

IBM WebSphere Development Studio Client for iSeries

Introduction to Remote System Explorer and LPEX Editor Student Exercises

For WDSv5 GA

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Overall Lab Guide

The objective of the Remote System Explorer (RSE) Introduction is to explore some of the basic features of the tools that make up RSE, the RSE tree view, LPEX Editor, CODE Designer, and Debugger as well as experience how RSE is integrated into the WebSphere Development Studio Client (WDS) workbench. The example of a small payroll application is used to walk you through the edit, compile, debug cycle. At the end of the lab, the student should know how to:

- Create connections to iSeries servers.
- Navigate in the RSE tree view
- Open source in the Editor, make changes, and use different ways to maneuver through the source.
- Invoke the Program Verifier and work with the Error list.
- Start a host compile using the remote compile capabilities.
- Use the DDS tree, the Design Page and the Properties Notebook.
- Invoke the debugger, set breakpoints, display and change variables, and control program execution.
- Create different filters in the Remote Systems Explorer, invoke actions and create new user actions.

The exercises for each tool, Editor, Designer, Debugger, and Remote Systems Explorer should be worked on in sequence. You can switch to a different tool though, without completing all exercises for the previous one.

Note: *The pictures in these labs show a similar application being built. Some of the names and icons may be different from the environment you are working with.*

Prerequisites

Although not required, familiarity with the RPG language is an asset.

Also, it is helpful if the student is familiar with basic MS Windows operations such as working with the desktop and basic mouse operations such as opening folders and performing drag-and-drop operations.

Remote System Explorer hands on Lab

The Steps in this Lab

- Start WDS Sc and use RSE perspective to connect to your iSeries server
- Open a source member in the LPEX source editor
- Work with this source using editor features
- Verify the source with the built-in program verifier
- Compile the source by using the remote command capabilities in RSE
- Run the application from the RSE environment
- Create different filters in RSE
- Create a user action in RSE

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EXERCISE 1: Introduction to WebSphere Development Studio

The **IBM WebSphere Development Studio for iSeries** product is a suite of e-business enabling technologies including host and workstation components:

Host Components

- ILE RPG
- ILE COBOL
- ILE C
- ILE C++
- Application Development ToolSet (ADTS) includes PDM, SEU, SDA, RLU

Workstation Components (WebSphere Development Studio Client, WDS_c)
WebSphere Studio Site Developer

+ iSeries Plugins

- Remote Systems Explorer
- WebFacing

Classic Tools

- VisualAge RPG
- CODE

The **CoOperative Development Environment**, better known as **CODE**, is a set of integrated development tools that allow you to: create, edit, compile, and maintain your source code; debug programs using a PC connected to an iSeries. In this Lab you will only use the CODE Designer tool, all other tools used are workbench tools

The Development Studio workbench includes the following tools features for the iSeries programmer:

- Remote System Explorer (RSE)

An enhanced and more flexible workstation version of the Program Development Manager (PDM). It ties all iSeries objects together and allows you to quickly access all the objects on iSeries and to effectively manage and organize your development projects.

- LPEX Editor

A powerful language-sensitive editor that is easy to customize. Token highlighting of source makes the various program elements stand out. It has SEU-like specification prompts for RPG and DDS to help enter column-sensitive fields. Local syntax checking and semantic verification for your RPG, COBOL and DDS

source makes sure it will compile cleanly the first time on an iSeries. If there are verification errors, an Error List lets you locate and resolve problems quickly. On-line programming guides, language references, and context-sensitive help make finding the information you need just a keystroke away.

- ISeries command interface to manage iSeries objects
An interface that allows you to submit requests to the iSeries to invoke actions like compile, bind, or build objects on the host.
- CODE Designer
A tool with a rich graphical user interface that makes designing or maintaining display file screens, printer file reports, and physical file databases easy and fun.
- iSeries Debugger
A source-level debugger that allows you to debug an application running on a host iSeries from your workstation. It provides an interactive graphical interface that makes it easy to debug and test your host programs. It is fully integrated in the workbench.

In this session, you will learn some of the basic features and functionality of each of these tools. We are confident that Development Studio Client will save you lots of time and effort in your day-to-day programming tasks. It will make you a more efficient and effective programmer. At the same time, it will save cycles on your iSeries. Now let's spend a couple of hours playing and see if you agree.

Installing WebSphere Development Studio Client

The WebSphere Development Studio Client for iSeries (WDS*c*) product consists of two parts:

1. The integrated tools in the Eclipse based workbench
2. The Classic tools CODE and VARPG

The installation is done on the workstation from:

1. a local CD drive
2. a LAN drive (assumes that an installable image has been set up on the LAN)
3. an iSeries (assumes that the workstation files have been copied to the iSeries IFS).

This workstation install uses the Windows Installer.

The minimum hardware requirements for WebSphere Development Studio are an Intel® Pentium III processor or faster with 512 MB of memory, a SVGA 800 x 600 monitor, CD-ROM drive, and a mouse or pointing device. An install of **WDS*c*** uses about 1.6GB of disk space.

Using the WebSphere Studio workbench to invoke the Editor

In this Lab you will use the WebSphere Studio workbench to access iSeries objects, and then work with RSE tools from the workbench.

Invoking WebSphere Development Studio client (WDSc)

To start Development Studio Client:

- Click the **Start** button on the task bar of your desktop
- Select **Start** → **Programs** → **IBM WebSphere Studio** → **IBM WebSphere Development Studio Client (Advanced)**

Note: If the **Advanced Version** of the product is not installed on your workstation then you will not see the word **advanced** in the Start menu

A dialog will appear

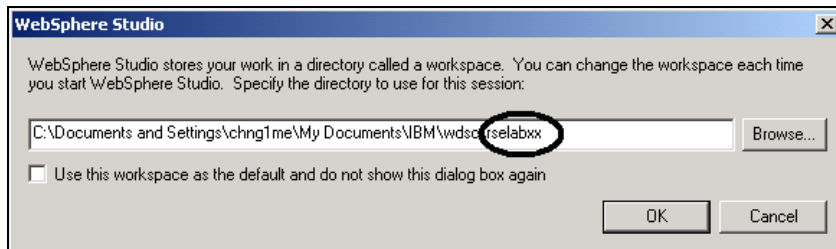


Figure 1: WebSphere Studio dialog for specifying workspace directory name

- Change the **Entry field** in this dialog and use directory name **rselabXX** (where XX is your team number)
 - If your team 01 use directory name rselab01 as shown in Figure 1

After a few moments of loading, the workbench appears

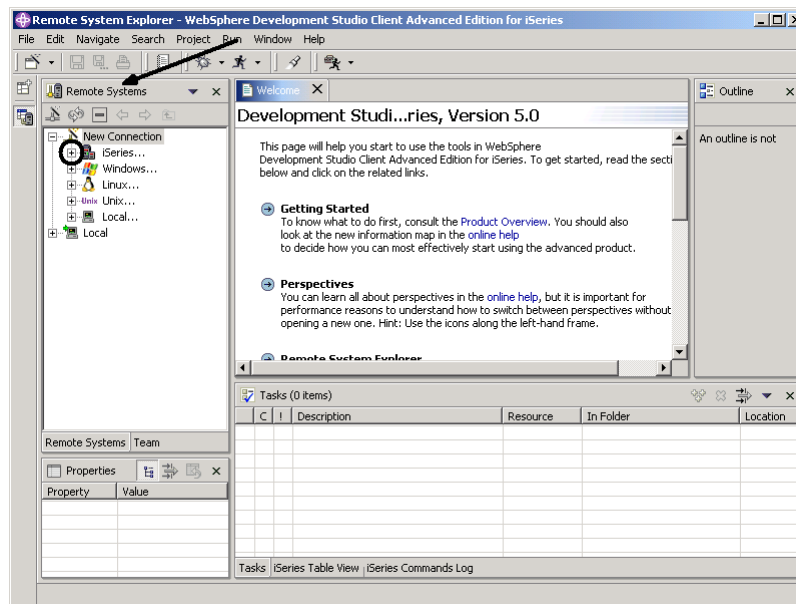


Figure 2: Workbench with Remote System Explorer

You will be working with the **Remote Systems Explorer (RSE)** perspective in the workbench, This perspective will be the active perspective when you start Development Studio Client with a fresh workspace, if you had used the workspace before then the workbench would come up with the image that it was last exited from.

A perspective is a specific arrangement of views and tools in the workbench, depending on what role the workbench user has, he/she will use a different perspective. A web developer will use the **web perspective**, a Java developer will use the **Java perspective**, an iSeries developer will use the **Remote Systems Explorer perspective**.

- Check for the name of the perspective, the arrow in Figure 2 indicates where to look for the perspective name.

If you see a different perspective, not the **Remote System** open in the workbench or no perspective:

- Select the **Window** option on the workbench Menu bar
- Select the **Perspective** option on the sub menu
- Select **Remote System Explorer**

Now you are ready to create a connection

Create a Connection

Go thru the following steps to create a connection to the iSeries server you will work with in this Lab.

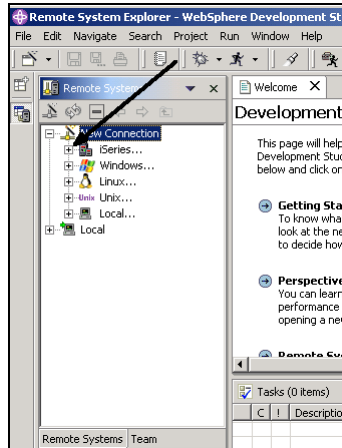


Figure 3: Create a new connection

- Locate the **New Connection** node.

If it is not expanded already

- Expand the **New connection** node by clicking on the **+** sign beside it
- Locate the **iSeries.....** node
- Expand the **iSeries** node by clicking on the **+** sign beside it

The new connection wizard will appear:

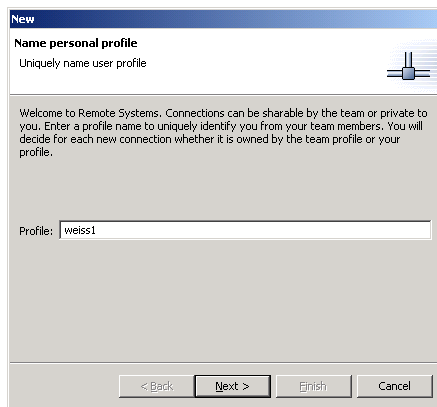


Figure 4: New connection wizard

Leave the **Profile** information as is:

- Click the **Next>** push button

The second page of the **New connection** wizard will show:

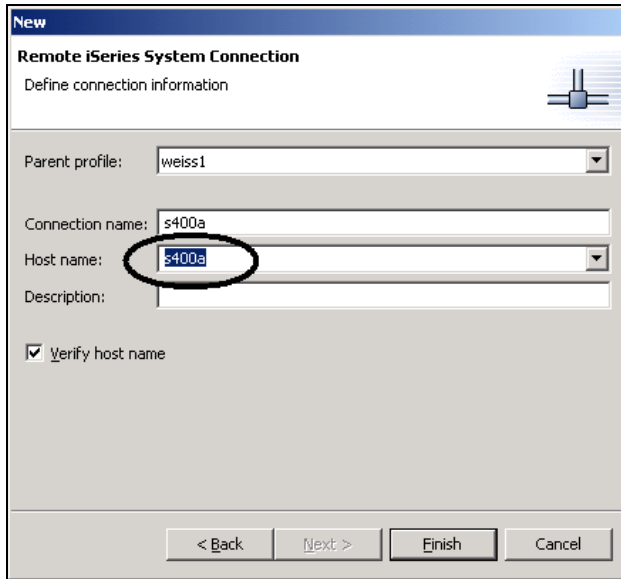


Figure 5: The create connection dialog

The cursor in the **Define Connection Information** dialog should be positioned in the **Host Name** entry field

The name of the host name you are using is **s400a** (or what your instructor tells you)

If a different host name is used in your Lab, the instructor will let you know

- Enter **s400a**, or the name given to you by the instructor in the **Host name** entry field

The **Connection name** will be automatically filled with the host name, leave it the way.

- Leave the **Parent profile** as is, don't change it.
- Leave the **Verify host name** check box checked
- Click the **Finish** push button.

Selecting an iSeries object in the RSE perspective

You will notice that the tree view in the Remote System view is now updated with this new connection. There are several new nodes listed under the new connection node.

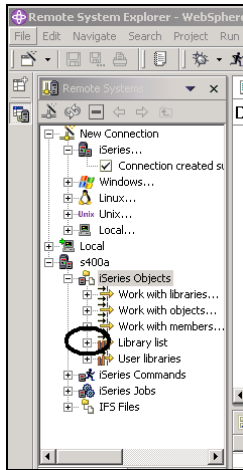


Figure 6: RSE tree view with iSeries connection

You notice the first three nodes in the tree view under the iSeries objects node are named after the PDM options, because they have similar capabilities

1. Work with libraries
2. Work with objects
3. Work with members

In addition you have a node for working with library lists and user libraries

4. Library list
5. User libraries

You also have more nodes to work with under the connection node itself

1. iSeries Commands
2. iSeries job
3. IFS Files

I want you to work with a library in your library list:

- Expand the **Library list** node, by clicking on the + sign beside it.

Now the connection will be activated and you will be prompted for userid and password



Figure 7: Authentication dialog

- Enter Userid **CODELABxx** (xx being your team number)
- Enter password **CODELABxx** (being your team number)
- Check the check box **Permanently change user id**
- Check the check box **Save password**
- Click the **OK** push button

The **Userid** has been setup so that your group/team library has been added to the library list automatically. Back in the workbench in the RSE perspective you will see the libraries in your job's library list.

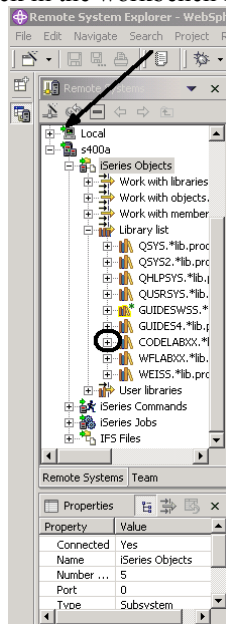


Figure 8: RSE with libraries in library list

Notice that the s400a node now has a small green arrow in the icon to indicate it is an active connection

Also your **CODELABxx** library should have a small green star that indicates it is the current library

In Figure 8 the library **GUIDESWSS** is the current library, if you have sharp eyes you can spot the star in the icon.

Now to proceed in your exercise:

- Expand library **CODELABxx**, (**xx** being your group number)

You will see all objects in this library appear in the tree view.

- Locate the **QDDSSRC** source file and expand it.
- Locate the **QRPGLSRC** source file and expand it as well.

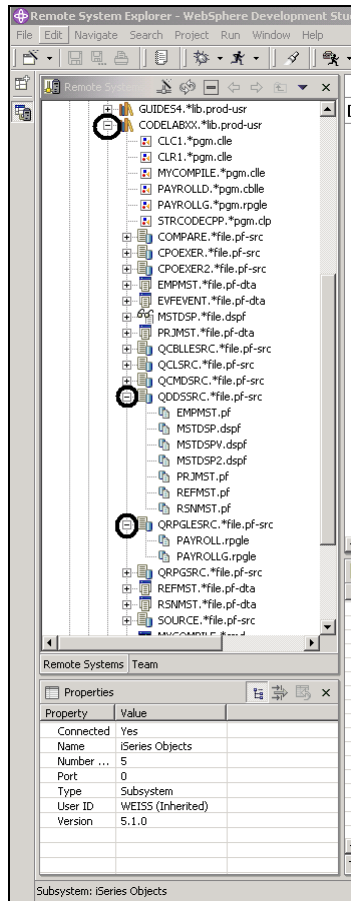


Figure 9: RSE tree view with expanded source files

Now you can see and access the **members** in these 2 source files.

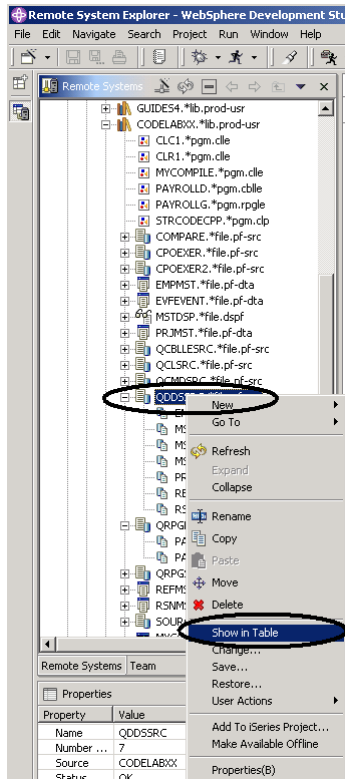


Figure 10: Select table view for *QDDSSRC* file

Before you go ahead and work with these members, I suggest you have a look at the table view as well because that is more similar to the view you are used to from PDM:

- Right mouse click on the **QDDSSRC** file
- Select the **Show in Table** option in the pop up menu

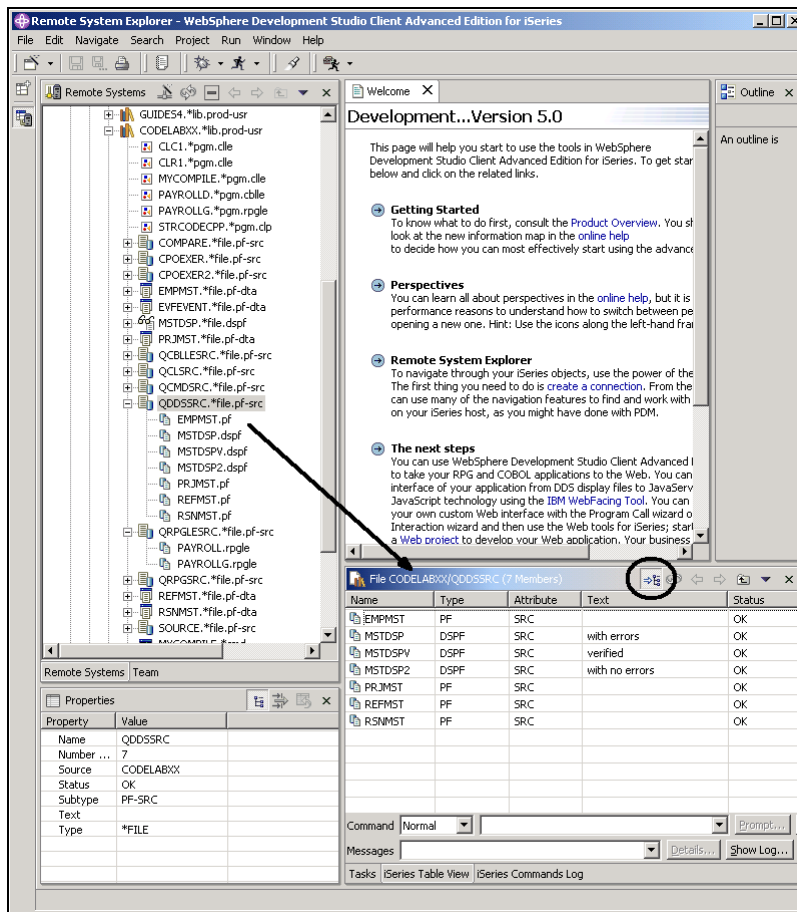



Figure 11: Table view with lock/unlock button

In the table view as shown in Figure 11:

Tip: You can sort the view by column, by clicking on the column's heading.

