ELEVATE 2024

New IDE Features in PowerBuilder 2025

Bruce Armstrong, Integrated Data Services
December 2-3, 2024

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Session Agenda

- New compiler and solution (demo)
- Modern code editor (demo)
- Converting MDI Menu to RibbonBar (demo)
- Secure Connection Encryptor (demo)
- IDE enhancements

Presenter Profile

Bruce Armstrong

https://www.linkedin.com/in/bruceaarmstrong/

Recent Projects

- OpenSourcePFCLibraries - The open-source PowerBuilder Foundation Class libraries

Key Skills

- PowerBuilder
- Oracle PL/SQL
- Java
- C#
- C++

Company Profile

Integrated Data Services

IDS has delivered innovative program and financial management information system solutions to the Federal Government for nearly three decades. Our flagship Enterprise Requirements Management product, CCaR™ is used by the DoD and Federal Agencies including the Air Force, Space Force, Army, USSOCOM, DSCA, DHA, JSF and DOE.

New compiler and solution

Old Compiler

- Pcode and Machine Code
- Source code and precompiled code stored in PBL
- Generates a parse tree which is then used to compile the code
- Has to perform five scans of the code

New Compiler

- Pcode Only
- Source code stored in plain text files
- Generates an abstract syntax tree (AST) which is then used to compile the code
- Performs one scan of the code

New compiler and solution

Old Compiler

- Single threaded
- Runs on same thread as IDE

New Compiler

- Multi-threaded and (in some cases) multi-process
- Runs on separate thread than IDE

New compiler and solution

- Existing workspaces must be migrated to the new solution approach to use the new compiler
- The migration process is one way
  - .pbw becomes .pbsln
  - .pbt becomes .pbproj
  - Folders are created for each PBL, and the source code for each object in the PBL is written into the folder
  - The .pbw, .pbt and pbl files are all placed into a BackupFiles folder

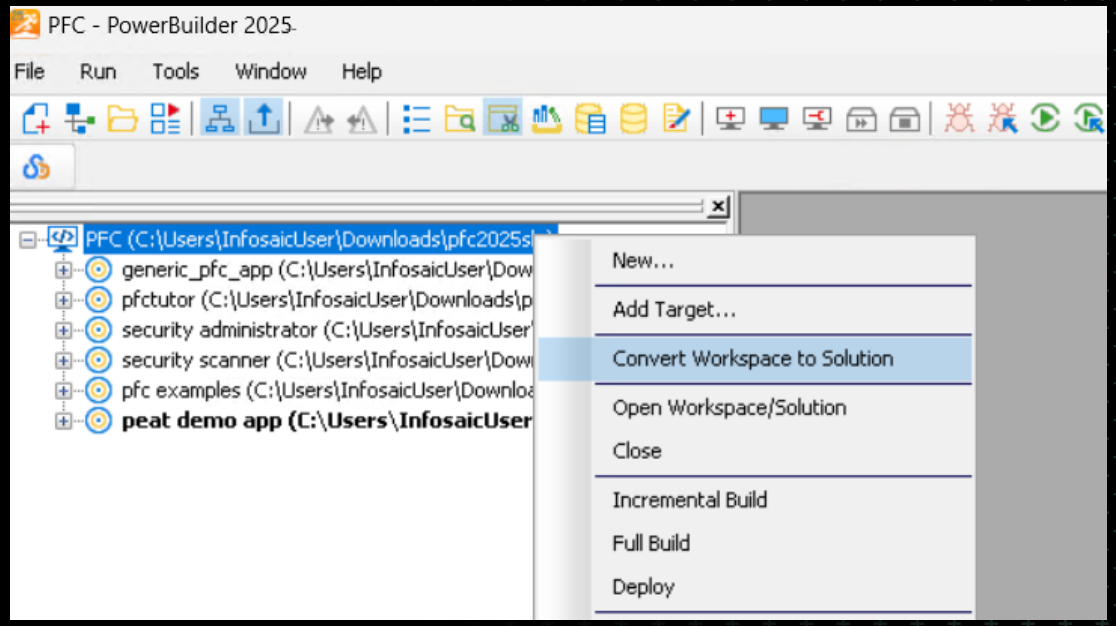
New compiler and solution

Library List related functions

	Workspace		Solution			
Function	IDE	EXE	IDE as PBL	EXE as PBL	IDE as folder	EXE as folder
AddToLibraryList	No	Yes	No	Yes	No	Yes
GetLibraryList	Yes	Yes	Yes	Yes	Yes	Yes
SetLibraryList	No	Yes	No	Yes	No	Yes
FindClassDefinition	Yes	Yes	Yes	Yes	Yes	No
FindFunctionDefintion	Yes	Yes	No	Yes	Yes	No
FindTypeDefinition	Yes	Yes	Yes	Yes	Yes	No
LibraryCreate	Yes	Yes	Yes	Yes	Yes	Yes
LibraryDelete	Yes	Yes	Yes	Yes	Yes	Yes
LibraryDirectory	Yes	Yes	Yes	Yes	Yes	No
LibraryDirectoryEx	Yes	Yes	Yes	Yes	Yes	No
LibraryExport	Yes	Yes	Yes	Yes	Yes	No
LibraryImport	Yes	Yes	Yes	Yes	Yes	No
FindGroup	Yes	Yes	No	No	No	No
FindClass	Yes	Yes	No	No	No	No
FindMatchingFunction	Yes	Yes	No	No	No	No
CreateSession	Yes	Yes	No	No	No	No
RunApplication	Yes	Yes	No	No	No	No

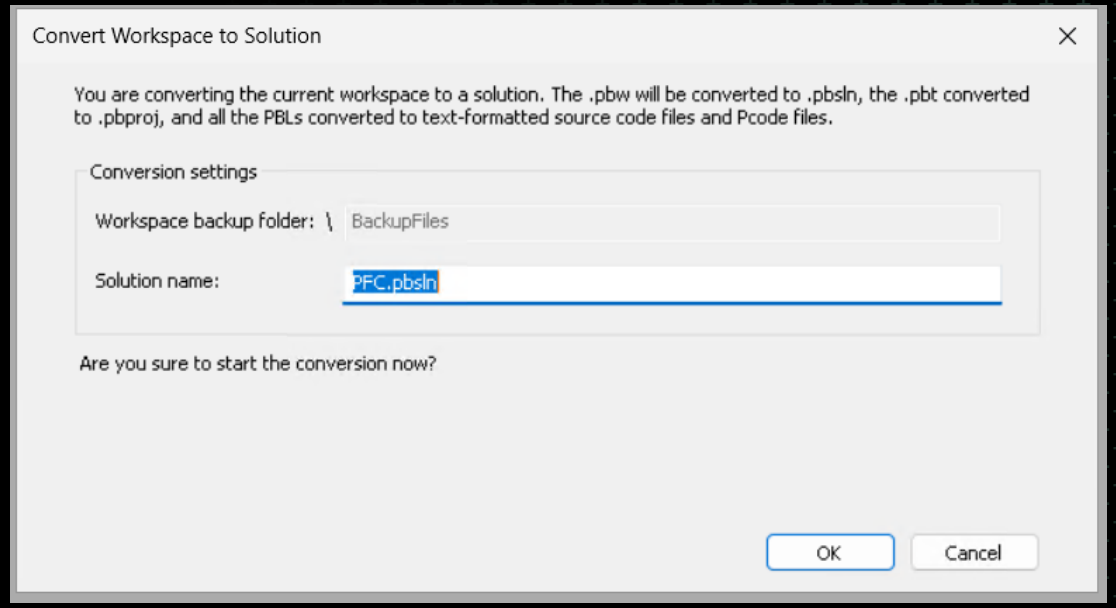
New compiler and solution

- Choose the “Convert Workspace to Solution” option in the system tree RMB menu



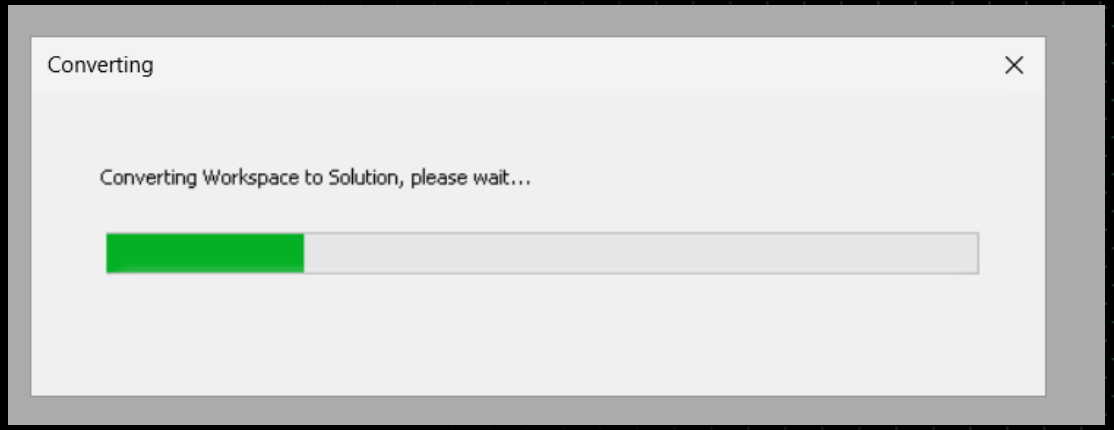
New compiler and solution

- Enter a name for the solution or accept the one that is automatically supplied



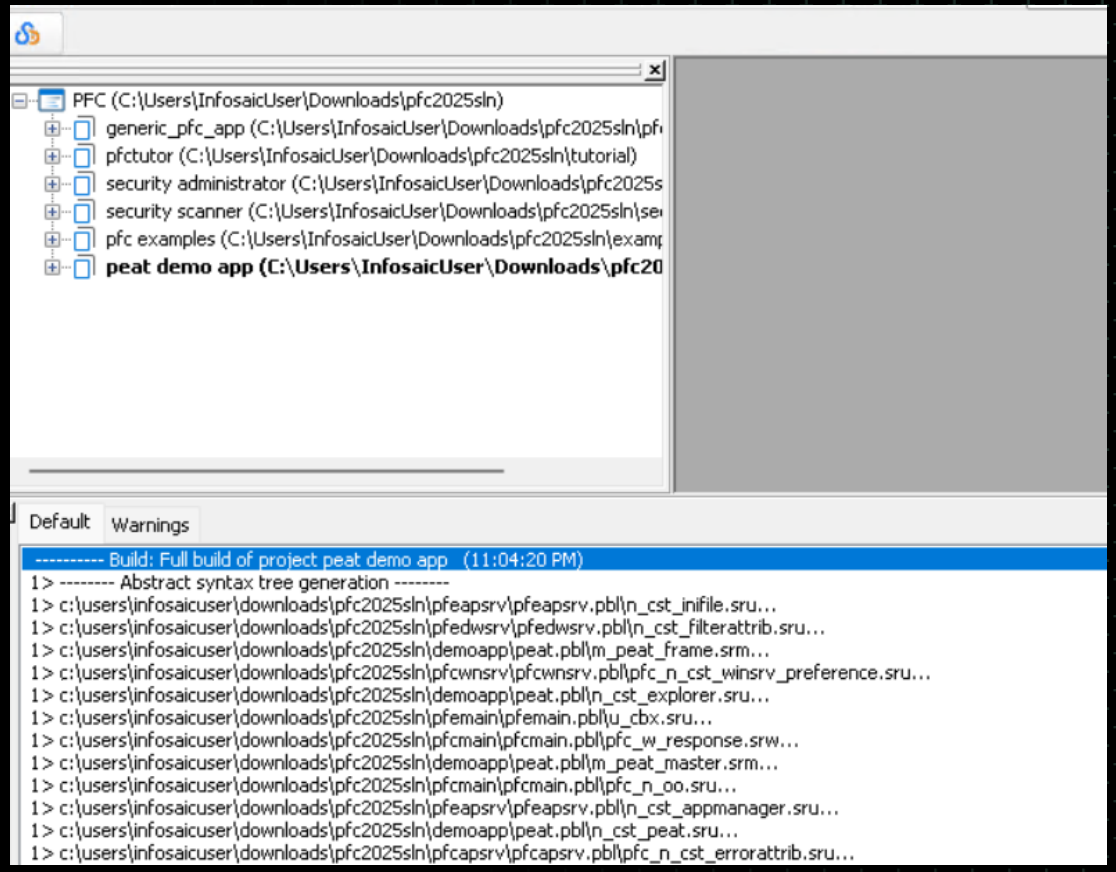
New compiler and solution

- The initial pass is quite fast



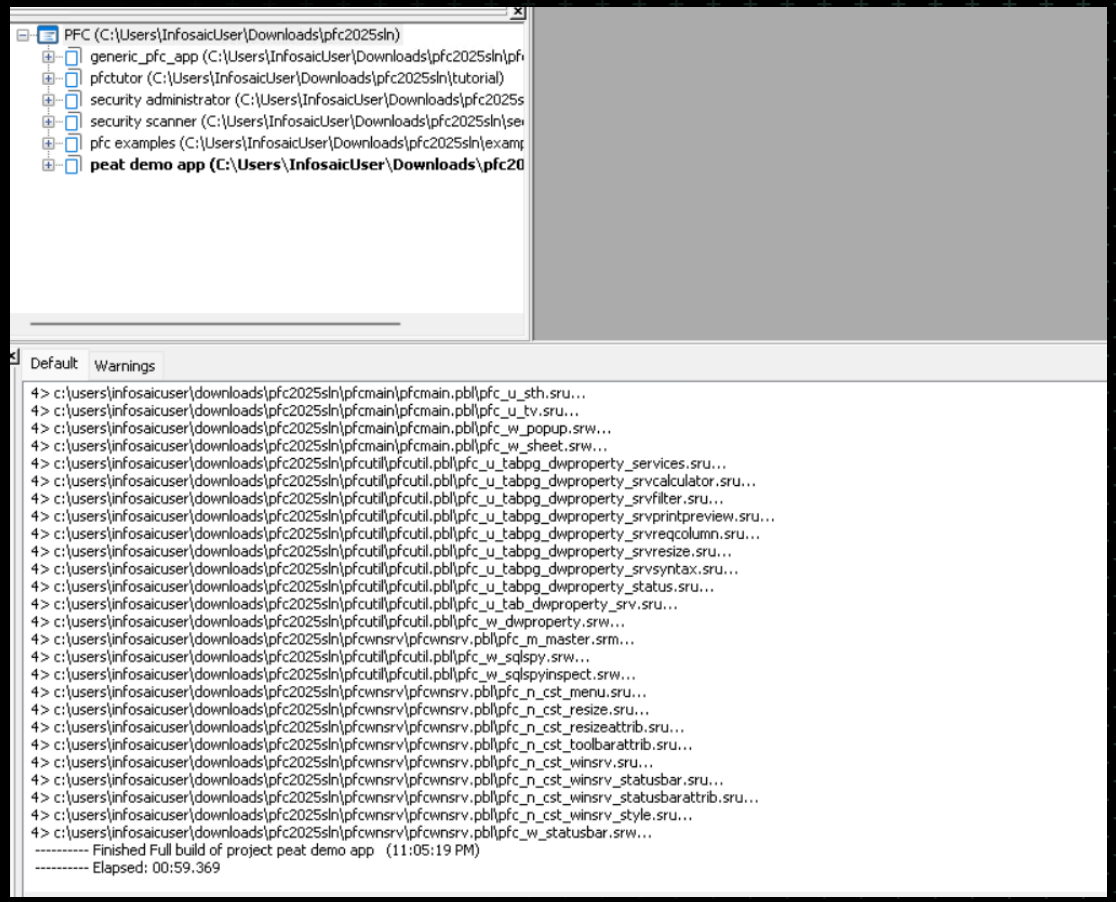
New compiler and solution

- The part that takes a while is the initial generation of the abstract system tree

