window for all new windows that show results of function do the following:

- 1 Click **T**ools, **O**ptions on the menu bar. The **Options** window appears:



- 2 Click in the **Show Function Results in** field, click the AssistButton **▼**, and select the Object View you want.

Object Tree Window

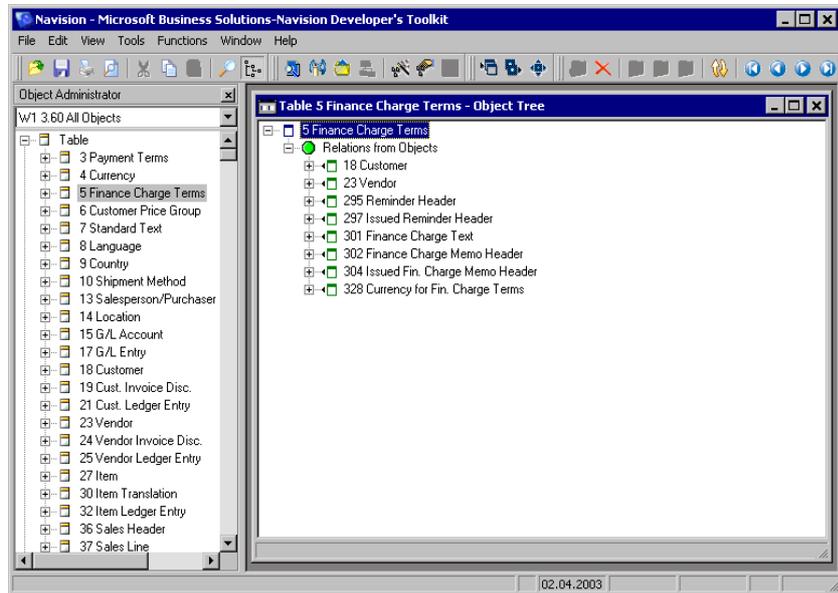
An **Object Tree** window shows the objects in a tree structure similar to the tree structure used in the Windows Explorer. You can also use the functions for an object in the **Object Tree** window. The result of these function operations will be shown in the same **Object Tree** window.

Using the Object Tree Window

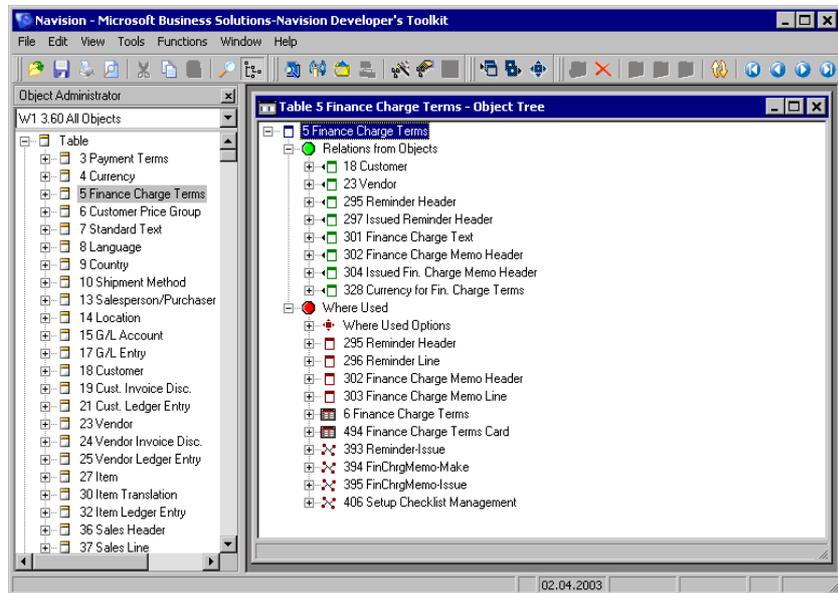
If you want to see the result of the **Relations from Objects** and **Where Used** functions for the **Finance Charge Terms** table, follow this procedure:

- 1 Click on the **Finance Charge Terms** table in the **Object Administrator** window to mark this table.

- Click **F**unctions, **R**elations from **O**bjects on the menu bar, or use the right mouse button to start the function. The **Object Tree** window appears:



- Click on the **Finance Charge Terms** table in the **Object Tree** window and click **F**unctions, **W**here Used on the menu bar, or use the right mouse button to start the function. The **Object Tree** window with the result of both functions appears:



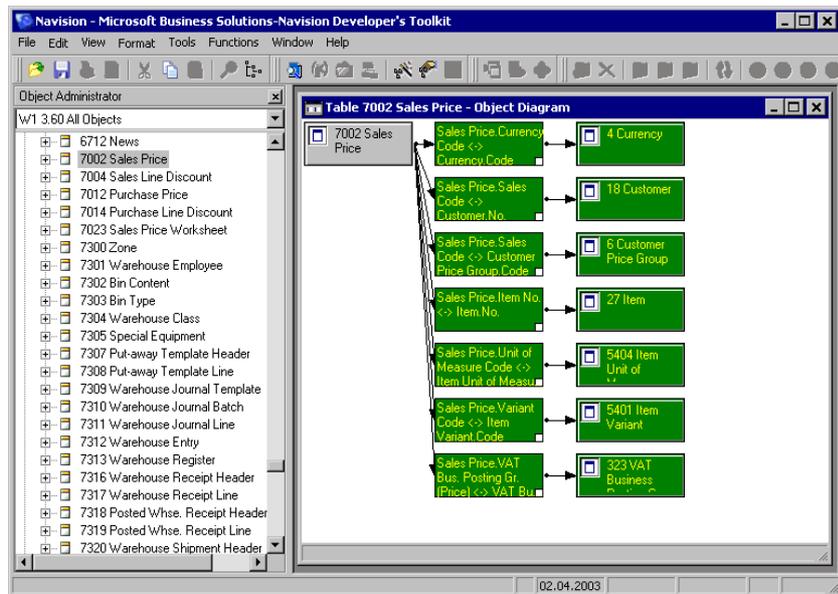
Object Diagram Window

An **Object Diagram** window shows the objects in a graphical view. You can also use all of the functions for an object in an **Object Diagram** window. The results will be shown in one **Object Diagram** window.

Using the Object Diagram Window

If you want to see the result of the **Relations to Tables** function based on **Sales Price** table in an **Object Diagram** window, follow this procedure:

- 1 Click **T**ools, **O**ptions on the menu bar and change the option in the **Show Function Results in** field to **Object Diagram**. You can also use the icon in the symbol bar.
- 2 Click on the **Sales Price** table in the **Object Administrator** window to mark this table.
- 3 Click **F**unctions, **R**elations to Tables on the menu bar, or use the right mouse button to start the function. The **Object Diagram** window appears:



Note

The **Object Diagram** window shows relations graphically. Later versions of Navision Developer's Toolkit will include additional application areas. When the **Object Diagram** window is used with these application areas, it will be possible to take full advantage of its functionality and also view business flows.

3.5 OBJECT TOOLS

Object Tools give you additional access to object data. Depending on the current object you can use these tools in different ways. The following tools are available:

- Object Bin
- Code Viewer
- Method Flow
- Source Finder

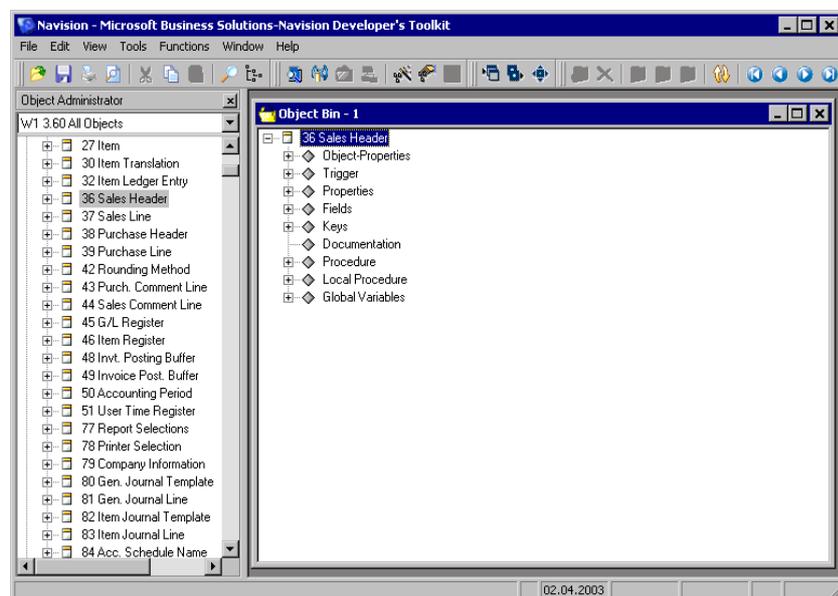
Object Bin Window

The **Object Bin** window shows an object in the same way as the **Object Administrator** window. You can use the **Object Bin** window to collect different objects in one window.

Using the Object Bin Window

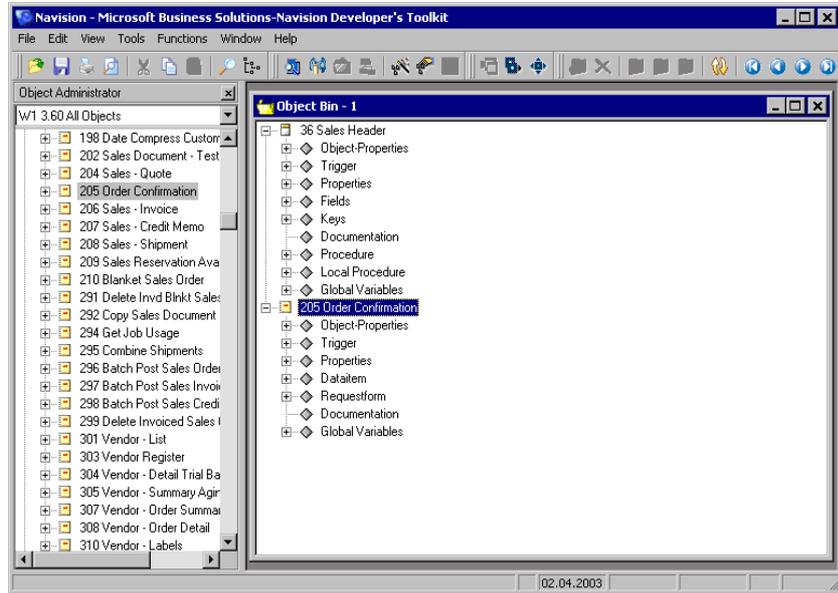
If you want to collect the **Sales Header** table and the **Order Confirmation** report in one **Object Bin** window, follow this procedure:

- 1 Click on the **Sales Header** table in the **Object Administrator** window to mark this table.
- 2 Click **Tools**, **Object Bin** on the menu bar, or use the right mouse button to copy this object in a new **Object Bin** window. The **Object Bin** window appears:



- 3 Click on report 205, **Order Confirmation** in the **Object Administrator** window to mark this report. Hold down the left mouse button and drag & drop this report in the **Object Bin** window.

- 4 Click on the **Order Confirmation** report in the **Object Bin** window and click on the "+" sign in front of this report to expand the first level below. The **Object Bin** window will look like this:



Code Viewer Window

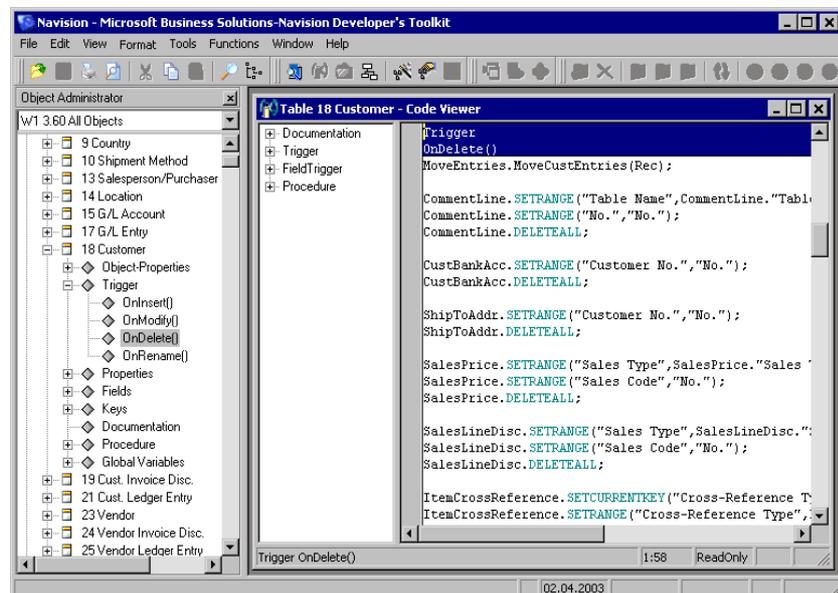
The **Code Viewer** window shows you the C/AL code lines for an object. The **Code Viewer** window is divided into two parts. The left side shows you the code structure of this object. For example you can see the list of object trigger, field trigger and procedures. On the right side you can see the C/AL code lines corresponding to the marked element on the left side. Keywords like commands are colored to improve the readability of the code lines.