You can also unlock this table view, so it switches to the selected object in the tree view, as you select objects in the RSE tree view.

- In the table view toolbar click the lock/unlock button , since it is in lock position by default it is now unlocked from the current QDDSSRC object. Meaning it is not locked to QDDSSRC.
- In the tree view, select QRPGLSRC, now the table should show the members in QRPGLSRC


```

000100 A*%TS DD 20020613 153333 QUSER REL-V5.1 iSeries WDT
000200 A* This is the DSFF use for the CODE Introduction 2 day course
000300 A* 5763CL2 (C)Copyright 1998
000400 A*****
000500 A* THIS DISPLAY FILE PROVIDES MAINTENANCE FORMATS FOR ALL THE
000600 A* TIME REPORTING MASTER FILES - EMPLOYEE MASTER
000700 A* - PROJECT MASTER
000800 A* - REASON CODE MASTER
000900 A*****
001000 A*Created by BATTHISH
001100 A*%ED with errors
001200 A*%EC
001300 A
001400 A DSPSIZ(24 80 *DS3)
001500 A REF(QGPL/QINVREC INVREC)
001600 A PRINT
001700 A INDARA
001800 A CA03(03 'end of job')
001900 A CA04(04 'return to maintenance sele-
002000 A ction')
002100 A* THE SELECT FORMAT ALLOWS SELECTION OF THE TIME REPORTING
002200 A* MASTER FILE THE OPERATOR WANTS TO MAINTAIN
002300 A
002400 A R SELECT
002500 A*%TS DD 20020613 153333 QUSER REL-V5.1 iSeries WDT
002600 A
002700 A 60
002800 A BLINK
002900 A ALARM
003000 A 2 5'PRG01'
003100 A 2 30'Time Reporting System'
003200 A 2 70DATE(*YY)
003300 A EDTCDE(Y)
003400 A 3 30'Maintenance Selection'
003500 A 3 70TIME
003600 A 6 14'Enter an X beside the application -
003700 A you want to maintain'
003800 A 9 28'Employee Master Maintenance'
003900 A PRJAPL 1A B 10 25
004000 A 10 28'Project Master Maintenance'
004100 A RSNAPL 1A B 11 25
004200 A 11 28'Reason Code Master Maintenance'
004300 A EMESS 50A O 21 16
004400 A 23 7'F3-End of Job'
004500 A EMPAPL 1 B 9 25INDTXT(01 '?')
004600 A*%GP MAINPANEL 01
004700 A*
004800 A* THE EMPSEL FORMAT ALLOWS SELECTION OF THE EMPLOYEE TO BE
004900 A* MAINTAINED AND THE TYPE OF MAINTENANCE TO BE PERFORMED
005000 A
005100 A R EMPSEL
005200 A*%TS SD 19920629 165055 SMYTH REL-V2R2M0 5738-PW1
005300 A
005400 A 60
005500 A BLINK
ALARM
2 5'PRG01'
2 30'Time Reporting System'

```

Figure 13: Source editor with DDS member

You can maximize the editor window by double clicking on its window heading, as shown by the arrow in Figure 13. You can get it back to its original size, by double clicking on the heading again.

Opening a second source member

We want you to open a second member in the editor, so back in the RSE perspective

- Double click on member **PAYROLL** in the QRPGLSRC source file.

This member will be loaded into the editor as well.

Your editor window will look something like this, notice the two window bars with both editor window open, switch from one editor session to the next by clicking on the window bars.

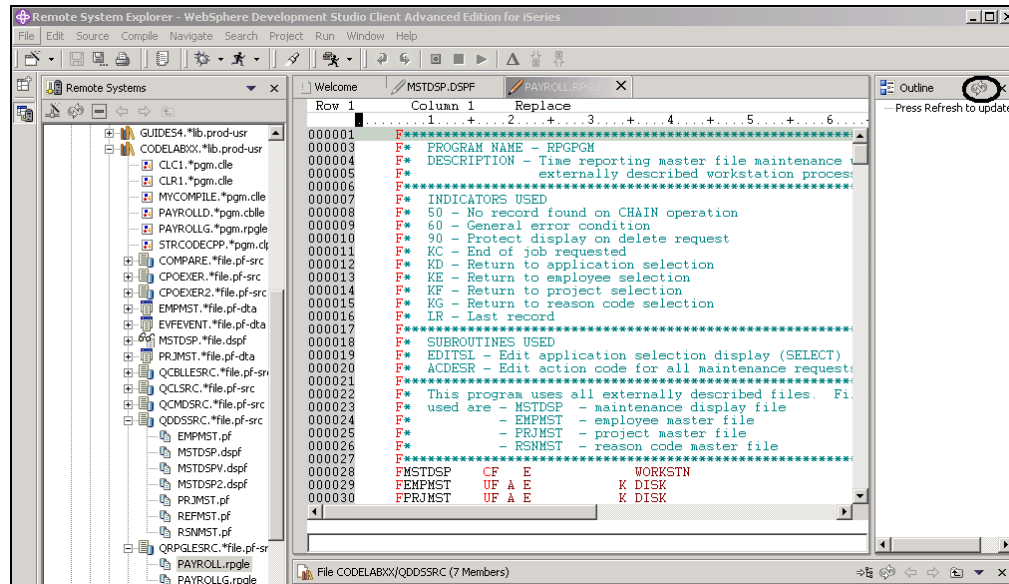


Figure 14: Editor with RPG source member and Outline view frame

Using the outline view

To see an outline view of your RPG source,

- Click on the **Refresh** button on the Outline view toolbar, as shown by the circle in Figure 14

You can see, the Outline view contains your source program in a tree view without the lines containing logic.

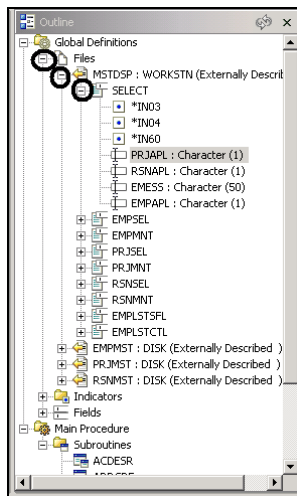


Figure 15: Outline view with file and record format expanded

To get some more details of your source member:

- Expand the **Files** node
- Expand the **MSTDSP** workstation file
- Expand the **SELECT** record format

Double clicking on any of the icons in the outline view will position the source editor accordingly. Now if you want to switch back to a different member loaded in the source editor just click on its window heading and the source editor window with the correct member comes into focus

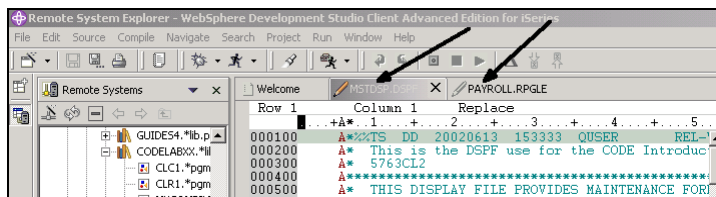


Figure 16: Click on the editor window heading to give focus to the edit session

To switch back to the DDS source member:

- Click on the Window heading to get **MSTDSP** editor window in focus

Make sure you are back at the **RPG member** for the next exercise.

Now you are ready to exploit the editor's basic features.

Move on to the next section:

Editor Basic Features

Exercise 2: Working with the Editor

Basic Editor Features

The LPEX Editor has all the basic functions that you would expect in any serious editor:

- Cut, copy, and paste
- Block marking of lines, characters, or rectangles with copy, move, and delete operations.
- Powerful find and replace functionality.
- Unlimited undo and redo.
- Automatic backup and recovery.

In addition there are a few more functions that you may not have seen in a workstation editor:

- Token highlighting -- different language constructs are highlighted using different colors and fonts to help identify them in a program.
- SEU-like format-line rulers to show the purpose of each column for column-sensitive languages like RPG and DDS. These rulers can automatically update themselves to reflect the current specification.
- SEU-like specification prompting for RPG and DDS.
- Sequence numbers, which allow SEU-style commands in the prefix area.
- Intelligent tabbing between columns for column-sensitive languages.
- Automatic uppercasing for languages that expect uppercase.
- For column-sensitive languages there is a command that simplifies text insertions and deletions.
- On-line language reference help.

Now let's take a minute to try a few of these features.

Column Sensitive Editing

Working with the RPG source member PAYROLL, which should be already open, try some of these features by following the instructions in this guide. You might want to maximize the editor window during this exercise.

LPEX provides special support for insertion and deletion in column-sensitive languages. You can switch this support on by going to the workbench preferences dialog:

- Select the **Window** option on the workbench menu bar.
- Select the **Preferences** option on the pull down menu.

The Preferences dialog appears

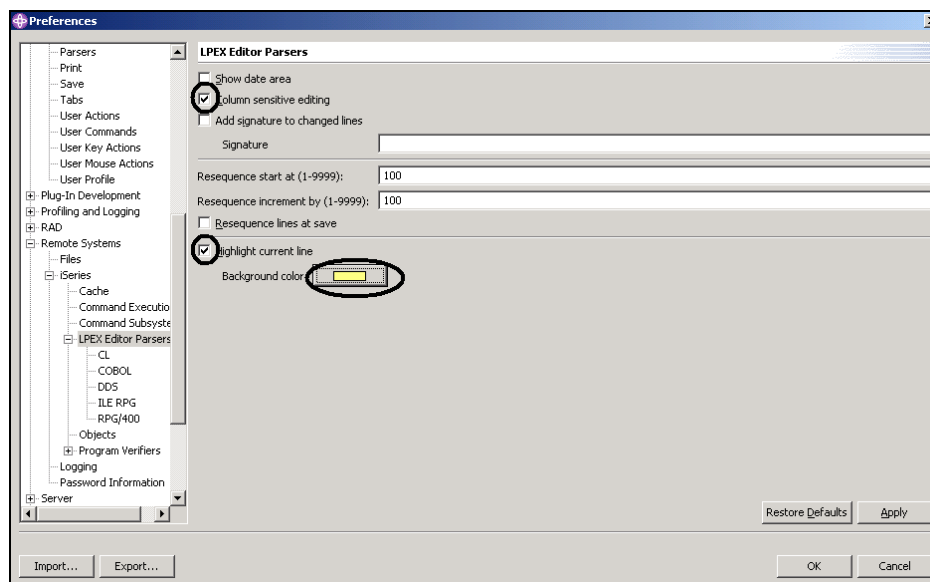


Figure 17: Preferences dialog

In the tree view in the left pane:

- Expand the **Remote Systems** node, then the **iSeries** node.
- Click on the **LPEX Editor Parsers** node

The right pane of the dialog will allow you to set preferences for this feature:

- Select the **Column sensitive editing** check box
- Select the **Highlight current line** checkbox
- Click on the **Background Color** push button
- Select a **light yellow** from the color palette
- Click the **OK** push button on the color chooser dialog

Tip: Other interesting preference settings are located under the LPEX Editor Parser node, when you expand this node you see preference settings for the individual language environments.

- Click the Ok push button on the Preferences dialog

Now let's see what this does.

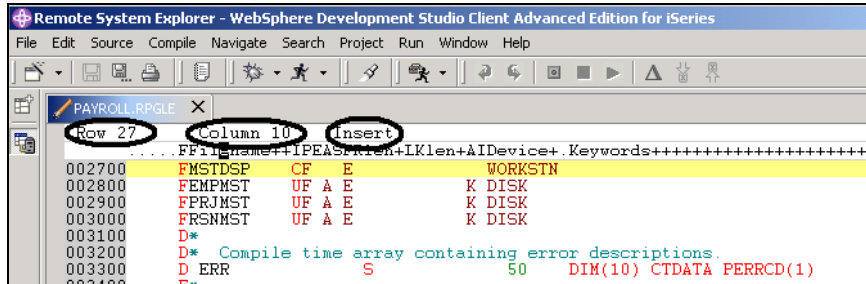


Figure 18: Editor in Insert mode with highlighted line 27

In the editor window:

- Move the cursor to **line 27, column 10**.
- Make sure the editor is in **Insert** mode.

If the status area says '**Replace**':

- Press the **Insert** key.
- Press the **spacebar** 3 times.

Notice that only the filename is shifted but none of the other columns to the right are affected.

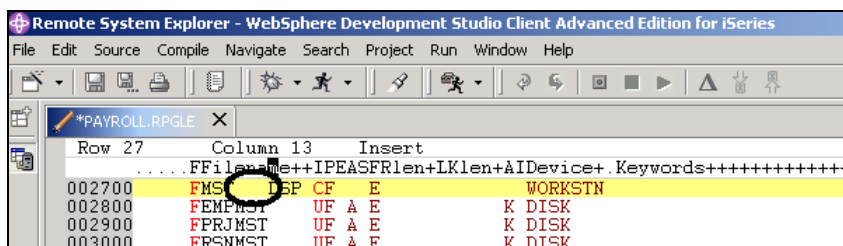


Figure 19: Inserted blanks in file name, none of the other columns has been shifted

- Press the **backspace** 3 times.
- Once again the filename is affected but no other columns are touched.

SEU Commands

If you are an SEU expert you will appreciate the ability to use SEU commands:

- Move the cursor into the *gray sequence number* area to the left of the edit area.
- On any sequence number type *dd*
- Go down a few lines and type *dd* again and press *Enter*.

Notice that the lines have been deleted.

- Now type *i5* in the sequence number area.

Make sure the cursor is within the sequence number area

- Press **Enter**.

Five new lines are inserted.

Undo and redo

Now you are going to undo some of the changes you just made to the file.

- Select the **Edit** option from the workbench menu bar
- Select the **Undo** option from the pull down menu

Notice that the 5 new lines disappear.

- Do another undo action by pressing **Ctrl+Z**.

Notice that the deleted lines reappear.

- Select the **Edit** option from the workbench menu bar
- Select the **Redo** option from the pull down menu.

Notice that the lines are deleted again.

At this point you will reload the source from the iSeries to make sure that it is back in its original form. To do this:

- Select the **File** option on the workbench menu bar
- Select the **Close** option from the pull down menu

A dialog will appear asking you to save the latest changes.

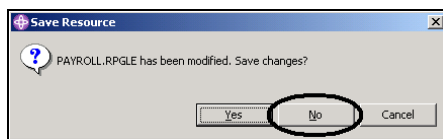


Figure 20: Confirmation dialog

- Click the **No** push button.
- Go back to the workbench to the *RSE perspective* and reload the **PAYROLL** member in the QRPGLSRC file

Using Language-Sensitive Help

Inside the editor, there is cursor-sensitive language-reference help available. This help is invaluable if you cannot remember the order of fields in an RPG specification or the possible values for a variable field. This help is available from the LPEX Editor window.

- Position the cursor over the word **MOVE** in line **56** of the ILE RPG source.
- Press **F1**.

Language-sensitive help for the MOVE operation code appears in a help window.

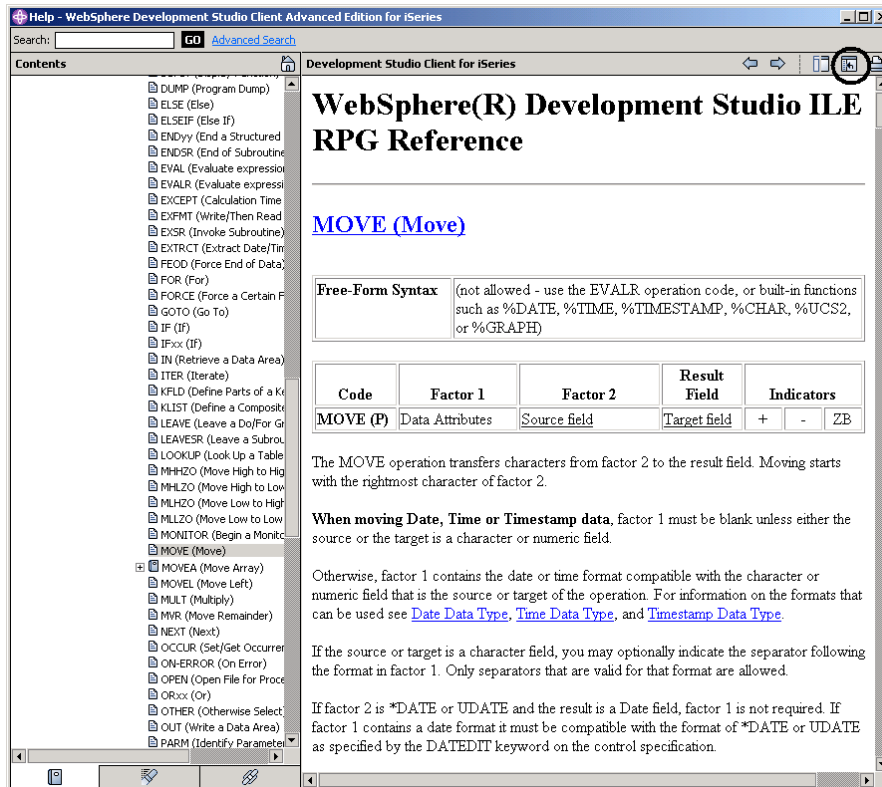


Figure 21: Help for MOVE and synchronize button

- Click on the **Synchronize Navigation** button on the Help window toolbar. This will synchronize the topics in left overview pane to the help topic you are viewing in the main help pane.
- Play around in the help window to see what else is available.
- Minimize the Help window.
- Select the **Help** menu option on the workbench menu bar, to see what help is available.
- Select the **Help contents** menu option from the menu pull down.