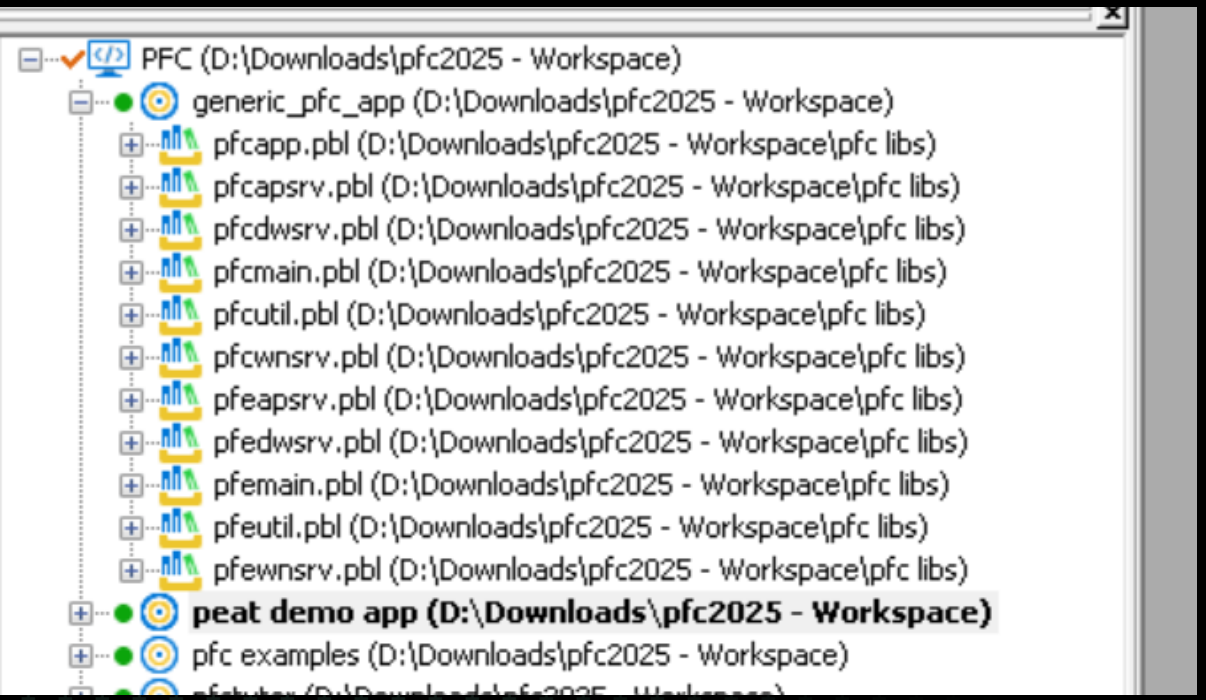


New compiler and solution

- In the case of the PFC Demo app, it took 1 minute to do the initial abstract system tree generation



New compiler and solution

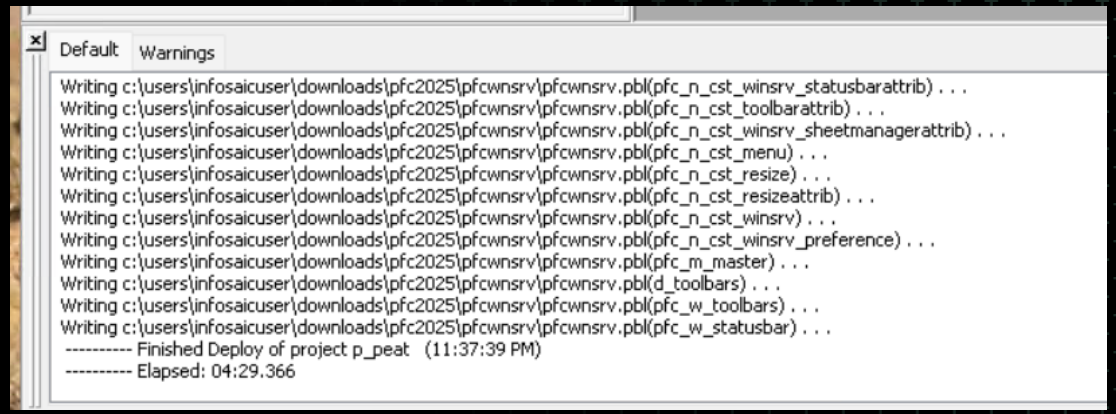


Workspace and Targets

Solution and Projects

New compiler and solution

- Old compiler: 4 min, 30 seconds to compile PFC Demo app



New compiler and solution

- New compiler: 1 min, 12 seconds to compile PFC Demo app

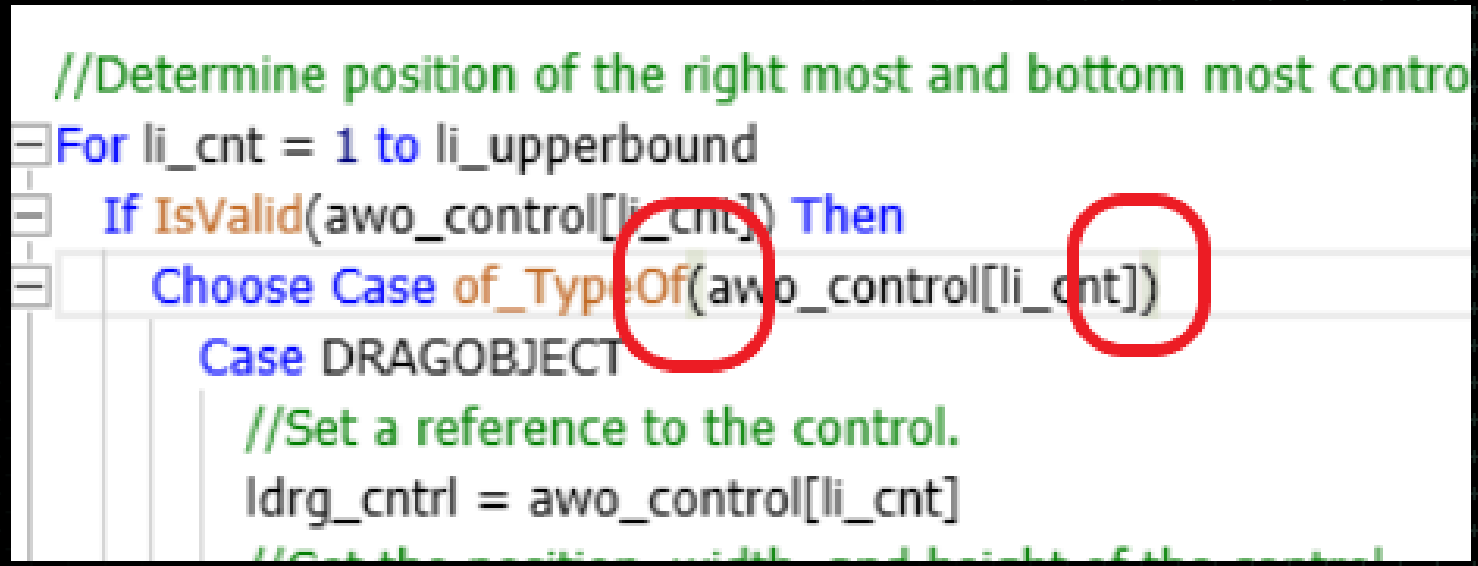
New compiler and solution

- The new compiler:
  - Is significantly faster than the old compiler
  - Make the PowerBuilder IDE more stable, as a crash in the compiler will not take down the PowerBuilder IDE
- The new solution:
  - Greatly facilitates interoperability with source control systems
    - The source code no longer has to be exported to make it accessible to source control
    - Updates from source control no longer have to be imported back into PBLs

DEMO: New compiler and solution

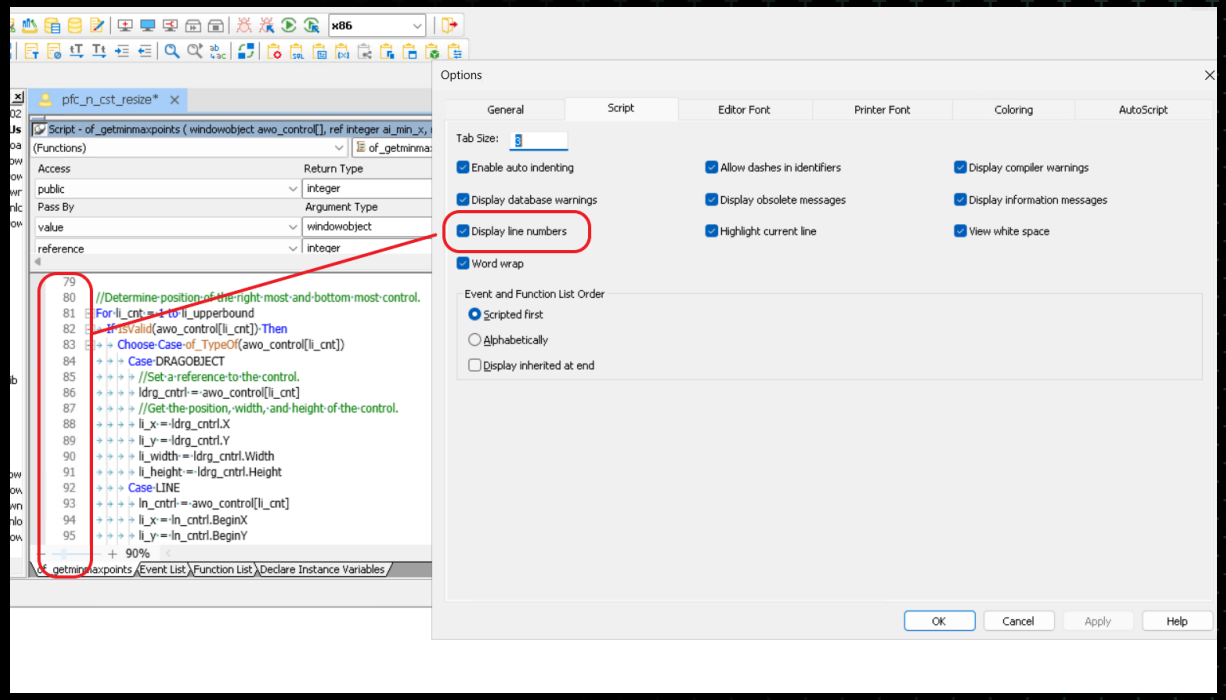
Modern code editor

- Bracket Matching
  - Automatically highlights matching brackets when the cursor is positioned near a left or right bracket.



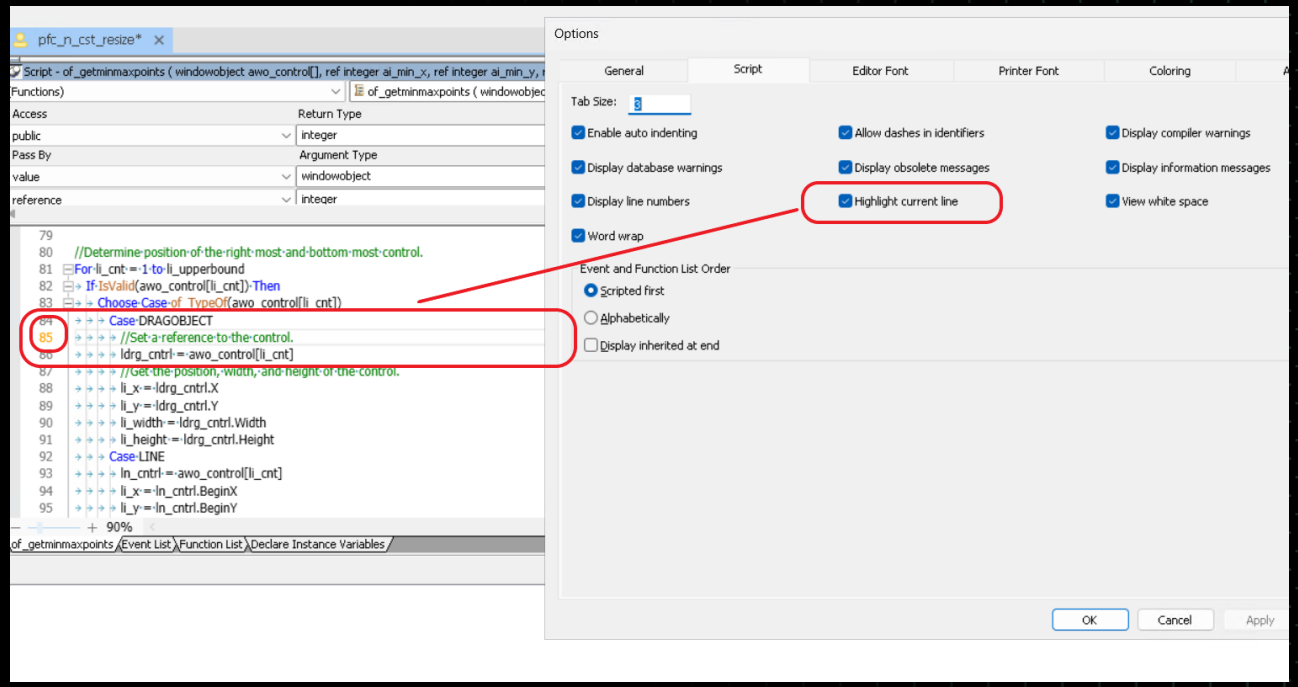
Modern code editor

- Line Numbers
  - Displays line numbers in the code editor for easy reference and navigation within the codebase.
  - This feature can be turned off in the Design menu > Options menu > Script tab page.



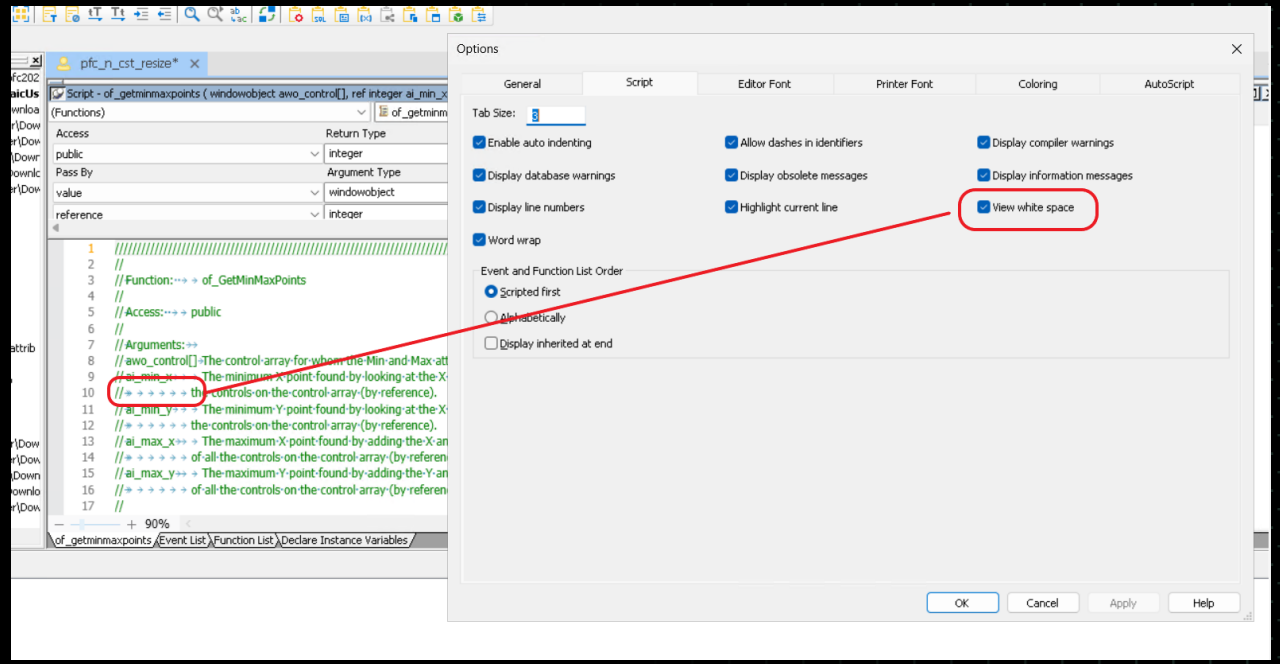
Modern code editor

- Highlight Current Line
  - The current line where the cursor is located is highlighted with a grey box.
  - This feature can be turned off in the Design menu > Options menu > Script tab page.