If you start the **Code Viewer** window from an object or field trigger in the **Object Administrator** window, the **Code Viewer** window will show you automatically the corresponding trigger.

Using the Code Viewer Window

If you want to see the trigger **OnDelete** in the **Customer** table, follow this procedure:

- 1 Click on the "+" sign in front of **Customer** table to expand the first level of this object.
- 2 Click on the "+" sign in front of **Trigger**.
- 3 Click on the trigger **OnDelete**.
- 4 Click **Tools**, **Code Viewer** on the menu bar, or use the right mouse button. The **Code Viewer** window appears:

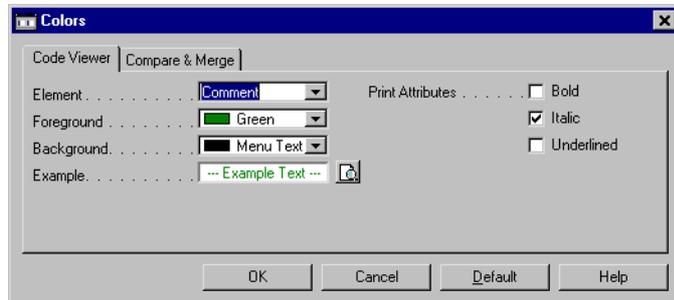


You can expand the levels on the left side of the **Code Viewer** window and click for example on procedure **AssistEdit** to see the C/AL code in this procedure.

You can also start the **Where Used** function in the left side of the **Code Viewer** window. In the right side you can mark some code lines and open the **Object Bin** window to show all objects used in this code line in an **Object Bin** window.

Setting Up Code Viewer Color Options

If you want to change the coloring in the Code Viewer window, click Tools, Colors on the menu bar. The Colors window looks like this:



The color settings are always shown for the currently selected element. To see the coloring of all elements, click on the Preview button next to the **Example** field.

Method Flow Window

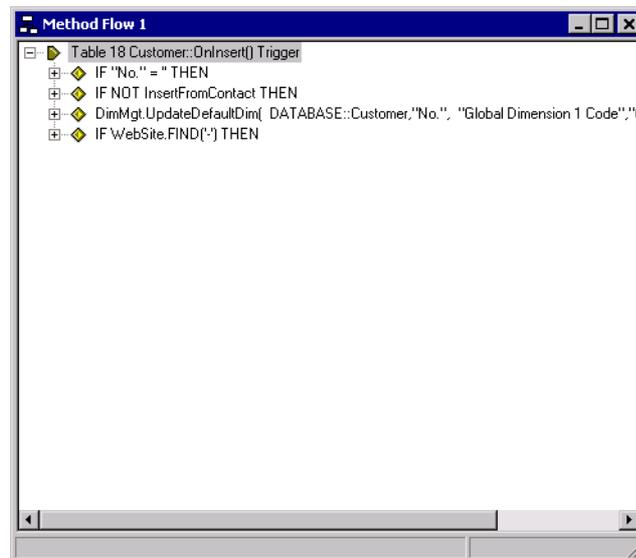
The **Method Flow** window shows C/AL code lines for a trigger or a procedure grouped into blocks by keywords. These blocks can be expanded and collapsed.

You can also expand a code line that contains a trigger or a procedure call (to the same object or to another object). The **Method Flow** window will show a new node that shows the code lines of this trigger or procedure as indented lines in the same window.

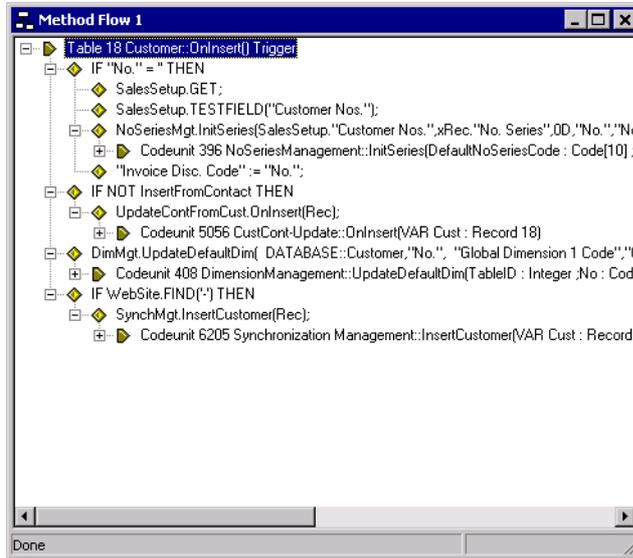
Using the Method Flow Window

If you want to explore the trigger **OnInsert** in the **Customer** table, follow this procedure:

- 1 Click on the "+" sign in front of **Customer** table to expand the first level of this object in the **Object Administrator** window.
- 2 Click on the "+" sign in front of **Trigger**.
- 3 Click on the trigger **OnInsert**.
- 4 Click **Tools**, **Method Flow** on the menu bar, or use the right mouse button. The **Method Flow** window appears:



- 5 Click on the first line in the **Method Flow** window to mark this entry and click View, Expand All on the menu bar, or use the right mouse button to expand all levels below. The **Method Flow** window will look like this:



If you click one of the nodes with the name Codeunit, you can expand this node to see the code lines from this codeunit.

Note

.....
With the default settings, comments and BEGIN/END lines are not shown. Click Tools, Options on the menu bar to change these settings for the **Method Flow** window.
.....

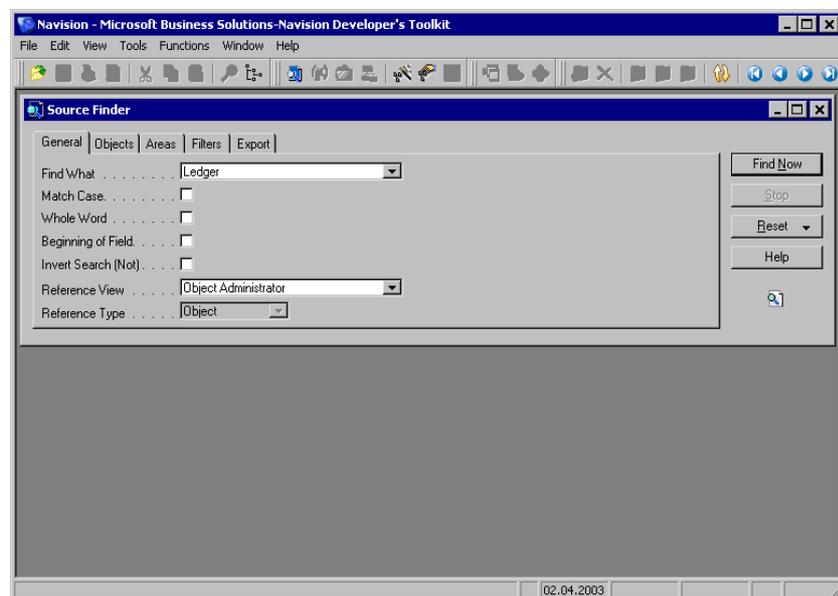
Source Finder Window

The **Source Finder** searches the database for a specific character string. To specify where in the database the Source Finder must search, you can use the settings on the different tabs in the **Source Finder** window.

Using the Source Finder Window

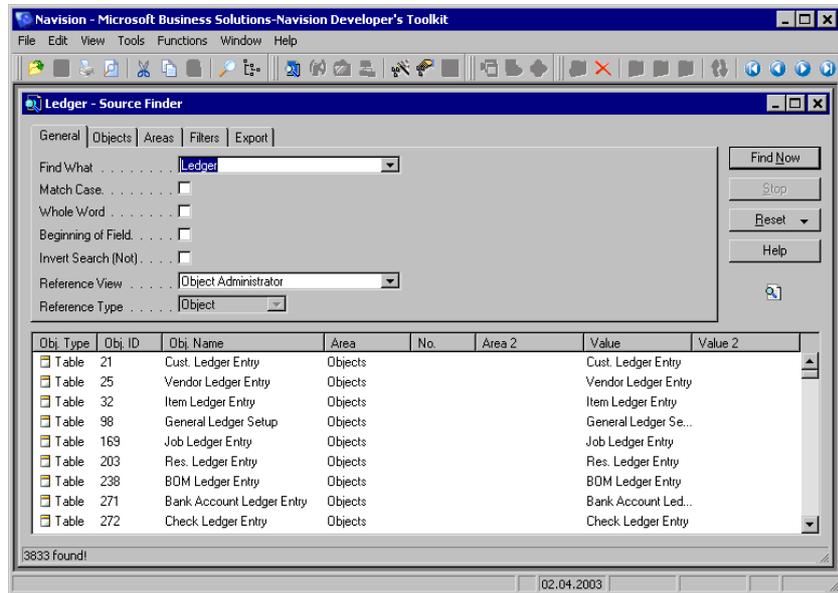
If you want to search for the string *Ledger* in all objects, follow this procedure:

- 1 Click View, Object Administrator on the menu bar, or use the F12 key to hide the **Object Administrator** window. This gives you more space on your Navision Developer's Toolkit desktop.
- 2 Click Tools, Source Finder on the menu bar. The **Source Finder** window appears:



- 3 Insert *Ledger* in the **Find What** field, like you see it in the picture above.

- 4 Click Find Now in the **Source Finder** window to start the search. The **Source Finder** window looks like this:



This **Source Finder** window shows you the occurrences of the expression *Ledger* in all objects and all areas. You can expand the width of the columns to see the complete value.

Note

.....
You can limit the search if you change the values on the **Objects**, **Areas** or **Filters** tab.
.....

Chapter 4

Examples of How to Use Source Analyzer

This Navision Developer's Toolkit Chapter describes some typical cases from your daily work and how to work with the Source Analyzer.

It contains the following sections:

- Introduction
- Viewing Object Data
- Analyzing Objects
- Searching for Object Data

4.1 INTRODUCTION

The examples in this chapter are based on standard Navision version 3.60 objects. These objects are already imported in the Navision Developer's Toolkit demonstration database. Before you can do the exercises, you must start Navision Developer's Toolkit and open the Navision Developer's Toolkit demonstration database (for example, DevTool.fdb).

4.2 VIEWING OBJECT DATA

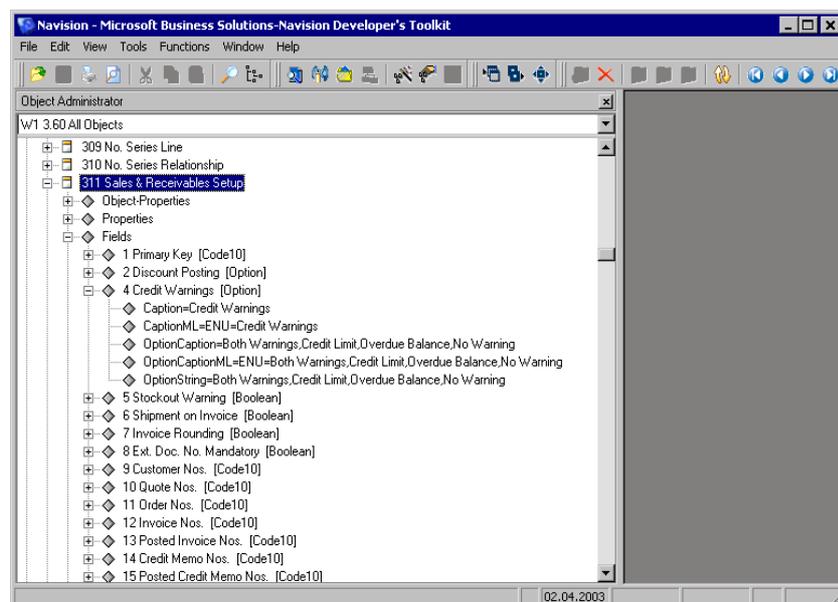
During the development of a Navision application, you always need information about other objects. You can change to these objects in the Object Designer window of Navision, but then you lose focus and hide your original designer window. If you use Navision Developer's Toolkit to have a look at the object data, you only have to switch the application and the focus of the designer window in Navision will not be changed.