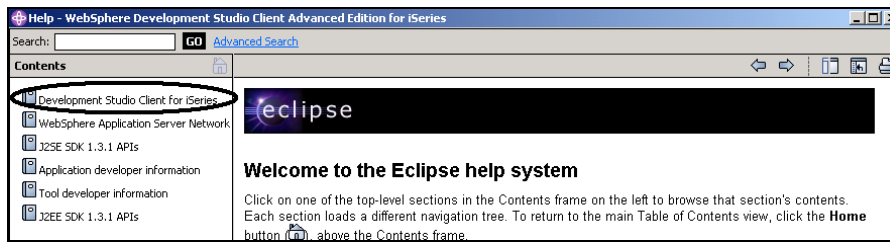


Figure 22: Main Help window

- Select **Development Studio Client for iSeries** from the topic list in the left pane

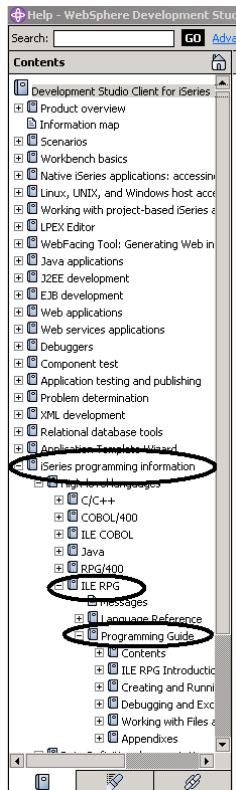


Figure 23: Finding the RPG IV manuals

- Expand the **iSeries programming information** node
- Expand the **ILE RPG** node
- Expand the **Programming Guide** node

Here you find the table of content and can select the topic your interested in

Having the latest version of the manuals at your fingertips will make your life easier

Using Prompts

Instead of entering or changing code directly in the editor window, you can use prompts. When you request a prompt for a specification line, a window appears where you can enter or change that line using entry fields.

- Move your cursor to *the D-spec* on line 33.
- Select the **Edit** option from the workbench menu bar
- Select **Prompt** (or press F4).

The editor window will shrink back and allow you to see the prompt window at the bottom of the workbench. The prompt window shows the specification line broken down into its individual fields.

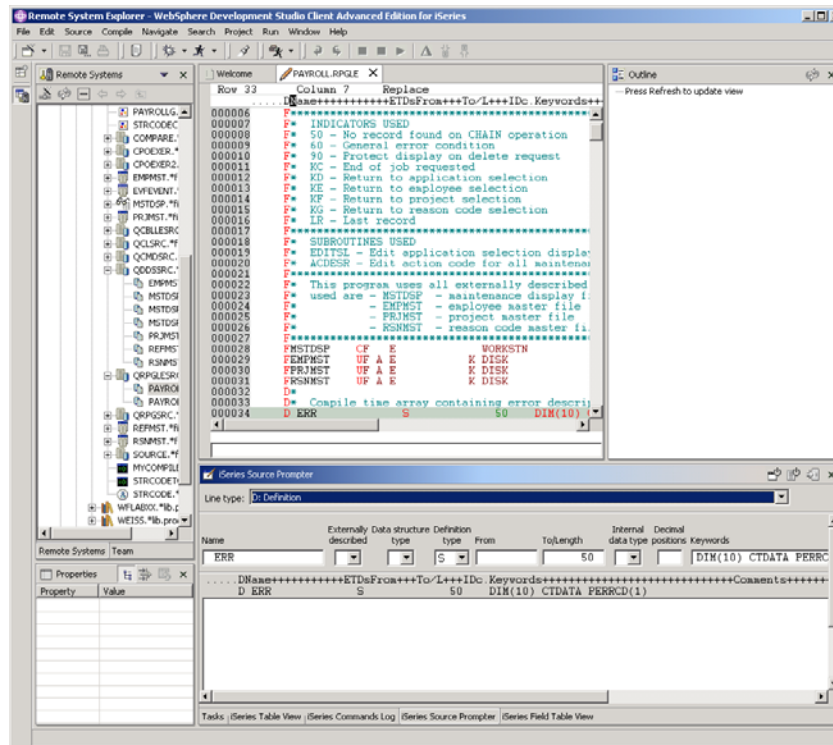


Figure 24: Prompt window

To display context sensitive help for any field in the prompt window,

- Move the cursor to the **Keywords** field using the Tab key.
- Press **F1** to see help for this field.

The Help window with help for the D spec keywords will appear. If it doesn't appear automatically, you might have to bring it to the foreground by clicking on its icon on the Windows task bar.

You will see words in the help that appear in a different color than the regular text. These are help links, and they show that there is additional help available on that word or phrase

- Click on any **link** to see specific help for that item.
- Minimize the **Help** window.

To get to the prompt window from the maximized editor window without bringing the size of the editor window down, I suggest you park the prompt window on the left task bar as a Fast view.

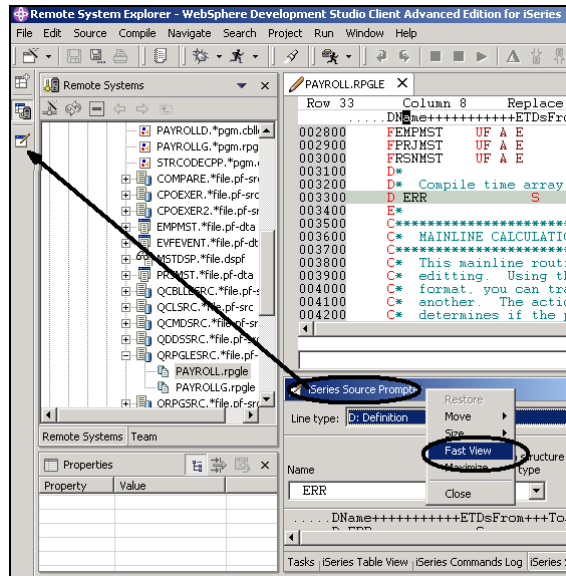


Figure 25: Prompter window moved to fast view on taskbar

- Right click on the prompt window heading
- Select the **Fast view** option from the pop up menu

You will see the prompt window icon on the task bar on the left hand side of the workbench

- Maximize the editor window
- Select a line in the editor window and press **F4** to prompt for a line

The prompt window will be placed on top of the editor window

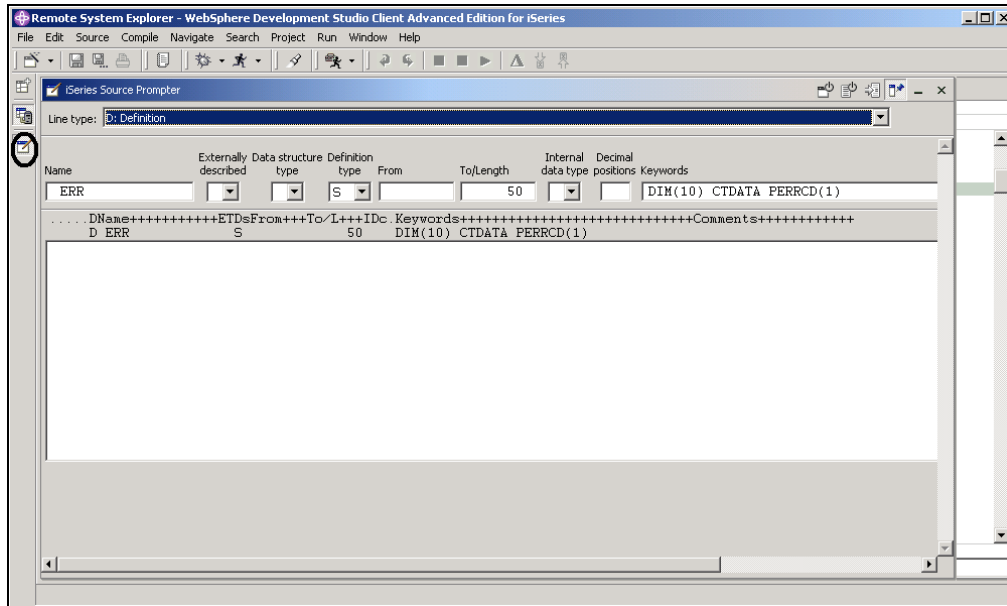


Figure 26: Prompt window on top of editor window

- Click on **Prompter icon** on the task bar to minimize the prompt window

Note: On the prompt window toolbar you can use the three push buttons to: disable prompt view, disable syntax checking, and toggle insert mode

Indenting Source

When editing ILE RPG source, it can be difficult to determine the beginning and ending of constructs. The indent option allows you to view your source with constructs in an indented mode.

- Select the **Source** option from the workbench menu bar
- Select the **Show Indentation** option from the pull down menu

The indented view is displayed at the bottom of the workbench.

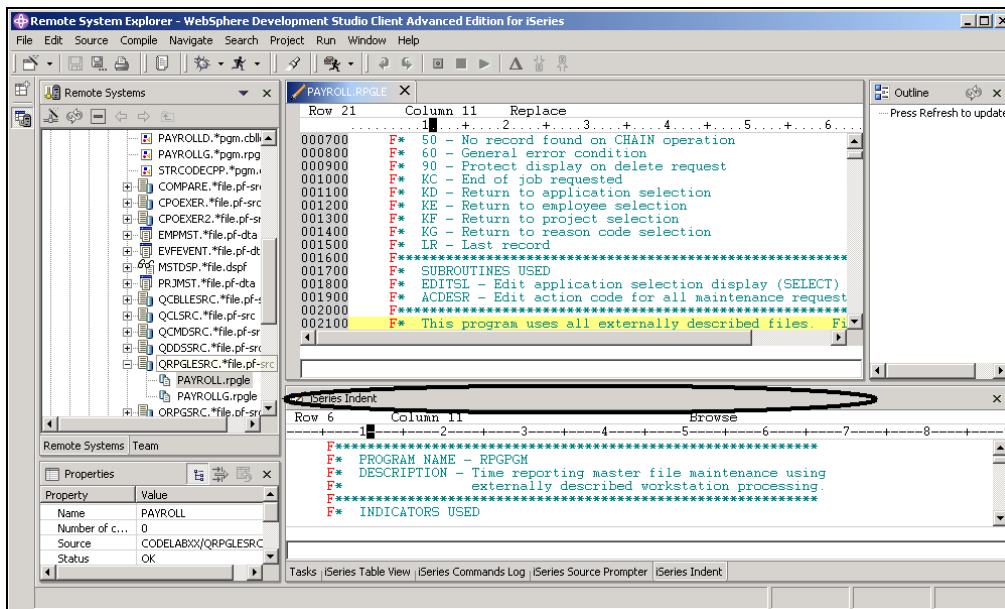


Figure 27: Indent view at bottom of workbench

To get the indented view displayed as full view,

- Double click on its **window heading**.

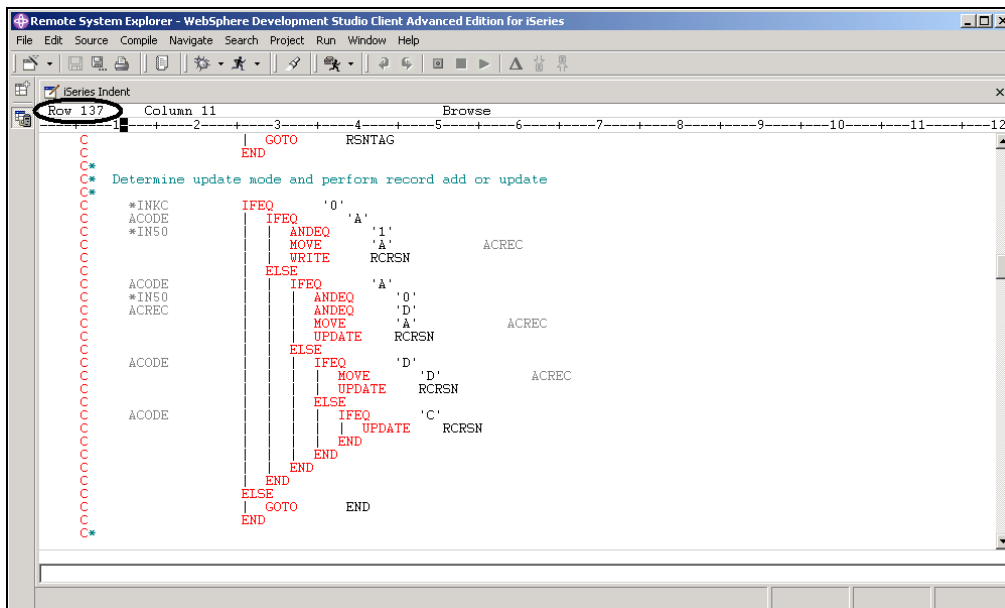


Figure 28: Maximized Indent view

- Scroll down to **line 137**

In this area you see some nested conditions with indented lines, as you will notice this helps to recognize the beginning and ending of these conditions.

Tip: You can move this view as a Fast view to the left task bar as well, if you plan to use this view frequently.

Note: The **INDENTED** view is Browse mode only and cannot be edited.

- Switch back to the editor window with the **PAYROLL** program

Find and Replace

The LPEX editor also has a powerful find and replace text feature.

- Press **Ctrl+Home** to go to the top of the file.
- Select the **Edit** option from the workbench menu bar
- Select the **Find/Replace** option from the pull down menu (or press **Ctrl+F**).

The Find /Replace dialog appears at the bottom of the editor window.

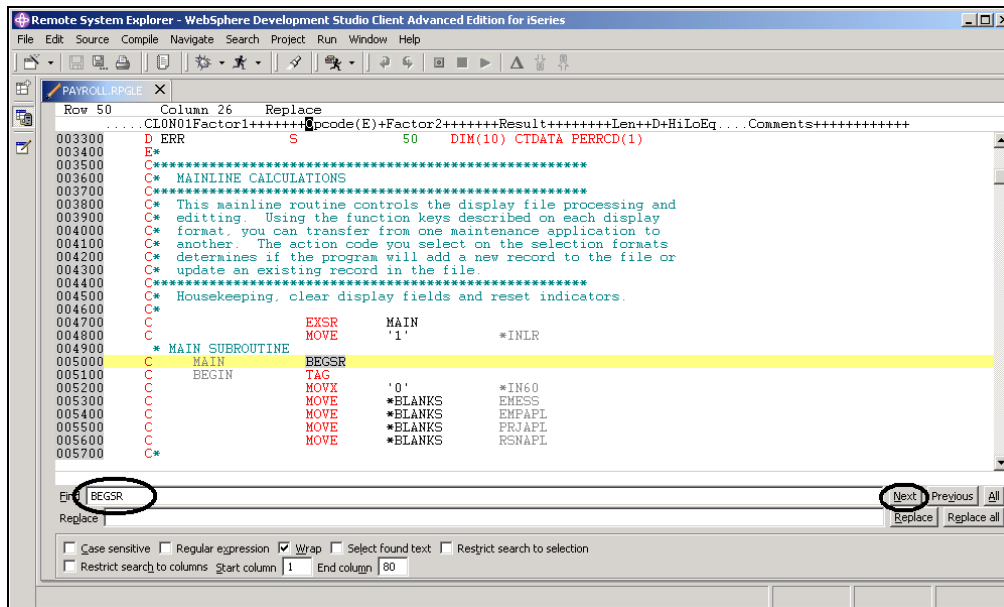


Figure 29: Find/Replace dialog

At the bottom of this dialog, you will notice that you have some options to select from i.e., search only in certain columns, etc. I want you to find the first occurrence of **BEGSR**,

- In the **Find** entry field, enter **BEGSR** to find the start of a subroutine. Make sure the **Replace** entry field is blank. You would use this field for text replacement.

You will notice that the editor moves the active line, to line 50, which contains the first **BEGSR** phrase in the file.

- Click the **Next** push button (or Press **Ctrl+N**) to go to the next location of **BEGSR** in the file.

Filtering Lines

The CODE Editor allows you to filter or subset your source so that you see only lines containing a given string.

Filtering lines makes it quick and easy to find lines without having to scroll through your source.