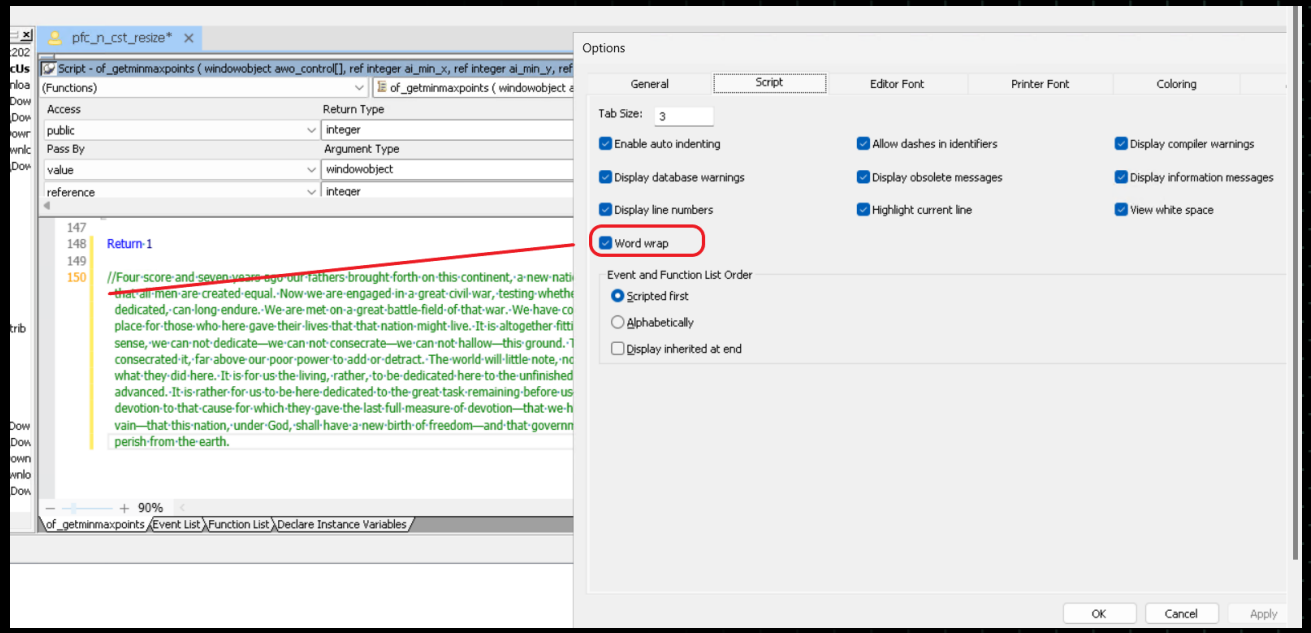
Modern code editor

- Display white space
  - Shows a visible indicator of white space
  - This feature can be turned off in the Design menu > Options menu > Script tab page.



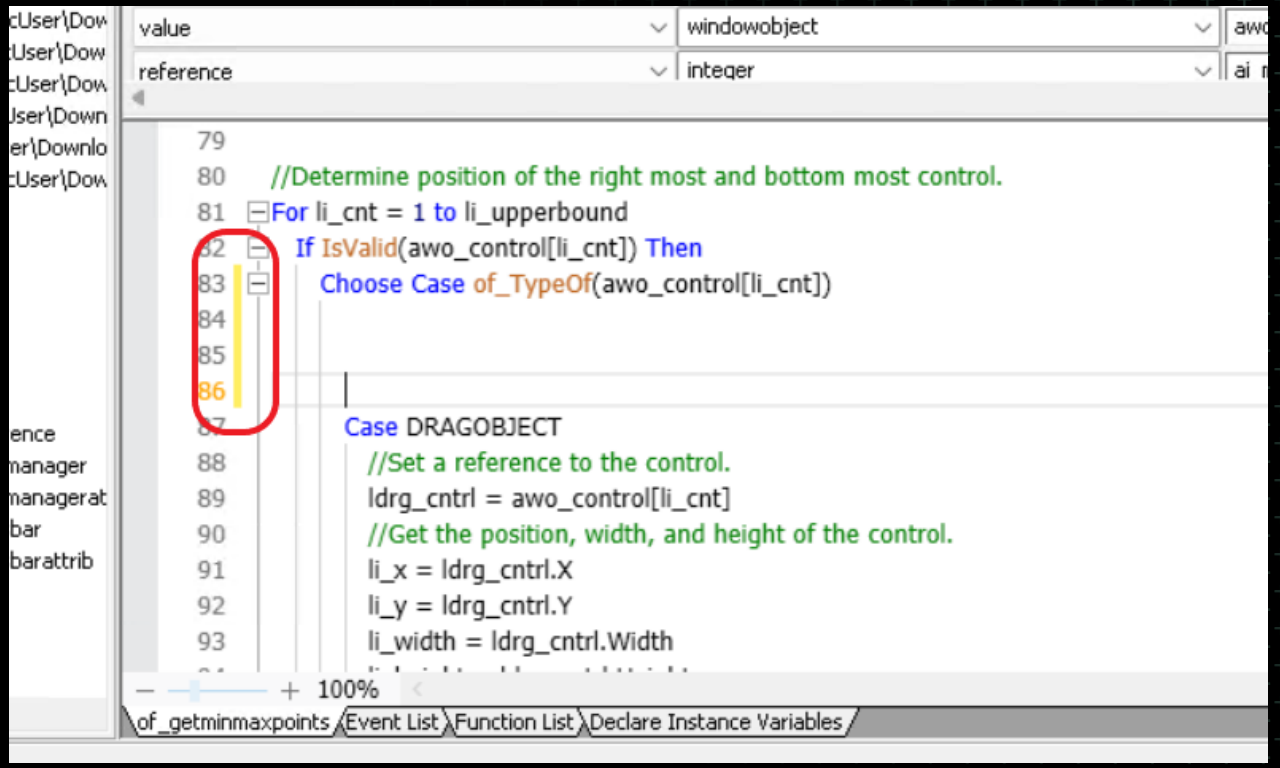
Modern code editor

- Word Wrap
  - Automatically wraps text to the next line when it exceeds the editor's width.
  - This feature can be turned off in the Design menu > Options menu > Script tab page.



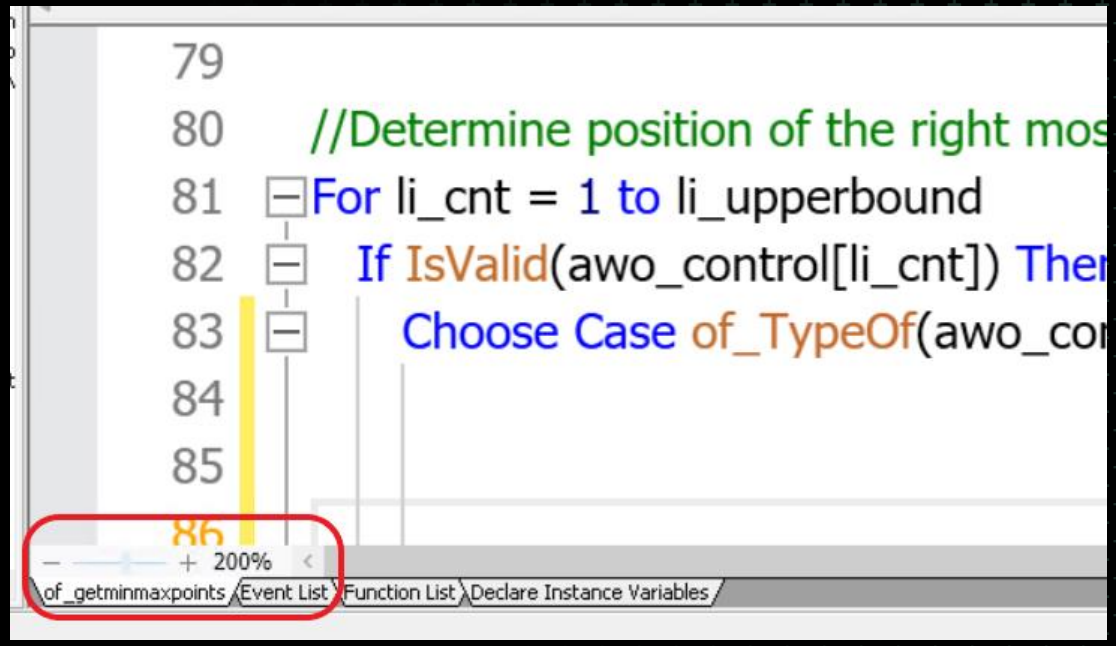
Modern code editor

- Change Tracking
  - Displays a yellow bar next to line numbers to indicate the line has been edited, helping developers track recent changes in the code.



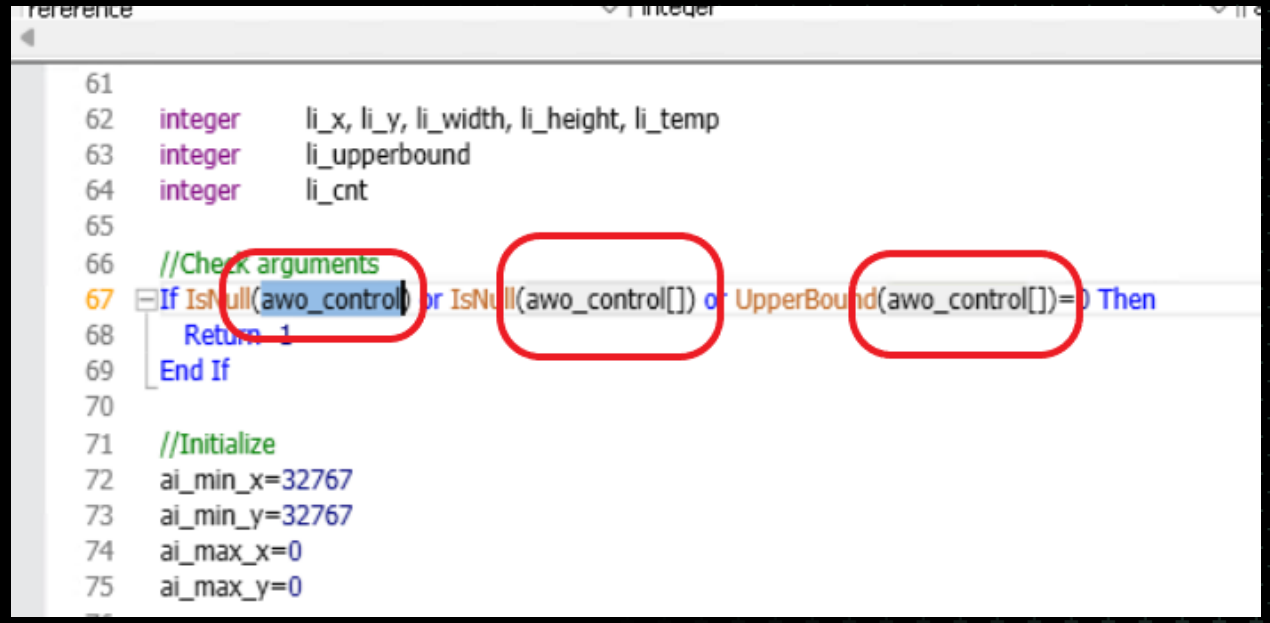
Modern code editor

- Zooming
  - Adds a zoom feature at the bottom left corner of the editor to allow users to adjust the text size for better readability.



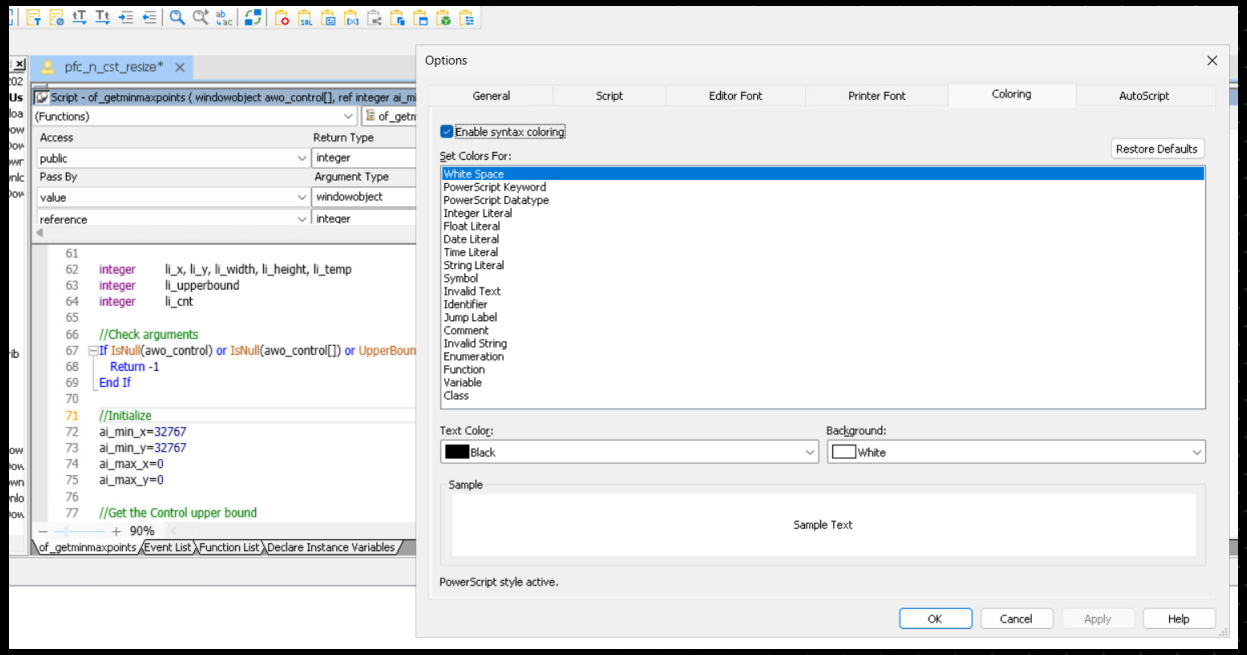
Modern code editor

- Highlight Name
  - When clicking on a name of a class, variable, or function, all occurrences of the same name are highlighted automatically.



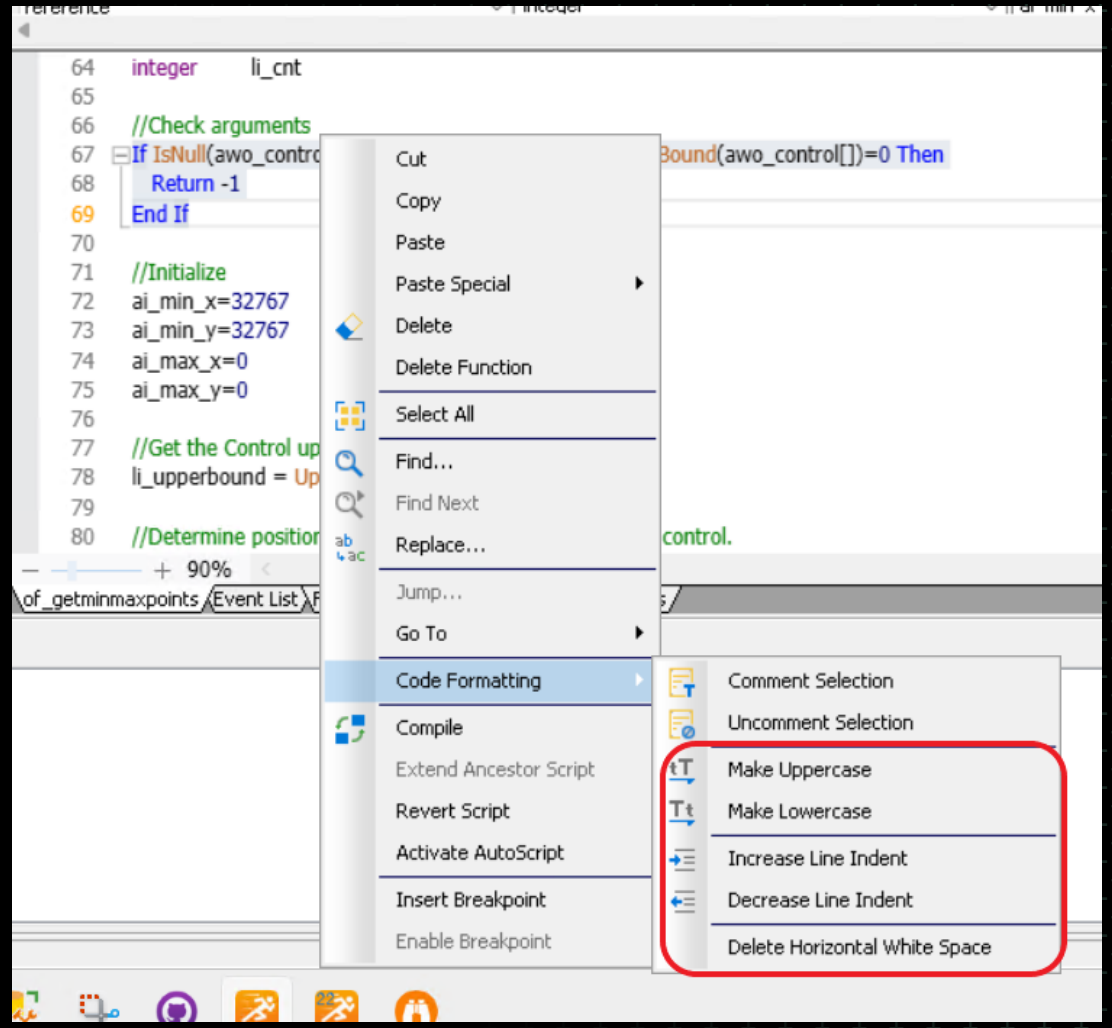
Modern code editor

- Syntax Coloring
  - Highlights the variable name, class name, and function name using different colors.



