



Learning CHL's
Code Comparison Tool (XDIFF)
Application

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Before we start...

CHL XDIF Training Manual Conventions

This comprehensive CHL Training Manual is your step-by-step guide for learning some of the basic functions of the XDIF application. Here are key features in the manual to look for.

Notes along the way draw attention to important points.

Action Steps show you what to do...

...and what you can expect to happen.

Screen shots help you visualize and match what is on the page to what is on the screen

Code Comparison Tool (XDIF)	
XDIF'S MAIN SCREEN	
	The Main Screen is the primary workspace. From here you will create your scans and reports...
Action Steps	
What you type or do	What happens
1. Click once on the...	The following dialog box will appear...
2. Click OK to close the Message Box.	From the Main Screen, click on...

Text Conventions



Throughout this manual, some numbers, letters, and other characters are printed differently than the surrounding text. This is because this text requires special attention. If, for instance, an instruction requires typing the words *My programs*, this is what will be written:

Type *My programs*

All buttons to be clicked, selections to be made, or text that is referenced in a document on screen appear in bold text:

Click the **Bold** button.
Select the text **My programs**.
Select **Keep with Next**.

Text or numbers from the Application will be displayed in the following font:

ANDERSON, JOHN
232 N HAMILTON PKWY
CLEVELAND, OH 54221






File names are referenced in Italics and use the case conventions for the current operating system. For example, a Windows 95 text file might appear like this:

Document.txt

All keys that are referenced from the keyboard and all keyboard/mouse combinations appear like this:

Press **[ENTER]**.
[SHIFT+Click] the table cell.

Note Conventions

	<p>A Stop Sign warns you of things that must be performed to a) continue the process you are in or b) to avoid a serious difficulty.</p>
	<p>The Target icon is to draw attention to the purpose of certain steps, to understand why you should use them or what you will accomplish.</p>
	<p>The Mortarboard Grad Hat points out exercises to help you gain confidence and expertise.</p>
	<p>The Book icon points out “book” knowledge which you may not immediately need to operate the program but that you may need to know later.</p>
	<p>The light bulb brings special attention to items that are time savers or have value beyond the scope of the application. They may also help you draw important or helpful conclusions.</p>

What you will need

INTENDED AUDIENCE

This manual assumes you are familiar with the Windows 95 operating system and with the various network and logon protocols necessary to operate your workstation. If you are not, please refer to your Windows 95 operations manual for information on how to use the mouse, open and close windows, operate menus and so on. If you do not have such a manual, contact your supervisor or LAN administrator for help. For further information regarding your network and logon procedures, see your LAN administration person.

This manual also assumes the you are familiar with the normal business practices of the Countrywide Home Loans and the general tasks and practices of your job.

OTHER PROGRAMS

You will need

- Windows 95/98 or NT Client workstation operating system.
- Microsoft Word 97 or better.
- The sample application - Carousel.
- Knowledge of the platform on which Carousel is written.

If you do not have these items, please contact your supervisor or LAN administrator for help.

Working with XDIFFF


Understanding XDIFFF

Countrywide Home Loans has made a massive effort to insure that its internal applications are Year 2000 Ready. Following the certification process, most applications will need to release new versions of the source code that was certified Y2K Ready. The XDIFFF scan tool examines Y2K certified source code from CHL's repository against new source code to determine what has changed and where it is located in the code structure. The primary reason the XDIFFF tool has been developed is to find the code changes that are date-related. These are called code "hits".



CHL has developed the XDIFFF tool as a Windows application with all of the normal and familiar Windows menus and structure. Using this tool, Technical Reviewers can produce reports that show code changes, specifically those that may have date-impact. Reports from this XDIFFF scanning process will be posted on the Y2K Assurance Release Database.

This manual is designed as a self-learning tool to help you quickly learn to perform code scans and comparisons and prepare this information for the Y2K Assurance Database. You will be using a sample Carousel application during this tutorial.

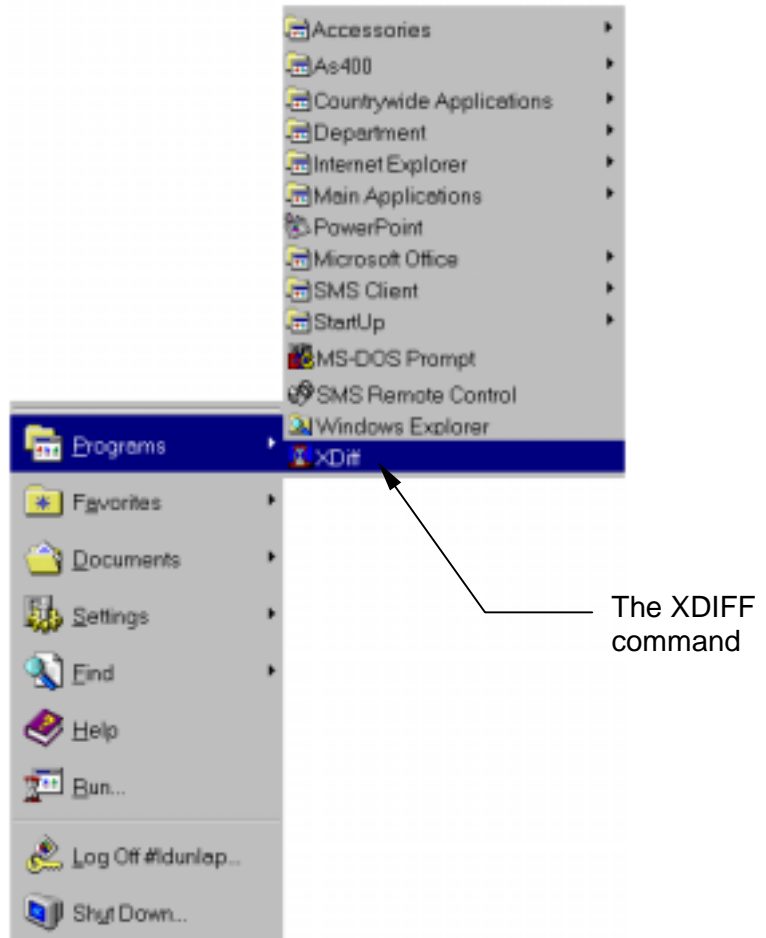
Opening XDIFFF

	<p>Our first task will be to open XDIFFF so that we may begin working with it.</p>
---	--

Action Steps

	What you type or do	What happens
<p>1.</p>	<p>Left click on the Start button in the lower left hand corner of the desktop.</p> 	<p>The Windows Start Menu opens.</p>
	<p>The XDIFFF icon may also be on your Desktop. Double-clicking on the icon will also open the XDIFFF tool.</p>	
<p>2.</p>	<p>Slide the mouse through the Menus to choose:</p> <p>Programs XDIFFF</p>	<p>Click on the XDIFFF Menu choice to open XDIFFF.</p>

Code Comparison Tool (XDIFFF)



3. Click on the



command.