I want you to filter for the operation code BEGSR so you can see all lines in your source code containing the phrase BEGSR



Figure 30: Selected operation code BEGSR

- Select the **BEGSR** operation code in the edit window
- Select the **Edit** option from the workbench menu bar
- Select the **Filter Selection** option from the pull down menu

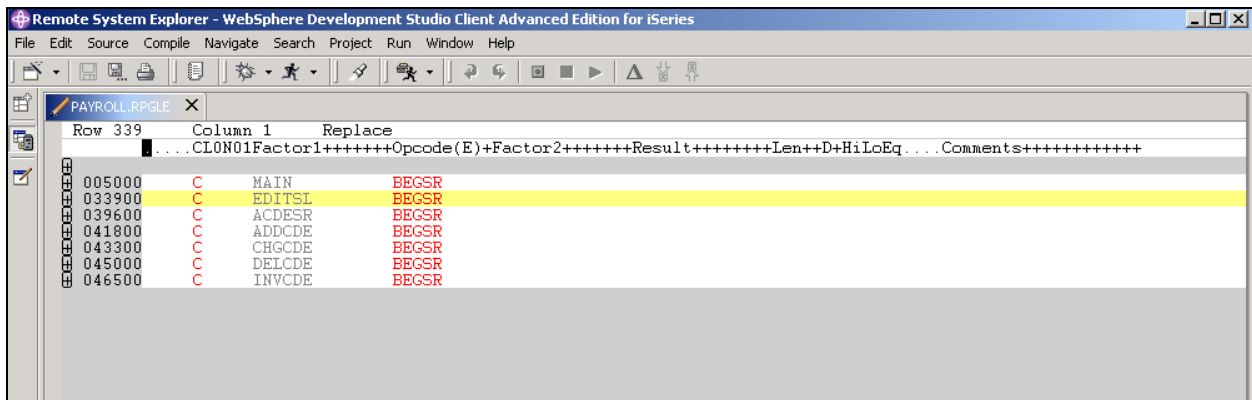


Figure 31: Editor window showing all lines with BEGSR phrase

- Move the **cursor** down **two lines**, to line 339
- Click on the **plus** beside the line to expand this section

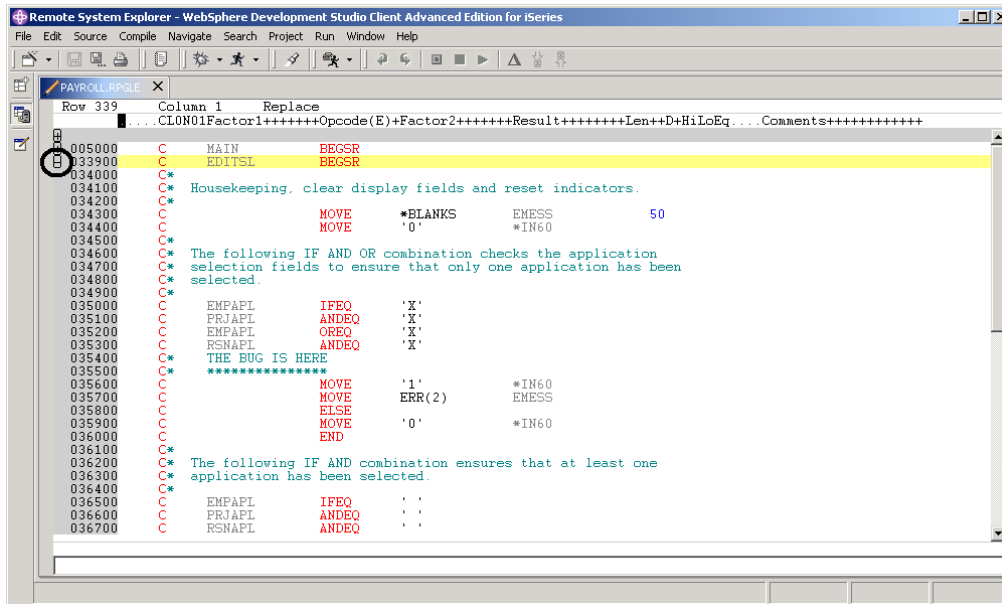


Figure 32: Section expanded

Show all of the source again by:

- Selecting the **Edit** option on the workbench menu bar
- Selecting the **Show all** option or by pressing (**Ctrl+W**).

Your cursor is still positioned on the same line that you moved the cursor to, even though all lines are now showing.

Using Filters

To help you navigate quickly through your ILE RPG source the editor allows you to filter lines based on the line type. Imagine you want to see where all the subroutines are defined in your source:

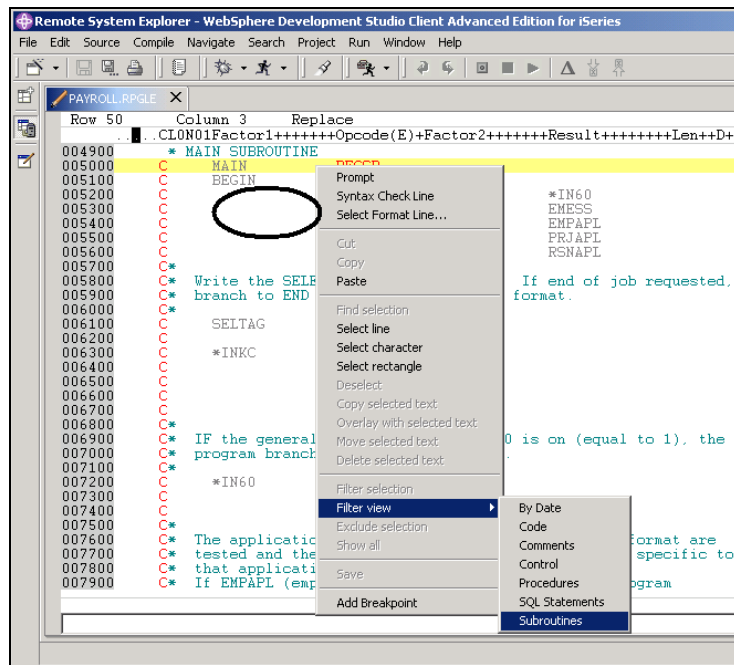


Figure 33: Editor pop up menu with Filter sub menu

- Right click in the *editor window*
- Select the *Filter view* option from the pop up menu
- Select the *Subroutines* option from the sub menu.

All subroutines specifications are displayed allowing you to move quickly and easily to the area in your file where the desired subroutine is.

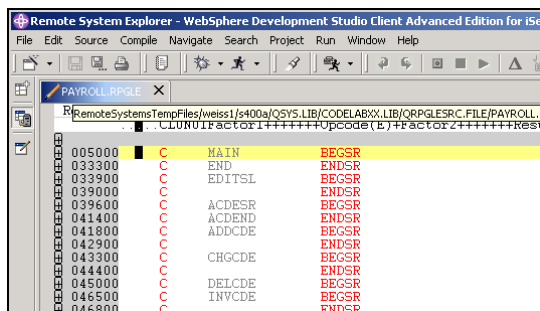


Figure 34: Subroutine filter in action

- Move your cursor to the line with the subroutine declaration **CHGCDE**. (line 433)
- Show all lines in this subroutine by clicking on the **+** sign beside it

Now you can work with the source inside this subroutine.

Multi-File Search Utility

If you would like to search through the members in a source physical file or through the files in a local directory, you can use the *Search* tool.

- Select the *Search* option on the workbench menu bar.

The Search dialog appears.

In the *Search string* entry field,

- Type ENHRS

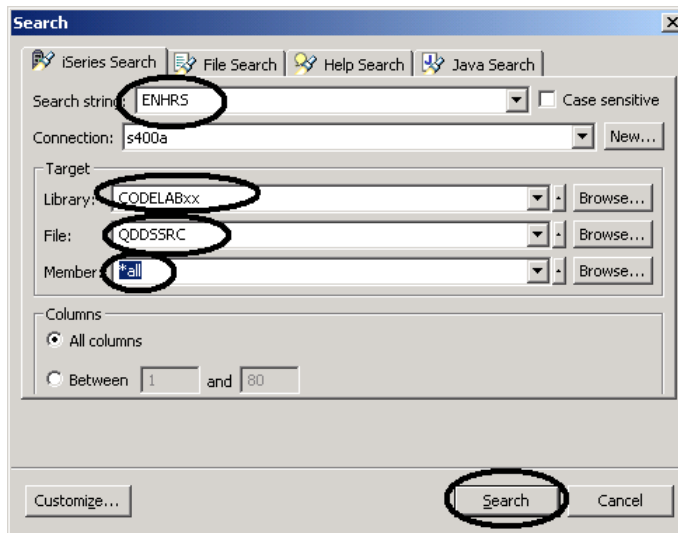


Figure Error! No text of specified style in document.-35: File Search dialog

The *Connection* entry field should contain your iSeries server name, otherwise enter it there

In the *Target* area

- Enter *CODELABxx* in the **Library** entry field, where *xx* is your workstation number,
- Enter *QDDSSRC* in the **File** entry field, to search all members in this source physical file.
- Enter **All* in the member entry field
- Click the **Search** button.

The Multi-File Search window lists all the lines in all the files that reference ENHRS.

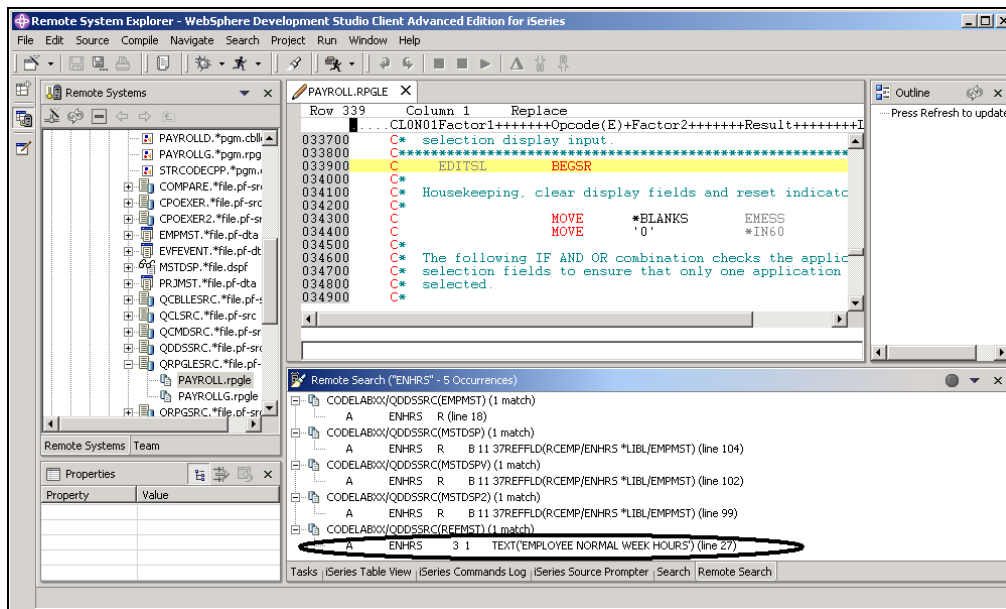


Figure Error! No text of specified style in document.-36: Search result

- Double-click on *the last line in the list*

A ENHRS 3 1 TEXT('EMPLOYEE NORMAL WEEK HOURS')

The screenshot shows the Advanced Edition for iSeries editor with a table of fields and their functions. The row for ENHRS is highlighted, and the REFMS1 member is loaded into the editor. The table contains the following data:

Row	Column	Name	Len	TDp	Functions
000012	A	DATFL	6	0	TEXT('DATE FIELD')
000013	A				COLHDG('DATE' 'MMDDYY')
000014	A	EMPLOYEE MASTER RELATED FIELDS			
000015	A	EMPNO	6	0	TEXT('EMPLOYEE NUMBER')
000016	A				COLHDG('EMPLOYEE' 'NUMBER')
000017	A	ENAME	30		TEXT('EMPLOYEE NAME')
000018	A				COLHDG('EMPLOYEE' 'NAME')
000019	A	EMCAT	1		TEXT('EMPLOYEE CATEGORY')
000020	A				COLHDG('EMP' 'CAT')
000021	A	EDEPT	5		TEXT('EMPLOYEE DEPARTMENT')
000022	A				COLHDG('EMPL' 'DEPT')
000023	A	ELOCN	30		TEXT('EMPLOYEE LOCATION')
000024	A				COLHDG('EMPLOYEE' 'LOCATION')
000025	A	EUSRI	8		TEXT('EMPLOYEE USRID')
000026	A				COLHDG('EMPLOYEE' 'USRID')
000027	A	ENHRS	3	1	TEXT('EMPLOYEE NORMAL WEEK HOURS')
000028	A				COLHDG('NORMAL' 'WK HRS')
000029	A	EPHRC	5	1	TEXT('PROJECT HOURS CURRENT MONTH')
000030	A				COLHDG('PRJ HRS' 'CUR MTH')
000031	A	EPHRY	7	1	TEXT('PROJECT HOURS YEAR TO DATE')
000032	A				COLHDG('PRJ HRS' 'YTD')
000033	A	EPHRP	7	1	TEXT('PROJECT HOURS PRIOR YEAR')
000034	A				COLHDG('PRJ HRS' 'PRIOR YR')
000035	A	EPNRC	5	1	TEXT('NON PROJECT HOURS CURR MONTH')
000036	A				COLHDG('NON PRJ HRS' 'CUR MTH')
000037	A	EPNRY	7	1	TEXT('NON PROJECT HOURS YTD')
000038	A				COLHDG('NON PRJ' 'HRS YTD')
000039	A	EPNRP	7	1	TEXT('NON PROJECT HOURS PRIOR YEAR')
000040	A				COLHDG('NON PRJ HRS' 'PRIOR YR')
000041	A	EHVRK	5	1	TEXT('EMPLOYEE HOURS WORKED')
000042	A				COLHDG('EMP HRS' 'WORKED')

The Remote Search window shows 5 occurrences of ENHRS:

- CODELABXX/QDDSSRC(EMPMS1) (1 match)
- A ENHRS R (line 18)
- CODELABXX/QDDSSRC(MSTDSP) (1 match)
- A ENHRS R B 11 37REFFLD(RCEMP/ENHRS *LIBL/EMPMS1) (line 104)
- CODELABXX/QDDSSRC(MSTDSP) (1 match)
- A ENHRS R B 11 37REFFLD(RCEMP/ENHRS *LIBL/EMPMS1) (line 102)
- CODELABXX/QDDSSRC(MSTDSP2) (1 match)
- A ENHRS R B 11 37REFFLD(RCEMP/ENHRS *LIBL/EMPMS1) (line 99)
- CODELABXX/QDDSSRC(REFMS1) (1 match)
- A ENHRS 3 1 TEXT('EMPLOYEE NORMAL WEEK HOURS') (line 27)

The member *REFMS1* is automatically loaded into the editor and the cursor is placed on the correct line. Wow !

Comparing Files

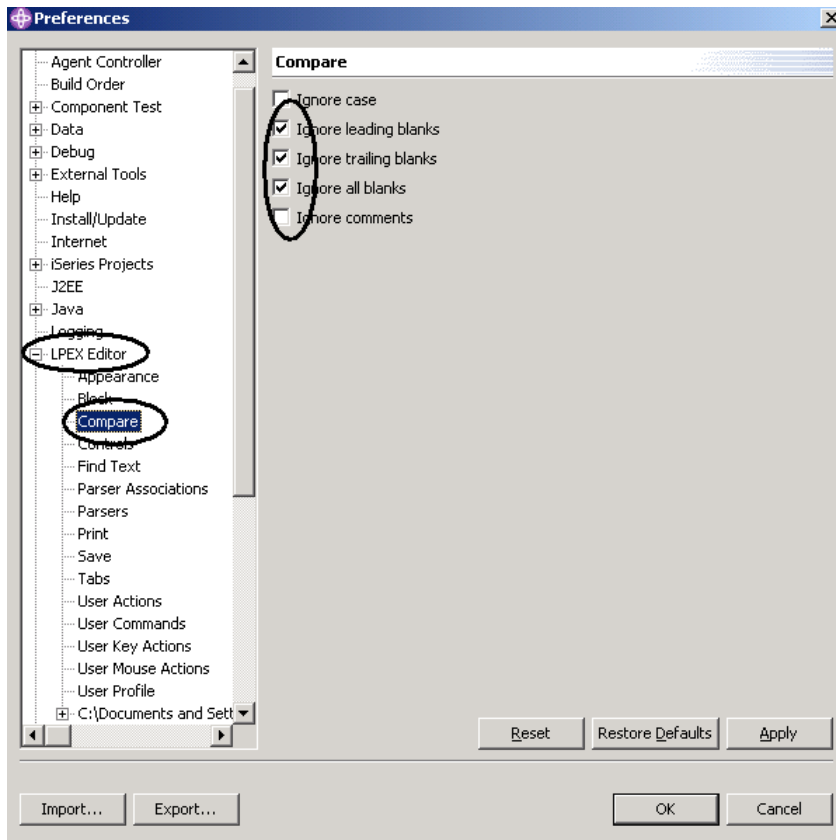
If your product undergoes many changes, you will find the Compare utility useful. It allows you to compare different versions of a program and find the differences.

There are 2 ways in doing the compare, use the compare in Eclipse or using the Compare tool in the CODE tool, the compare in the CODE tool is a bit more intuitive but requires to start the CODE editor outside of the workbench .

First lets use the built-in compare

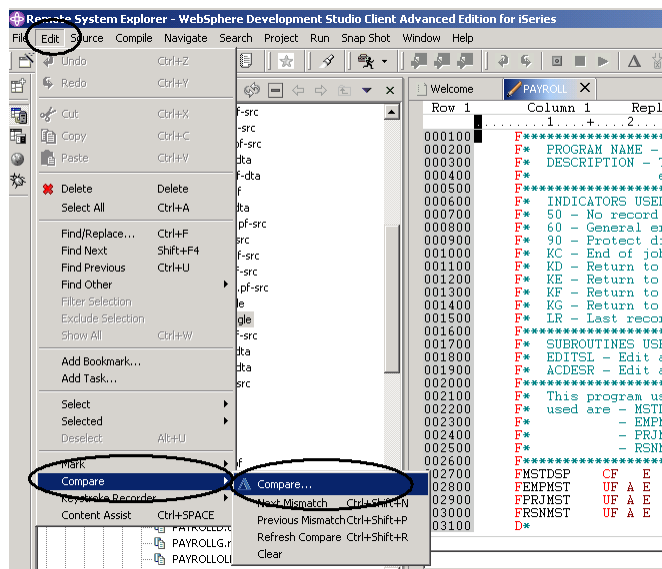
Before you do the compare you need to change the preferences to exclude blank comparison.

- Select the *Window* menu option on the workbench menu bar
- Select the *Preferences* option from the pull down menu
- Expand the Lpex editor node from the tree view in the preferences dialog
- Select the *Compare* node from the Lpex Editor branch

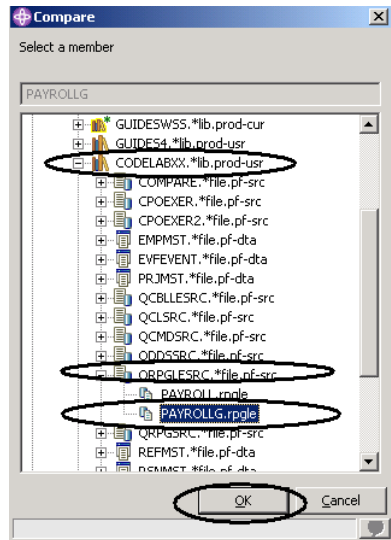


- In the Compare dialog make sure that the **Ignore blanks** check boxes are selected
- Click the **Ok** push button on the preferences dialog

Back in the edit window of the Payroll member



- Select the **Edit** option on the workbench menu bar
- Select the Compare option from the pull down menu
- Select the Compare option from the sub menu



In the Compare dialog:

- Expand your **connection**
- Expand the ***LIBL** node
- Expand the **CODELABxx** node
- Expand the **QRPGLSRC** node
- Select member **PayrollG**
- Click the **Ok** push button on the Compare dialog

The editor now will show the differences of these two members PAYROLL and PAYROLLG

You can move from mismatch to mismatch by going back to the Compare menu option under the Edit menu option or by using short cut keys **CTRL/Shift and N**.