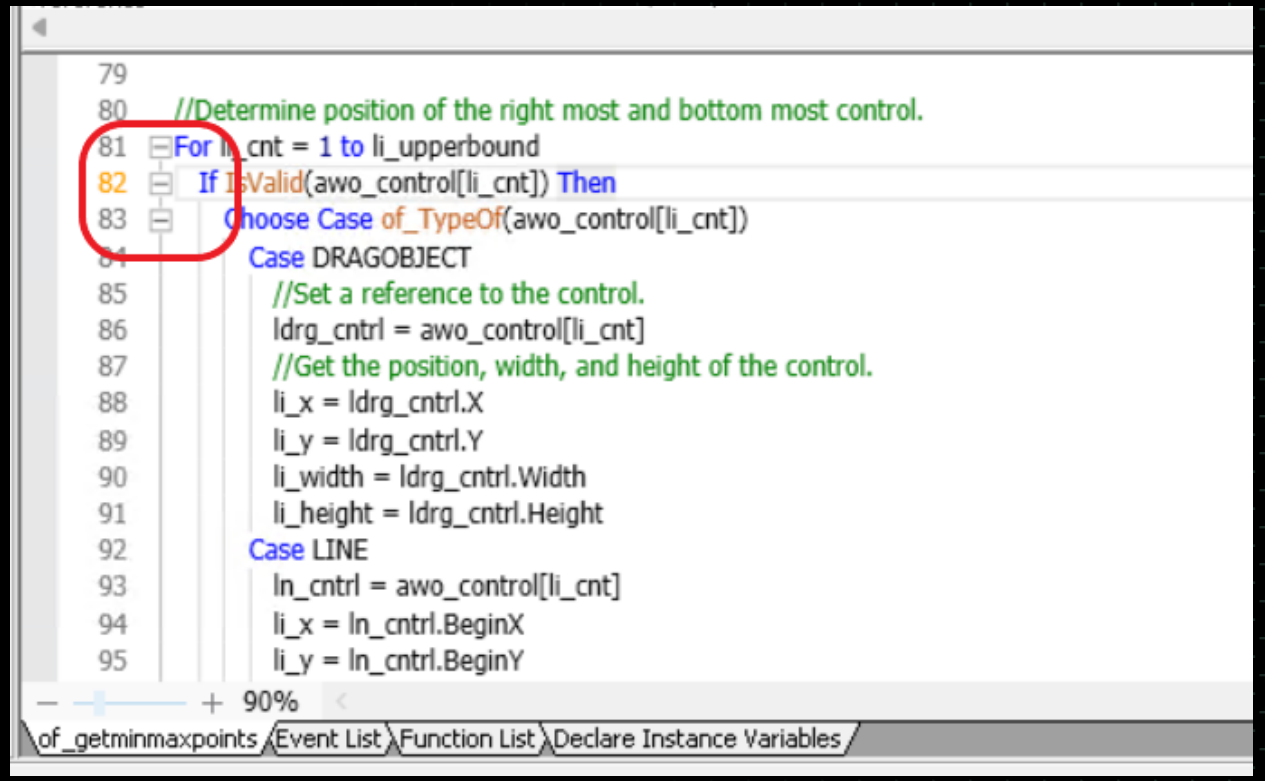
Modern code editor

- Code Formatting
  - Case Conversion
    - Converts the case of selected text via the right-click menu.
  - Horizontal Whitespace Removal
    - Deletes horizontal whitespace through the right-click menu.
  - Line Indentation
    - Increases or decreases line indentation via the right-click menu.



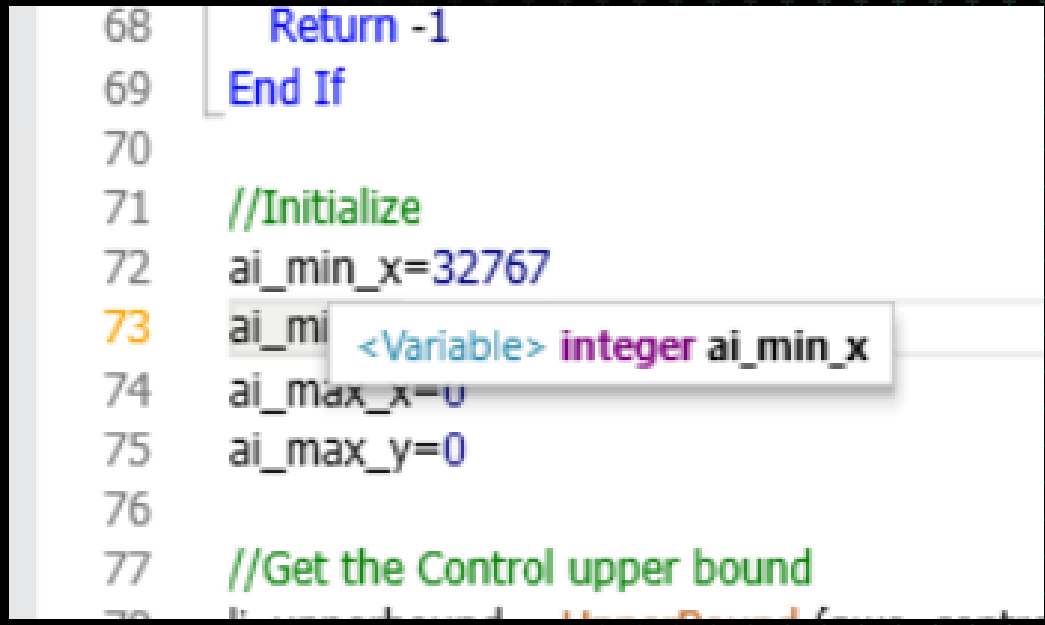
Modern code editor

- Outlining & Folding
  - Supports the outlining & folding display of syntax elements like FOR/NEXT, IF/ENDIF, CHOOSE, TRY etc.



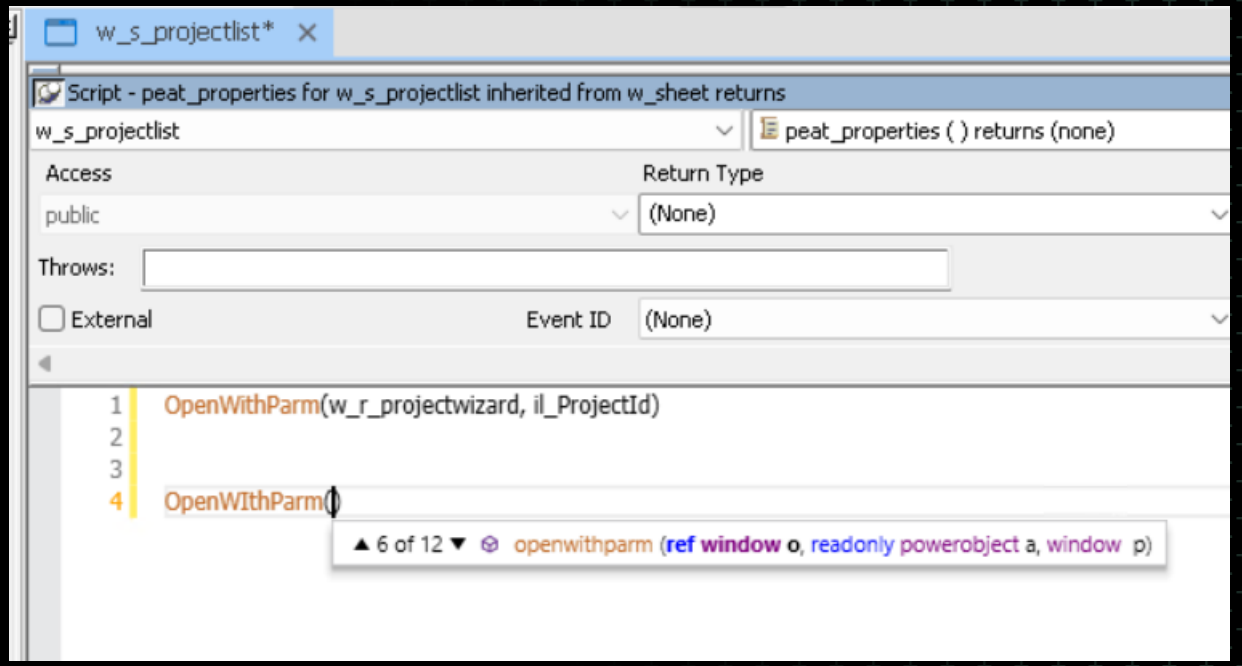
Modern code editor

- QuickInfo
  - Displays relevant information about a variable when hovering over it with the mouse pointer, providing quick insights into the variable's details.



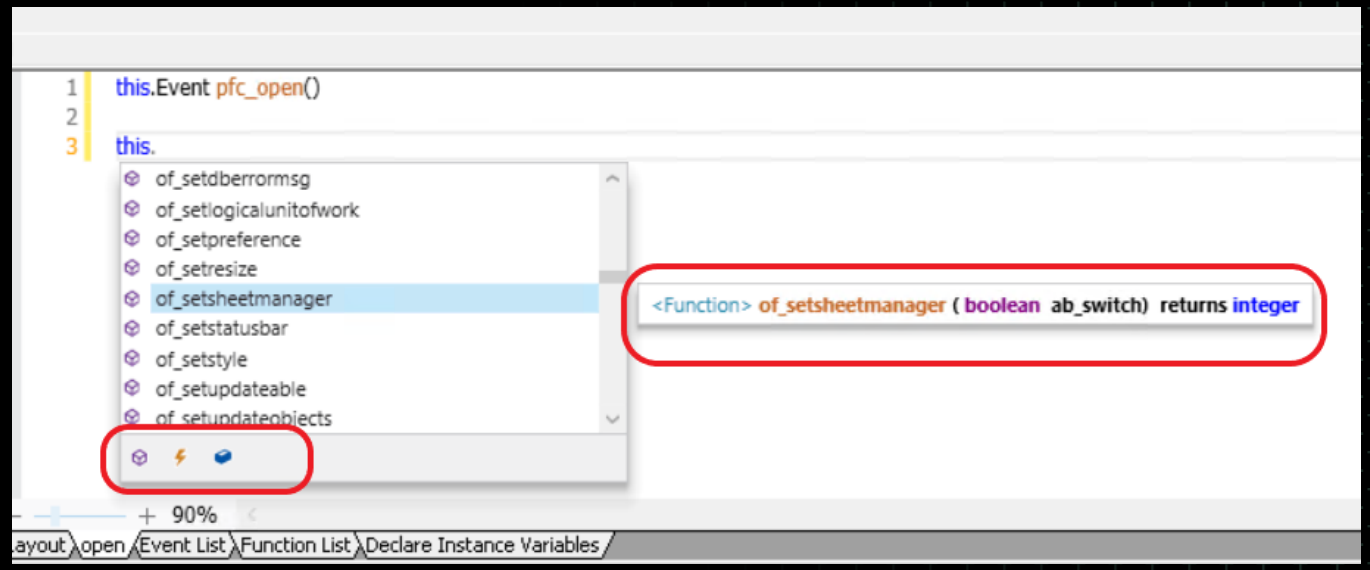
Modern code editor

- Parameter Info
  - Automatic pops up the syntax details when typing a function name followed by "(", aiding in understanding the function's syntax requirements.



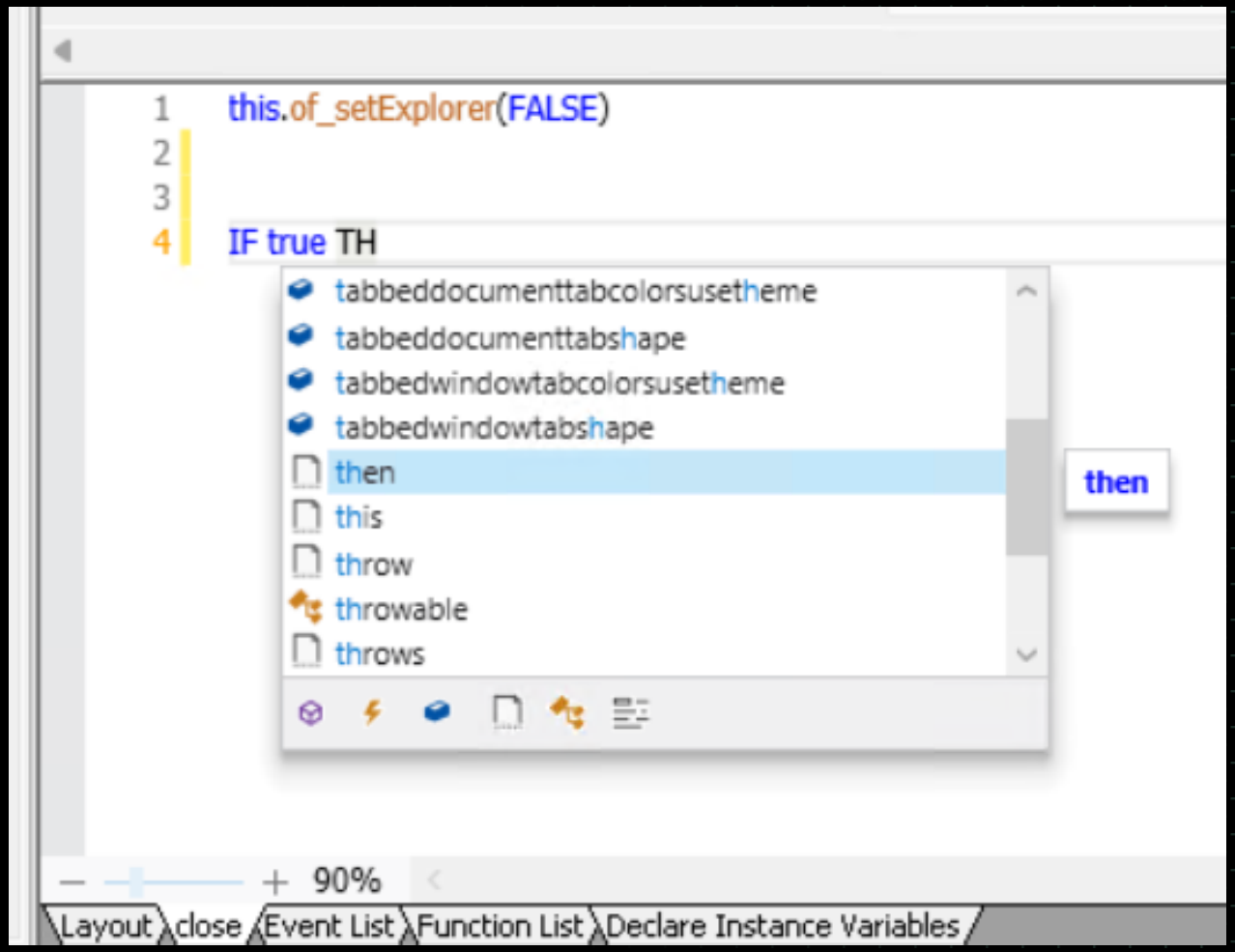
Modern code editor

- AutoCompletion List
  - Enhances the AutoCompletion list with more content, refined interface, and filtering options for improved code suggestion experience.