This section explains how to view different types of object data. For the examples below we recommend that the Object Administrator window is always open.

Finding the Option String of a Field

This example will show you how to find the option string of the field 4, **Credit Warnings** in table 311, **Sales & Receivables Setup**:

- 1 Click on the "+" sign in front of object group Table in the **Object Administrator** window to expand this group.
- 2 Use Edit, Find to find the expression *Sales & Rec.*
- 3 Click on the "+" sign in front of the **Sales & Receivables Setup** table to expand the first level of this object.
- 4 Click on the "+" sign in front of Fields. You can see a list of all fields in this table.
- 5 Click on the "+" sign in front of the field 4, **Credit Warnings** to expand the level below this field. Now you can see the OptionString property, like in the window below:

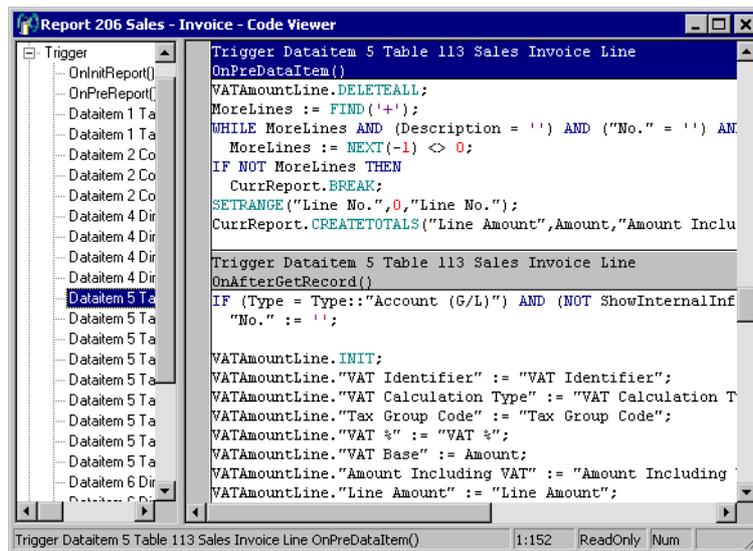


Viewing all C/AL code lines of a report

Sometimes you need to see the C/AL code lines in different triggers of an object. For example in reports you have to select either a data item or a section to view the code lines.

To see all C/AL code lines of data item 5, in report 206, *Invoice* follow this procedure:

- 1 Expand the object group Report in the *Object Administrator* window.
- 2 Click on report 206, *Invoice*.
- 3 Click Tools, Code Viewer on the menu bar, or use the right mouse button to open the *Code Viewer* window.
- 4 Expand all triggers on the left side of the *Code Viewer* window.
- 5 Click on the first line which contains Dataitem 5. The program points automatically to the first trigger of the data item on the right side of the *Code Viewer* window. The *Code Viewer* window looks like this:



The right part of the *Code Viewer* window contains all triggers of the current object. In the status bar of the *Code Viewer* window you can always see the complete name of the current trigger. You can use the clipboard to copy code lines into the Navision C/AL editor.

4.3 ANALYZING OBJECTS

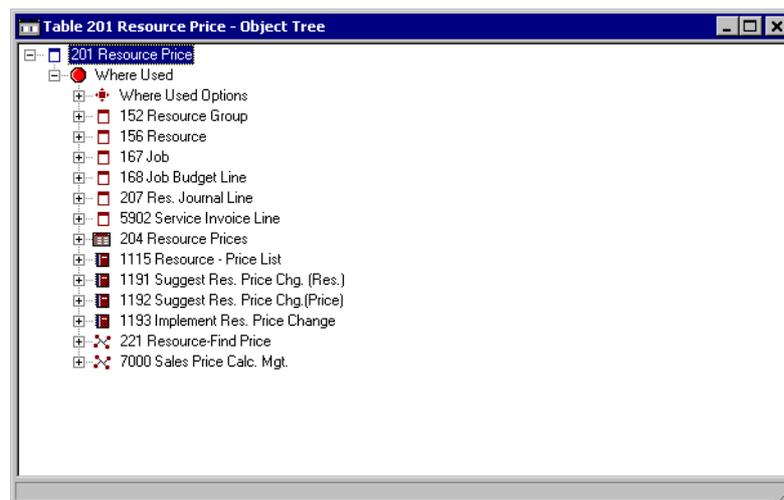
Whether you are designing a new application or supporting or updating an existing application you have to analyze the relations between objects or the usage of objects or parts of them.

This section shows you some examples how to analyze objects.

Analyzing the Usage of a Table

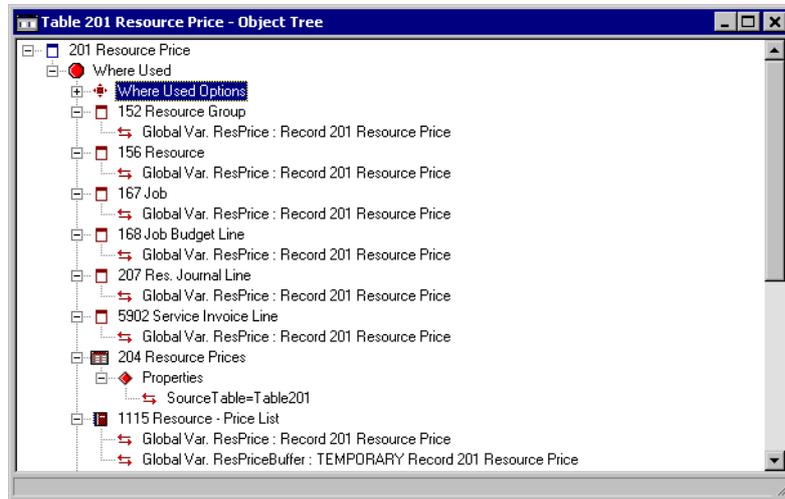
In this example you can see how to analyze the usage of table 201, **Resource Price**:

- 1 Expand the object group Table in the **Object Administrator** window.
- 2 Click on table 201, **Resource Price**.
- 3 Click **F**unctions, **W**here Used on the menu bar, or use the right mouse button to start the function. The **Object Tree** window appears showing you where the **Resource Price** table is used:



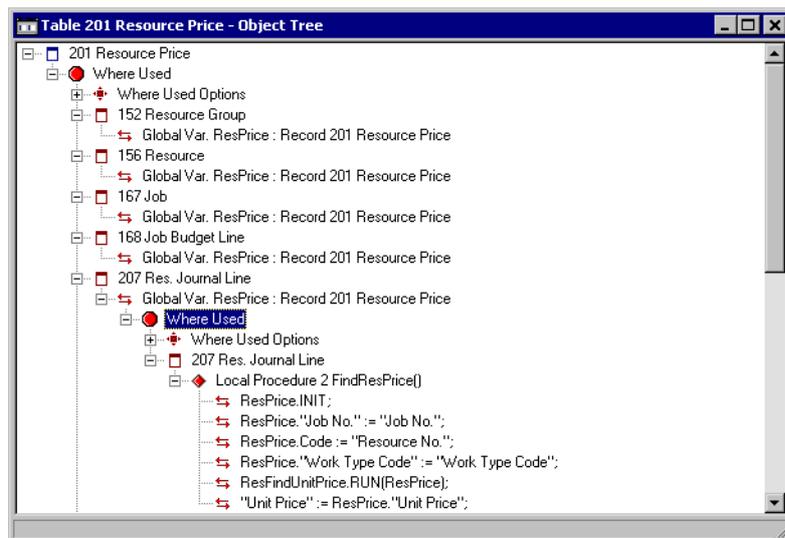
- 4 Click on **Where Used** in the **Object Tree** window and click **V**iew, **E**xpand All or use the right mouse button. Now you can see all levels in the **Object Tree** window.

- Click on Where Used Options in the **Object Tree** window and click View, Collapse All or use the right mouse button. The **Object Tree** window looks like this:



You can see that table 201, **Resource Price** is used in table 207, **Res. Journal Line** as a global record variable.

- Click on the line below table 207, **Res. Journal Line** in the **Object Tree** window.
- Click Functions, Where Used on the menu bar, or use the right mouse button to start the function.
- Click View, Expand All or use the right mouse button to expand all levels below the current marked line.
- Click on Where Used Options in the **Object Tree** window and click View, Collapse All or use the right mouse button. The **Object Tree** window looks like this:



You can see all places where table 201, **Resource Price** is used in table 207, **Res. Journal Line** as global variable called **ResPrice**.

- 10 Click on the line called "ResFindUnitPrice.RUN(ResPrice);".
- 11 Click Tools, Code Viewer on the menu bar, or use the right mouse button to see the corresponding code line in table 207, **Res. Journal Line**. The **Code Viewer** window appears:

```

ResFindUnitPrice.RUN(ResPrice);
"Unit Price" := ResPrice."Unit Price";
VALIDATE("Unit Price");

EmptyLine() : Return : Boolean
Procedure 5
EXIT("Resource No." = '') AND (Quantity = 0);

SetupNewLine(LastResJnlLine : Record 207)
Procedure 8
ResJnlTemplate.GET("Journal Template Name");
ResJnlBatch.GET("Journal Template Name","Journal Batch Name");
ResJnlLine.SETRANGE("Journal Template Name","Journal Template Name");
ResJnlLine.SETRANGE("Journal Batch Name","Journal Batch Name");
IF ResJnlLine.FIND('-') THEN BEGIN
    "Posting Date" := LastResJnlLine."Posting Date";
    "Document Date" := LastResJnlLine."Posting Date";
    "Document No." := LastResJnlLine."Document No.";
END ELSE BEGIN
    "Posting Date" := WORKDATE;
    "Document Date" := WORKDATE;
    IF ResJnlBatch.No_Series() THEN BEGIN

```

The cursor is now in front of the corresponding line.

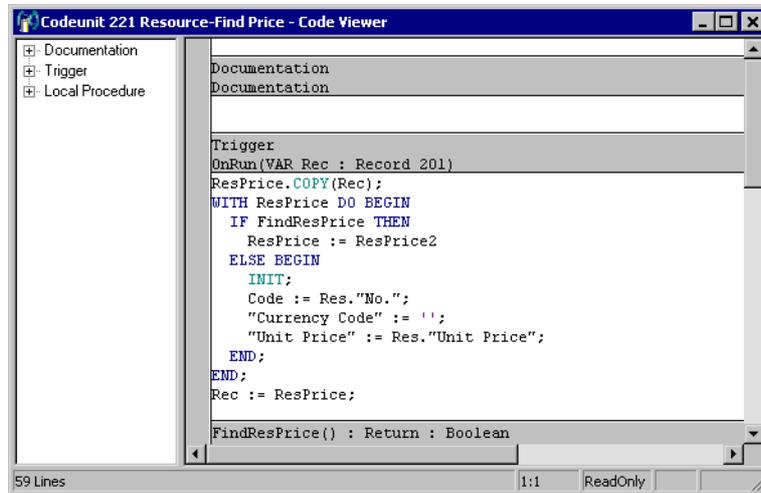
- 12 Double click on ResFindUnitPrice in the current line to mark this expression.
- 13 Click Tools, Object Bin on the menu bar to copy this object in a new **Object Bin** window. The **Object Bin** window appears:



You can expand the different levels of this object to see all properties.

- 14 Click on the first line in the **Object Bin** window.

15 Click Tools, Code Viewer on the menu bar, or use the right mouse button to see the code lines in this codeunit. The **Code Viewer** window appears:



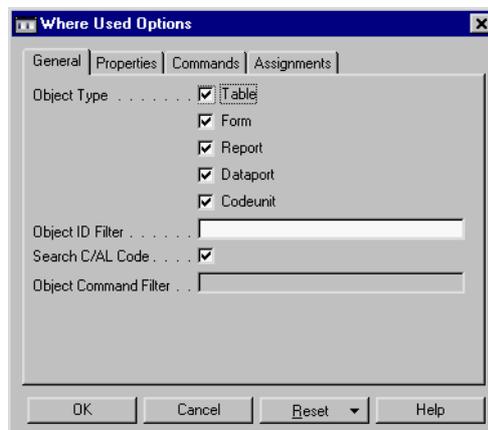
You can see all code lines in codeunit 221, **Resource-Find Price** to analyze what happens in this codeunit.