The color of the PAYROLL and PAYROLLG will be different so you have an indication where mismatched lines belong to.

```

003800 C* This mainline routine controls the display file processing and
003900 C* editing. Using the function keys described on each display
004000 C* format, you can transfer from one maintenance application to
004100 C* another. The action code you select on the selection formats
004200 C* determines if the program will add a new record to the file or
004300 C* update an existing record in the file.
004400 C*****
004500 C* Housekeeping, clear display fields and reset indicators.
004600 C*
004700 C C C EXSR MAIN
004800 C C C MOVE '1' *INLR
004900 C * MAIN SUBROUTINE
005000 C MAIN BEGSR
005100 C C C TAG
005200 C C C MOVE '0' *IN60
005300 C C C MOVE '0' *IN60
005400 C C C MOVE *BLANKS EMESS
005500 C C C MOVE *BLANKS EMPAPL
005600 C C C MOVE *BLANKS PRJAPL
005700 C C C MOVE *BLANKS RSNAPL
005800 C*
005900 C* Write the SELECT format to display. If end of job requested,
006000 C* branch to END TAG; ELSE edit SELECT format.
006100 C C C SELTAG TAG
006200 C C C *INKC EXFMT SELECT
006300 C C C '1'
006400 C C C GOTO END
006500 C C C ELSE
006600 C C C EXSR EDITSL

```

To end the Compare session

- Select the **Edit** option on the workbench menu bar
- Select the **Compare** option from the menu pulldown
- Select the **Clear** option from the sub menu

Using the compare tool in the CODE editor

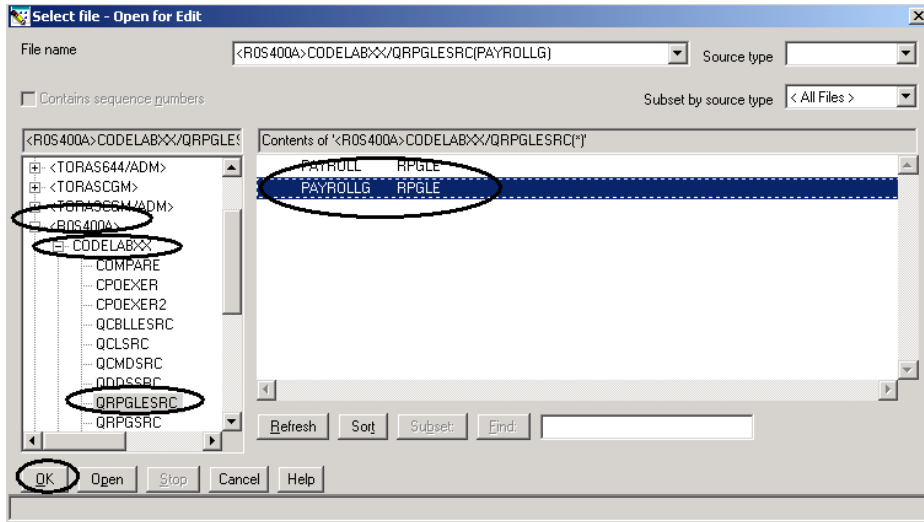
In the Remote systems view

- Right click on member **PAYROLL** in **QRPGLESRC**
- Select the **Open with** menu option from the po-up menu
- Select the **CODE editor** option from the sub menu

This opens the CODE editor window with the PAYROLL member, it will come up in browse mode since it is locked by the LPEX editor session

Open the PAYROLLG member

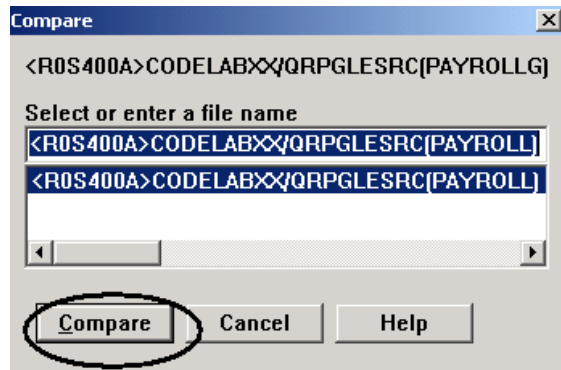
- Select the File option from the CODE editor menu bar
- Select the Open option from the pull down window



In the Open dialog,

- Expand the *R0s400A* connection (the RSE connection)
- Expand library *CODELABxx*
- Select file *QRPGLESRC*
- Select member *PAYROLLG* from the member list on the right side
- Click the *Ok* push button on the Open dialog
-

From the **Actions** menu, select **Compare...** The **Compare** dialog appears.



All entries are preloaded

- **Click** on the **Compare** push button. The editor now has the *PAYROLLG* member loaded on the left and member *PAYROLL* loaded on the right. In between the two members are two long vertical blue lines with horizontal yellow and red bars highlighting the differences in these members.

```

CODE - <R05400A>CODELABXX/QRPGLESRC(PAYROLL): 2
File Edit View Actions Compare Options Windows Help
<R05400A>CODELABXX/QRPGLESRC(PAYROLL): 2
Row 1 Column 1 Replace
000001 F*****
000002 F* PROGRAM NAME - RPGPGM
000003 F* DESCRIPTION - Time reporting master file maintenance using
000004 F* externally described workstation processing.
000005 F*****
000006 F* INDICATORS USED
000007 F* 50 - No record found on CHAIN operation
000008 F* 60 - General error condition
000009 F* 90 - Protect display on delete request
000010 F* KC - End of job requested
000011 F* KD - Return to application selection
000012 F* KE - Return to employee selection
000013 F* KF - Return to project selection
000014 F* KG - Return to reason code selection
000015 F* LR - Last record
000016 F*****
000017 F* SUBROUTINES USED
000018 F* EDITSL - Edit application selection display (SELECT)
000019 F* ACDESR - Edit action code for all maintenance requests
000020 F*****
000021 F* This program uses all externally described files. Files
000022 F* used are - MSTDSP - maintenance display file
000023 F* - EMPHST - employee master file
000024 F* - PRJHST - project master file
000025 F* - RSNHST - reason code master file
000026 F*****
000027 FMSTDSP CF E WORKSTH
000028 FEMPHST UF A E K DISK
000029 FPRJHST UF A E K DISK
000030 FRSNHST UF A E K DISK
000031 D*
000032 D* Compile time array containing error descriptions.
000033 D ERR S 50 DIH(10) CTDATA PERRCD(1)
000034 E*
000035 C*****
000036 C* MAINLINE CALCULATIONS
000037 C*****
000038 C* This mainline routine controls the display file processing and
000039 C* editing. Using the function keys described on each display
000040 C* format, you can transfer from one maintenance application to
000041 C* another. The action code you select on the selection formats
000042 C* determines if the program will add a new record to the file or
000043 C* update an existing record in the file.
000044 C*****
000045 C* Housekeeping, clear display fields and reset indicators.
000046 C*
000047 C EXSR MAIN
000048 C MOVE '1' *INLR
000049 C
000050 C * MAIN SUBROUTINE
000051 C MAIN BEGSR
000052 C BEGIN TAG
000053 C MOVE '0' *IN60
000054 C MOVE *BLANKS EMESS
000055 C MOVE *BLANKS EMPAPL
000056 C MOVE *BLANKS PRJAPL
000057 C MOVE *BLANKS RSNAPL
  
```

Use the vertical scroll bars to move within the files. As you scroll, you will see where the differences are in the members. RPG experts will notice that PAYROLL has some errors in it. We will fix these in a few moments.

From the **Compare** menu (which was inserted while performing this action), select **Exit Compare** to go back to the original view.

Close the CODE editor and continue working in the workbench

Syntax Checking

One of the powerful features that the LPEX Editor shares with SEU is its ability to syntax check your source. Syntax checking can be done either when the cursor leaves each line of source or all at once on either the currently selected source or on the entire file. In this part of the exercise you will create a syntax error and will be immediately prompted to correct it.

- Move the cursor to *line 198* which contains *'EXSR ACDESR'*.

You might already be on that line but if not, type the line number in the sequence number column, or scroll down

- Append an **X** to the **EXSR** op-code to make it **EXSRX**.
- Move the **cursor off** of the line.

An error message appears to draw attention to the error.

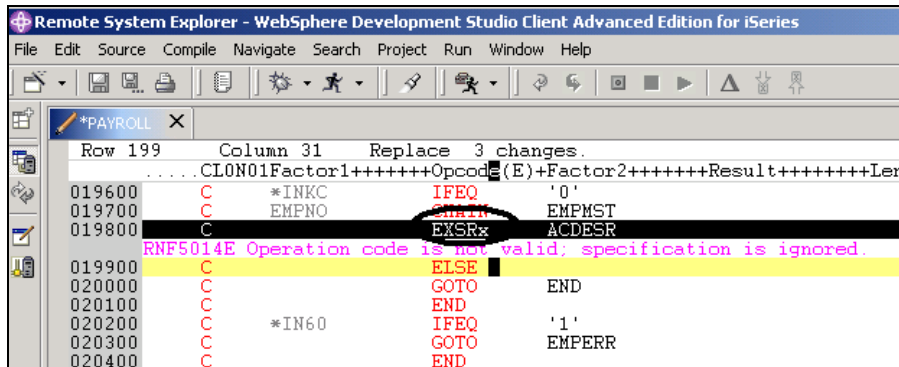


Figure 37: Editor window with syntax error

- Move the **cursor** onto the **pink error message**.
- Press **F1**.

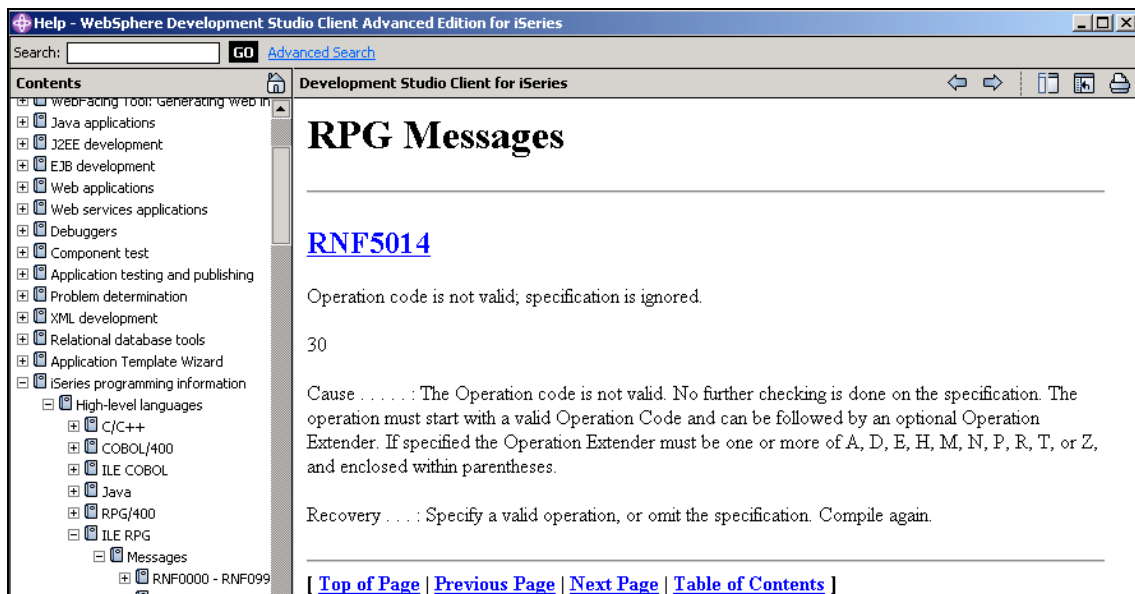


Figure 38: Second level help for syntax error

This opens a window with second level help for the error.

- Minimize the **help window**.
- Change **EXSRX** to **EXSR** to correct the error.
- Move the **cursor off the line** you just fixed.

The error message is automatically removed from the editor.

Tip: You can toggle automatic syntax checking by using the *Windows*→*Preferences* option on the workbench menu bar and the *Remote Systems*+*LPExEditor Parsers*+*ILE RPG* nodes in the preference tree view

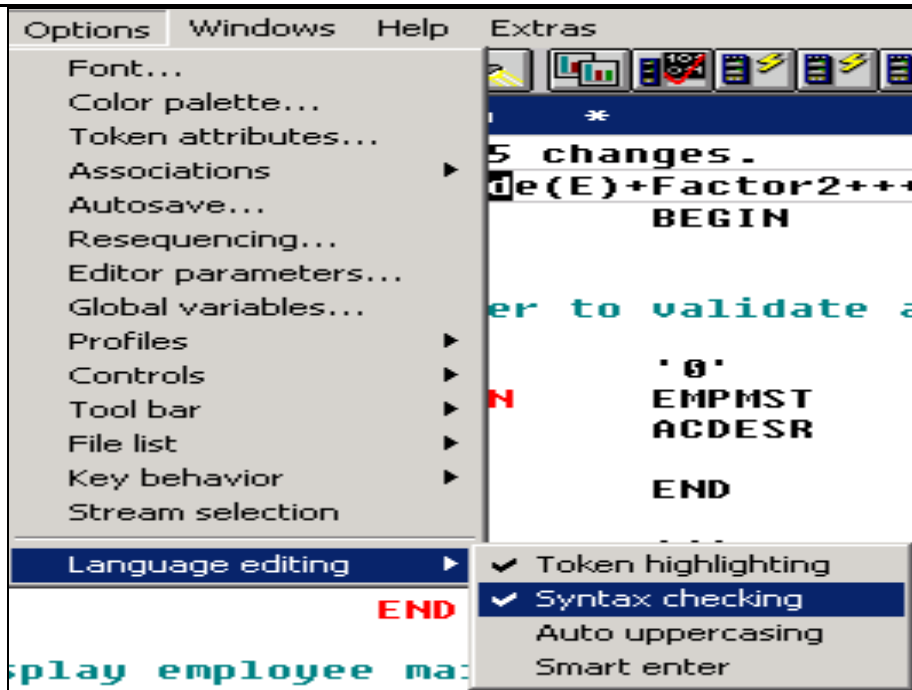


Figure 39: Preferences dialog to toggle syntax checking

Verifying Your Source

Now you get to play with one of the most powerful and unique features of the RSE -- the **Program Verifier**. The verifier checks for semantic (compile) errors on your workstation so that you can guarantee a clean compile on the iSeries. Think of the host cycles you'll save. It is especially handy when you are writing code but you are disconnected from an iSeries. You can do this because RSE ported the parsing and checking code from the iSeries host compilers to the workstation. The Error List window lists the errors that are found and their severity, inserts the error messages directly into the source and helps you to navigate between the errors.

Invoking the Program Verifier

Before you compile your code on an iSeries, you can make certain that there are no errors by invoking the Program Verifier:

- Select the *Source* option from the workbench menu bar
- Select the *Verify* option from the pull down menu

After a moment the verifier will display an error list underneath the editor window.

ID	Message	Severity	Line	Location	Connection
RNF5178	ENDSR operation is missing for subroutine DELCDE; ENDSR statement is assu...	30	1	CODELAB\QRPGLSRC(PAYROLL)	s400a
RNF7030	The name or indicator SELTAX is not defined.	30	73	CODELAB\QRPGLSRC(PAYROLL)	s400a
RNF7043	Target SELTAX of GOTO or CABxx operation is not a label; the specification i...	30	73	CODELAB\QRPGLSRC(PAYROLL)	s400a
RNF7031	The name or indicator ACDEND is not referenced.	0	414	CODELAB\QRPGLSRC(PAYROLL)	s400a
RNF7066	Record-Format EEMPLSTCTL not used for input or output.	0	27	CODELAB\QRPGLSRC(PAYROLL)	s400a
RNF7066	Record-Format EEMPLSTSL not used for input or output.	0	27	CODELAB\QRPGLSRC(PAYROLL)	s400a

Figure 40: Verifier error list

The error list will show you

1. The error message itself
2. The severity
3. The line number
4. The source location
5. The connection name

Fixing errors

To fix an error in your source go the error list and:

- Double-click on the error **RNF7043**

You are automatically brought back into the editor window to the line where the error occurred. The error on line 73 is a typo. **SELTAX** should really be **SELTAG**. Make the appropriate change.

The only serious remaining error is **RNF5178E**. This error is caused by a missing **ENDSR**.

Note: The verifier could not determine where the **ENDSR** is missing so the line number reported is 1, for this reason you can't just double click on the error message, you need to investigate where the missing statement belongs.

- Move to **line 462** in the editor
- Place the cursor in the **text area** of **line 462**
- Press the **Enter key** to insert a new line.
- In **line 463**, type

C **ENDSR**

Hint: use the Tab key to quickly move to the appropriate column

All the non-informational errors are now fixed.

You can filter out different severities by using the filter menu

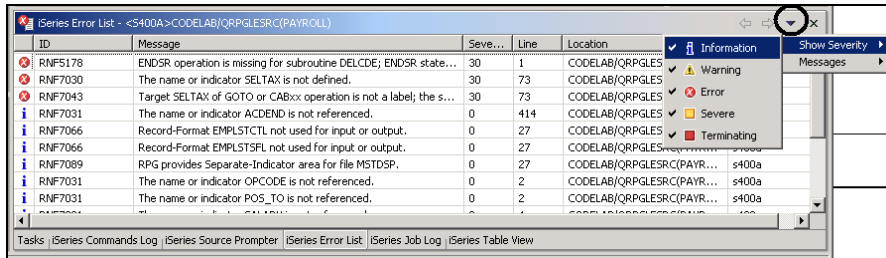



Figure 41: Filter for severity levels

- Click the arrow in the window bar as shown in Figure 41
- Deselect the severities you don't want to see in the list (Information for example)

Saving a Source Member

Before you lose any of your changes, it's a good idea to save them. You can save the member from either:

1. The **File** option on the workbench menu bar
2. The workbench **toolbar** (click on )
3. Press **Ctrl+S**.

Changes are uploaded to the iSeries

- Verify your source again,

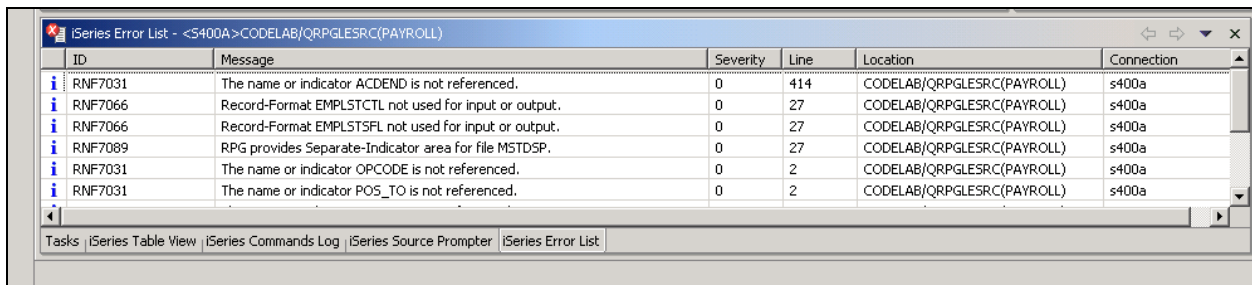


Figure 42: Error list, only informational message are left

Everything should be **OK**, you are ready to compile the program.