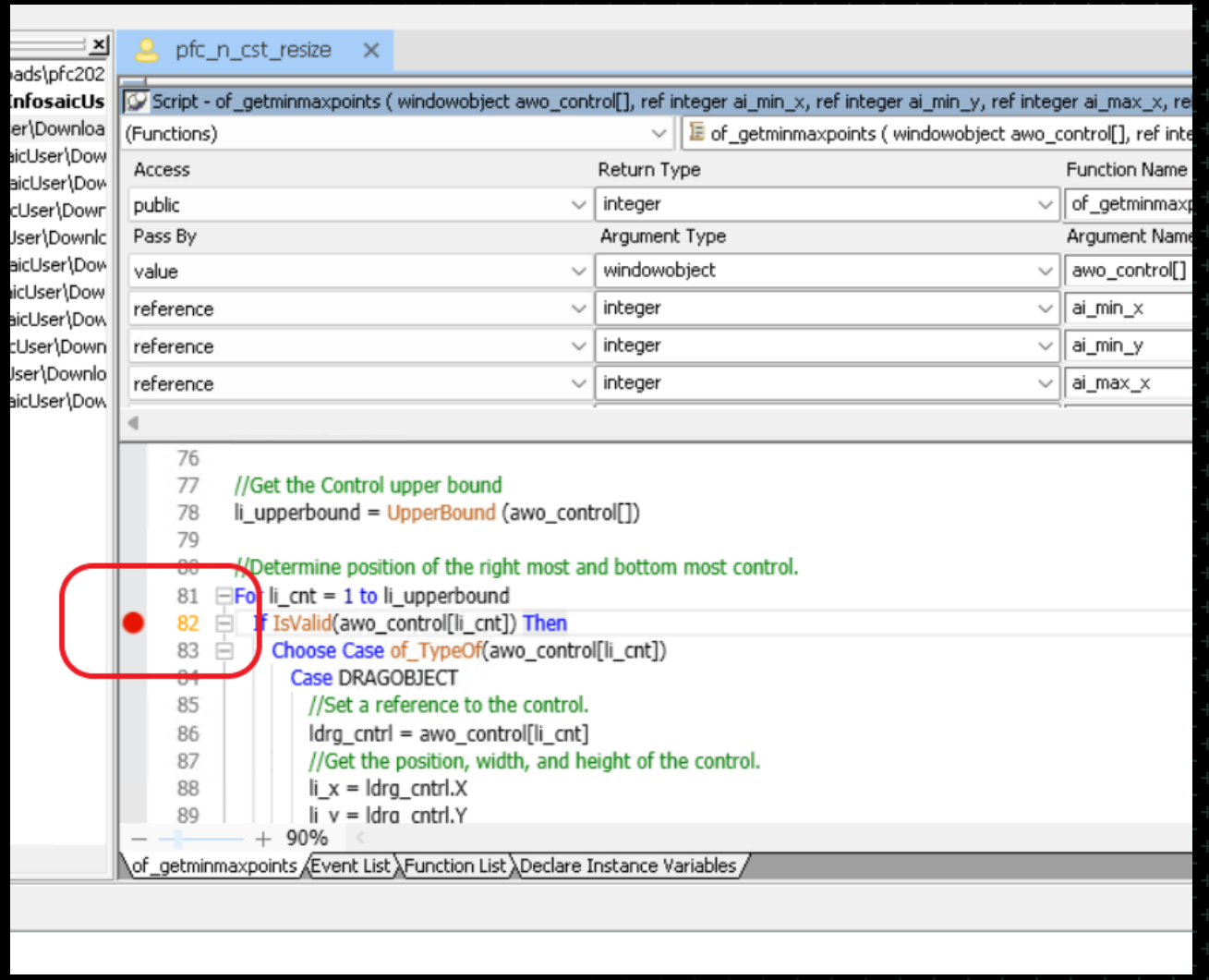
Modern code editor

- AutoScript
  - Enhances editing support for code completion and context-aware suggestions during development.



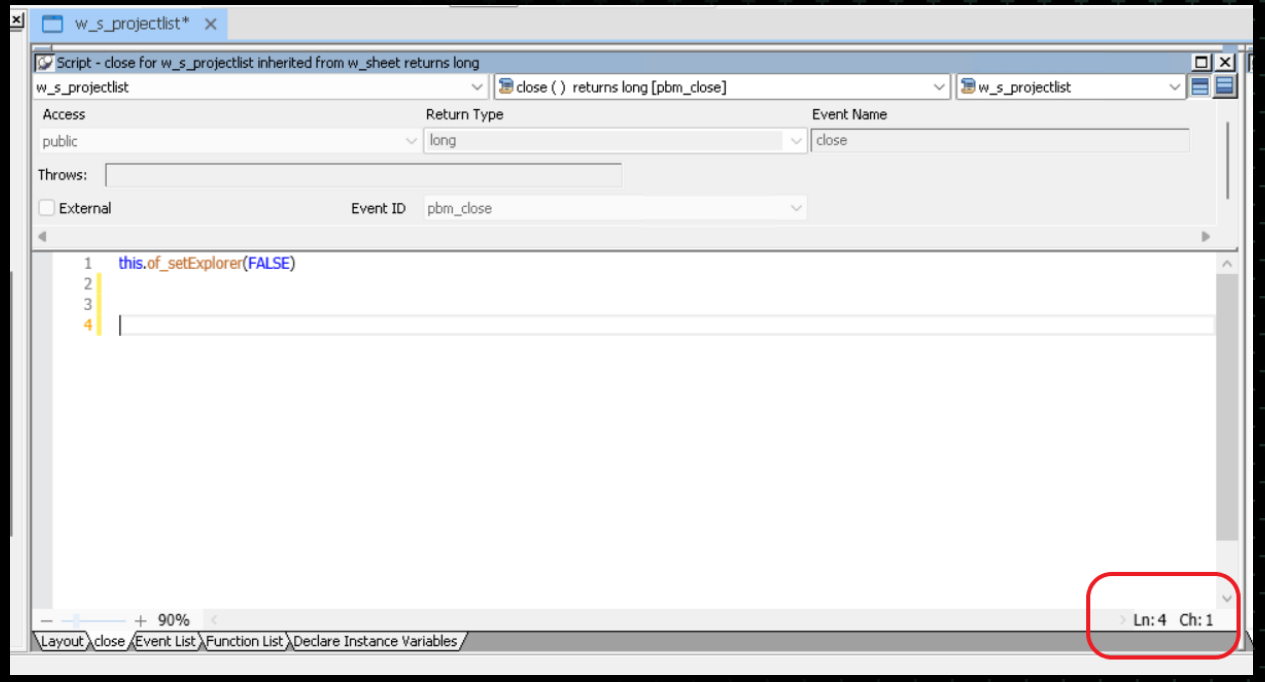
Modern code editor

- Debugging and Breakpoint Cursor Enhancement
  - Improved visual appearance of breakpoints and execution cursors for a more streamlined debugging experience.
  - You can click in the left margin to set/unset the breakpoints



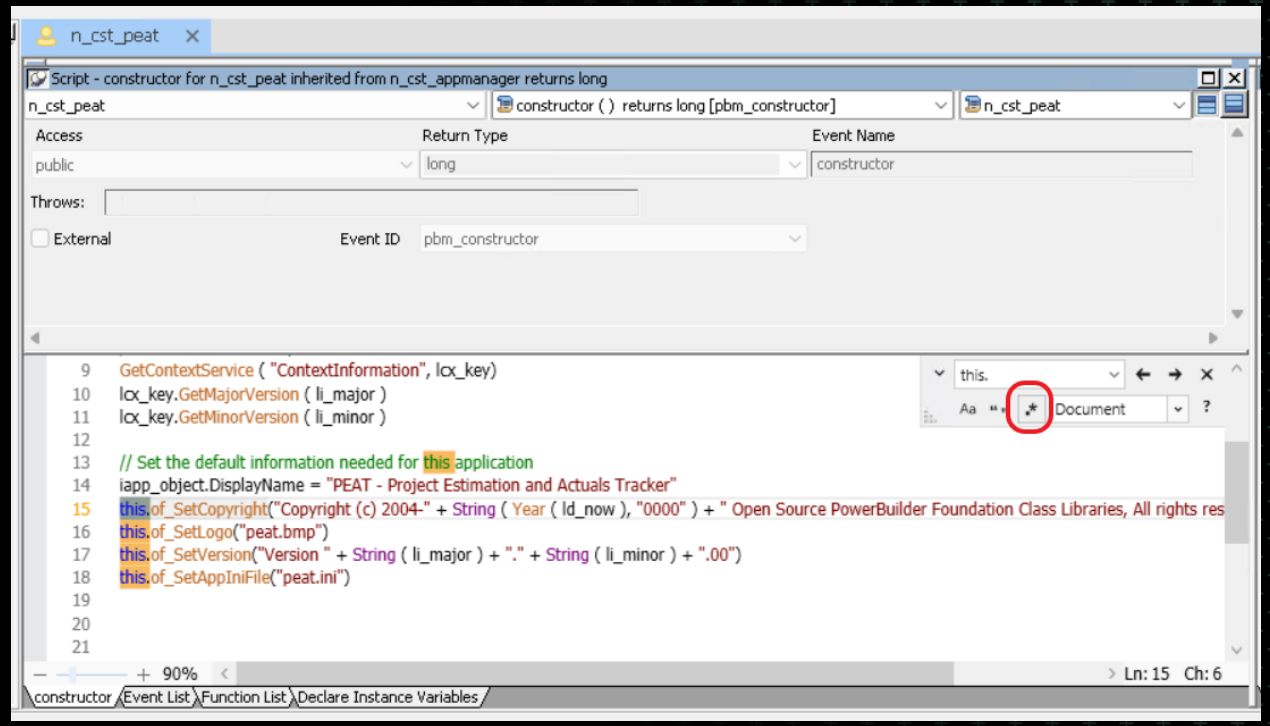
Modern code editor

- Status Bar
  - Adds a status bar at the bottom right corner of the editor, displaying line and column numbers for easy reference.



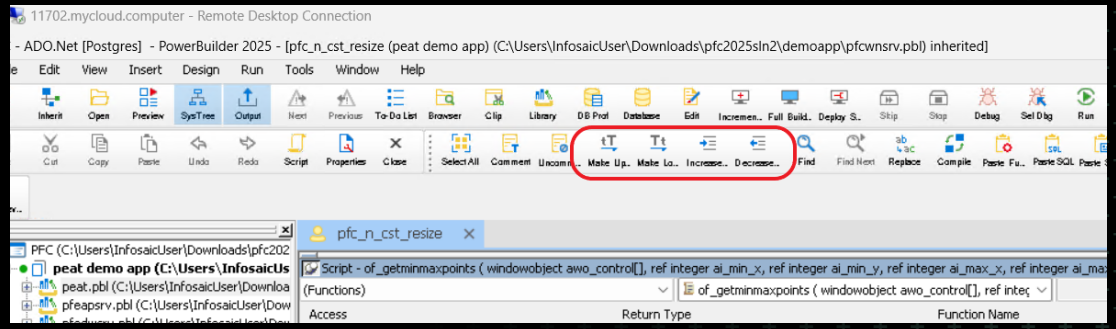
Modern code editor

- Enhanced Find and Replace with Regex
  - Improved find and replace functionality with keyword highlighting, as well as enhanced regex support for advanced search operations.



Modern code editor

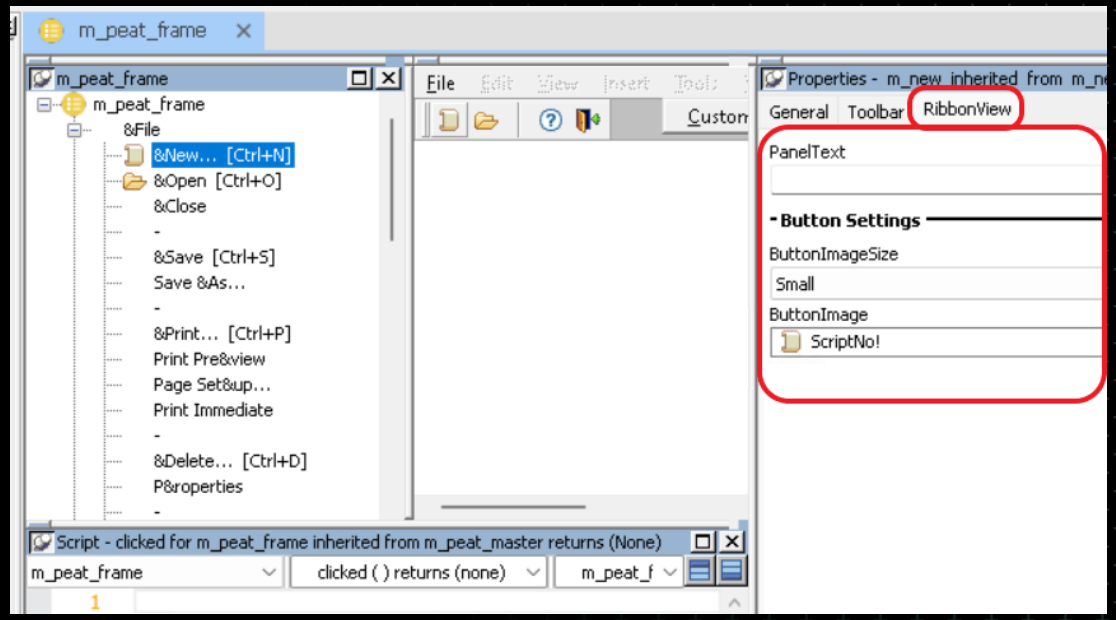
- Enhanced Menu & Toolbar
  - The Edit menu has been added with the Code Formatting menu and the following sub-menus: Comment Selection, Uncomment Selection, Make Uppercase, Make Lowercase, Increase Line Indent, Decrease Line Indent, & Delete Horizontal White Space.
  - The Toolbar has been added with the following items: Make Uppercase, Make Lowercase, Increase Line Indent, & Decrease Line Indent.



DEMO: Modern code editor

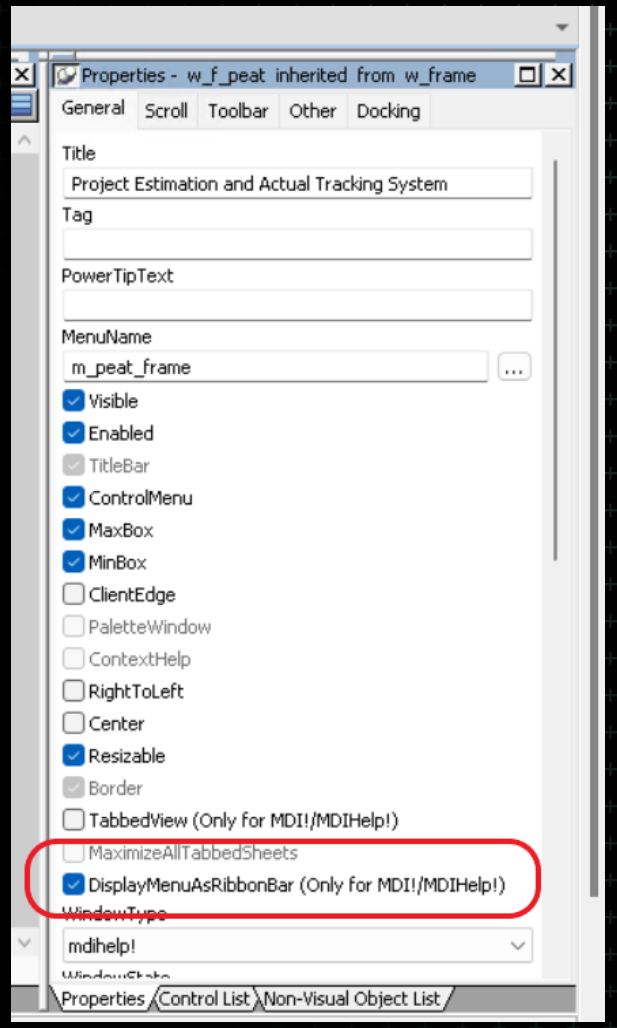
Converting MDI Menu to RibbonBar

- New RibbonView panel in menu painter allows you set text and picture for the menu items in the ribbonbar