Finding Where a Field is Used

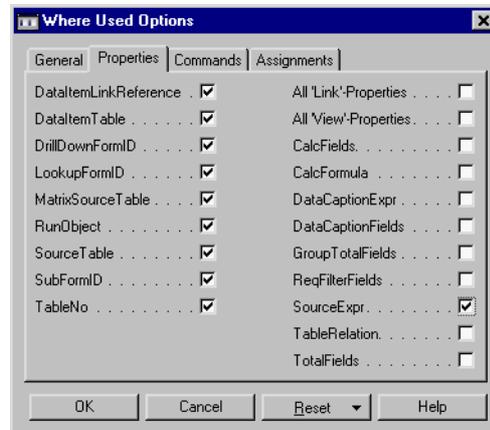
Sometimes you have to adjust the length of a field. Before you change the field you have to analyze the usage of this field. First of all you need to know where the field is filled in or transferred to another field or used as source expression of controls.

The example below shows you how to analyze where the **Description** field in table 27, **Item** is used in C/AL code lines and as source expression of controls:

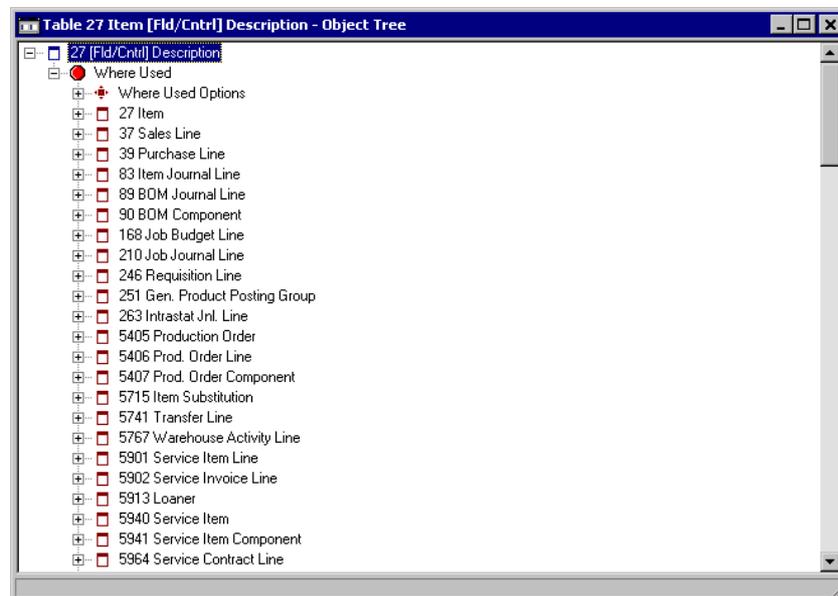
1 Click Tools, Where Used Option. The **Where Used Options** window appears:



- Click on the **Properties** tab and insert a ✓ in the **SourceExpr** field, like you see it in the **Where Used Options** window below:



- Click OK.
- Click on field 3, **Description** in table 27, **Item** in the **Object Administrator** window.
- Click **F**unctions, **W**here Used on the menu bar, or use the right mouse button to start the function. The **Object Tree** window appears showing you where the **Item** table is used:

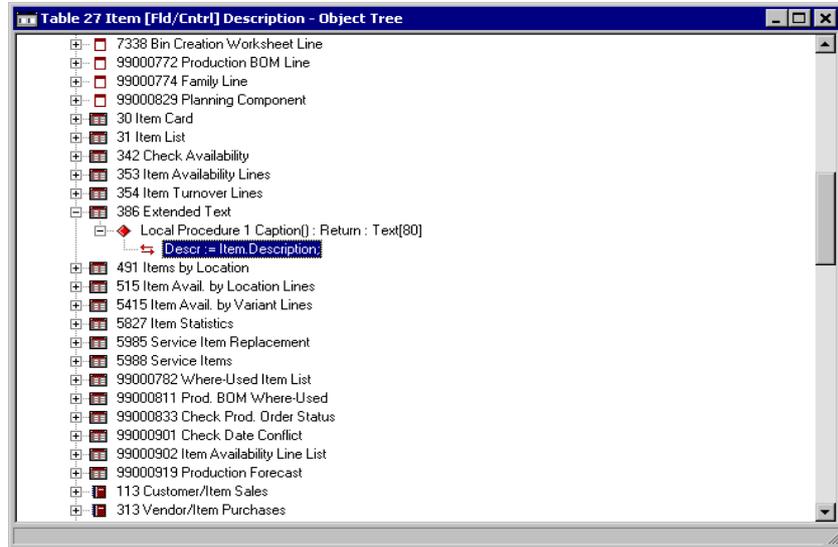


The **Object Tree** window shows you all objects where the **Description** field is used.

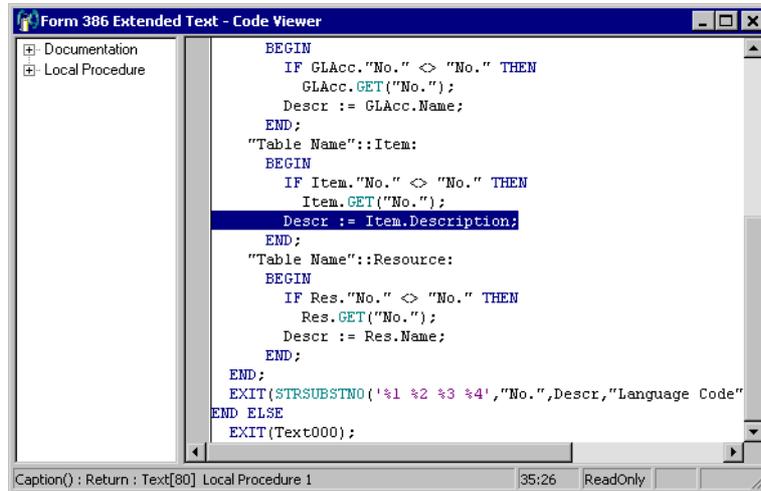
- Click on form 386, **Extended Text** and expand the levels below this form.

Chapter 4. Examples of How to Use Source Analyzer

- 7 Click on the indented line below form 386, **Extended Text**. The **Object Tree** window looks like this:



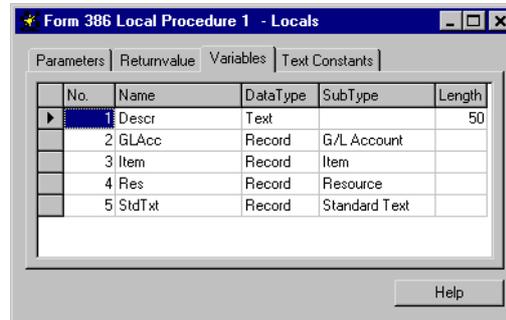
- 8 Click **_Tools**, **Code _Viewer** on the menu bar, or use the right mouse button to see the code lines in this local procedure. The **Code Viewer** window appears:



The cursor is in front of the code line, where the **Description** field is used. The value of the **Description** field is transferred to the **Descr.** variable.

- 9 Click **View**, **C/AL Locals**.

10 Click the on the **Variables** tab. The **Locals** window looks like this:



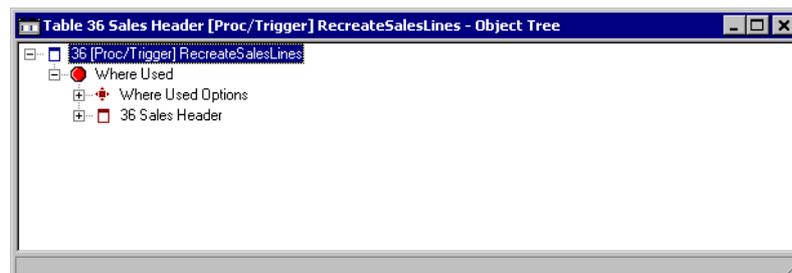
You can see the definition of the **Descr** variable in the **Locals** window, which you also might have to change according to the changes of the **Description** field in table 27, **Item**.

Finding Where a Procedure is Called

During the support of an application you have to analyze for example where two procedures are called, to inform the user where this functionality is processed.

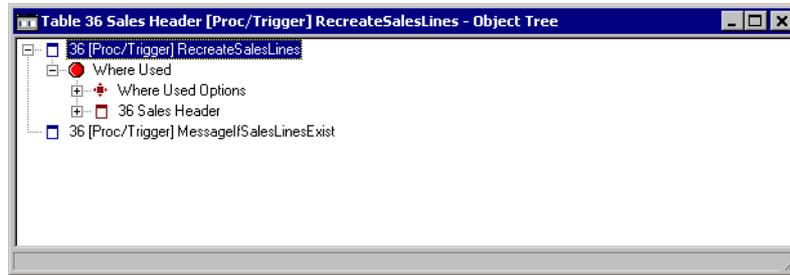
This example shows you how to find out where procedure 4, **RecreateSalesLines** and procedure 5, **MessageIfSalesLineExists** in table 36, **Sales Header** are called:

- 1 Click on procedure 4, **RecreateSalesLines** in table 36, **Sales Header** in the **Object Administrator** window.
- 2 Click **F**unctions, **W**here Used on the menu bar, or use the right mouse button to start the function. The **Object Tree** window appears:



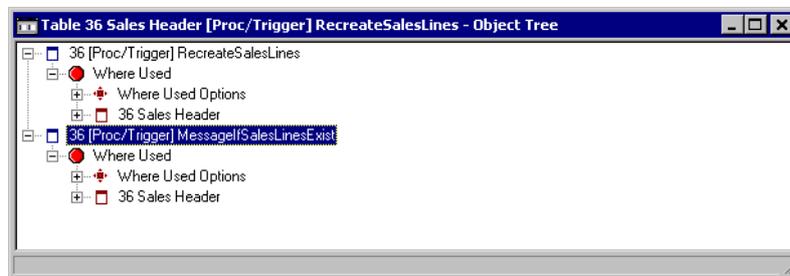
- 3 Click on procedure 5, **MessageIfSalesLineExist** in table 36, **Sales Header** in the **Object Administrator** window.

4 Drag this procedure and drop it in the existing **Object Tree** window:

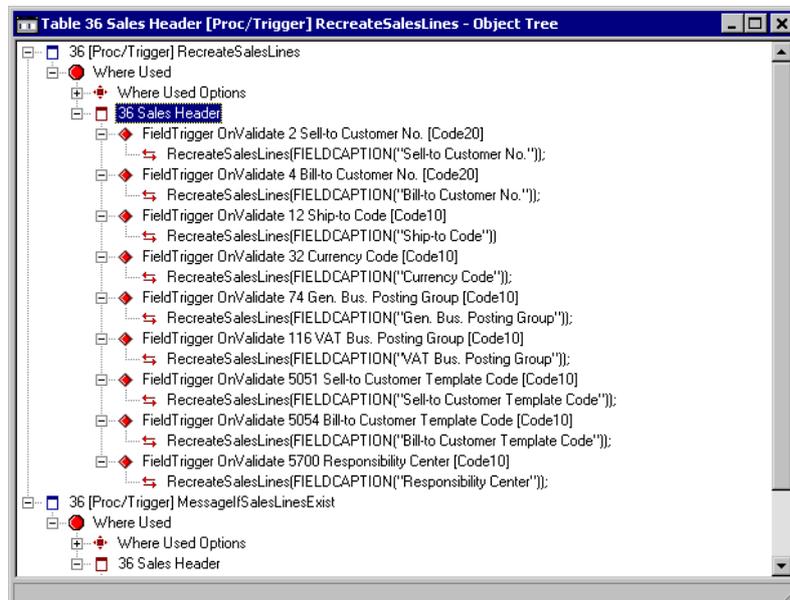


5 Click on procedure **MessagelfSalesLineExist** in the **Object Tree** window.

6 Click **Functions, Where Used** on the menu bar, or use the right mouse button to start the function. The **Object Tree** window will be updated:



7 Click on each line containing table 36, Sales Header and expand all lines. The **Object Tree** window looks like this:



You can see all OnValidate triggers where these procedures are called.

4.4 SEARCHING FOR OBJECT DATA

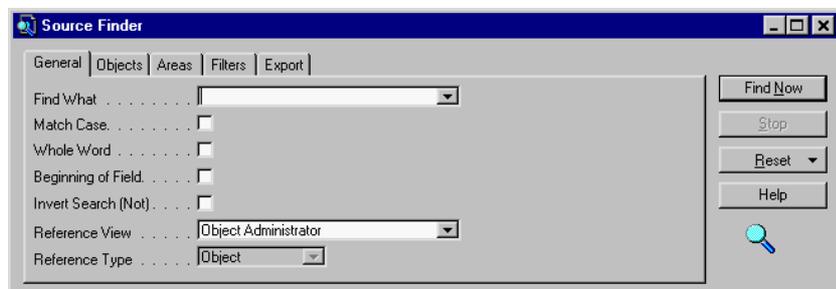
Searching for object data means searching for a text expression in different data areas of an object. The Source Finder provides you in your daily work with a powerful search engine to find various expressions in different objects, such as properties, commands, names and types.