The XDIF Tool opens.



A Help window will open up with some instructions on how to Load, Scan, and Compare source code. It also gives a description of three types of comparisons available. Use it for quick reference.

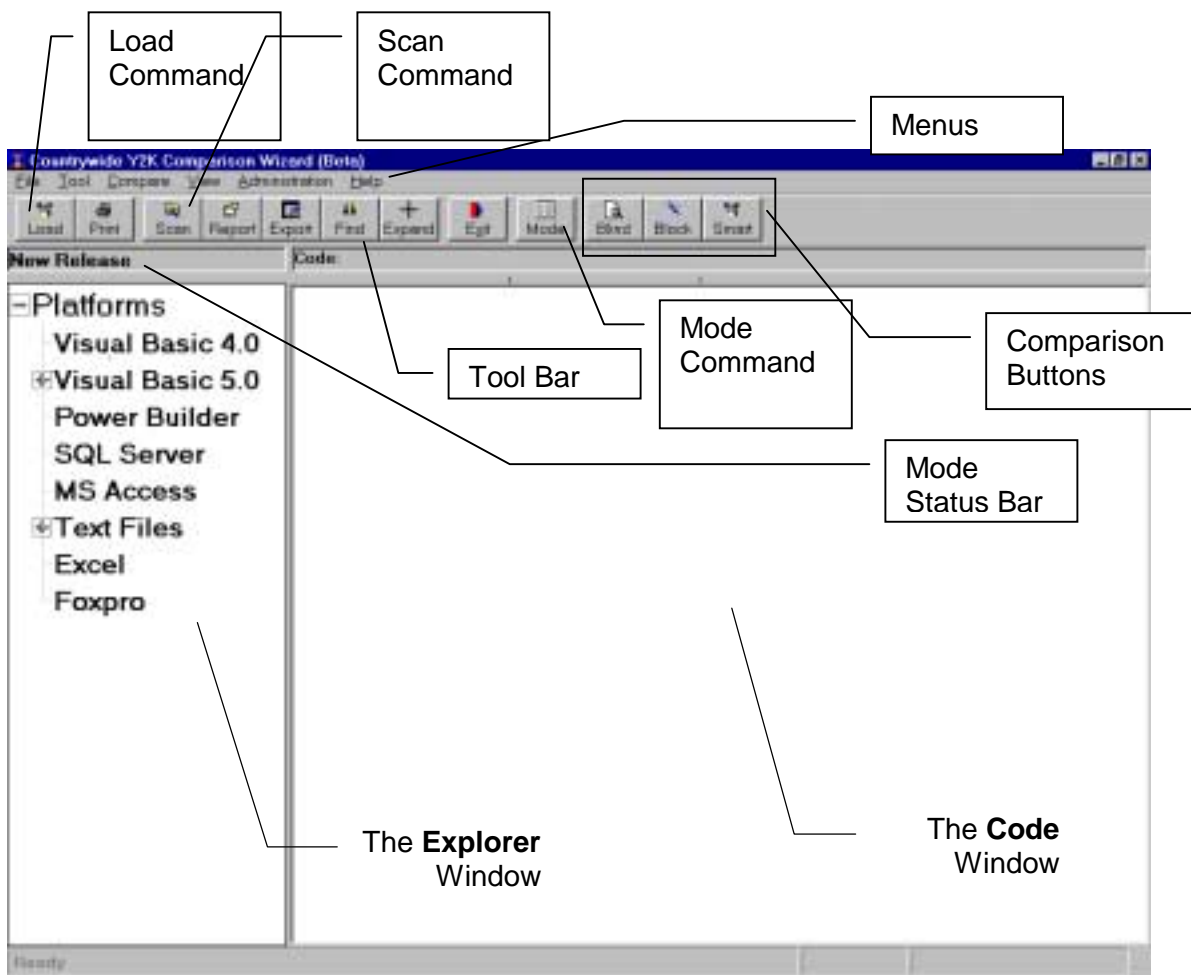
XDIFFF Main Screen

A QUICK LOOK AT THE MAIN SCREEN – The Main Screen is divided into three sections – **Menus and Tools**, **Explorer Window**, and **Code Window**.



The **Menus and Tools** at the top of the screen contain commands for running the XDIFFF program. These commands are in the Menu with shortcuts to important functions available as tools.

The **Explorer Window** contains the platforms that XDIFFF can scan. The plus icon in front of a platform lets you know that there is more information under this heading.


The **Code Window** shows the code detail of functions highlighted in the Explorer Window.



Loading Carousel's *Baseline* and *New Release* Source Code

	<p>The application's Baseline Code is the Y2K Certified Source Code in Countrywide's corporate source code repository.</p> <p>The application's New Release source code is the new released into Production with changes from the archived Baseline source code.</p>
	<p>Before comparing the two versions of the application source code, they must both be Loaded and Scanned into XDIFFF.</p>


BASELINE MODE

	<p>Before Loading the Baseline source code you must be in “BASELINE MODE”. The current status of the XDIFFF Application is shown in the Mode Status Bar (illustrated in the <i>XDIFF Main Screen</i> figure on page 10).</p>
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LOADING THE BASELINE CODE

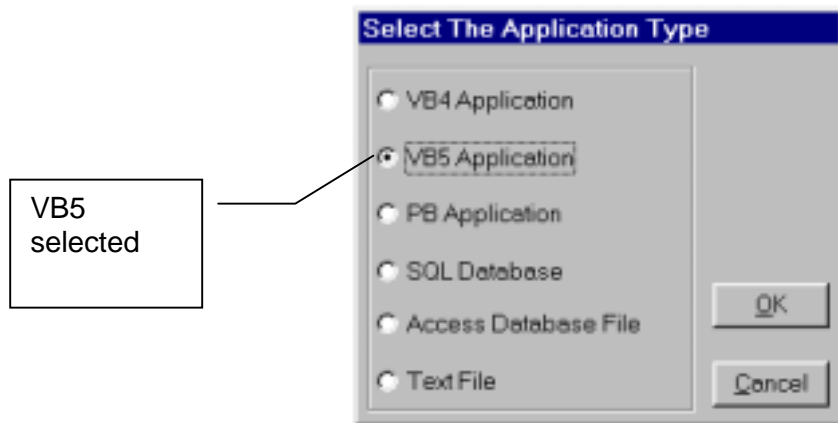
Action Steps

What you type or do	What happens
<p>1. Click on Mode Tool on the Tool Bar (If necessary to change mode).</p>	<p>Mode Status Bar will change to BASELINE. (This may take a few minutes).</p>

