

APL64 2025.0.5

Table of Contents

Overview	3
Interpreter Modifications	3
Primitive functions with performance improvements	3
System functions with performance improvements and/or updated programmer documentation	3
New <input type="checkbox"/> TEXTREPL argument	3
New <input type="checkbox"/> XL actions: FromAPLToRange, ToAPLFromRange, Autofit and NumberFormatRanges	3
<input type="checkbox"/> SSASSIGN programmer documentation syntax and example updated.....	4
<input type="checkbox"/> SSCAT programmer documentation example updated.....	4
<input type="checkbox"/> SYSINIT Additional Values: EnvVars, MachineName and Processor count	4
APL64 Developer GUI Modifications	4
<input type="checkbox"/> EDSS: New Import and Export options from/to an APL variable.....	4
<input type="checkbox"/> EDSS: New option to print the Worksheet or Current Selection in the Worksheet	5
<input type="checkbox"/> EDSS: Active worksheet tab is more prominent with a white background.....	5
<input type="checkbox"/> EDSS: When there is only one worksheet, its tab will now be visible	6
Consistent Borders in the APL64 Developer GUI.....	6
Find/Replace Tool Performance Improvements	8
The Command Line, when hidden, is removed as an item in the Active Panes List	8
Function and Variable Editor Pane Tabs include Tool tips indicating the Object Name.....	8
The exception message was improved for a canceled print task.....	9
Print Updates	9
Print dialog: The Pages option in the Page Range section is enabled	9
A heading is printed on each printed page.....	9
New Documentation Timeout option in the Documentation Options window.....	10
WRE and CPC Utility.....	11
Cross-platform Component in Azure On-demand Function: documentation & example improved.....	11
New CPC Example: Using CPC in a Webserver with an HTML Browser-based GUI.....	11
Adding an entire folder of Additional Files for the Application is improved.....	11
Error occurred when creating a WRE with duplicate files present in the Additional Files for the Application area	11
Exception occurred when creating a WRE with an invalid runtime workspace filename	11

Miscellaneous	11
Additional fields added to System Information document in Help About APL64 menu:.....	11
Programmer documentation Updated – APL64 Compatibility with APL+Win.....	12
Bug Fixes	12
Interpreter	12
Bug in Monadic ↑ (first function) w/ axis (aka □mix) in evolution level 1.....	12
The Boolean array was corrupted after an indexed assignment	12
1!2147483647 returned Limit Error instead of 2147483647	12
Querying a workspace (fns/vars) using @path\wsname returned a null object reference message	12
The disclose function with axis returned “APL64 SYSTEM ERROR: Aval.Categorize encountered an undemoted child element at index=9”	12
Exception when executing □pw←0 ♦ ι2150	12
Index into with an axis that is a nested empty array produced DOMAIN ERROR.....	13
Disclose with axis produced NONCE ERROR in evolution levels 1 and 2	13
Reduction of an empty dimension produced incorrect results.....	13
□UCS returned a spurious leading character when translating from UTF-16	13
□ROWFIND didn't return the first instance for duplicate rows in the arguments	13
□SSASSIGN didn't allow indices separated by a comma like the SSASSIGN function in APL+Win	13
Enclose with Empty Axis with more than one array returned incorrect result.....	13
An exception occurred when executing a statement with a leading ←← in a function.....	13
An exception occurred when executing □uppercase instead of □ucase in a function	13
An exception occurred when running a function in)evlevel 2 when intended to run in)evlevel 1...13	13
Developer Version GUI	13
A mouse click in the history or editor panes could result in undesirable scrolling and selection	13
The keyboard shortcuts Ctrl+/- and Ctrl+Shift+/- to comment and uncomment lines did not work....	13
The down arrow on the last line to insert a new line in the function editor did not work.....	13
The Jump to line feature in editor didn't scroll the line into view	13
The Selection option wasn't enabled by default in the Print dialog for a selection	13
Canceling the Print dialogue didn't return the focus to APL64.....	14
Printing a selection in APL64 didn't maintain the selection after being printed	14
Without a selection, everything is selected after printing with Page Range set to All	14
Exception when typing Shift+F10	14
The caret was not visible in the newly floated Editor, Debug or State Indicator pane.....	14

A different keyboard definition selection didn't take affect when restarting APL64	14
Alt+F9 and Alt+Shift+F9 keyboard shortcut didn't scroll the visible line into view	14
An exception occurred when the Menu Text and Action Text in the Configure User Tools window matched	14
1 <input type="checkbox"/> telprint charmat returned DOMAIN ERROR	14
<input type="checkbox"/> textrepl allowed for overlapping replacements to occur in the resulting segmented text	14

Overview

This document describes the enhancements and bug fixes in the APL64 2025.0.5 Update.