Remote compile

The remote compile capability is part of the RSE. It gives you a workstation interface to submit requests to the iSeries to compile, bind, or build objects on the host. It allows for easy access to all the compile options available for all the supported **CRTxxx** commands.

If you used the local program verifier, then your host compiles should be successful -- no wasted iSeries cycles.

However, if there are errors, the host compiler will send the error information back to the workstation and they will be loaded into the Error List window, which behaves just as it did when you did a program verify.

The default for compiling programs is to submit the compile to the batch job queue, here in the lab environment you can run the compiles interactive.

Change the preferences to compile in interactive by:

- Selecting the **Windows** option from the workbench menu bar
- Selecting the **Preferences** option from the pull down menu

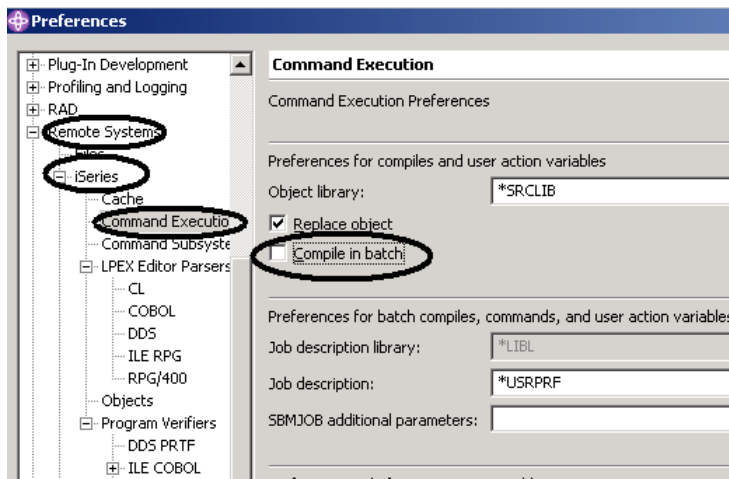


Figure 43: Change Compile command default

- Expanding **Remote Systems**
- Expanding **iSeries**
- Selecting **Command Execution**
- De-selecting the **Compile in batch** check box
- Click the **OK** push button, to get back to the RSE perspective

Starting the compile

Starting a compile is like using any other command in the RSE. In the RSE tree view that shows your expanded library CODELABxx:

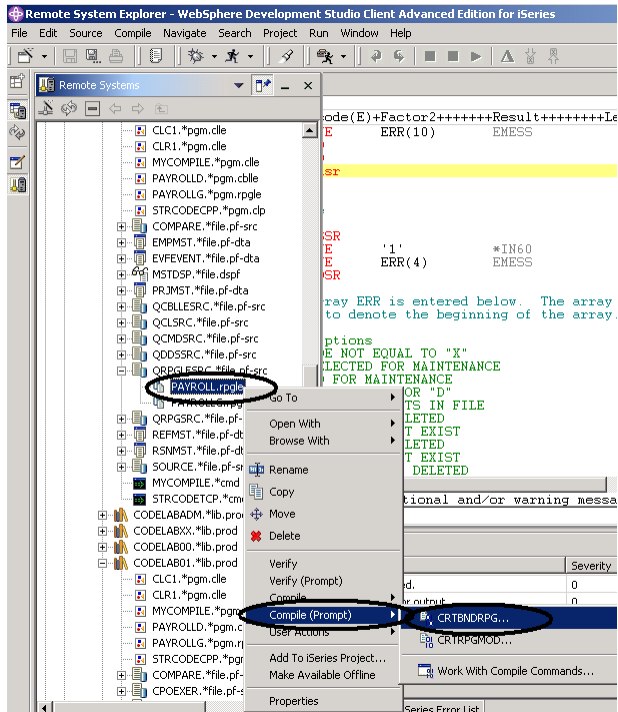


Figure 44: Select member to compile

- Right-click on the **PAYROLL** member in QRPGLSRC
- Select the **Compile (Prompt)** option from the pop-up menu
- Select the **CRTBNDRPG...** option from the sub menu

Compiling Your Source

You will now use the prompt for the CRTBNDRPG command to specify your compile parameters

All entry fields pertaining to names are already filled in with the correct information.

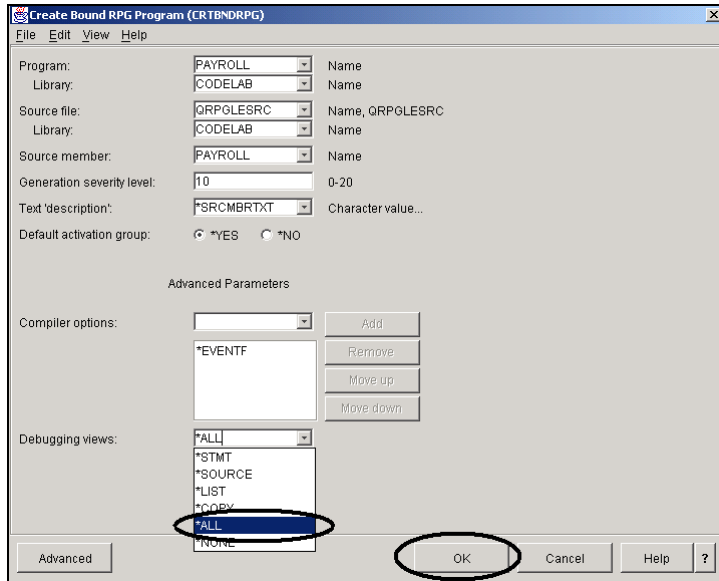


Figure 45: Prompt for CRTBNDRPG

- Change the **Debugging views** parameter to ***ALL**.

If you want check out the other parameters available by clicking the *Advanced* push button

- Click the **OK** push button when you are done.

A dialog box will show that the compile started

The progress bar on the workbench (bottom right corner will indicate that the compile runs)

then the error list will be shown, with no errors, just informational messages

If you are not sure that the compile was successful:

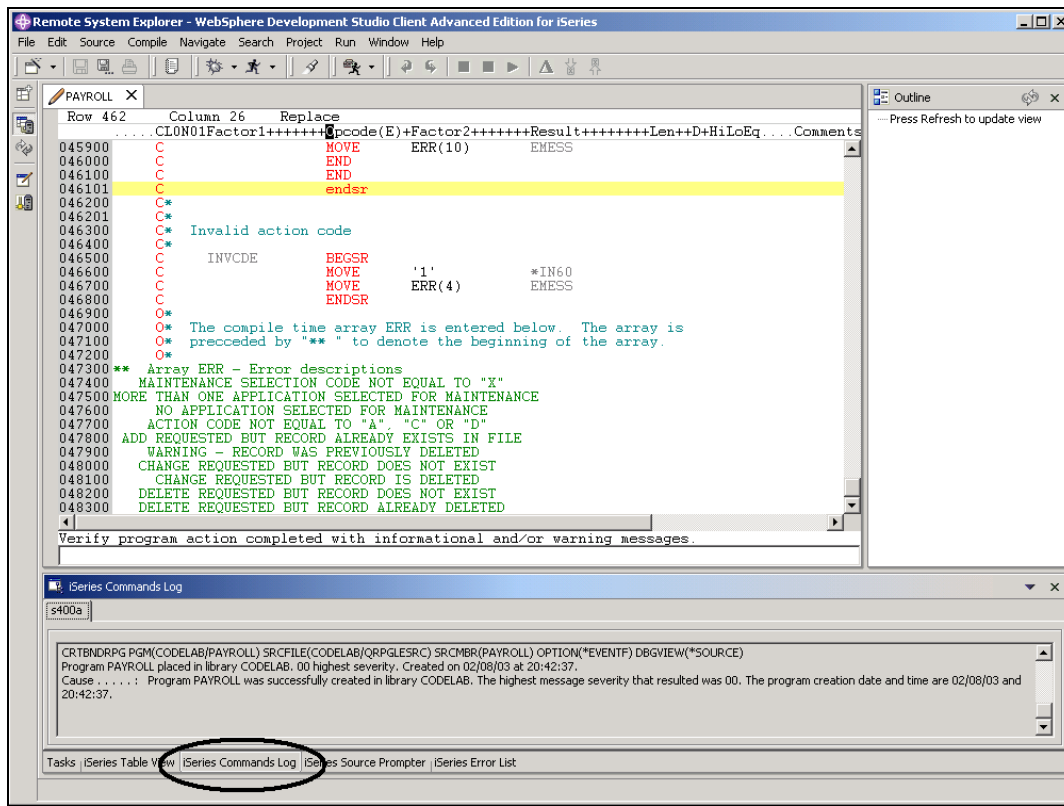


Figure 46: iSeries Commands Log

- Click on the *iSeries Commands Log* tab at the bottom of the workbench

The iSeries table view with Command entry field

You can use the *iSeries table view* inside the RSE to submit commands to the iSeries.

You could change your library list, for example:

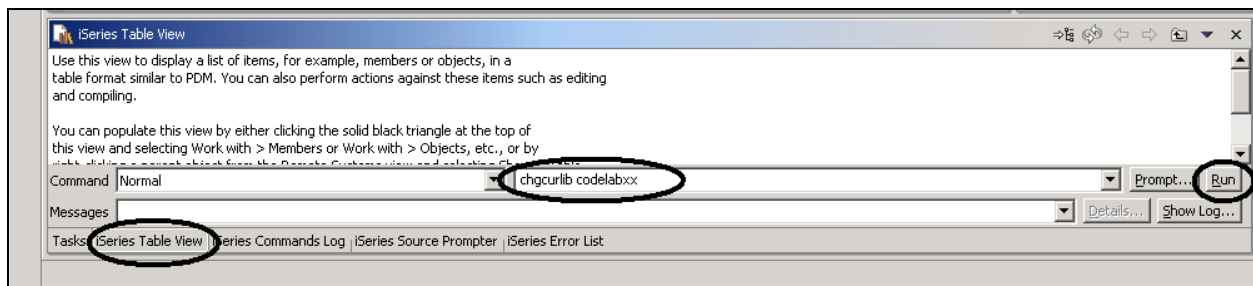


Figure 47: Table view with command entry

- Select the *iSeries Table view* tab from the views at the bottom of the workbench
- Enter in the command entry field: **CHGCURLIB CODELABxx**
- Click the **Run** push button

If you haven't used the table view to show iSeries objects in this view you will get this error message because the table view is not link to an active connection.

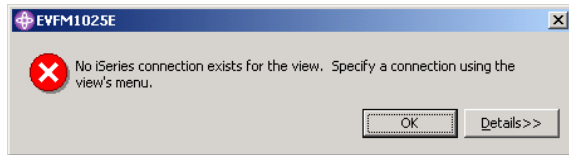


Figure 48: error message when using Table view without active connection

If you get this message:

- Go to the **RSE tree** view
- Right click on **QRPGLESRC** file

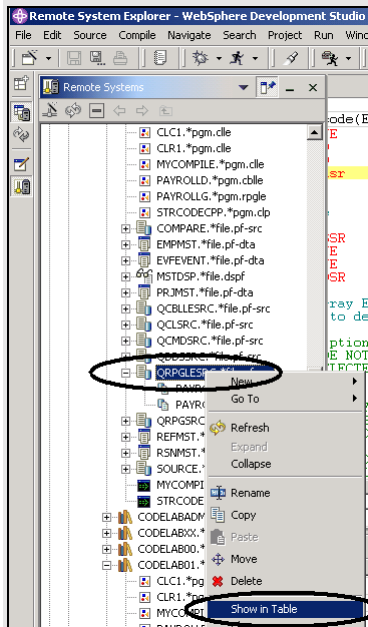


Figure 49: Select Table view to connect it to iSeries

- Select the **Show in Table** option from the pop up menu

The table view is now populated with the member in the selected source file

- Run the **CHGCURLIB** again

The command will run on the iSeries and after completion you will see the completion message on the bottom of the Table view.

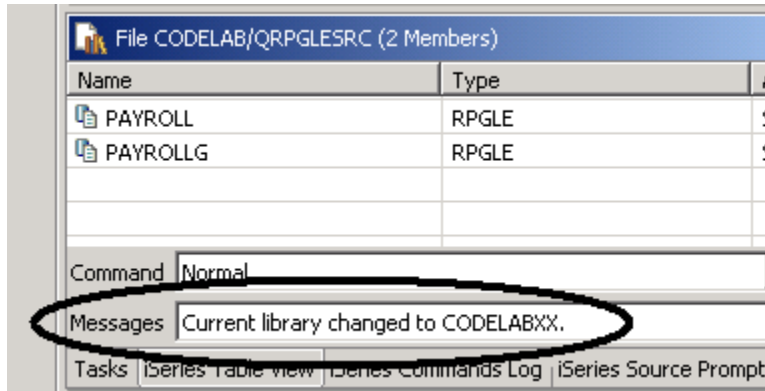


Figure 50: Completion message for command

Tip: You can also connect to other than iSeries systems with the Remote System Explorer and Launch commands for these systems as well, i.e. your local system, or LINUX.

Interactive Connection to the iSeries

Communications between the iSeries and your workstation can be configured for:

1. RSE server job, the one that you use currently
2. Interactive job to test 5250 applications

If you need an Interactive communications link to the iSeries server, you need a 5250 emulator to start the interactive job on the iSeries. The communications link will be established through the emulation session by using an OS/400 command to initiate the session to your workstation. For the next task you will be using an interactive connection in this Lab.

Using an interactive connection

Start a 5250-emulation session.

Sign on to the iSeries with your userid and password **CODELABxx** where **xx** is your workstation number (01, 02, etc.).

Note: Instead of the **Enter** key, you may have to use the **Ctrl** key in your 5250-emulation session.

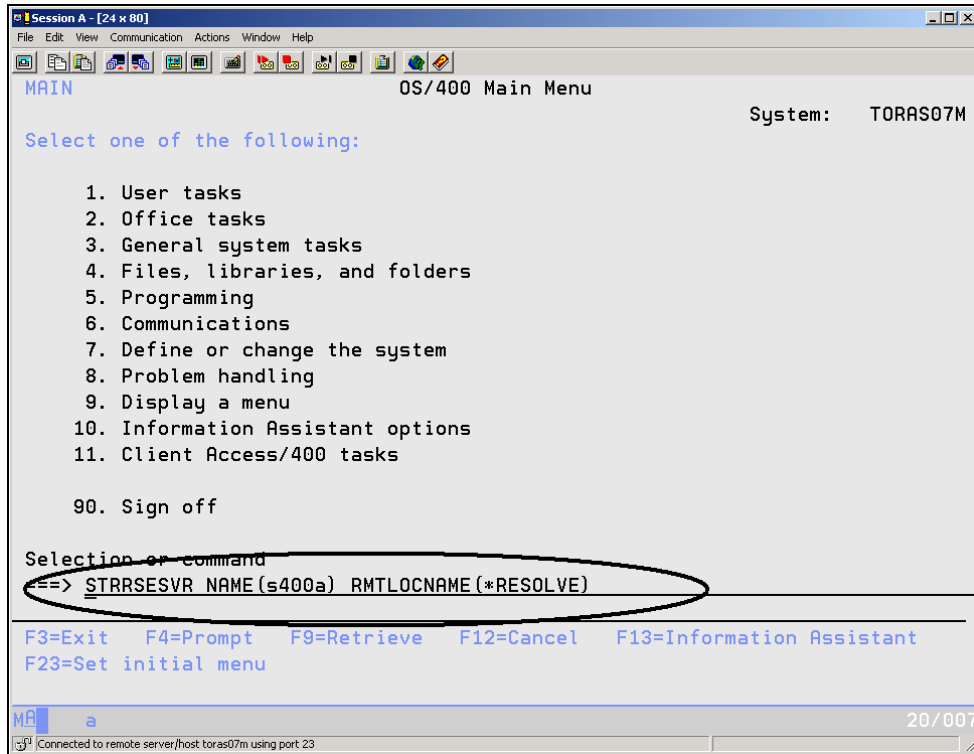


Figure 51: Start RSE interactive connection

- Key in the following command

STRRESVR NAME (s400a) RMTLOCNAME(*RESOLVE

The ***RESOLVE** keyword will get the IP address of your workstation and with this information the **RSE server** will communicate with the **RSE daemon** that runs on your workstation.

You should see a screen as shown in Figure 52.