	<p>Now that we are in the proper Mode, we will begin Loading Carousel’s Baseline code from the repository.</p>
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<p>2. To load Carousel’s Baseline code, Click on the Load Tool on the Tool Bar.</p>	<p>The Load sub-menu opens.</p>
<p>3. Carousel is a Visual Basic 5.0 application. Choose Visual Basic 5.0.</p>	<p>The VB5 Application option button will be selected.</p>

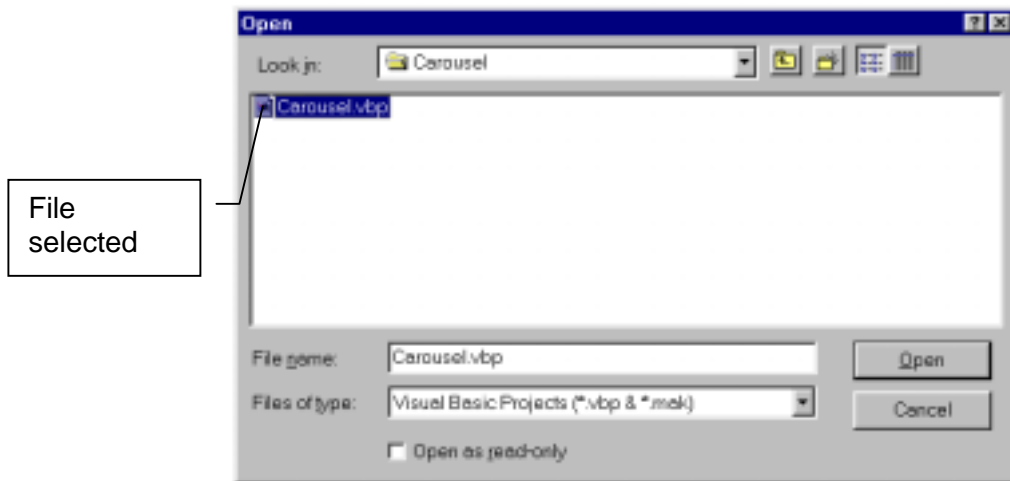
Code Comparison Tool (XDIFFF)



<p>4. Click on the OK button.</p>	<p>The Select VB Project Popup dialog box appears.</p>
<p>5. Locate the Carousel Baseline source code by using the Browse Button (if you know the path and filename you can enter it in the text box).</p>	<p>The <i>Carousel.vbp</i> file is found in its directory.</p>
<p>6. Select the <i>Carousel.vbp</i> file (Note: only *.vbp or *.mak files will be shown)</p>	<p>The file is highlighted.</p>

Browse Button





7. Click on the **Open** Button.

The path to the file will be entered into the popup dialog.

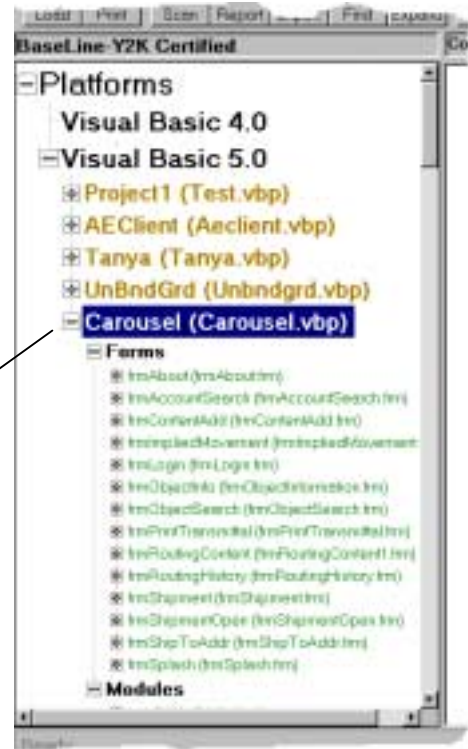


8. Click on the **OK** Button.


XDIFFF will begin Loading the Baseline code for Carousel.

Code Comparison Tool (XDIFFF)

When Carousel's Baseline code has finished Loading the Application will appear in the **Explorer Window**.

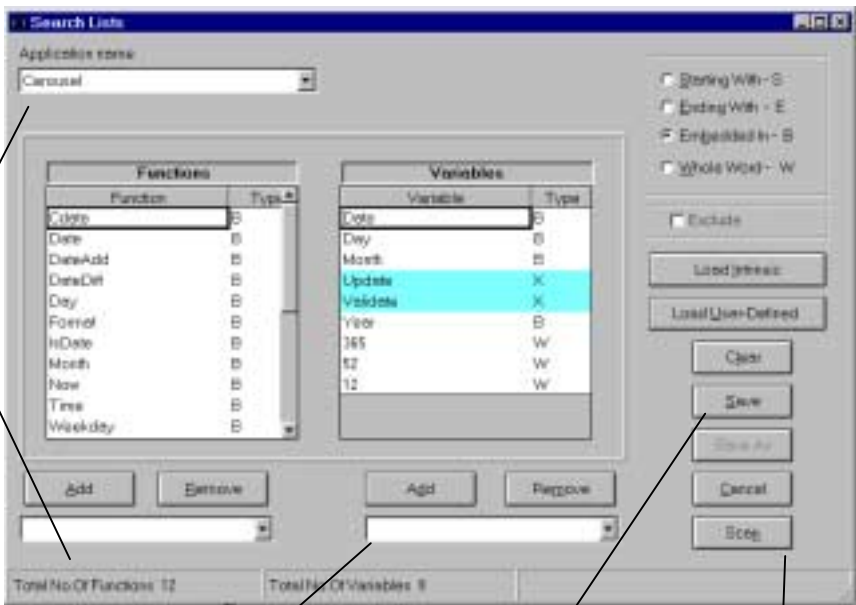


SCANNING THE BASELINE CODE

	<p>Now we will Scan the Loaded Baseline code into the XDIFF tool.</p>
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Action Steps

	What you type or do	What happens
1.	Click on the Scan Tool in the Tool Bar	The Search Lists dialog box, as illustrated below, will appear.