This section shows you some examples of how to use the Source Finder.

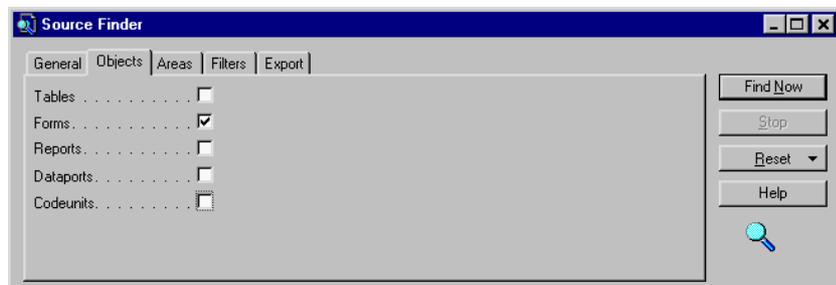
Searching for Properties

If you want to know in which forms the properties BlankZero and DecimalPlaces are changed, follow this procedure:

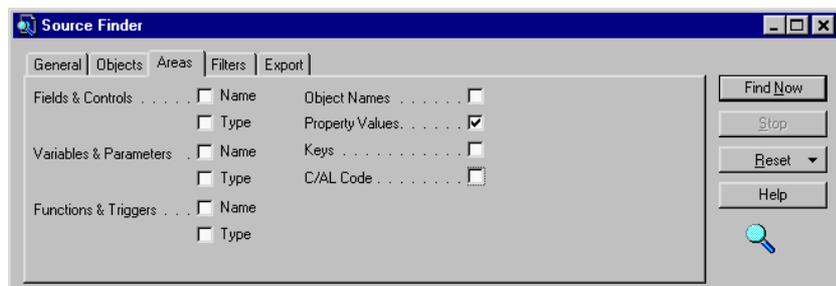
- 1 Click Tools, Source Finder on the menu bar. The **Source Finder** window appears:



- 2 Click on the **Objects** tab and insert a in the **Forms** field only:

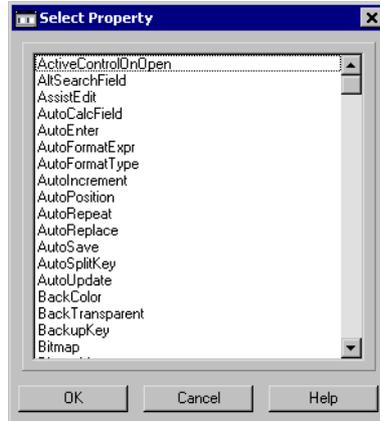


- 3 Click on the **Areas** tab and insert a in the **Property Values** field only:



- 4 Click on the **Filters** tab.

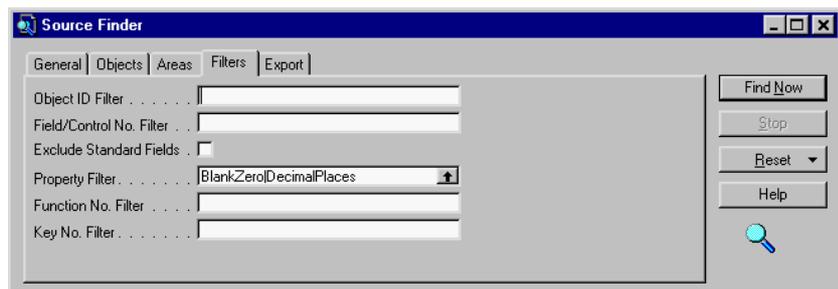
5 Click on ↑ in the **Property Filter** field. The **Select Property** window appears:



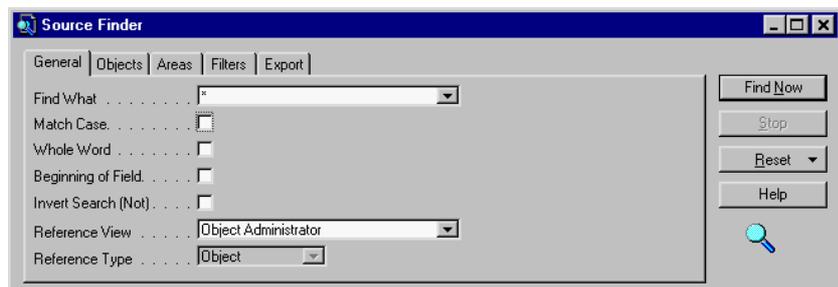
6 Mark the BlankZero and DecimalPlaces properties.

7 Click OK.

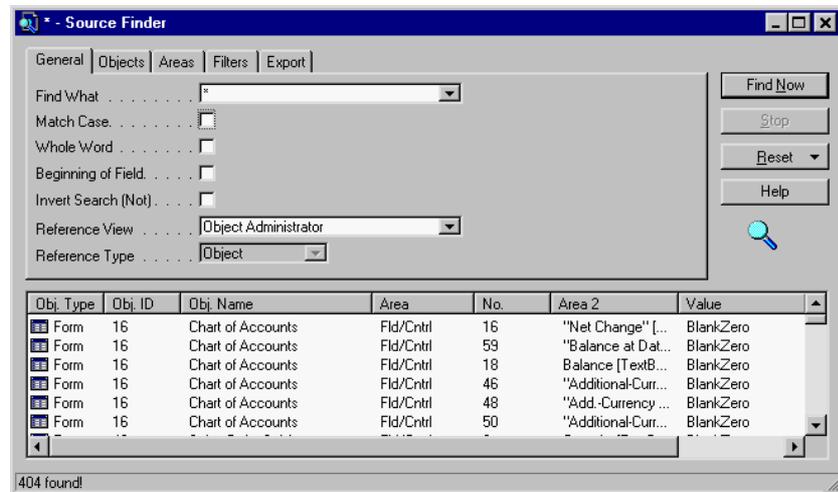
The properties are copied in the **Property Filter** field in the **Source Finder** window:



8 Click on the **General** tab and enter * in the **Find What** field:



9 Click Find Now to start the search. The **Source Finder** result window appears:

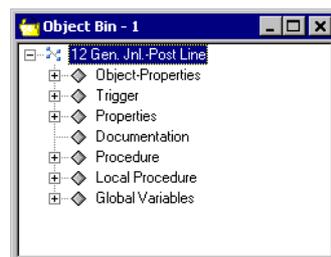


You can click on the header of the Value column to sort the lines based on the values in this column.

Searching for Comments

If you use comments to document the code lines, you can follow the procedure below to get a list of all comments in the major posting codeunits (codeunits 12, 22, 212, 80, 90):

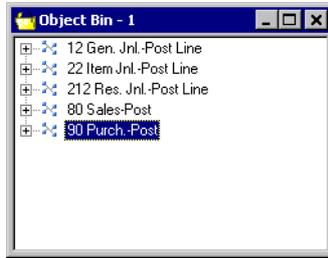
- 1 Click on codeunit 12, **Gen. Jnl.-Post Line** in the **Object Administrator** window.
- 2 Click Tools, Object Bin on the menu bar, or use the right mouse button to copy this object in a new **Object Bin** window. The **Object Bin** window appears:



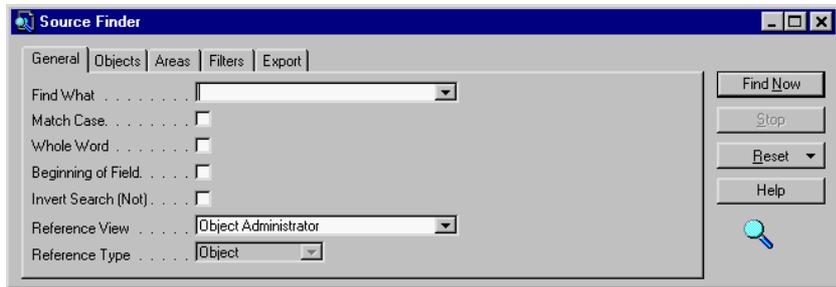
- 3 Collapse all lines in the **Object Bin** window.
- 4 Click on codeunit 22, **Item Jnl.-Post Line** in the **Object Administrator** window and drag and drop it into the **Object Bin** window.
- 5 Click on codeunit 212, **Res. Jnl.-Post Line** in the **Object Administrator** window and drag and drop it into the **Object Bin** window.
- 6 Click on codeunit 80, **Sales-Post** in the **Object Administrator** window and drag and drop it into the **Object Bin** window.

Chapter 4. Examples of How to Use Source Analyzer

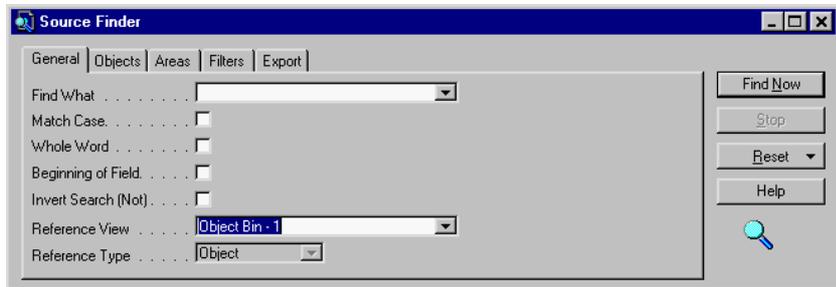
- 7 Click on codeunit 90, **Purch.-Post** in the **Object Administrator** window and drag and drop it into the **Object Bin** window. The **Object Bin** window looks like this:



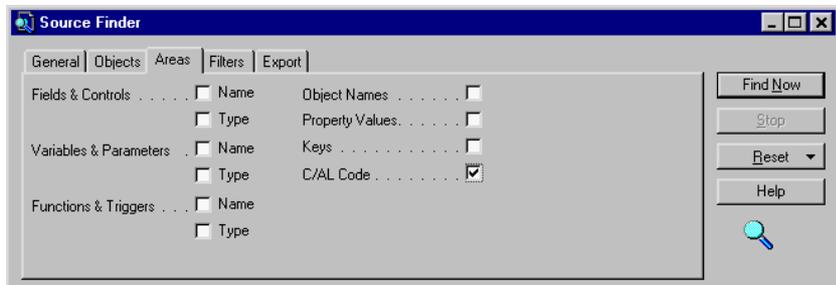
- 8 Click **Tools**, **Source Finder** on the menu bar. The **Source Finder** window appears:



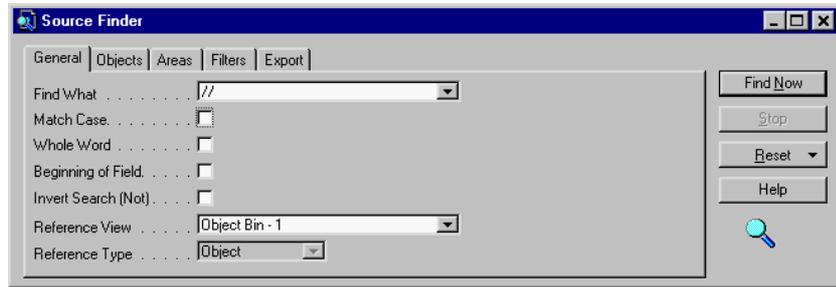
- 9 Click on **▼** in the **Reference View** field and select **Object Bin - 1**:



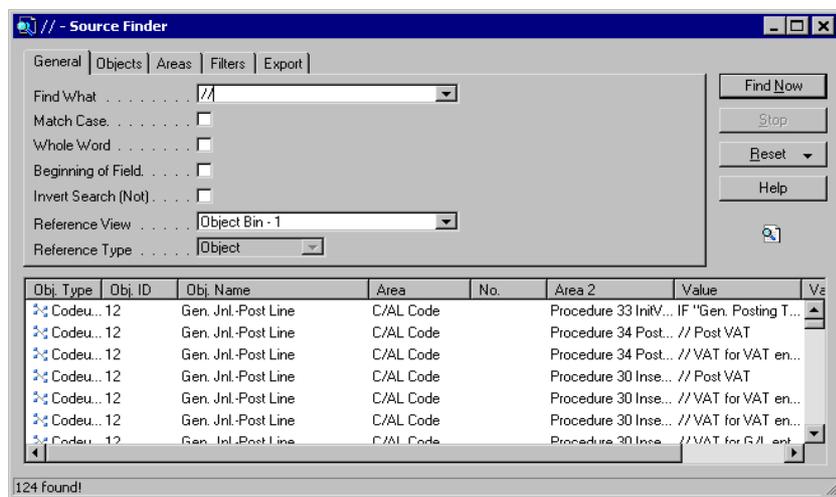
- 10 Click on the **Areas** tab and insert a **✓** in the **C/AL Code** field only:



11 Click on the **General** tab and enter // in the **Find What** field:

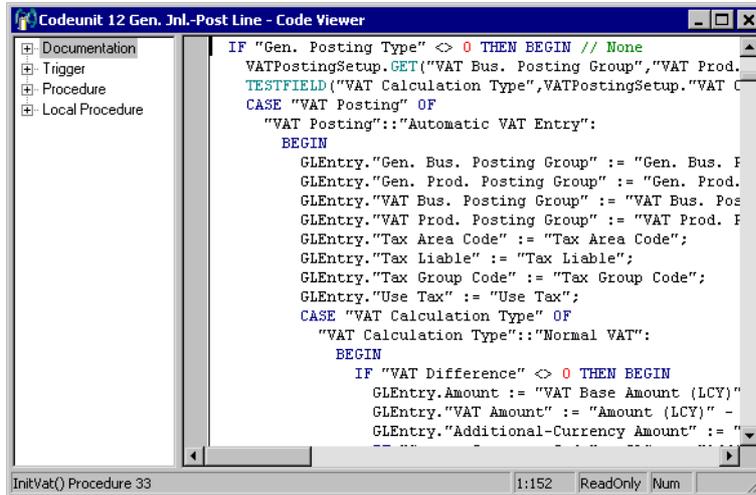


12 Click **Find Now** to start the search. The **Source Finder** result window appears:



13 Click on the first line in the **Source Finder** result window.

14 Click **T**ools, **C**ode **V**iewer on the menu bar, or use the right mouse button to see the code lines in this local procedure. The **Code Viewer** window appears:



If you go back to the **Source Finder** window and open the **Code Viewer** window based on another line again, the existing **Code Viewer** window will be updated.

Chapter 5

Compare & Merge Tool

The Navision Developer's Toolkit - Compare & Merge Tool is a utility designed to help Navision Solution Centers document, compare, upgrade and maintain modified customer solutions. This tool can also be used for implementing or upgrading add-on solutions in a modified customer version.

This chapter contains basic information about the components of the Compare & Merge Tool. It contains the following sections:

- Overview of Compare & Merge Tool
- Merge Setup
- Compare & Merge
- Compare Two Versions
- Export Objects

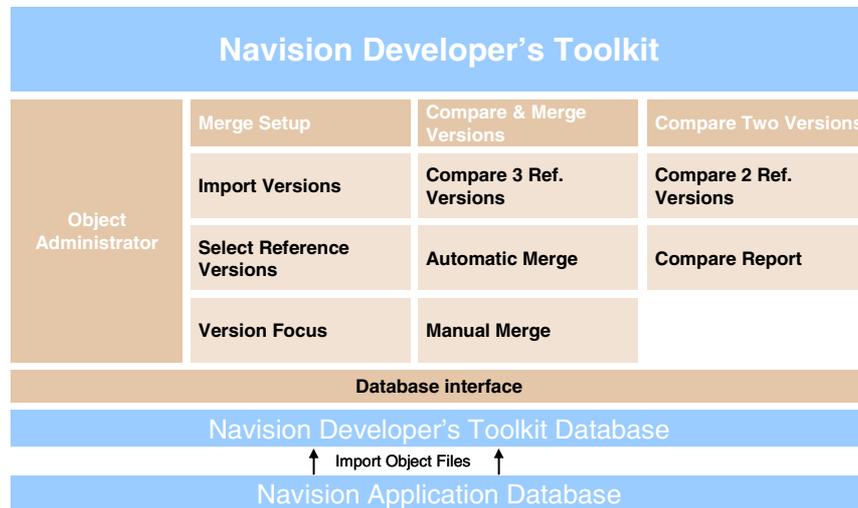
5.1 OVERVIEW OF COMPARE & MERGE TOOL

Navision Developer's Toolkit - Compare & Merge Tool is a collection of tools designed to help Navision Solution Centers document, compare, upgrade and maintain modified customer solutions. This tool can also be used for implementing or upgrading add-on solutions in a modified customer version.

The basic idea behind Navision Tools is to have one database with all information about objects to be used and one program, which provides the user with all functions needed during an upgrade process.

The picture below shows the structure and the elements of Navision Developer's Toolkit - Compare & Merge:

Compare & Merge - Overview



Navision Developer's Toolkit Database

The Compare & Merge Tool is based on the object data that is stored in the Navision Developer's Toolkit database. Before you can start a compare & merge process, you must import Navision objects from the application databases into the Navision Developer's Toolkit database in text format. You can import objects from different Navision application versions. These versions can be used as reference versions in the compare & merge process.

Reference Versions

Each version that is used in the Compare & Merge process is called a reference version. Basically the Compare & Merge Tool compares three different versions of an object in order to create a new version:

Old Base Version

This version usually contains objects from a Navision standard version. For example, this could be Navision version W1 2.60.

Current Custom Version

This version is based on the Old Base Version and contains customized objects. For example, this could be Navision version W1 2.60 with changes for a customer.

New Base Version

This version contains objects from a new Navision standard version and is based on the Old Base Version. For example, this could be Navision version W1 3.60.

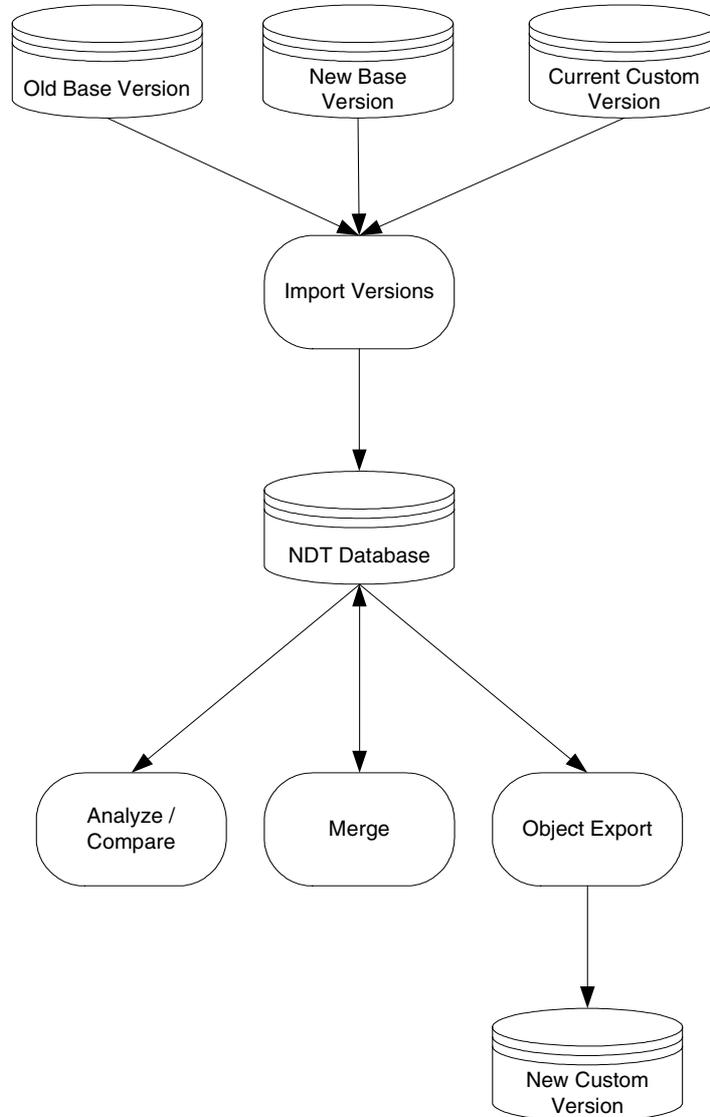
New Custom Version

This version is created by the Compare & Merge tool based on the three reference versions (Old Base, Current Custom, New Base).

The basic idea behind Navision Developer's Toolkit is to have one database with all information about objects to be used and one program to provide the user with all functions needed during an upgrade process.

Process Overview

The picture below shows the usage of the reference versions and the basic processes during an upgrade process:



The update process can be split up in these major steps:

Define Reference Versions

The user must decide which versions are needed during an update process. For example, this could be the old Navision standard version, the old customer version and the new Navision standard version.

Export Objects from Navision Application Database

The objects from reference versions must be exported from the Navision application database in text format.

Import Objects in Navision Developer's Toolkit Database

All objects from reference versions must be available in the Navision Developer's Toolkit database. If a version does not exist in this database, the objects must be available in text format in order to import them in the Navision Developer's Toolkit database.

Analyze and Compare Objects

The user analyzes each reference version with the cross-reference functions in Navision Developer's Toolkit to explore the structure and the usage of objects and object details. The comparison is used to compare two versions, for example the Old Base Version and the New Base Version. The comparison of the 3 reference versions is the preparation of the merge process and will also lead to a suggestion for the action in the later merge process. All differences in the compared versions are marked in the corresponding version or in all conflicting versions, if there are conflicts.

Automatic Merge

Based on the defined reference versions the user starts the automatic merge process. The comparison of the 3 reference versions is part of the automatic merge process and will lead to a suggestion for the action in the later merge process. The system will create a new version as a merge result. All objects that could not be merged automatically are marked. These objects must then be merged manually.

All differences in the compared versions are colored in the corresponding version or in all conflicting versions, if there are conflicts.

Manual Merge of an Object

If an automatic merge is not possible due to conflicts between the reference versions, the user has to decide manually which object version should be used as the new version. The manual merge could be necessary for the whole object or only for one or more areas in an object. After manual merge, the changes will be saved in the new version.

Export Objects

All objects from the new version must be exported from the Navision Developer's Toolkit database in either a text format or directly to the Navision application database.

Import New Object Version in Navision Application Database

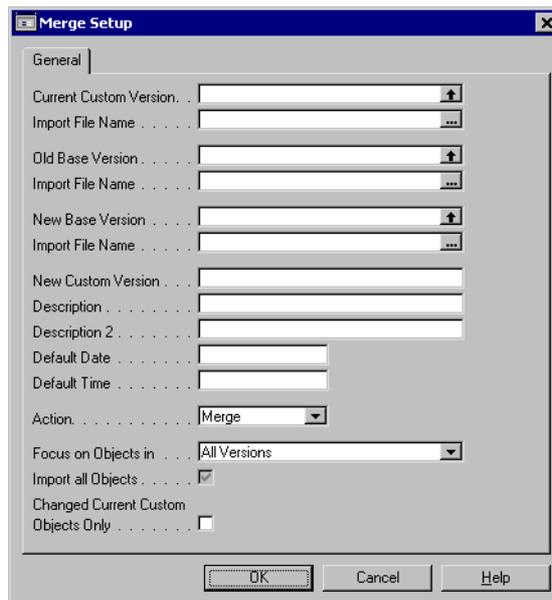
If the objects were exported from the Navision Developer's Toolkit database in text format, they must be imported into the Navision application database. After this, all objects must be compiled.

5.2 MERGE SETUP

The Merge Setup contains all information that is required in order to start a Compare & Merge process. You can use the **Merge Setup** window or the Merge Wizard to enter this information.

Entering Merge Setup

The **Merge Setup** window looks like this:



For each reference version (Current Custom, Old Base, New Base Versions) you can either select an already imported version or you can enter an **Import File Name** that contains Navision objects in text format. If you do not have a version already imported you must also enter a code in the **Version** field. You must also enter a code in the field **New Custom Version**.

Depending on the merge scenario you can set different options to speed up the Compare & Merge process. The following sections contain the setup for 3 different scenarios.

Merge a Full Version

The main goal of this scenario is to create a full merged version that contains all objects from the reference versions. You can use the default setting *All Versions* in the field **Focus on Objects in**. The program takes care of all objects that are at least in one of the reference versions. If a version has to be imported all objects will be imported. During the Compare & Merge process each object is either just copied or merged into the New Custom Version. This scenario requires the most time to do a merge.

Merge Only Customized Objects

In this scenario you have exported only the customized objects from the Navision application database and you want to update these objects. In the field **Focus on Objects in** you must select *Current Custom Version*. With this setting the program will only compare and merge objects that exist in the Current Custom Version. As a merge result you will receive all objects from the Current Custom Version merged with the same objects from the New Base Version. This is a fast way to do the merge process, if your Current Custom Version only contains some changed objects.