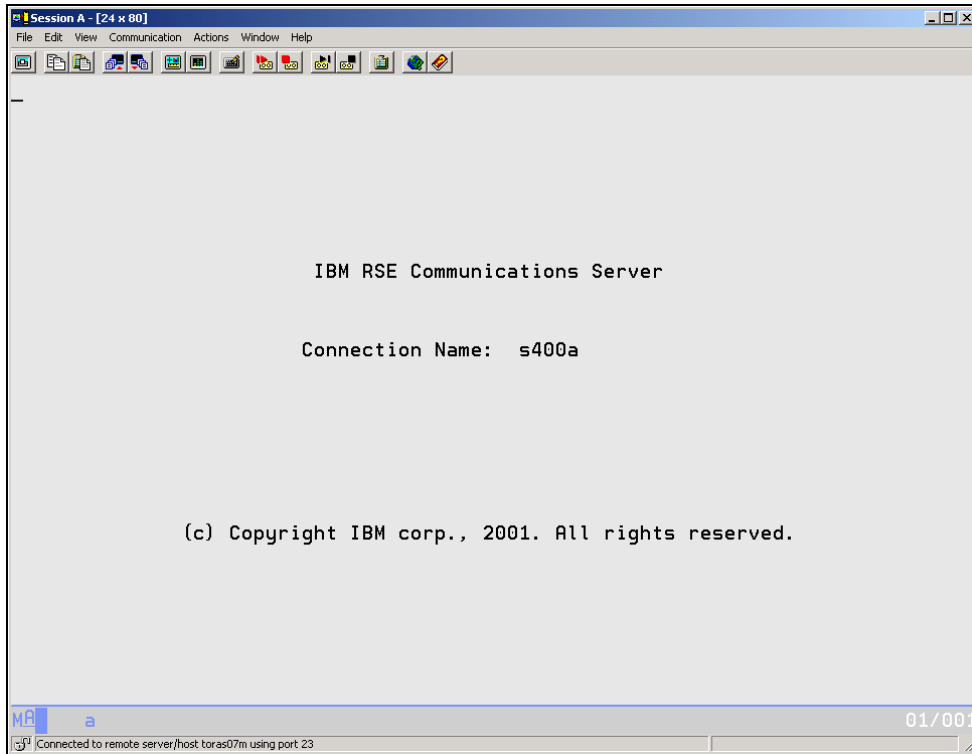


Figure 52: RSE connection screen

Note: This screen will stay this way, don't wait for it to finish, this session is the interactive session for interactive commands started from the RSE.

Running the PAYROLL Program

In this part of the exercise you will run the *PAYROLL* program that you just compiled.

In the RSE tree view

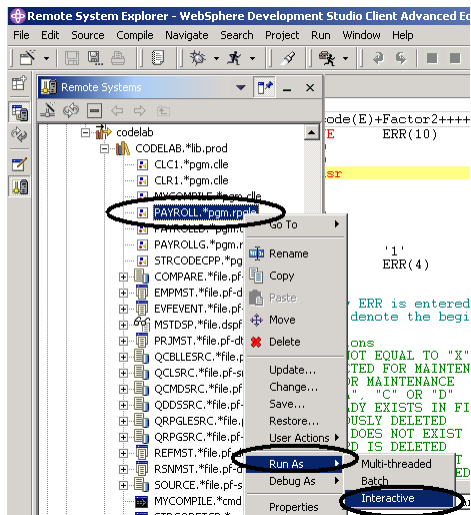


Figure 53: Run program in interactive job

- Locate the **PAYROLL** program that you created
- Right click on the **PAYROLL** program icon in the RSE tree view
- Select the **Run As** option from the pop up menu
- Select the **Interactive** option from the sub menu
- Switch to your **5250-emulation** session.

You will see the **Start Menu** of the payroll program

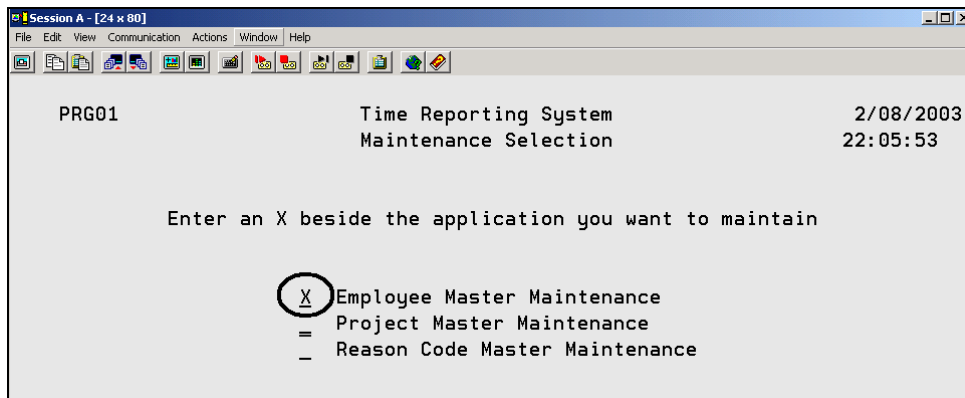
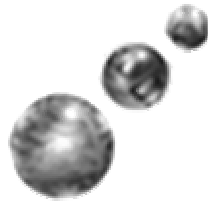


Figure 54: Payroll Start Menu

- Place an **'X'** beside **Employee Master Maintenance**.
- Press the **Enter** key.
- Type **123** for the Employee Number.
- Type **A** for the Action Code to add employee **123**.
- Press the **Enter** key.

- Type any information you like about the employee.
- Press the **Enter** key.
- Play in the application as much as you like.
- Press **F3** to end the PAYROLL program.

We hope you enjoyed the exercise now you will switch gears, you will look at the 5250 User Interface Design tool in WebSphere Development Studio



Exercise 3: Exploring Remote System Explorer

Most of the functionality of the CODE Project Organizer has been replaced by WebSphere Studio functionality with the exception of accessing ADM parts.

The **Remote Systems Explorer** is replacing PDM (Program Development Manager) on the workstation. It currently doesn't have all the function of PDM but will overtime be a full replacement for PDM.

It allows you to:

- Simplify your work by giving you quick access to lists of iSeries libraries, objects, members, IFS files, Unix files, and local files.
- Use the context-sensitive pop-up menus on these lists to perform actions such as start the CODE Editor, CODE Designer, or Distributed Debugger or other common iSeries actions.
- Use the **Work with User Actions** option to create and manage your own user-defined actions and have them appear in the pop up menus.
- Use the command support to increase your productivity by allowing you to enter and repeat iSeries or local commands without switching to an emulator session.

In the following exercise you will use the **Remote Systems Explorer (RSE)** perspective to work with the iSeries objects that you used in the previous exercise. You will also see how easy it is to perform actions and define your own actions. In short, you'll see how **Remote Systems Explorer** can organize and integrate your work and make that work easier.

Creating a library filter

In the RSE perspective, you now need to get to the iSeries objects you want to work with

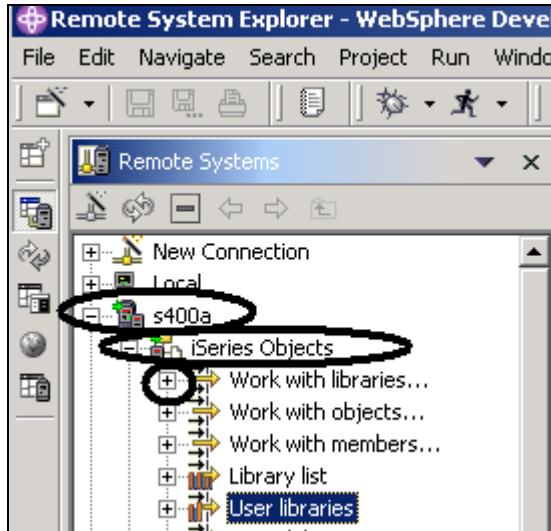


Figure 55: Expand Work with libraries node

In the previous exercises you have worked with the library list filter, now you will create your own library filter. First you will need to specify the library you want to work with:

- Expand the **connection node** that connects to your iSeries host, by clicking on the + sign beside it.
- Expand the **iSeries Objects** node

To create a new library filter

- Expand the **Work with libraries...** Node.

You see this dialog show up

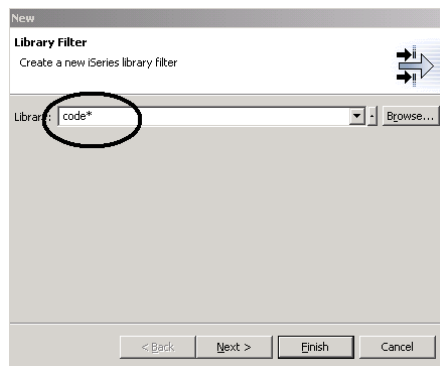


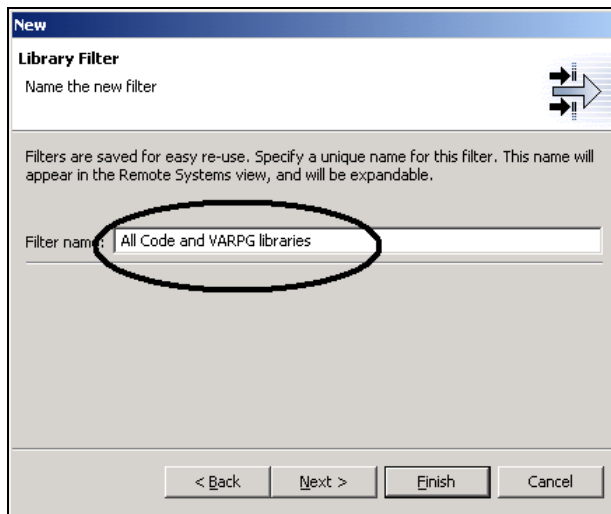
Figure 56: Specify a filter string

You are going to create a filter to specify the libraries you want to work with, so they will show in the RSE object list. We want you to create a filter that shows all libraries on the iSeries with the name **CODExxxxxx** and **VARxxxxxxx**, xxx being any character.

Specify the first filter string that selects the libraries starting with CODE by

- Keying into the **Library:** entry field **CODE*** , using the * wild card character.
- Clicking the **Next >** push button, beside the **Filter Strings** list

The following dialog will show



Specify a name for this filter by:

- Keying into the **Filter name** entry field:
All CODE and VARPG libraries
- Click the **Finish** push button

Back in the **Remote System explorer** tree view you will see the new filter expanded, listing all CODE* libraries, now you need to add the VARPG libraries:

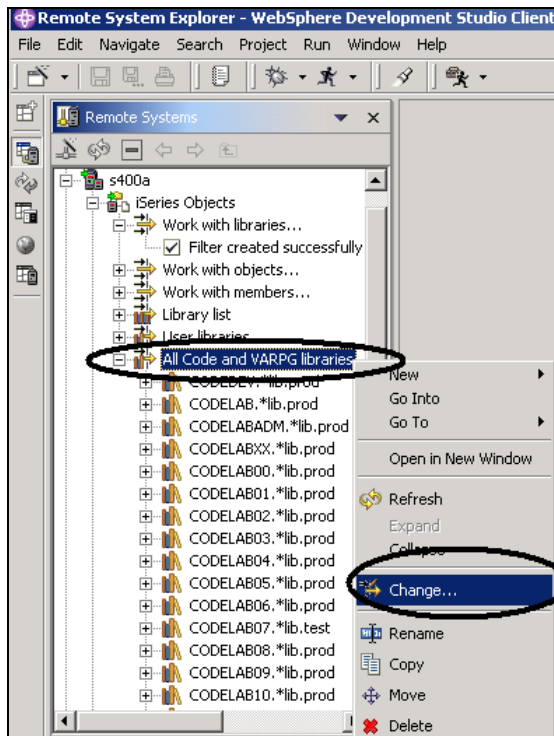


Figure 57: Select the Change option

- Right click on the Filter *All CODE VARPG libraries* icon
- Select the *Change...* option from the pop up menu

The **Change Library Filter** string dialog shows up

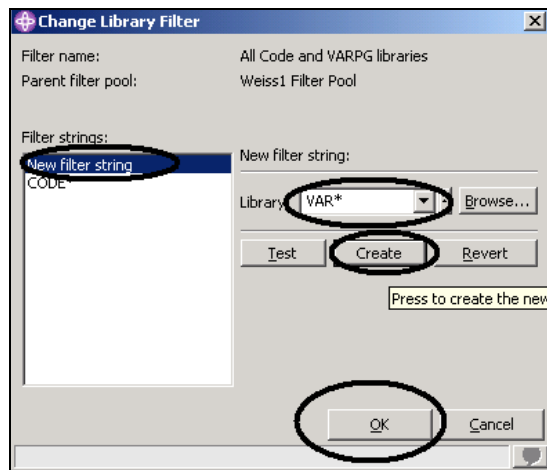


Figure 58: Add second filter string

- Click on the *New filter string* entry in the list box
- Enter *VAR** in the *Library* entry field

- Click the **Create** push button

The **VAR*** filter string gets added to the list box.

- Click the **OK** push button

You are now back in the RSE perspective dialog. You will see the list in the RSE perspective being expanded to include your filter

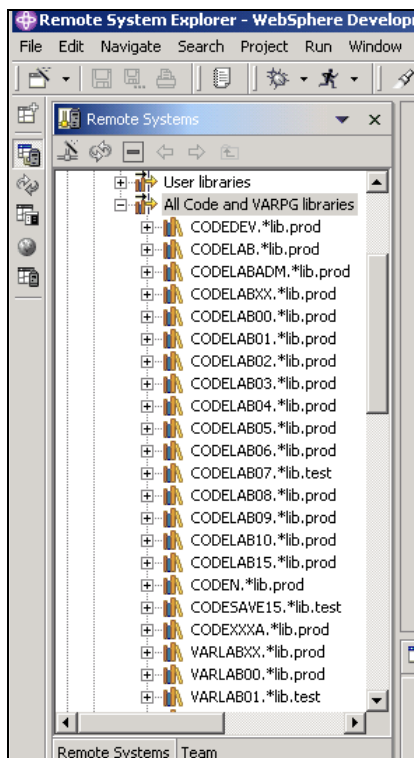


Figure 59: Expanded filter

Now you can work with the libraries directly and can drill down to the object you want to work with.
Now create an object filter

Creating an object filter

In the RSE list, under the connection node you are using,

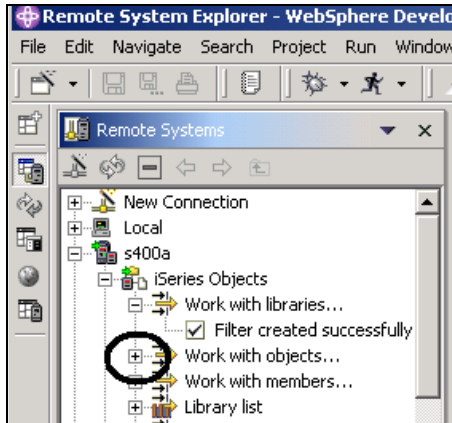


Figure 60: Create object filter

- Find the **Work with objects...** node,
- Expand *this node*

This will show the *New Object Filter* dialog

Create a filter to show all your source files in your **CODELABxx** library:

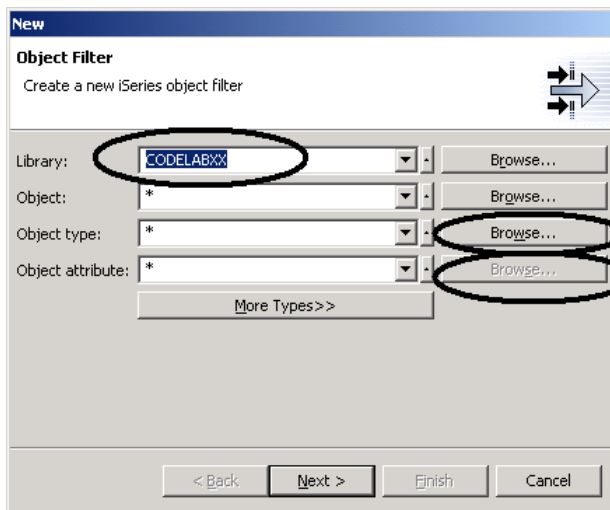


Figure 61: Specify filter string

- Enter **CODELABXX** in the **Library** entry field
- Click the **Browse** push button beside the **Object type** entry field

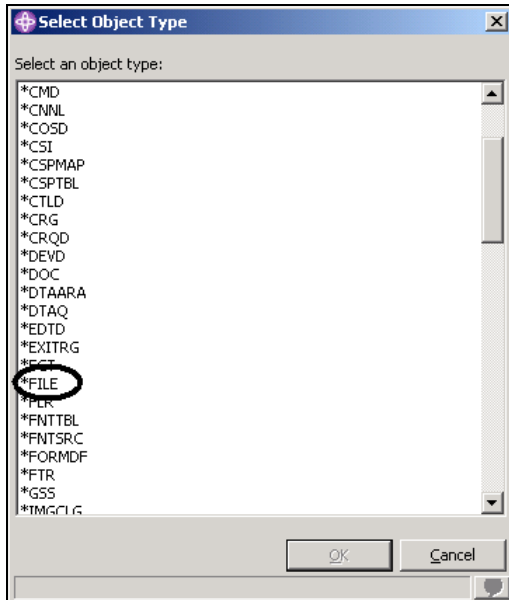


Figure 62: Select Object Type

- Select the ***File** object type from the list
- Click the **OK** push button

Back in the Object filter dialog

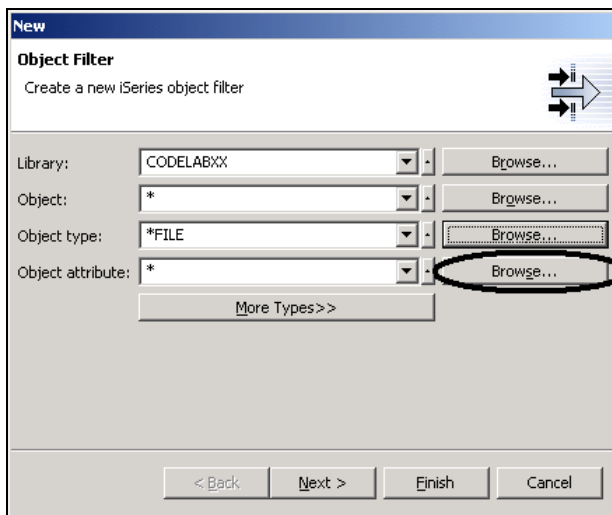


Figure 63: Browse for Object Attribute

- Click the **Browse** push button beside the **Object Attribute** entry field

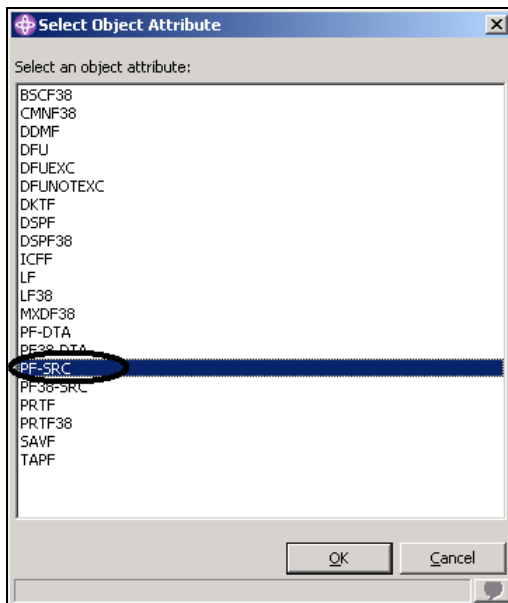


Figure 64: Select filter Object Attribute

- Select **PF-SRC** from the Object Attribute list
- Click the **OK** push button

On the Object Filter dialog:

- Click the **Next >** push button

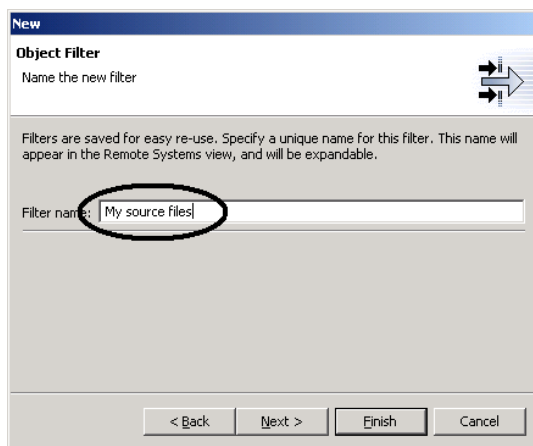


Figure 65: Specify filter name

- Specify the Filter name: **My source files**
- Click the **Finish** push button

The new filter will show up in the RSE list

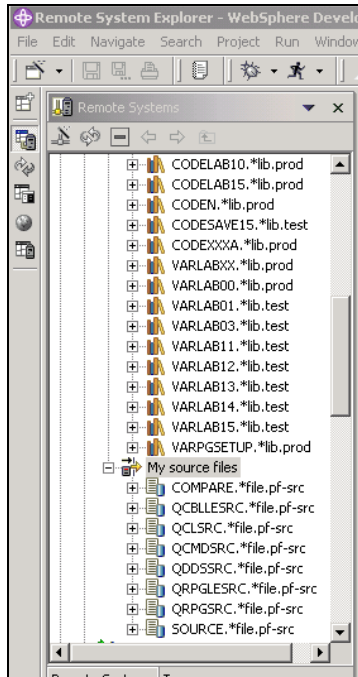


Figure 66: Object filter shows all source files in library

You got the idea how to create filters and tailor your development environment. Filters can also be specified for non iSeries servers and your local system.