The screenshot shows the 'Search Lists' dialog box with the following callout boxes:




- Application Name Box:** Points to the 'Application name' dropdown menu at the top left, which currently shows 'Carousel'.
- Add or Remove Functions:** Points to the 'Add' and 'Remove' buttons located below the 'Functions' list.
- Add or Remove Variables:** Points to the 'Add' and 'Remove' buttons located below the 'Variables' list.
- SAVE Button:** Points to the 'Save' button in the bottom right area of the dialog.
- Scan Button:** Points to the 'Scan' button in the bottom right area of the dialog.

The dialog box contains two main lists:

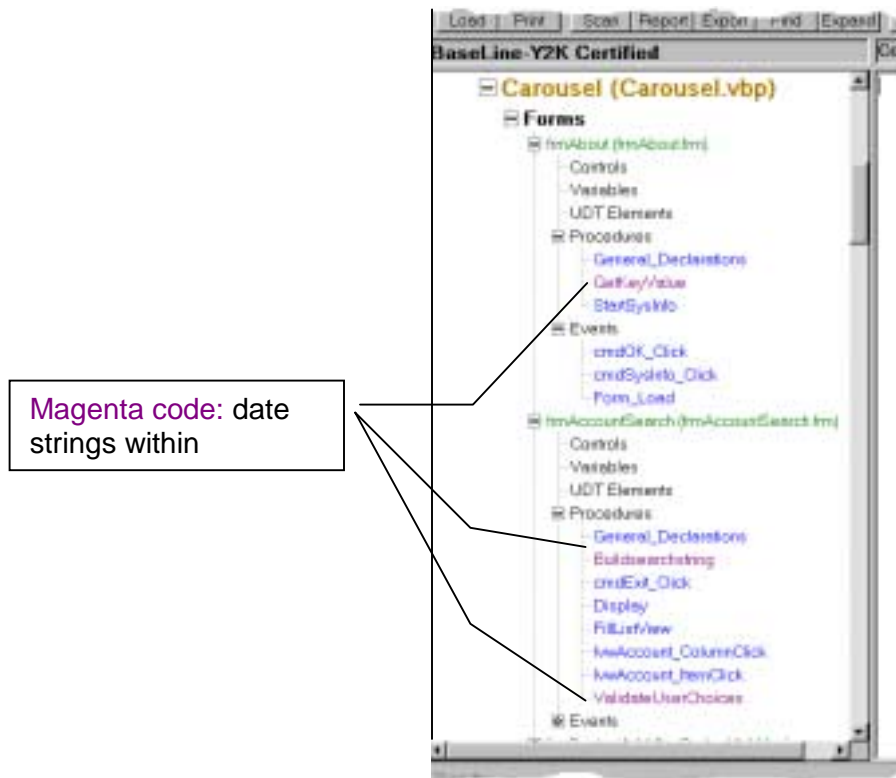
Functions		Variables	
Function	Type	Variable	Type
Code	B	Code	B
Date	B	Day	B
DateAdd	B	Month	B
DateDel	B	Update	X
Day	B	Update	X
Format	B	Year	B
InDate	B	165	W
Month	B	12	W
Now	B	12	W
Time	B		
Weekday	B		

At the bottom of the dialog, it shows 'Total No. Of Functions: 12' and 'Total No. Of Variables: 9'.

Code Comparison Tool (XDIFFF)


<p>2. Check to see if your Application is in the Application Name Box. If not use the Drop Down List to select it.</p>	<p>Your Application Name is displayed in the Application Name Box.</p>
	<p>Adding or Removing Functions or Variables: You will probably not need to Add or Remove Variables or Functions prior to creating your Scan List (step below). However, this functionality is available if needed.</p>
<p>3. Click the SAVE Button</p>	<p>The Save (Scan) List dialog box will appear.</p>
<p>4. Enter a name for the default Scan List.</p>	<p>The dialog box displays the name for the scan list.</p> 
	<p>This Scan List is the same list you must use when you scan the New Release source code to insure correct comparison results.</p>
<p>5. Click on the OK Button.</p>	<p>The default Scan List is saved.</p>
<p>6. Click on the SCAN Button in the Search Lists dialog box.</p>	<p>XDIFFF will scan Carousel's Baseline (Y2K Certified) code.</p>

Code Comparison Tool (XDIFFF)



When scanning is complete, the Explorer Window will expand to show some procedures, routines, and events in a different color. This indicates potentially Y2K non-compliant date strings within.


GOING TO NEW RELEASE MODE

	<p>Before we begin Loading the New Release source code into XDIFFF, we must be certain that we have changed Modes. The Mode Status Bar should currently say “Baseline – Y2K Certified”. We will want it to read “New Release” before we proceed with Loading.</p>
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Action Steps

What you type or do	What happens
<p>1. Click on Mode Tool on the Tool Bar.</p>	<p>Mode Status Bar will change to New Release. (This may take a few minutes).</p>

LOADING THE NEW RELEASE CODE

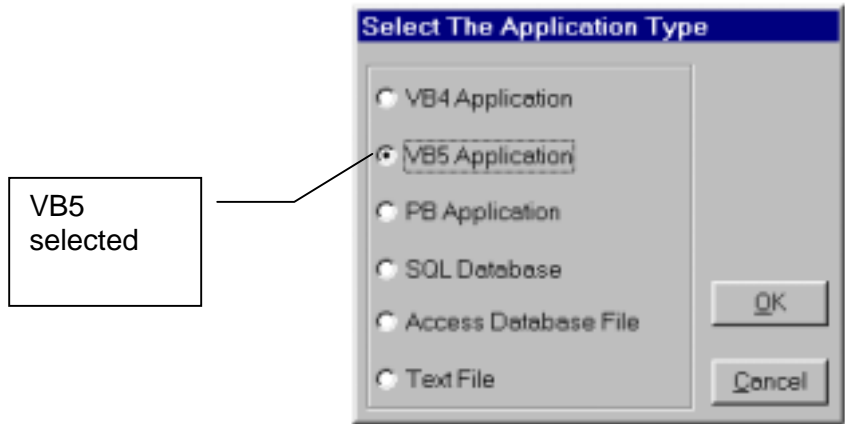
	<p>Now that we have accomplished the first half of the procedure required before comparing the two source code versions, we will begin Loading the New Release version of the source code. It is very similar to the process we used to Load the Baseline source code.</p>
---	--