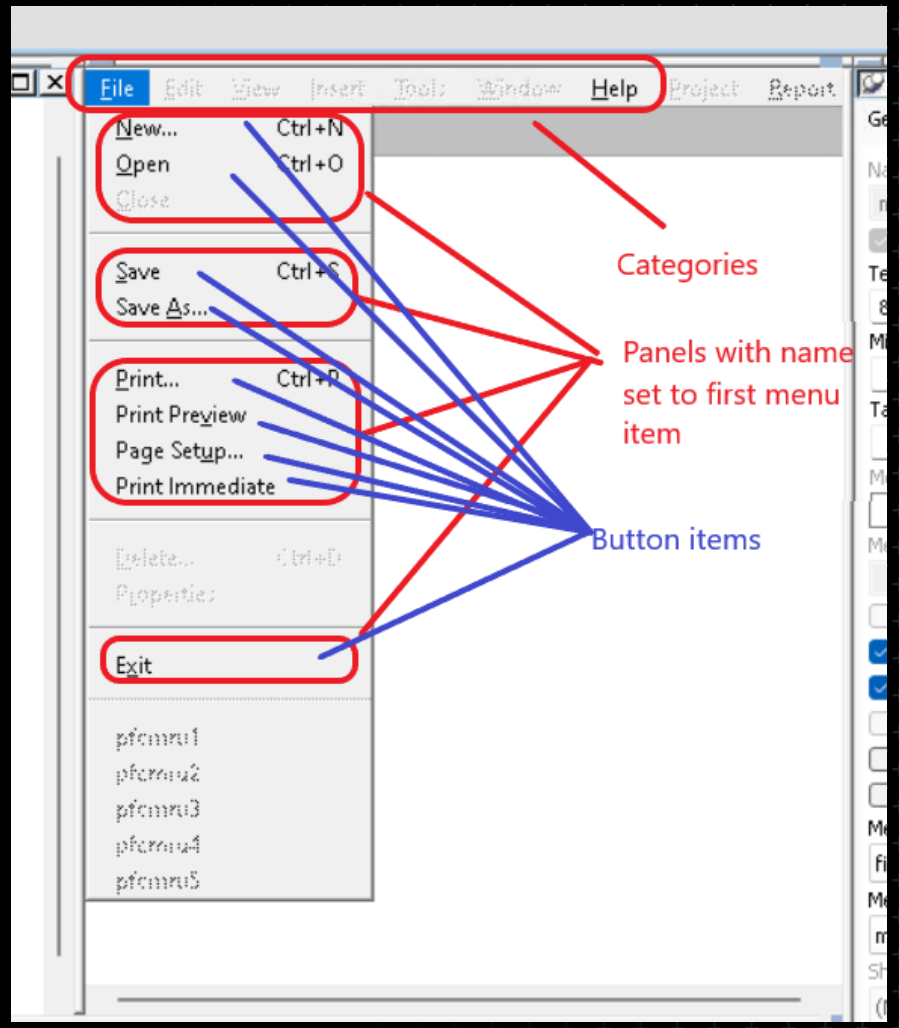
Converting MDI Menu to RibbonBar

- New DisplayMenuAsRibbonBar option available for MDI frame windows
- Can be set in script as well



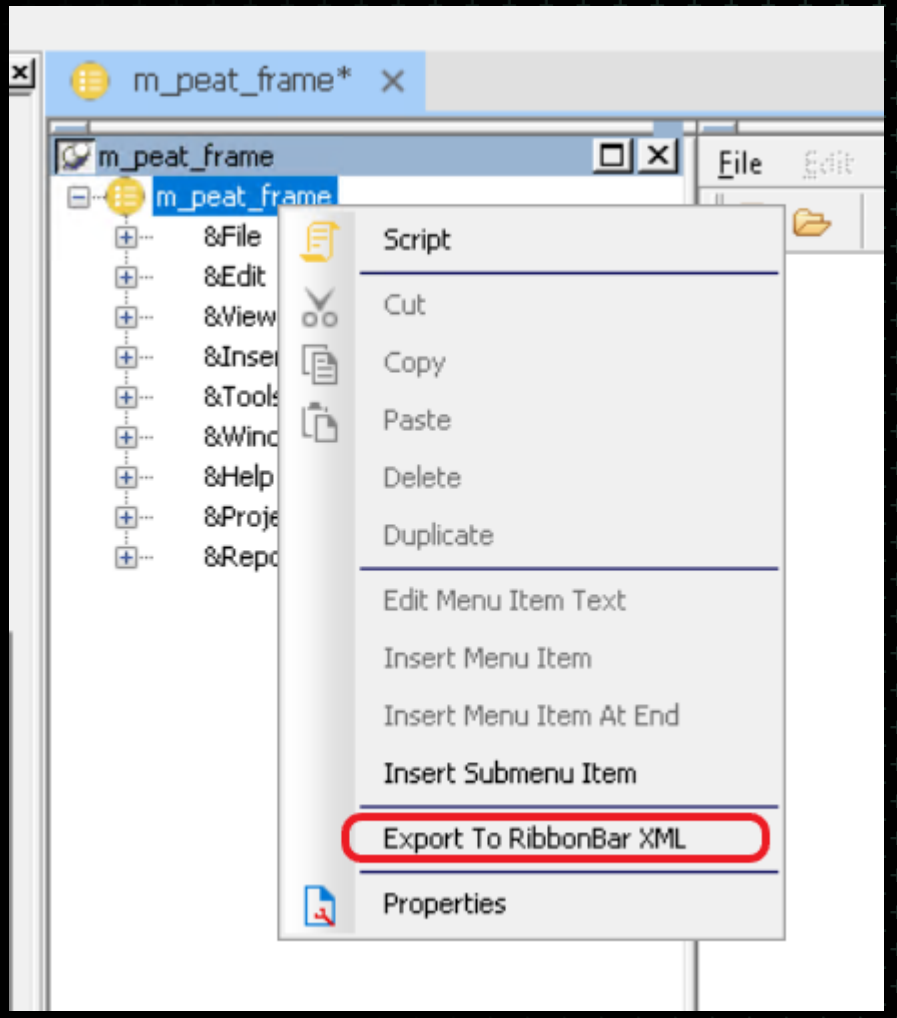
Converting MDI Menu to RibbonBar

- Top level menu items become categories
- Dividers within the first level menu become panels. The panel is named after the first menu item in the section
- Second level menu buttons, if they do not have subitems, become buttons
- Second level items, if they have subitems, become drop down buttons
- Third level menu items become menu items within the second level drop down buttons
- Fourth level menu items become items with the third level menu items



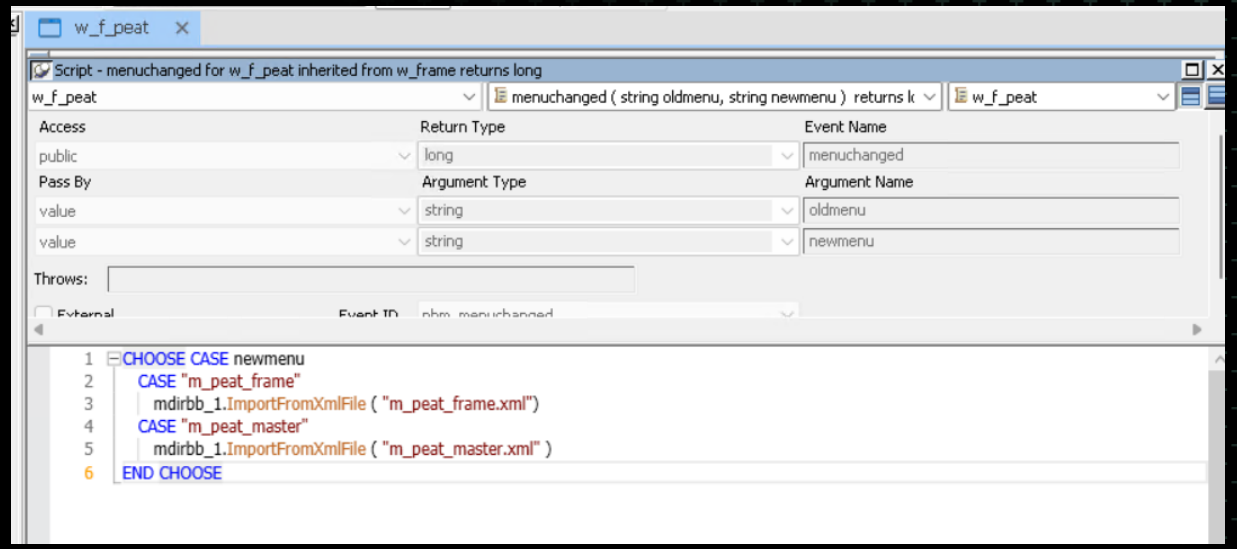
Converting MDI Menu to RibbonBar

- You may want to further customize the look of the generated RibbonBar
- New “Export to RibbonBar XML” RMB popup menu item



Converting MDI Menu to RibbonBar

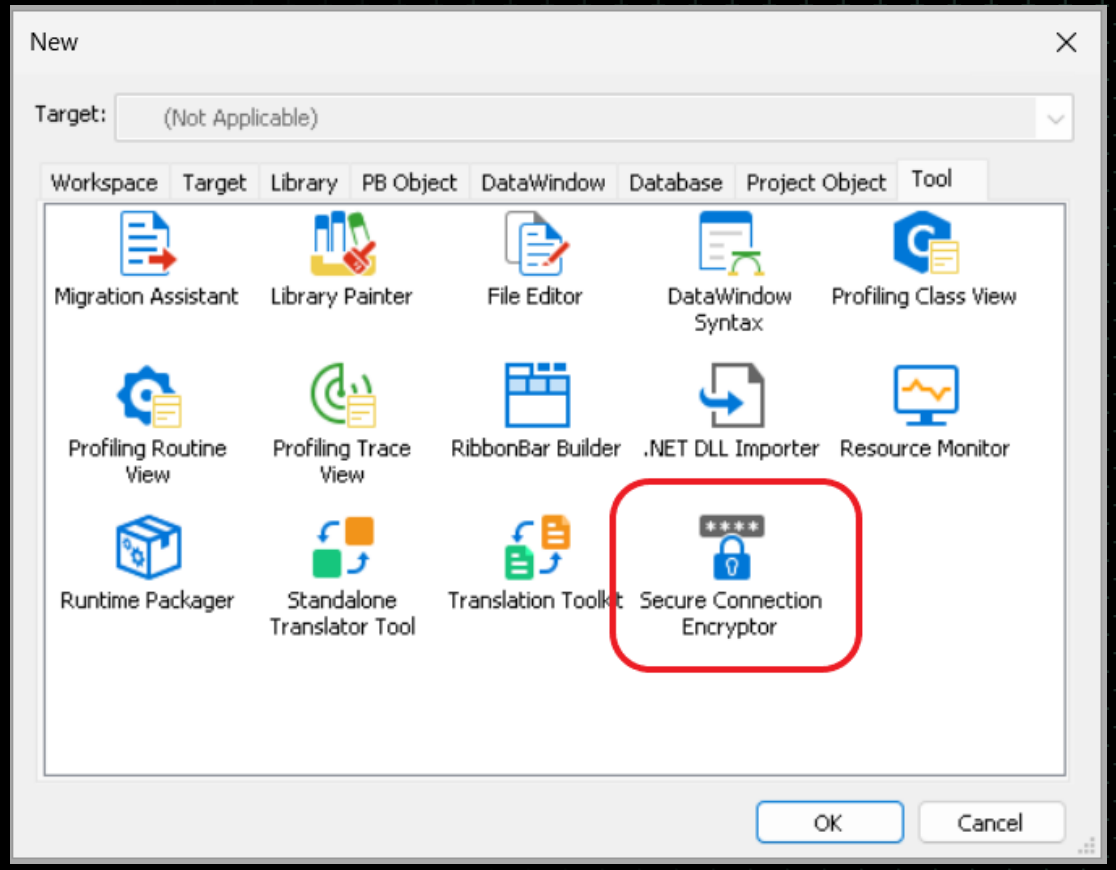
- Customize the XML to suit your taste
- Add code to the new menuchanged event in the MDI frame to load the custom XML when the menu changes