Tip: If you end up with too many filters, look into creating filter pools, which allow you to group filters and tailor the filters to your environment.

Now you can work with the objects you have in your RSE list like you worked in PDM with libraries, objects, or members.

Assuming you want to edit the member **Payroll**, in QRPGLSRC you just:

- Expand node **QRPGLSRC**
- Right mouse click on the member **Payroll**
- From the pop up menu select **Open with**
- From the sub menu select **LPEX editor**

This will download the source member and open the editor with this member

After you have edited the member you could save it and then compile it from the RSE list by using the pop up menu options on this member.

You can also create your own actions in addition to the default actions.

Creating a user action

In PDM you can create user actions in addition to the pre-supplied system actions, in the RSE you can do the same.

In the RSE perspective

- Locate your **connection node** and the **iSeries Object** node underneath it.

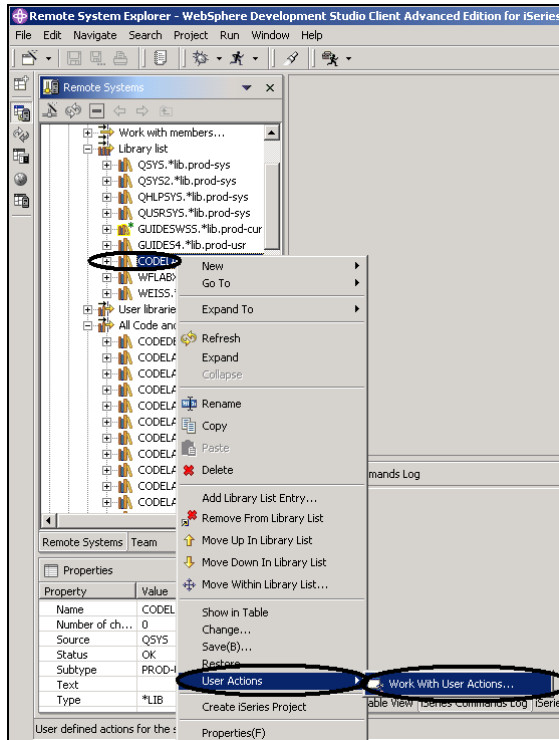


Figure 67: Work with user actions

- Expand the **Library list** filter
- Right-click on the **CODELABxx** node
- Select the **User Actions** option from the pop up menu
- Select the **Work With User Action...** option from the sub menu

You will see the **Work with User Actions** dialog

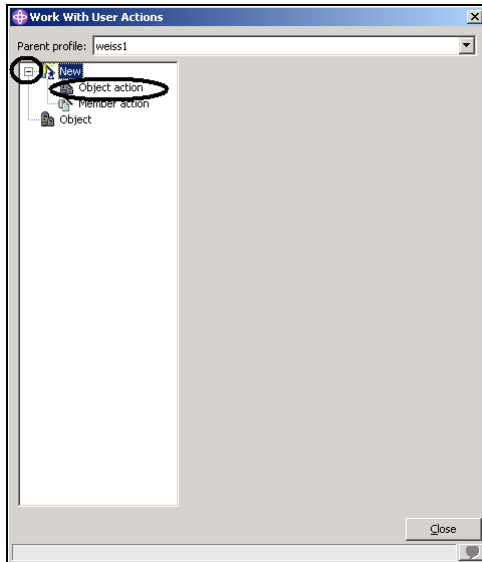


Figure 68: Work with User Actions dialog

- Expand the **New** node in the list, if it is not expanded already
- Click on the **Object action** node

The **Work with User Actions** dialog appears

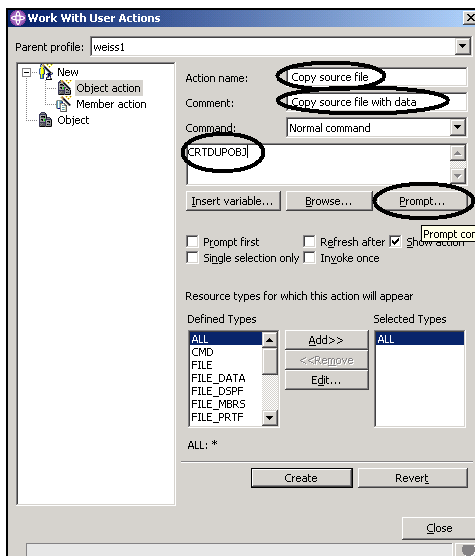


Figure 69: Create an Object action

We want you to create a user action that copies a source file with data to a new source file called QJUNKSRC in the same library.

- Enter a name for the user action in the **Action** entry field: **Copy source file**
- Enter a comment in the **Comment** entry field

- Key in the command to execute **CRTDUPOBJ**
- Click the **Prompt** push button, to get the command prompter for this command

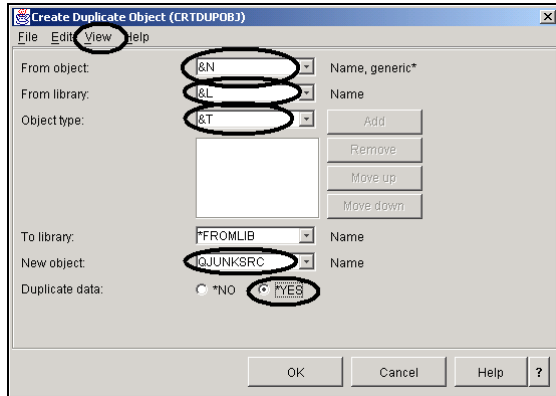


Figure 70: Prompt for CRTDUPOBJ command

This is the command you will be running

```
CRTDUPOBJ OBJ(&N) FROMLIB(&L) OBJTYPE(&T) NEWOBJ(QJUNKSRC)
DATA(*YES)
```

- Enter **&N** in the **From Object** entry field, to indicate to use the name of the selected object in the RSE list
- Enter **&L** in the **From Library** entry field, to pick up the library name form the selected object
- Enter **&T** in the **Object Type** entry field, to pick up the object type from the selected object
- Enter **QJUNKSRC** in the **New object** entry field

To get the additional Duplicate Data parameter:

- Select the **View** option on the menu bar of this dialog
- Select the **All parameters** option from the pull down menu

Now the **Duplicate Data** parameter is also shown on the prompt dialog

- Select the **Yes** radio button for the **Duplicate Data** parameter
- Click the **OK** push button

You will be back at the **Work with User Action** dialog

To refresh the RSE list after the action has been run:

- Select the **Refresh after** check box

Tip: Pressing the **Insert variable..** push button, brings up a list of valid replacement variables with explanation what they do.

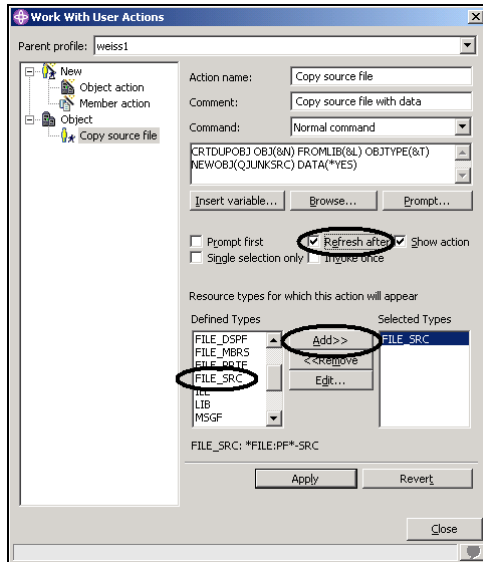


Figure 71: Limit user action to source files

This user action is only valid for Source physical files, you need to specify this restriction so this user action will only show in pop up menus when you right click on a source physical file.

To specify this restriction

- Locate the **Defined Types** listbox
- Select **FILE_SRC** in the list
- Click the **Add>>** push button beside the list

FILE_SRC is now one of the Selected Types, actually since you only selected this one it is the only one.

- Select the **Refresh** check box to refresh the RSE list after the user action has been performed
- Click the **Close** push button

Now, only when you right mouse click on a source file, will this user action appear on the pop up menu selected, for any other object type it will not appear.

Back in the workbench and the RSE perspective, give it a try

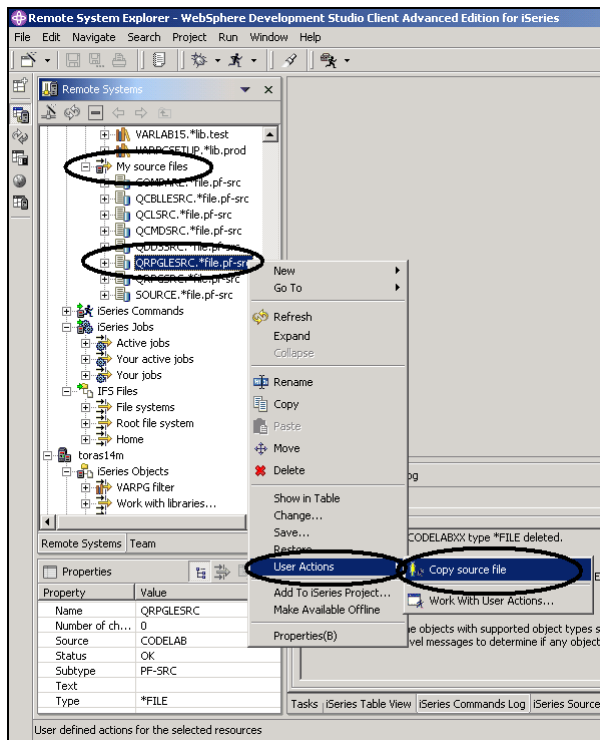


Figure 72: User action shows in pop up menu

- Locate your filter **My Source files**
- Expand the **filter**, if it is not already expanded
- Right mouse click on the **QRPGLSRC** file
- Select **User Actions** from the pop up menu
- Select **Copy source file** from the sub menu

The file gets duplicated and the list gets refreshed, your new source file will show in the list.

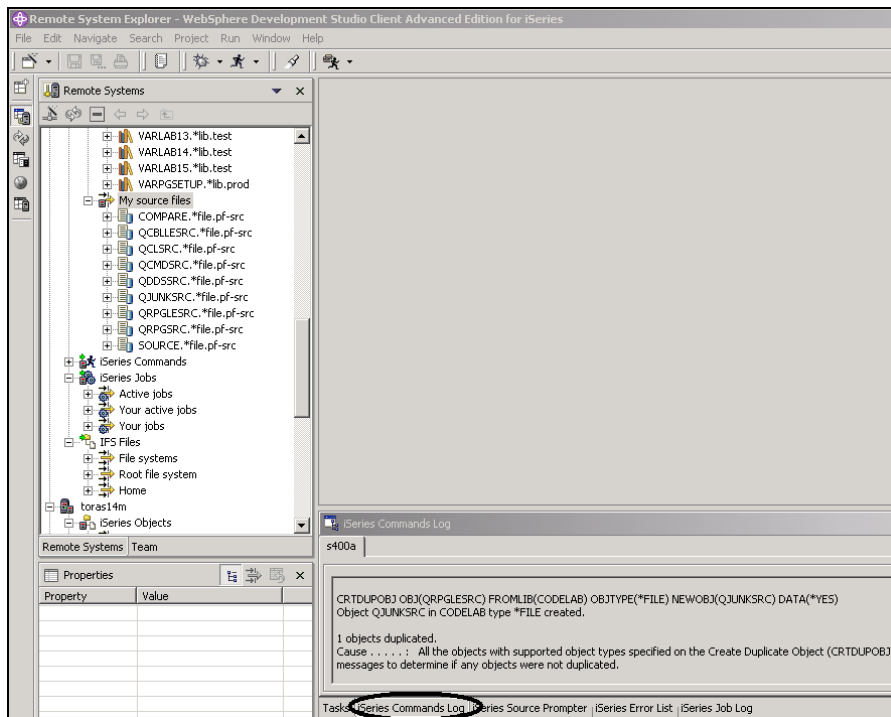


Figure 73 CRTDUPOBJ command in user action ran successful

You can check the messages of the CL commands you are running in the RSE job by looking at the Commands log in the right hand side bottom pane in the work bench.

To delete the source file **QJUNKSRC** that you just created:

- Right mouse click on its **node** in the list
- Select the **Delete** option from the pop up menu.

Running commands from the RSE

The Command entry is part of the RSE table view

- Check if you have a iSeries **Table view** tab in the bottom right view pane where your command log appeared in the previous task.
- If you have it click on **it**
- If you don't have it
 - In the RSE tree view, right mouse click on **your source file filter**
 - Select the **Show in table** option from the pop up menu

Now in the iSeries Table view you can run commands on the iSeries server that the table is connected to

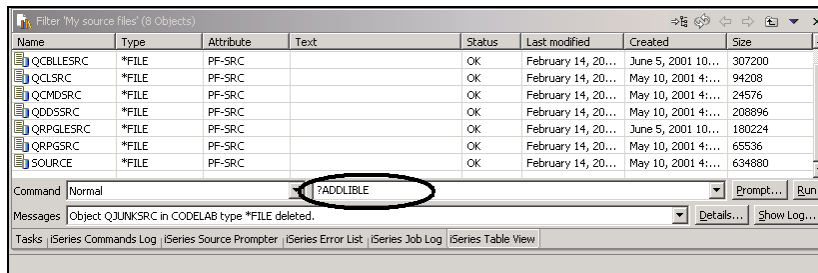


Figure 74: Table view with command entry

In the **command** entry field

- Key in an iSeries command for example **?ADDLIBLE**
The question mark is there to display a prompt screen

Tip: Instead of specifying a question mark you could use the Prompt push button

- Click the **Run** push button

The command prompt dialog for the ADDLIBLE command appears

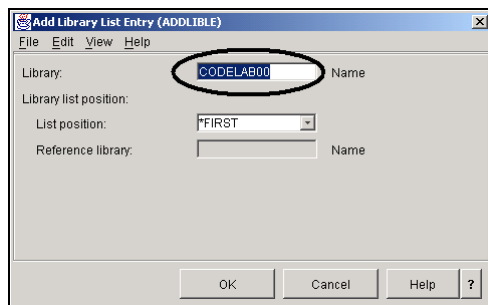


Figure 75: Command prompt dialog

In the prompt dialog:

- Key in **CODELAB00**, that will add this library to the library list of your RSE job on the iSeries server.

The messages field will confirm the successful completion of this command

To get to the command history, similar to F9 on the green screen, press the little arrow on the command entry field

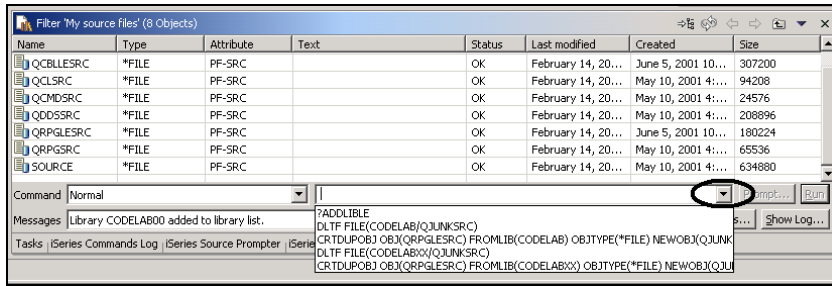


Figure 76: command history

You could also use the **iSeries** commands node in the RSE view underneath the iSeries objects node and run predefined commands or define your own commands.

We hope this exercise gave you a first taste of the capabilities the RSE perspective provides to iSeries Application Developers

Congratulations!

You have successfully completed the Introduction to RSE lab. More material can be found at our web site at <http://www.ibm.com/software/ad/iseries>

Happy Coding!