Action Steps

What you type or do	What happens
<p>1. To load Carousel’s New Release code, Click on the Load Tool on the Tool Bar.</p>	<p>The Load sub-menu opens.</p>

Code Comparison Tool (XDIFFF)

<p>2. As we previously determined, Carousel is a Visual Basic 5.0 application. Choose Visual Basic 5.0</p>	<p>The VB5 Application option button will be selected.</p>
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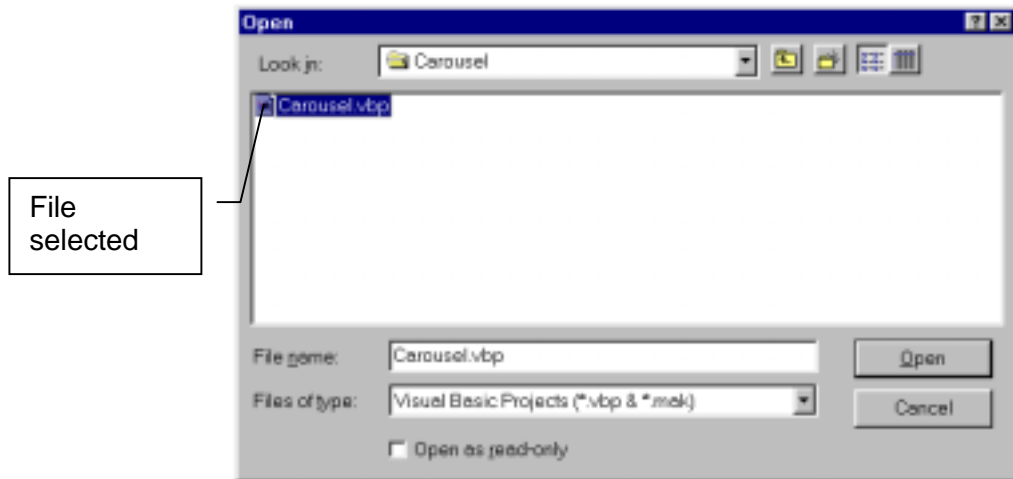


<p>3. Click on the OK Button.</p>	<p>The Select VB Project popup dialog box is displayed.</p>
--	--

Browse Button

<p>4. Locate the Carousel New Release source code by using the Browse Button (if you know the path and filename you can enter it in the text box).</p>	<p>The <i>Carousel.vbp</i> file is found in its directory.</p>
---	--

<p>5. Select the <i>Carousel.vbp</i> file (Note: only *.vbp or *.mak files will be shown)</p>	<p>The file is highlighted.</p>
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6. Click on the **Open** Button. The path to the file will be entered into the **Select VB Project** popup dialog box.



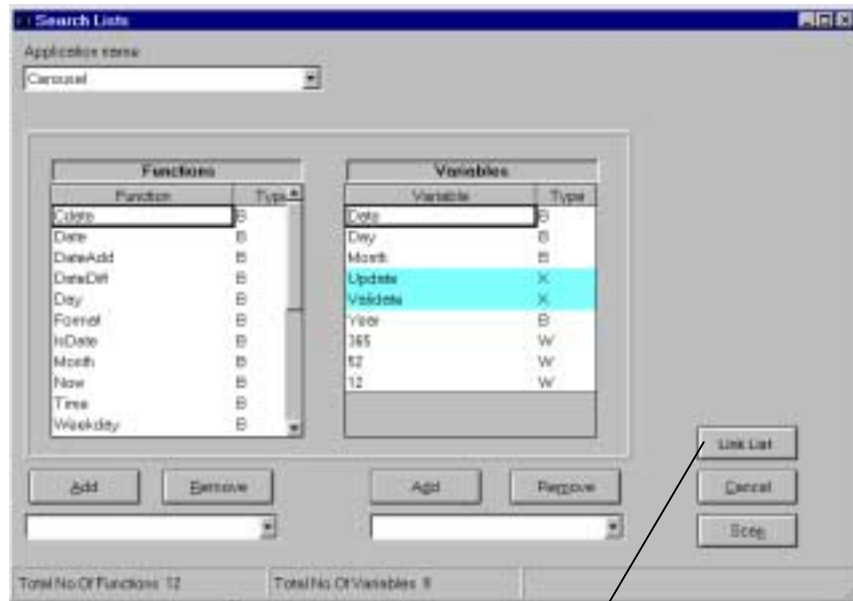
7. Click on the **OK** Button. XDIFFF will begin Loading the New Release code for Carousel.

SCANNING THE NEW RELEASE CODE

	<p>Now that we have Loaded the New Release source code, we will scan this code into the XDIFFF tool.</p>
---	--

Action Steps

	What you type or do	What happens
1.	Click on the Scan Tool in the Tool Bar	The Search Lists dialog box, as illustrated below, will appear.



Link List Button

2.	Check to see if your Application is in the Application Name Box. If not use the Drop Down List to select it.	Your Application Name is displayed in the Application Name Box.
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Code Comparison Tool (XDIFFF)

3. Click the Link List Button.	The List Browser dialog box will be displayed.
---------------------------------------	---

Directory where Carousel List resides

Load List Button

Name	String Type	Search Type
TZ	V	W
JES	V	W
SZ	V	W
Cdate	F	
Date	F	
DateAdd	V	
DateDiff	F	
Day	F	
Day	V	
Format	F	
hDate	F	
Month	F	

4. Select Carousel from the List Tree in the left pane of the List Browser dialog box.	The List Tree will expand showing the Scan Lists contained under Carousel.
5. Select the correct Scan List in the expanded List Tree structure. For our example, select the "carousel1" List.	The table view in the right pane of the List Browser dialog box populates.

This Scan List must be the same list you created when you scanned the Baseline source code to insure correct comparison results.

6. Click on the Load List Button.	The Scan List is Loaded. The Search Lists dialog box is re-displayed.
7. Click on the SCAN Button in the Search Lists dialog box.	XDIFFF will scan Carousel's New Release code.

Code Comparisons



We have now Loaded both the Baseline and the New Release source code. We are ready to compare these two versions of Carousel's source code for code changes.



We will do Blind, Block, and Smart Comparisons in this section examining the strengths and weaknesses of each type of comparison.