DEMO: Converting MDI Menu to RibbonBar

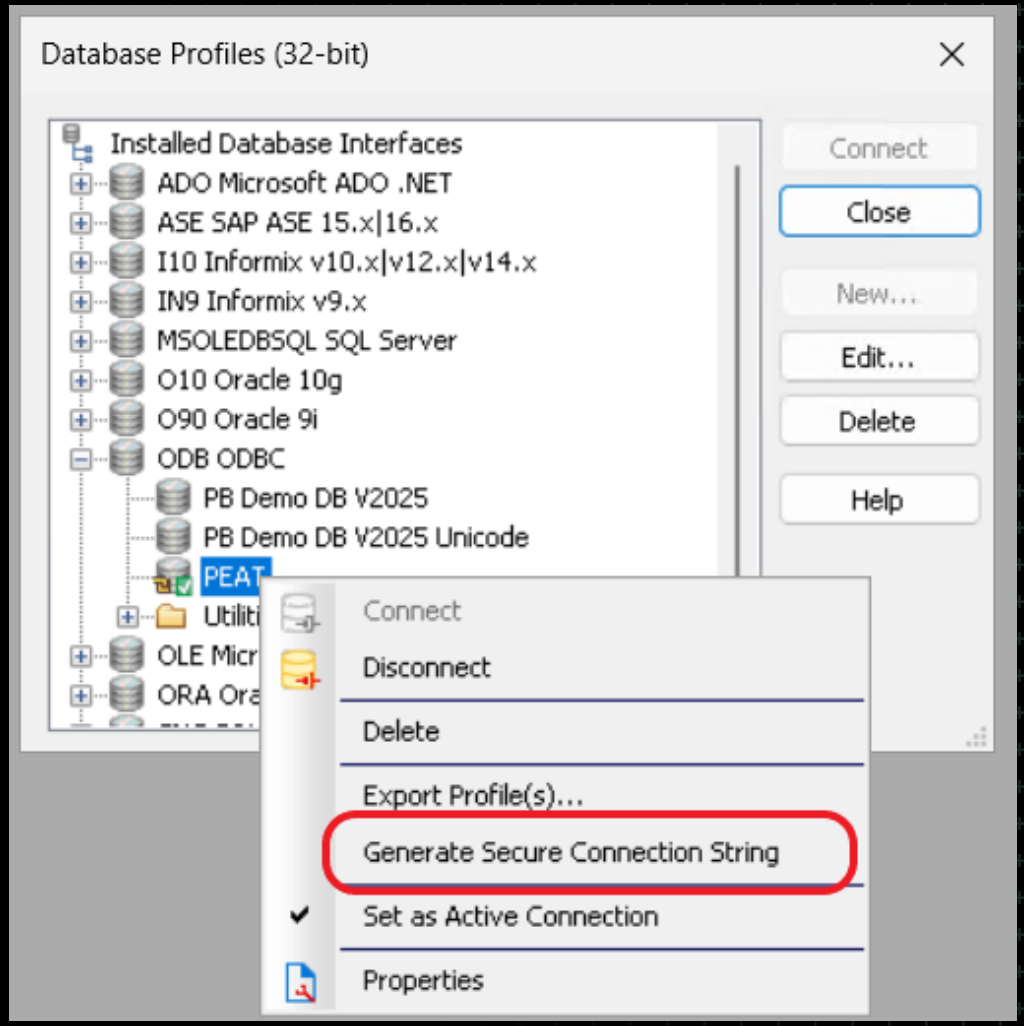
Secure Connection Encryptor

The Secure Connection Encryptor can be launched from the New dialog



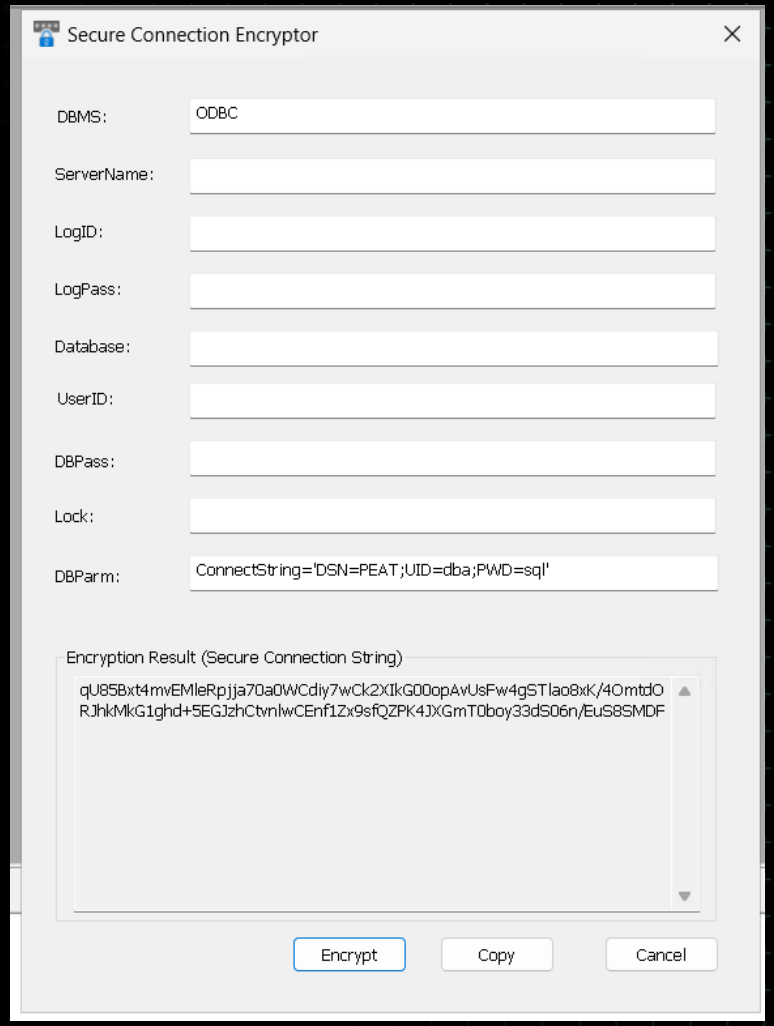
Secure Connection Encryptor

- It is also available as a RMB menu option in the database profile dialog



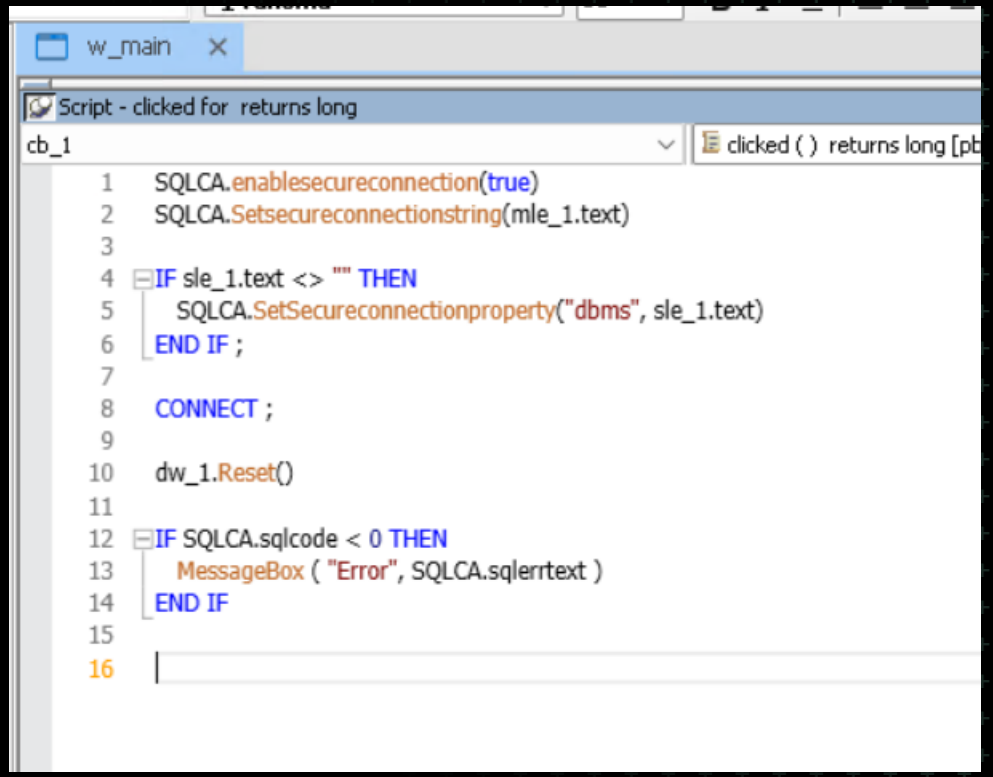
Secure Connection Encryptor

- If launched from the database profile dialog it will populate the entries automatically.
- Otherwise, you will need to fill them out manually



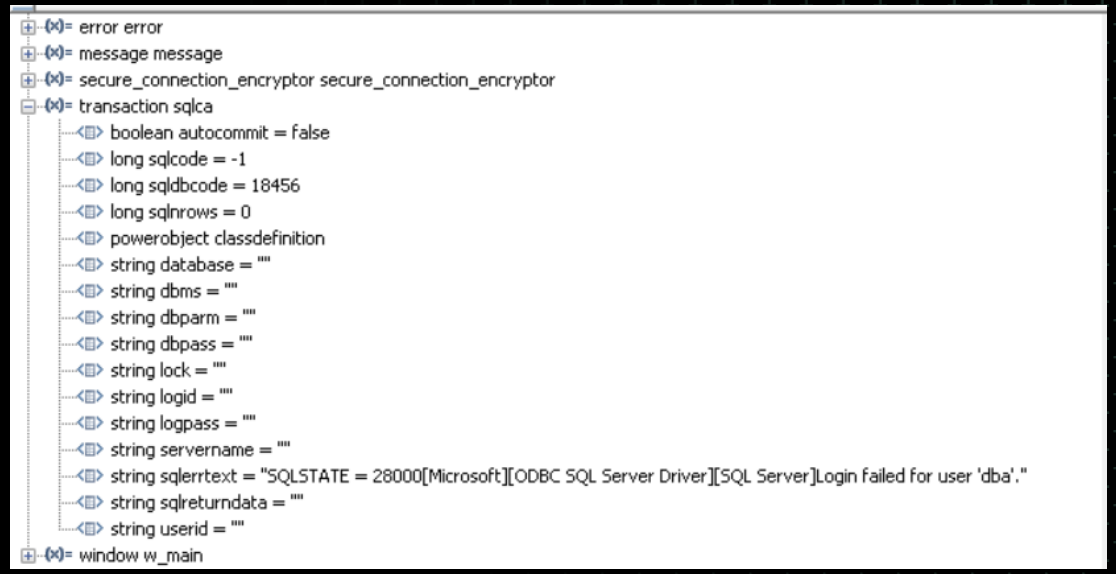
Secure Connection Encryptor

- New SQLCA methods
  - EnableSecureConnection
  - SetSecureConnectionString
    - Sets all properties from encrypted string
  - SetSecureConnectionProperty
    - Updates one property with clear text string



Secure Connection Encryptor

- If you have used the Secure Connection Encryptor values to populate SQLCA, then the values used cannot be read in the debugger



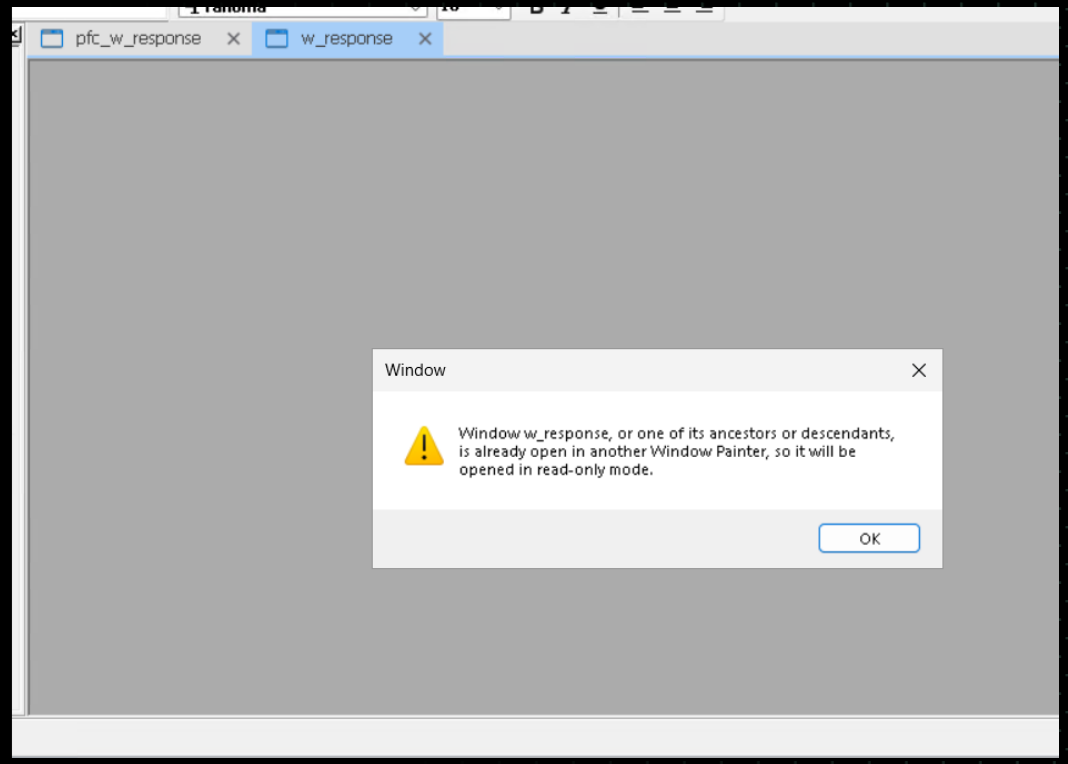
DEMO: Secure Connection Encryptor

IDE enhancements

- Open object in read-only mode
- Search by object type
- Search from the Browser window
- Locate object from the Browser window
- Locate the object from the tab header
- Open menu painter from window's properties page
- New Icons for PowerBuilder IDE Shortcut
- Database interface names simplified

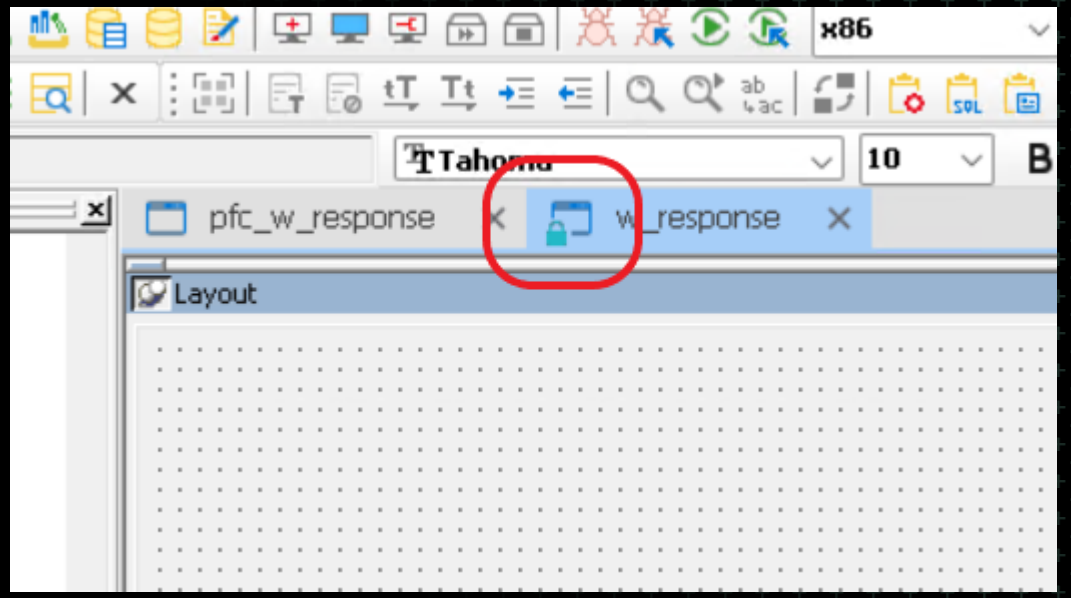
IDE enhancements

- Open object in read-only mode
  - An object will be opened in the read-only mode if the object's ancestor or descendant is already open, or the User Object on its surface is already open, or a control inherited from it is already open. You will be prompted that the object is read-only when the object is opened.



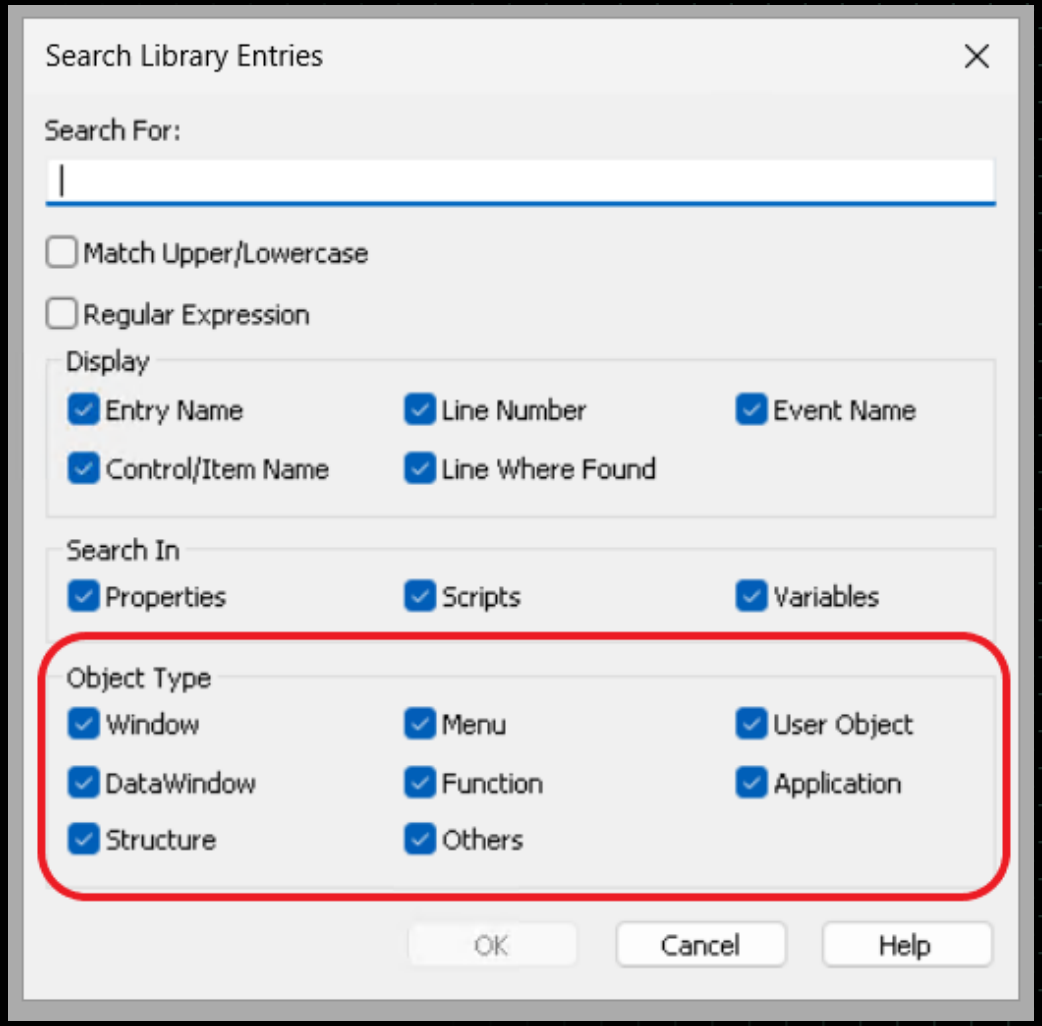
IDE enhancements

- Open object in read-only mode
  - A lock icon will be displayed in the object title bar after it is opened. For a read-only object, you can change its UI in the painter, but you cannot save the changes, and you cannot change or save its scripts in the code editor.