If you do not check the field **Import all Objects**, the program will only import objects from reference version files that exist in the Current Custom Version.

Merge a Service Pack

If you receive a service pack for a Base Version you can follow this scenario, where only objects from the service pack will be merged. Just select *New Base Version* in the field **Focus on Objects in** and do not put a check mark in **Import all Objects**. The program will only compare and merge objects that exist in the New Base Version. As a merge result you will receive all objects from the Current Custom merged with the same objects from the New Base Version. This is fast way to do the merge process, if your New Base Version only contains some changed objects.

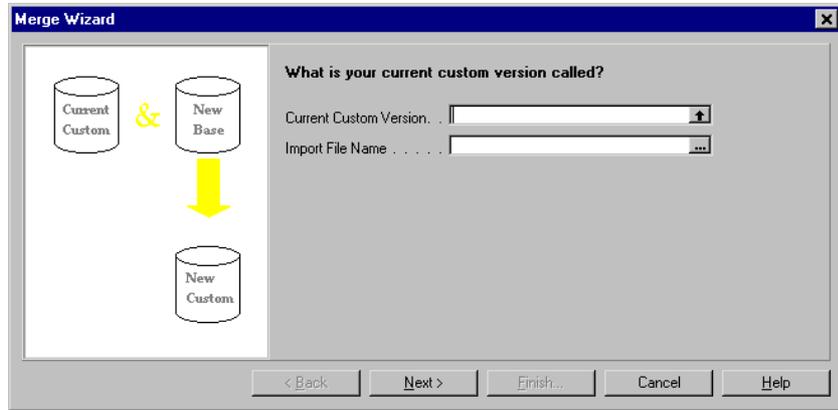
Please refer to the online help if you need more information about the fields in the **Merge Setup**.

Note

.....
 All versions of objects that you want to use in one Compare & Merge process must be exported with the same Navision client version (For example, Navision 3.60), because of changes in the Navision text file format.

Merge Wizard

You can also use the **Merge Wizard** windows to enter the Merge Setup information. The **Merge Wizard** will guide you through the setup procedure with different pages. The first page looks like this:



All information that you enter in the Merge Wizard is saved in the Merge Setup. The fields are exactly the same as in the **Merge Setup** window.

Start Compare & Merge Process

Click OK in the **Merge Setup** window or Finish in the last page of the **Merge Wizard** to start the Compare & Merge process. The program will first calculate the required database space and check the available space in the Navision Developer's Toolkit database. A warning will appear, if you need to expand the database before the Compare & Merge process starts.

The program will first import the versions, if required, and then start the Compare & Merge process. After this process is finished, the program shows a summary of the process. After you confirm this summary the result of the automatic merge is shown in the **Compare & Merge** window.

5.3 COMPARE & MERGE

After you have started the Compare & Merge process and the versions have been imported, if required, the system first compares all 3 reference versions and tries to create the New Custom Version. This is called the Automatic Merge process.

Automatic Merge Process

During the automatic compare & merge process the reference versions are compared in order to find out which objects or parts of them are different and how this information can be merged.

In the first step the checksum is compared for each object. The checksum is created during the import and includes all object data, except the fields **Date**, **Time**, **Version List** and **Modified**. Based on this checksum, the program decides whether an object can be easily copied to the New Custom Version or a merge on the detail level is required, if the object is different in all 3 reference versions.

During the detail-level merge, the program first compares Current Custom Version and Old Base Version. After that the New Base Version and Old Base Version are compared. The result of this comparison leads to an action to create the New Custom Version. If there is a conflict because a detail has been changed in the Current Custom Version and the New Base Version, the program copies the information from the version that is defined in the **Merge Options**.

If you want to know more about the merge rules, please read the online help.

After the program has finished the automatic merge process, the status window displays the number of objects that have been copied and merged and how many objects have conflicts and overlapping controls. After you close this status window, the **Compare & Merge** window appears.

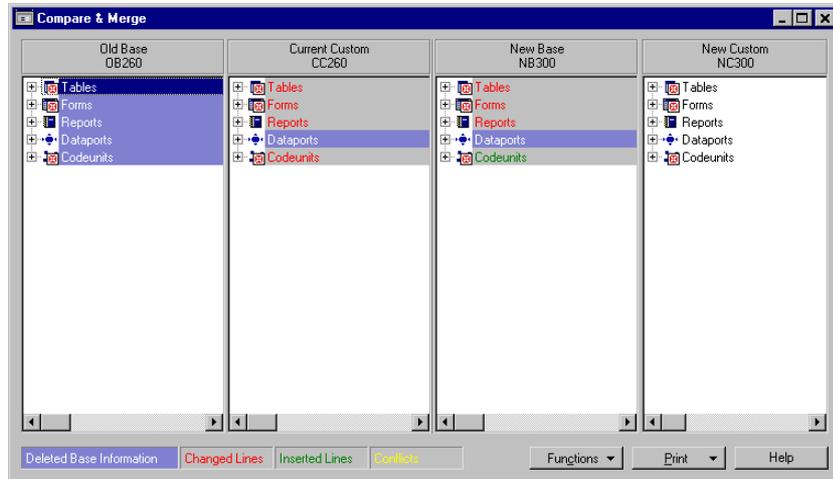
Manual Merge Process

After the automatic merge process is finished, you can start the manual merge process.

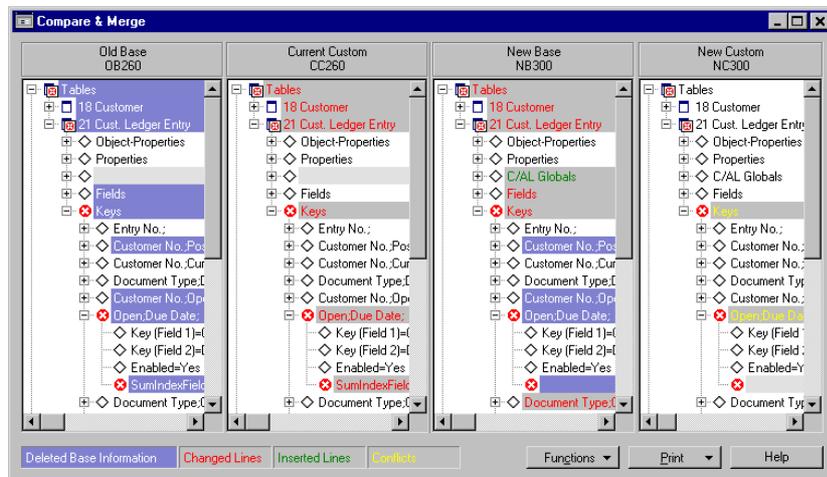
The manual merge process is always required when the automatic merge is not possible due to conflicts between the reference versions. You must decide manually which object version you want to use as a new version. The manual merge could be necessary for the whole object or only for one or more areas in an object. You can do this in the **Compare & Merge** window.

Compare & Merge Window

The Compare & Merge window below shows an example merge:



All columns are synchronized vertical and horizontal. You can expand objects to see the details and collapse objects to reduce the object details shown in the **Compare & Merge** window.



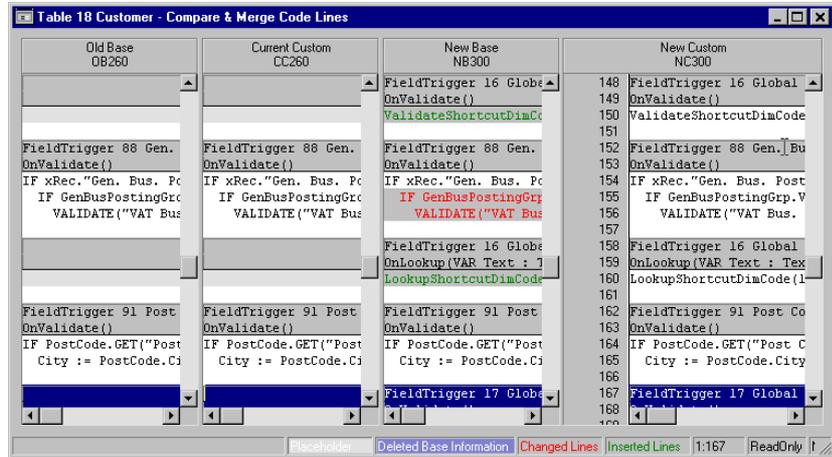
As an example, this window contains only some objects in each version.

The coloring is used to show the differences between the reference versions. A conflict bitmap indicates that the program could not merge automatically. You should always check the suggestion in the New Custom Version and either mark this suggestion as accepted or change it.

You can change all details of an object in the New Custom Version only. If you want to undo your changes in an object you can click Rermerge in the right mouse menu on object level. This rermerge will overwrite all your changes in this object.

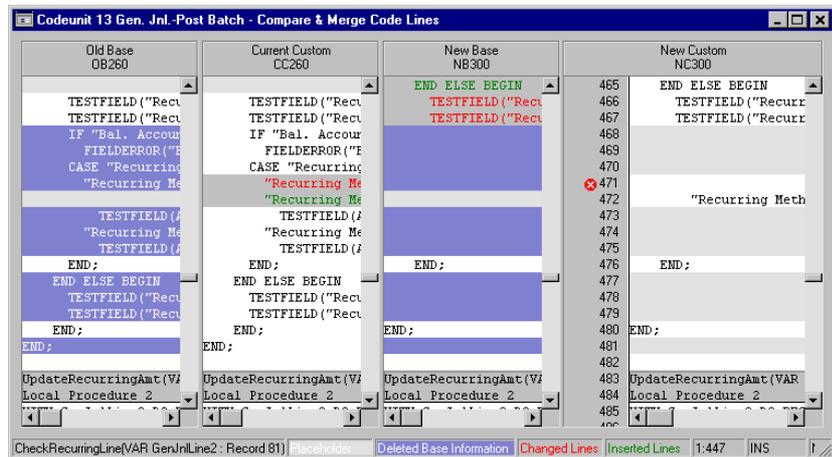
If you want to see the C/AL code for an object you must open the **Compare & Merge Code Lines** window.

Compare & Merge Code Lines Window



The **Compare & Merge Code Lines** window shows all C/AL code lines for an object in each version that is used in the current Compare & Merge process. You can open the **Compare & Merge Code Lines** window from a selected object or a specific trigger.

The coloring indicates the status of each code line. The conflict bitmap is shown in front of the corresponding line in the New Custom version:



You can change all lines of an object in the New Custom Version only. If you start remerging for an object, the code lines will also be remerged and your changes will be overwritten.

When you click Tools, C/AL Globals, the Compare & Merge C/AL Globals window appears. This window shows the global variables for the current object and is not editable. Click Tools, C/AL Locals to open the Compare & Merge C/AL Locals window.

This window shows the local variables for the current trigger or function and is also not editable.

Note

.....
The code line editor does not perform any syntax check in code lines. Syntax errors in code lines might cause problems during import or compilation in the application database
.....

Interrupting a Merge Process

 If you want to interrupt the automatic merge process, you can click Stop in the status window. The program will finish the current object and save all merge information created so far. After you reopen the **Compare & Merge** window, even if you have closed the program, the program reminds you the you have an unfinished merge process. You can decide if you want to proceed now or later.

During the manual merge process all changes are saved as soon as you click on another object or when you close the **Compare & Merge** window. You can close the program and continue whenever you want.

Note

.....
It is only possible to have one merge project per Navision company. If you want to process more than one merge process in parallel you must create a new company in the same database or in a new database.
.....

Check Overlapping Controls

 After finishing the merge of forms, the system will check forms for overlapping controls automatically. The result is shown in the status window after the automatic merge process. Click Print, Overlapping Controls in the **Compare & Merge** window to see a list of overlapping controls in Forms and request forms in Reports.

These overlapping controls can be rearranged either directly in Navision or in Navision Developer's Toolkit by changing the properties.