Blind Comparisons



A Blind Comparison blindly compares each line of source code in the New Release against an equivalent line in the Baseline code. This comparison does not concern itself with lines of code that are moved up or down in a code structure but only literally examines each line between versions.


Its value is in determining if there have been any modifications in the source code procedural level.

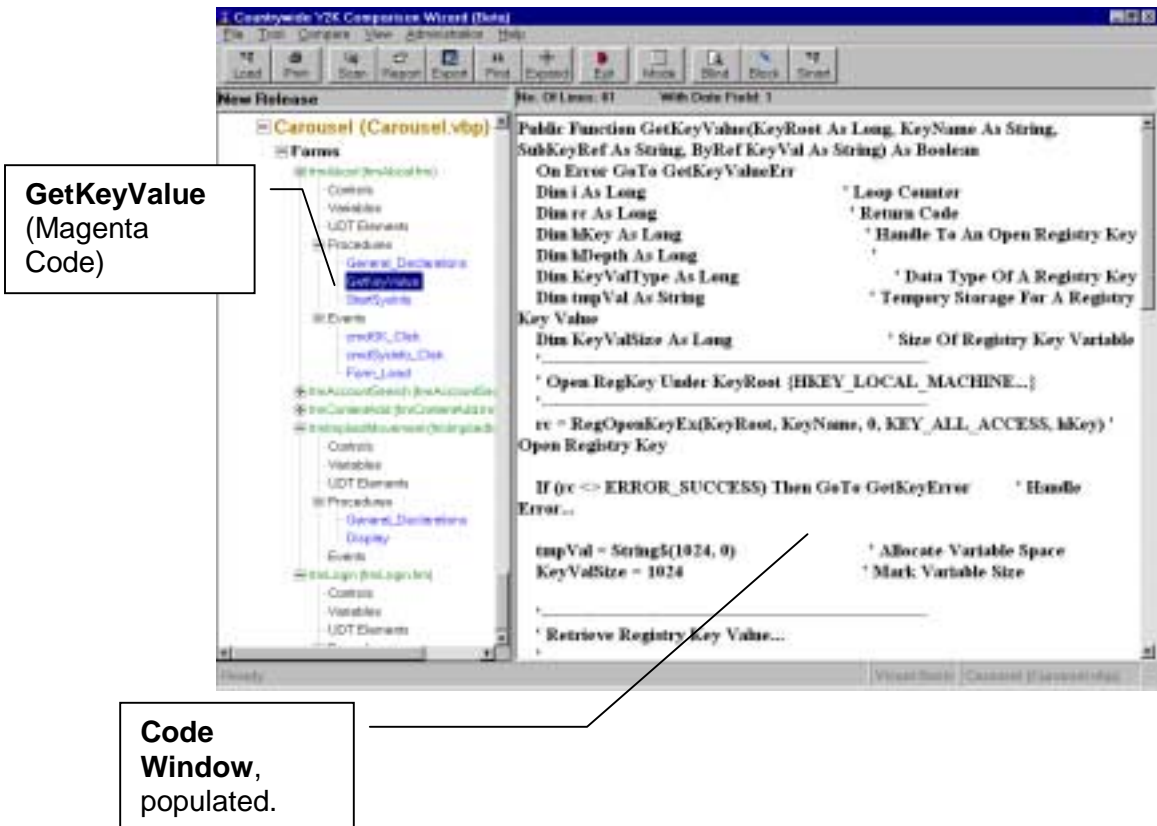


We will perform a Blind Comparison next...

Code Comparison Tool (XDIFFF)

Action Steps

	What you type or do	What happens
1.	Click on the BLIND Tool in the Tool Bar.	When your cursor is available on the screen again, the comparison has been completed.
		Once the comparison has been completed, either before or after running reports, you can compare any code structure under one of the nodes in the Explorer Window and view the comparison results.
2.	Select the GetKeyValue procedure under the Carousel/Forms/Procedures node in the Explorer Window.	The GetKeyValue procedure is highlighted. (Before proceeding, wait for the Code Window to populate.)




GetKeyValue (Magenta Code)

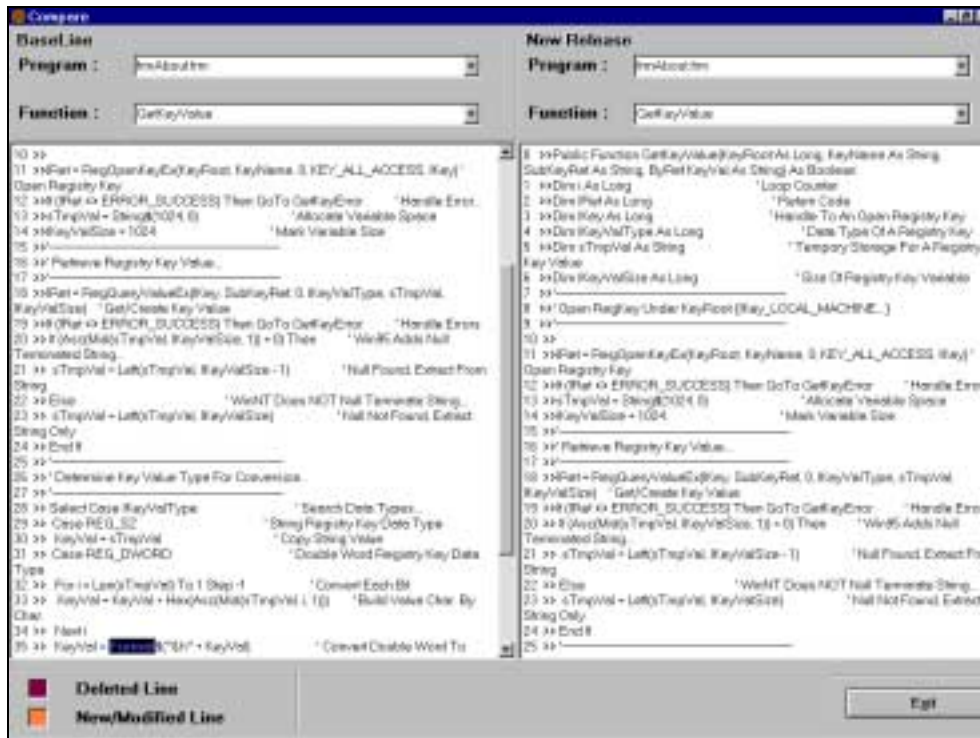
```

Public Function GetKeyValue(KeyRoot As Long, KeyName As String,
SubKeyRef As String, ByRef KeyVal As String) As Boolean
    On Error GoTo GetKeyValueErr
    Dim i As Long           ' Loop Counter
    Dim rc As Long         ' Return Code
    Dim hKey As Long       ' Handle To An Open Registry Key
    Dim hDepth As Long
    Dim KeyValType As Long ' Data Type Of A Registry Key
    Dim tmpVal As String   ' Temporary Storage For A Registry
    Key Value
    Dim KeyValSize As Long ' Size Of Registry Key Variable
    ' Open RegKey Under KeyRoot (HKEY_LOCAL_MACHINE...)
    rc = RegOpenKeyEx(KeyRoot, KeyName, 0, KEY_ALL_ACCESS, hKey) '
    Open Registry Key
    IF (rc <> ERROR_SUCCESS) Then GoTo GetKeyError ' Handle
    Error...
    tmpVal = String$(1024, 0) ' Allocate Variable Space
    KeyValSize = 1024 ' Mark Variable Size
    ' Retrieve Registry Key Value...
    
```