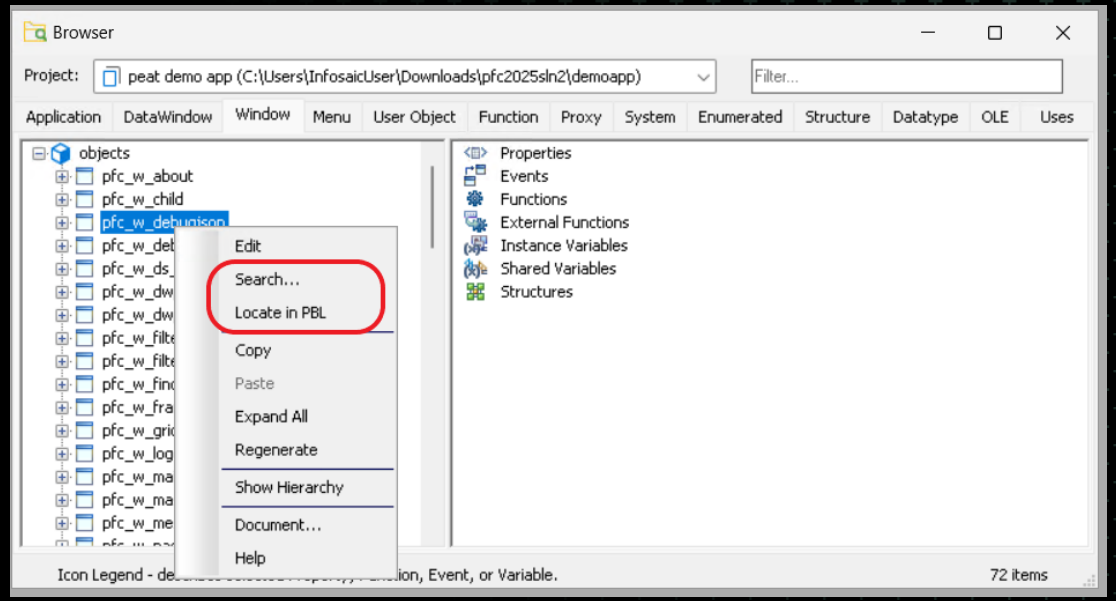
IDE enhancements

- Search by object type
  - In the Search Object Entries window, you can select the object type (including window, menu, user object, DataWindow, function, application, structure, and others such as pipeline, project, query etc.) in which you want to search. This can improve the search efficiency (especially in large and complex applications) and filter results more precisely.



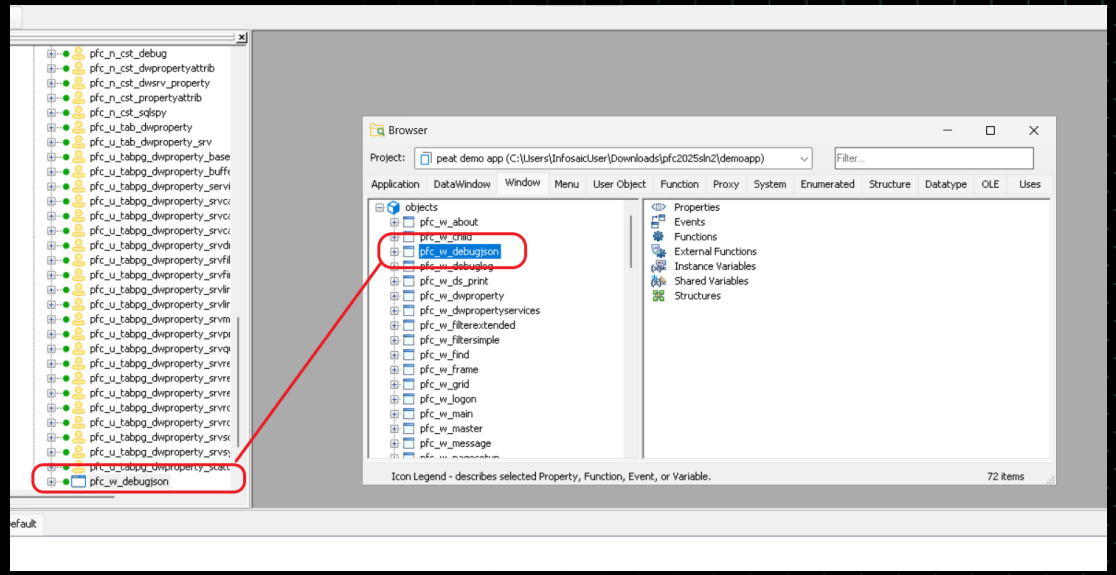
IDE enhancements

- Search from the Browser window
  - In the tree view of the Browser window, you can right-click the object and then select Search from the popup menu to open the Search Object Entries window.
- Locate in PBL from the Browser window
  - In the tree view of the Browser window, you can right-click the object and then select Locate in PBL from the popup menu to quickly locate the object in the PBL in the system tree.



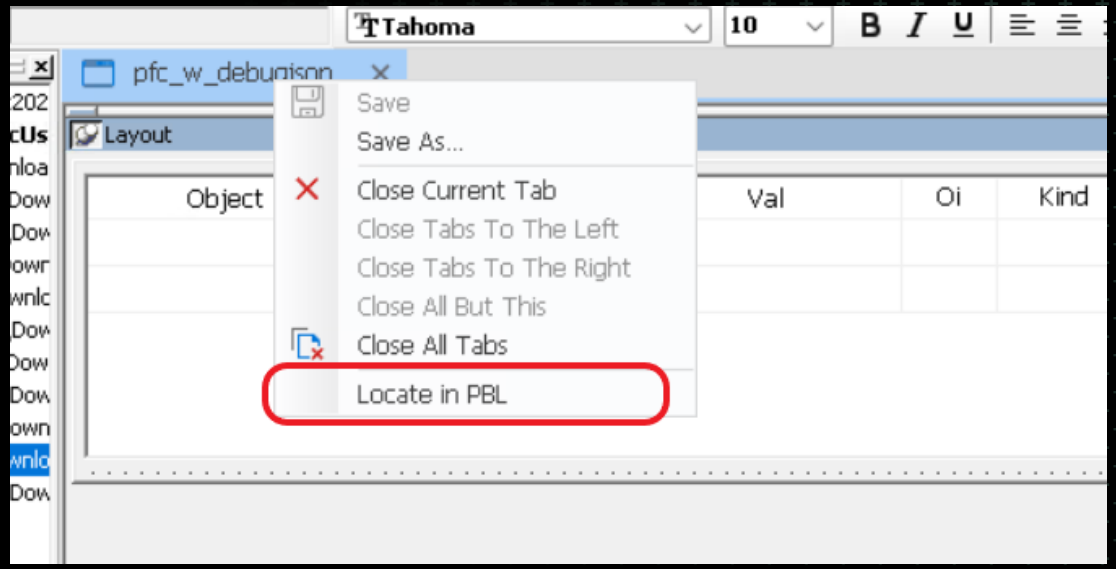
IDE enhancements

- Locate in PBL from the Browser window
  - In the tree view of the Browser window, you can right-click the object and then select Locate in PBL from the popup menu to quickly locate the object in the PBL in the system tree.



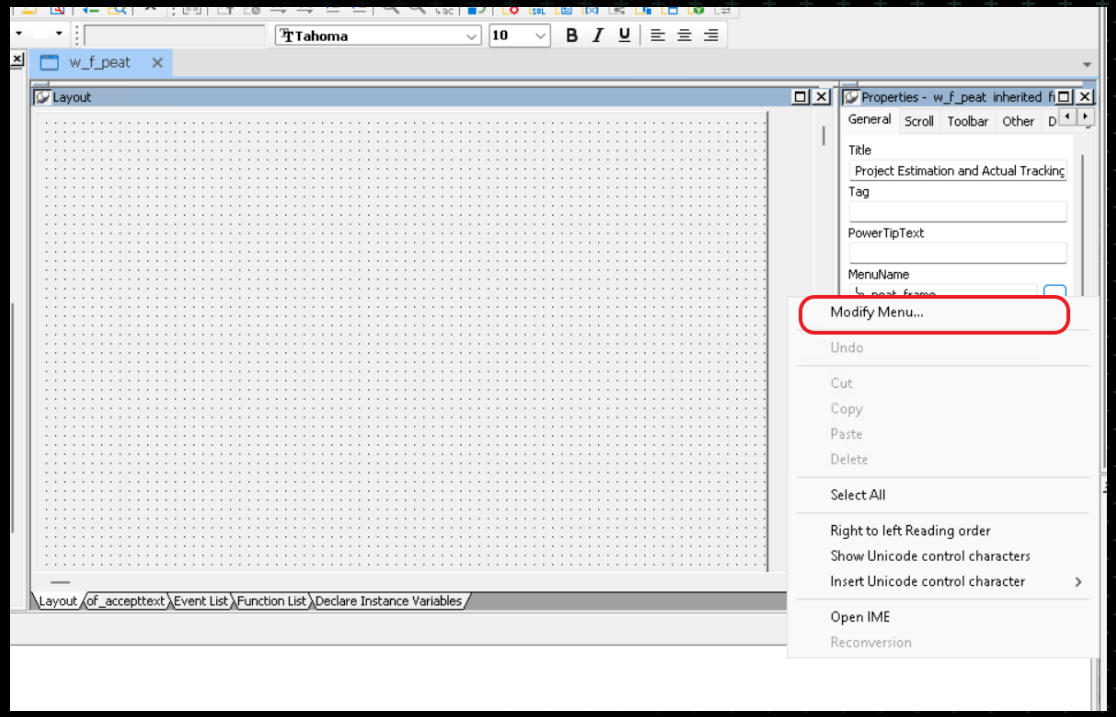
IDE enhancements

- Locate the object from the tab header
  - You can right-click the tab header, and then select Locate in PBL from the popup menu to jump to the object entry in the system tree.



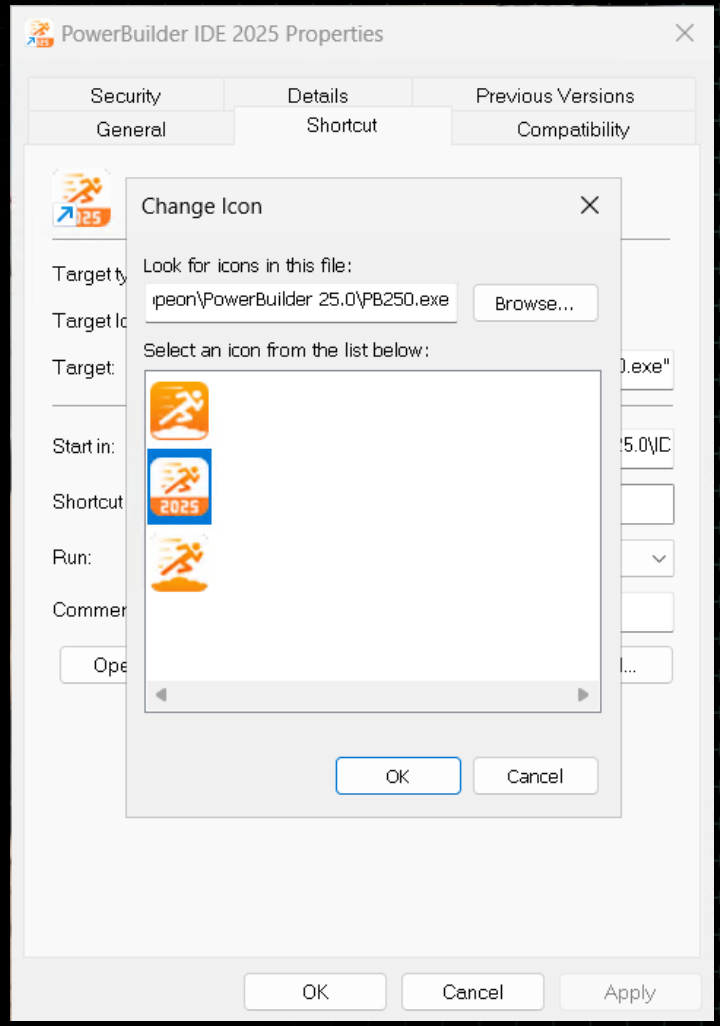
IDE enhancements

- Open menu painter from window's properties page
  - In the General tab of the window's Properties page, you can right-click the menu name in the MenuName field and then select Modify Menu from the popup menu to open the menu object in the menu painter.



IDE enhancements

- New Icons for PowerBuilder IDE Shortcut
  - If you have more than one major version of PowerBuilder installed on your machine it makes is much easier to distinguish which is which from the shortcuts



IDE enhancements

Database interface names simplified

- The database interface names have been simplified and standardized to improve clarity.
- The most recent database interfaces will be shown at the first level, for easy selection. Older database interfaces will be shown under the "Obsolete Interfaces" node.
- The SQLCA.DBMS value of "IN10 Informix v10.x|v12.x|v14.x" has been changed to "INF Informix". Although the old value "IN10 Informix v10.x|v12.x|v14.x" is still supported, it is recommended to use the new value "INF Informix" instead of the old value.
- The old name conventions in the database profiles or DBMS exported from earlier versions will still be supported and compatible with Version 2025.

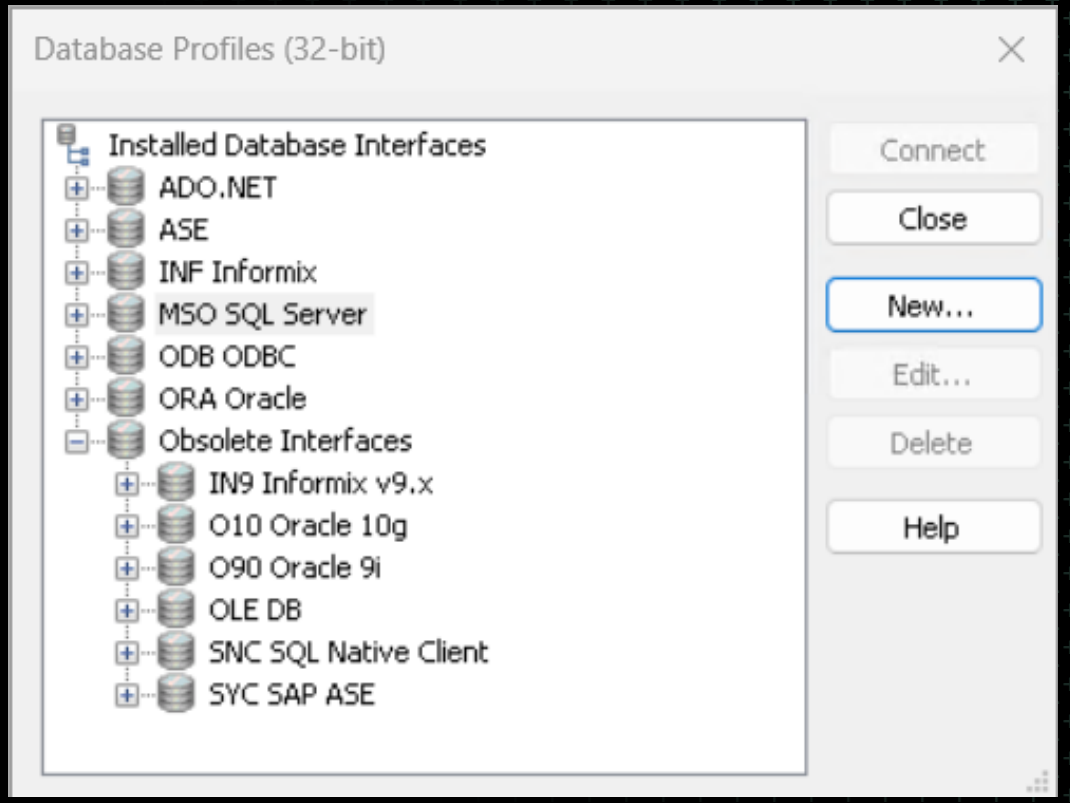
IDE enhancements

Database interface names simplified

Old Name	New Name	Hierarchy	SQLCA.DBMS value
ADO Microsoft ADO.NET	ADO.NET	shown at the first level	(no change)
ASE SAP ASE 15.x|16.x	ASE	shown at the first level	(no change)
IN10 Informix v10.x|v12.x|v14.x	INF Informix	shown at the first level	Changed to "INF Informix"
MSOLEDBSQL SQL Server	MSO SQL Server	shown at the first level	(no change)
ODB ODBC	(no change)	shown at the first level	(no change)
ORA Oracle	(no change)	shown at the first level	(no change)
IN9 Informix v9.x	IN9 Informix	shown under the "Obsolete Interfaces" node	(no change)
O10 Oracle 10g	O10 Oracle	shown under the "Obsolete Interfaces" node	(no change)
O90 Oracle 9i	O90 Oracle	shown under the "Obsolete Interfaces" node	(no change)
OLE Microsoft OLE DB	OLE DB	shown under the "Obsolete Interfaces" node	(no change)
SNC SQL Native Client	SNC SQL Server	shown under the "Obsolete Interfaces" node	(no change)
SYC SAP ASE	SYC ASE	shown under the "Obsolete Interfaces" node	(no change)

IDE enhancements

- Database interface names simplified



Session Agenda (recap)

- New compiler and solution (demo)
- Modern code editor (demo)
- Converting MDI Menu to RibbonBar (demo)
- Secure Connection Encryptor (demo)
- IDE enhancements

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Thank you

Q&A Time