Note

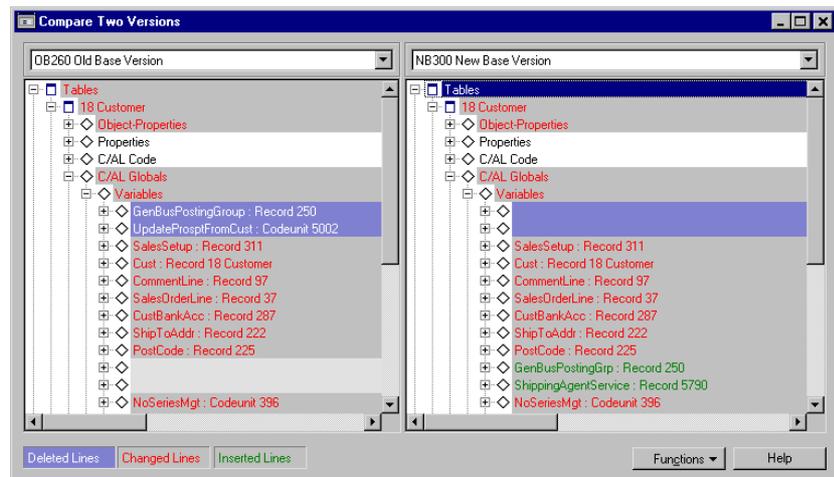
.....
Only Forms and request forms in Reports are checked for overlapping controls.
.....

5.4 COMPARE TWO VERSIONS

You can use the **Compare Two Versions** window to compare two versions that you have already imported in Navision Developer's Toolkit. The comparison is based on the object structure and gives you fast access to specific areas.

Compare Two Versions Window

The **Compare Two Versions** window looks like this:



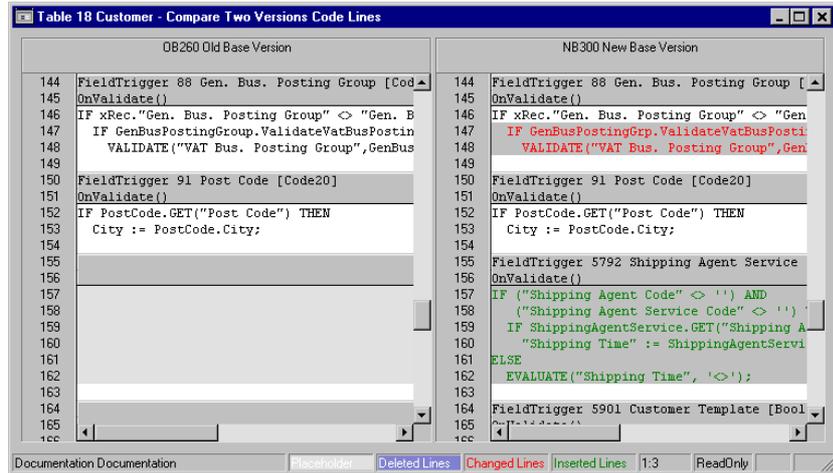
As an example, this window contains only some objects in each version.

Each column shows you all objects of the versions you have selected in each column header. After you select a version, the comparison will start automatically.

Both columns are synchronized vertically and horizontally and coloring is used to show the differences on all levels. When an item in a tree is not expanded, the item will represent the coloring of details of the item. If you want to set a filter on object type or object ID, click on the Functions button in this window.

Compare Two Versions Code Lines

The **Compare Two Versions Code Lines** window shows all C/AL code lines for an object in each version that is used in the **Compare Two Versions** window. You can start the **Compare Two Versions Code Lines** window for a selected object by selecting Tools, Code Viewer in the menu bar, or by clicking the right mouse button or the F9 key. The **Compare Two Versions Code Lines** looks like this:



The coloring indicates the status of each code line. You can use the icons on the menu bar to jump to the previous or next difference.

Printing the Compare Two Versions Report

If you want to have a printout of the comparison of two versions, you can click File, Print in the **Compare Two Versions** window. A request form appears where you can set filter and other options for this report.

Attention

.....
 The print out of this report and a jump to the last page in the preview may take some time, because both versions have to be compared again before the printing. You can reduce the time, if you print differences only.

Export Compare Two Versions

You can export the information from the **Compare Two Version** window by clicking **File, Export, As Text File** in the menu bar from the **Compare Two Versions** window. A request form appears where you can set filter and other options for this export.

Attention

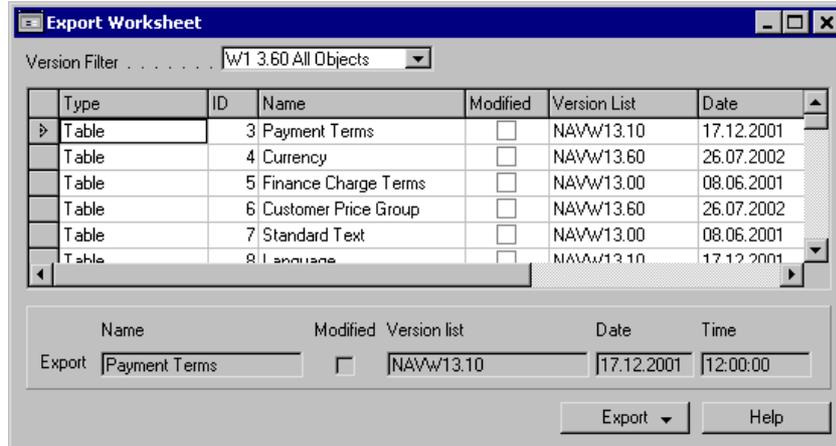
.....
This export may take some time, because both versions have to be compared again before the export. You can reduce the time by exporting differences only.
.....

5.5 EXPORT OBJECTS

Navision Developer's Toolkit allows you to export objects that have been imported before or objects that have been created during the merge process.

Export Worksheet

You can use the **Export Worksheet** to export objects from Navision Developer's Toolkit either directly to a Navision application database or to a file in Navision text format. Click File, Export, Navigation Text File or Navigation Client to open this window. The **Export Worksheet** looks like this:



After you have selected the object version in the header of the **Export Worksheet**, all objects from this version are shown. You can filter objects by setting field filters or by marking lines. Click Export, To Navision Text File... to export all marked objects as a Navision text file, or click Export, To Navision Client... to export all marked objects directly to a Navision database.

If you have chosen to export to a Navision text file, a request form will appear in which you can select whether or not to print one file per object and specify the file name for the text file. Click OK to confirm your selection, and all the marked objects will be exported to a Navision text file.

If you have chosen to export to a Navision client, the Select Navision Client window will open, from which you can select the appropriate Navision client. Click OK to confirm, and all marked objects will be exported to the Navision database.

Chapter 6

Installing and Starting Navision Developer's Toolkit

Navision Developer's Toolkit is delivered with an installation program. This chapter will show you how to use it.

This chapter contains the following section:

- Installing and Uninstalling
- Starting Navision Developer's Toolkit and Connecting to a Database

6.1 INSTALLING AND UNINSTALLING NAVISION DEVELOPER'S TOOLKIT

You use a special installation program to install Navision Developer's Toolkit on a hard disk (you cannot simply copy the files because they are packed in a special way). The program guides you through the installation process, asking you questions you must answer along the way.

Attention

.....
Before you begin installing the program from the program diskettes, make a copy of them. Then use the copy to install the program from and save the original as a backup.
.....

Installing the Navision Developer's Toolkit

Before you start the installation procedure please make sure that you have checked the following requirements to install and run Navision Developer's Toolkit:

- Operating system Windows 98 or Windows NT/2000/XP.
- Computer with Pentium processor.
- Microsoft Business Solutions-Navision 3.70 or higher installed.
- C/FRONT W1 3.70 or higher.
- Microsoft Business Solutions-Navision License File (`fin.flf`) with permission to the granules C/FRONT and Navision Developer's Toolkit available.

To install the program, follow this procedure:

- 1 Start the operating system.

If you are installing the Navision Developer's Toolkit from a network drive or a CD-ROM, make sure that you are connected to the network server or CD-ROM drive.

- 2 Click the Start Button on the task bar and then click Run.
- 3 Type the path and name of the installation program. If you are installing from CD, for example, the path is `d:\setup`, where `d`: is the drive of your CD-ROM. If you install from a network drive, type the path and name of the installation program on the network. Click OK to start the installation program.

Under Windows 98/2000/XP or Windows NT version 4.0 or later, you can also use the Add/Remove Programs function under Settings, Control Panel.

After you have started the installation program the **Welcome** window appears.

- 4 To continue, click Next at the bottom of the window. If you decide not to continue with the installation, click Cancel. If you continue, the **Disclaimer** window appears.
- 5 Click Yes in the **Disclaimer** window, if you accept this disclaimer. The setup will continue. Click No, if you do not accept this disclaimer. The setup will close.
- 6 The **Latest release Information** window appears, if you have accepted the disclaimer.
In this window you will see the latest information for the current release. Click Cancel to cancel the installation program or click Next to continue.
- 7 The **Choose Destination Location** window appears next. Here you must specify the folder where Navision Developer's Toolkit will be installed. You can accept the default (in this case, c:\Program Files\Microsoft Business Solutions Navision Developers Toolkit) or you can click Browse to change default.
- 8 Click Next in the **Choose Destination Location** window. The **Select Copy Options** window appears.
In this window you can decide if you want to select a Microsoft Business Solutions-Navision License File (for example `fin.flf`) and a Navision STX File (for example `fin.stx`). Both files will be copied to the destination location of the program. The STX file will be used as default for keywords that are used during the import. You can change this keywords later. If you do not select a STX file the program will use the default STX file from the setup program.
- 9 Click Next.
If you have checked one of the file options the **Select File** window appears. After you have selected all files the **Start Copying Files** window appears.
If you did not check a file type option, the **Start Copying Files** window appears right away. This windows shows you a summary of all information that has been collected during the previous steps.
- 10 Click Next to start the actual installation. You can follow the progress of the installation in the **Setup Status** window.
- 11 As soon as the installation program has finished, a message appears. Click Finish. The window closes.

Uninstalling the Navision Developer's Toolkit

To uninstall Navision Developer's Toolkit in a Windows 98/2000/XP or Windows NT (version 4.0 or later) installation, use the Add/Remove Programs function under Settings, Control Panel.

6.2 STARTING THE PROGRAM AND CONNECTING TO A DATABASE

The Navision Developer's Toolkit installation program automatically places Navision Developer's Toolkit in the program folder of your windows start menu.

Start Navision Developer's Toolkit to gain access to all the analyzing and development tools. In order to work with a database you must open a local database or connect to a server database.

Note

.....
If you use Navision Developer's Toolkit the first time you have to setup a database. Please refer to chapter 2, "Navision Developer's Toolkit Database" or read the online help to get more information about the setup of an Navision Developer's Toolkit database.
.....

Local Database If you want to access a local database, you can use File, Database, Open to open an existing database.

Server Database If you want to connect to a server database, you can use File, Server, Connect. You manually choose the location of the file `cfront.dll`, the server name and the net type. Please make sure that the server has already been started.

INDEX

- C**
- Code Viewer window 41
- Color Options
 - setting up 42
- Compare & Merge 73
 - Automatic Merge Process 73
 - Code Lines 75
 - Compare & Merge Window 74
 - interrupting a Merge Process 76
 - Manual Merge Process 73
 - Merge Setup 70
 - Merge Wizard 72
 - Overview 66
 - Start Process 72
- Compare & Merge Tool
 - Features 8
- Compare Two Versions 77
 - Code Lines 78
 - Export 79
 - Print Report 78
- Concept of Navision Developer's Toolkit 4
- Current Custom Version 67

- D**
- database
 - connecting to a server 84
 - copying 12
 - creating a new 12
 - opening a local 84
- demonstration database
 - setting up 20

- E**
- example
 - analyzing usage of a table 51
 - finding usage of a field 54
 - finding usage of a procedure 57
 - searching for comments 61
 - searching for properties 59
 - viewing C/AL code lines 50
 - viewing object properties 49

- Export Objects 80
- Export Worksheet 80

- F**
- Functions 26

- I**
- Import Worksheet 17
- installing the program 82

- M**
- Merge Setup 70
- Merge Wizard 72
- Method Flow window 43

- N**
- New Base Version 67
- New Custom Version 67

- O**
- Object Administrator
 - using 25
- Object Administrator window 24
- Object Bin window 39
- object data
 - importing application objects 14
- Object Diagram window 38
- object export 80
- object file
 - exporting application objects 13
- Object Functions 26
- object import
 - creating an import version 14
 - importing object data 14
 - starting 17
 - using an import version 17
- Object Tools 39
- Object Tree window 36
- Object View
 - setting up the default 36
- Object Views 36
- Old Base Version 67
- Overlapping Controls
 - Print Report 76

- R**
- Reference Versions 67
- Relations from Objects 28
- Relations to Tables 26

- S**
- Source Analyzer
 - Features 6
 - overview 22



Source Finder window	45
starting the program	84

U

uninstalling the program	83
--------------------------------	----

W

Where Used	30
Where Used Options	
setting up	30
Where Used With	32
Where Used With Options	
setting up	32