Code Window, populated.

Code Comparison Tool (XDIFF)

<p>3. Right-click on the selected procedure.</p>	<p>The Compare Functions popup menu displays.</p>  <p>The screenshot shows a context menu with 'Compare Functions' highlighted. Other visible options include 'Dim aDepth', 'Dim KeyValType', 'Dim tmpVal As S...', 'Open RegKey', 'cmdDF_Click', and 'cmdSysInfo_Cl...'. The menu is overlaid on a window titled 'Procedures'.</p>
<p>4. Click on Compare Functions in the popup menu.</p>	<p>The Compare Window is displayed.</p>

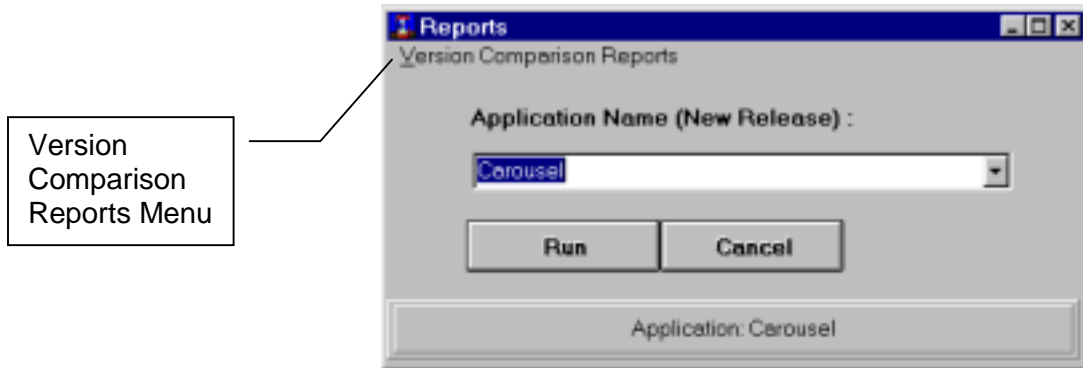


BLIND COMPARISON REPORT

	<p>Reports must be run immediately following each comparison. If you run another type of comparison the report for your current comparison will not be available.</p>
--	---

Action Steps

What you type or do	What happens
<p>1. Click on the REPORT Tool on the Tool Bar.</p>	<p>The Reports dialog box will be displayed.</p>
<p>2. In the Application Name drop down list, select Carousel.</p>	<p>Carousel will be displayed in the Application Name text box.</p>




<p>3. Click on the Version Comparison Reports Menu</p>	<p>The Version Comparison Reports Menu pops down.</p>
---	--

Version Comparison Reports

- ✓ Source Level
- Source Code Level (Added/Changed lines)
- Source Code Level (Deleted lines)
- Source Code Level (Exceptions)
- Table Version Comparison

Code Comparison Tool (XDIFFF)

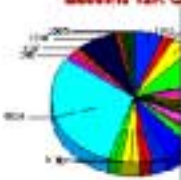
4.	Select the Routine Level Report.	The Menu closes. The Routine Level Report has been chosen.
	You have chosen the Routine Level Report. The other menu choices represent the other Reports available from the Blind Comparison.	
5.	Click on the Run button.	The Version Comparison Report (Routine Level) is displayed.

Print Report Button (if needed)

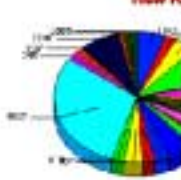
07%

Version Comparison Report - Data Impacted Data (Routine Level)

Baseline Y2K Certified project



New Release




Diagrams show number of lines for each Program in the Application (Baseline Y2K Certified Project and New Release)

App: Carwash	Lib: Carwash	Type Of Comparison: Blind					
Library	Program Name	Type	Routine Name	Data Impacted (Yes/No)	Baseline Count	New Release Count	Flag
Carwash							
	CCentrals		CLS				
	ChangeCenters		IFC		37	37	IFC Change
	Class_Initials		IFC		10	10	IFC Change
	Copy		IFC		43	43	IFC Change
	DefaultViewDB		IFC		65	65	IFC Change
	General_Declarations		Y		59	19	IFC



All other reports are run and printed by repeating steps 1 through 5 in the process above, choosing the appropriate Report from the **Version Comparison Report** menu.

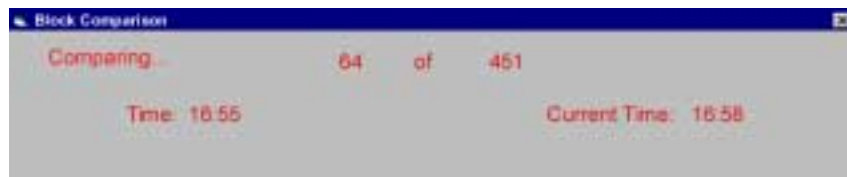
Block Comparisons


	<p>A Block Comparison runs a Microsoft Word comparison utility that compares procedures from Baseline code to New Release code and marks the line as <i>New/Modified</i> or <i>Deleted</i>.</p> <p>All the changes to the functions irrespective of date impact, are seen in this comparison.</p>
---	---

	<p>Now we will run a Block Comparison...</p>
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Action Steps

	What you type or do	What happens
1.	Click on the BLOCK Tool in the Tool Bar.	During the comparison process you will see a screen similar to the one below.



	<p>When your cursor is available on the screen again, the Block Comparison had been completed.</p>
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Once the comparison has been completed, either before or after running reports, you can compare any code structure under one of the nodes in the Explorer Window and view the comparison results.

For further instruction, see page 25, Step 2 of Running a Blind Comparison.

BLOCK COMPARISON REPORT



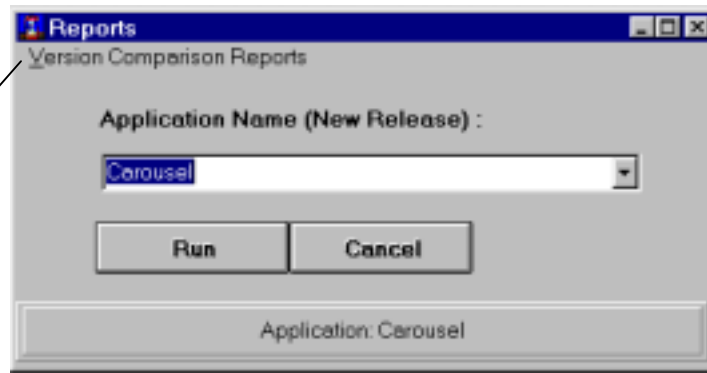
REMINDER: Reports must be run immediately following each comparison. If you run another type of comparison the report for your current comparison will not be available.

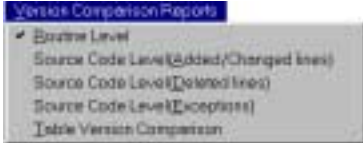
Action Steps


	What you type or do	What happens
1.	Click on the REPORT Tool on the Tool Bar.	The Reports dialog box will be displayed.
2.	In the Application Name drop down list, select Carousel.	Carousel will be displayed in the Application Name text box.

Code Comparison Tool (XDIFFF)


Version Comparison Reports Menu



<p>3. Click on the Version Comparison Reports Menu</p>	<p>The Version Comparison Reports Menu pops down.</p> 
<p>4. Select the Routine Level Report.</p>	<p>The Menu closes. The Routine Level Report has been chosen.</p>

	<p>You have chosen the Block Comparison Routine Level Report. The other menu choices represent the other Reports available from the Block Comparison.</p>
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<p>5. Click on the Run button.</p>	<p>The Version Comparison Report (Routine Level) is displayed.</p>
---	---


	<p>All other reports are run and printed by repeating steps 1 through 5 in the process above, choosing the appropriate Report from the Version Comparison Report menu.</p>
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Smart Comparisons

	<p>The Smart Comparison examines only those lines in the New Release that are date impacted and tries to match them in the Baseline source code for each procedure.</p> <p>Smart Comparison uses “smart” techniques to identify changes at the line level. Any change made to a line in the New Release is considered a new line. If the utility finds multiple lines of matching code in the Baseline, it tries to match those lines in the New Release code following preset rules. Unlike Blind Comparison, it matches lines that have moved up or down in the structure.</p>
---	--

	<p>Our last comparison will be the Smart Comparison...</p>
---	--

Action Steps

	What you type or do	What happens
1.	Click on the SMART Tool in the Tool Bar.	When your cursor is available on the screen again, the comparison has been completed.

	<p>Once the comparison has been completed, either before or after running reports, you can compare any code structure under one of the nodes in the Explorer Window and view the comparison results.</p> <p>For further instruction, see page 25, Step 2 of Running a Blind Comparison.</p>
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SMART COMPARISON REPORT

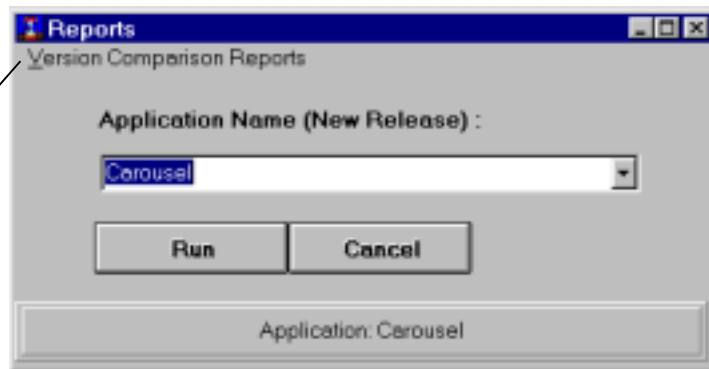



Reports must be run immediately following each comparison. If you run another type of comparison the report for your current comparison will not be available.

Action Steps


	What you type or do	What happens
1.	Click on the REPORT Tool on the Tool Bar.	The Reports dialog box will be displayed.
2.	In the Application Name drop down list, select Carousel.	Carousel will be displayed in the Application Name text box.

Version Comparison Reports Menu




3.	Click on the Version Comparison Reports Menu	The Version Comparison Reports Menu pops down. 
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Code Comparison Tool (XDIFFF)

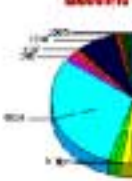
4.	Select the Routine Level Report.	The Menu closes. The Routine Level Report has been chosen.
	You have chosen the Routine Level Report. The other menu choices represent the other Reports available from the Smart Comparison.	
5.	Click on the Run button.	The Version Comparison Report (Routine Level) is displayed.

Print Report Button
(if needed)

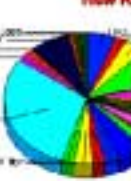


Version Comparison Report - Data Impacted Data (Routine Level)

Baseline Y2K Certified project



New Releases



[Diagram shows number of lines for each Program in the Applications (Baseline Y2K Certified Project and New Releases)]


Library	Program Name	Type	Routine Name	Data Impacted (Yes/No)	Baseline Count	New Release Count	Flag
Carousal							
	CL5						
	ChangeCenters			Y/N	37	37	Y/N Change
	Class_Initialis			Y/N	10	10	Y/N Change
	Copy			Y/N	43	43	Y/N Change
	DeliveriesDB			Y/N	69	69	Y/N Change
	General_Declarat			Y	59	59	Y/N




All other reports are run and printed by repeating steps 1 through 5 in the process above, choosing the appropriate Report from the **Version Comparison Report** menu.

XDIFFF Reports

Choosing the Report


	Reporting and what it is all about
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	Our goal for this section is...
---	---------------------------------

Action Steps

What you type or do	What happens
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
12.	

Posting to the Release Database

	What is the Release Database and why do we care.
---	--

	This is our goal for this section
---	-----------------------------------

Action Steps

What you type or do	What happens
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
11.	

	
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Archiving results

Appendix



Action Steps

What you type or do	What happens
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	