Interpreter Modifications

Primitive functions with performance improvements

- Power (*)
- Binomial (!)
- Decode (⊥)
- Catenate (⌞) for in place assignment, e.g. X,←Y
- Epsilon (€) when arguments are a character datatype

System functions with performance improvements and/or updated programmer documentation

- TEXTREPL: Performance and programmer documentation
- TELPRINT: Performance and programmer documentation
- WORDREPL: Performance
- MATRIFY: Performance

New TEXTREPL argument

Added an optional Boolean scalar argument option to the right argument to indicate when overlapping replacement is permitted for successive replacements. The default behavior is to prevent overlapping replacement.

New XL actions: FromAPLToRange, ToAPLFromRange, Autofit and NumberFormatRanges

- FromAPLToRange action inserts the elements of an APL64 variable into an Excel worksheet range.
- ToAPLFromRange action fills an APL64 array with the values of an Excel worksheet range.
- Autofit action specified ranges.
- NumberFormatRanges sets the number format of selected ranges in an Excel-format worksheet.

Refer to the **Help | APL Language | Using XL** menu for additional details.

SSASSIGN programmer documentation syntax and example updated

SSCAT programmer documentation example updated


SYSINIT Additional Values: EnvVars, MachineName and Processor count

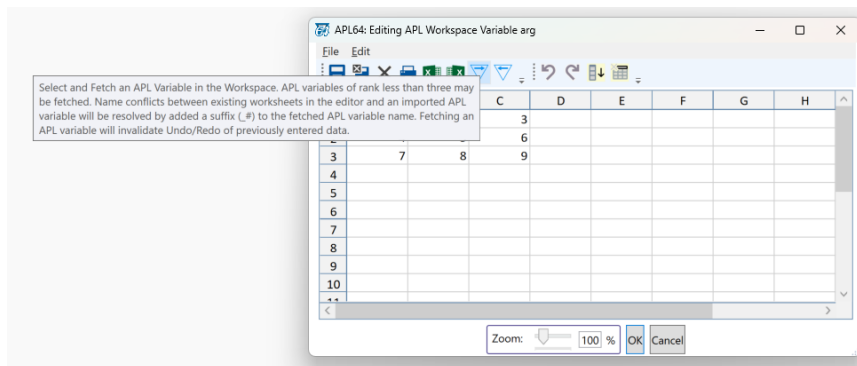
- SYSINIT[4]: Environment variables array
- SYSINIT[6]: Machine name
- SYSINIT[7]: Processor count

APL64 Developer GUI Modifications

EDSS: New Import and Export options from/to an APL variable

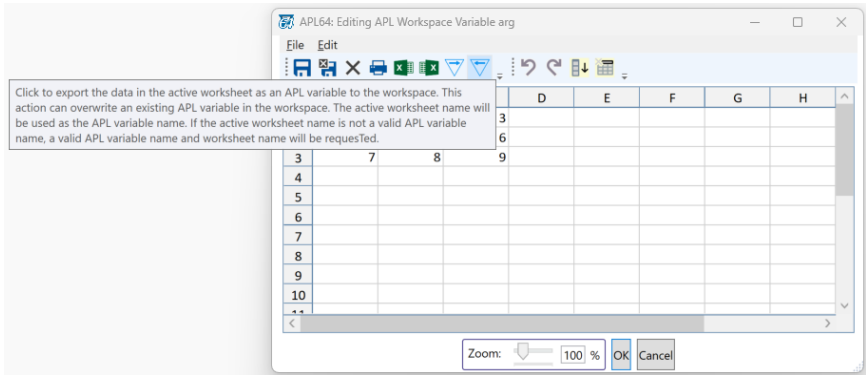
- Import an APL Variable from the Workspace

Use the EDSS editor to edit an existing APL variable, and click the **File | Import APL Variable to Worksheet** menu item or toolbar button  to select the workspace variable to import to the EDSS editor:

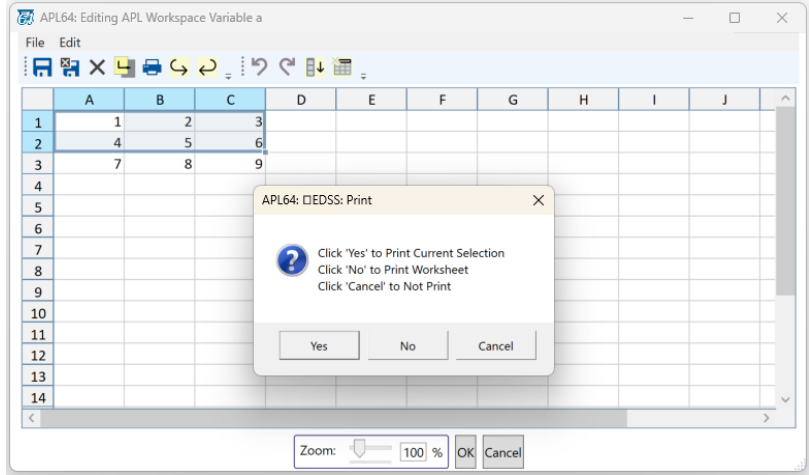


- Export Active Worksheet Data to an APL Variable

The EDSS dialog supports saving the data in the active worksheet to the workspace. Click the **File | Export Active Worksheet Data As APL Variable** menu item or the toolbar button.

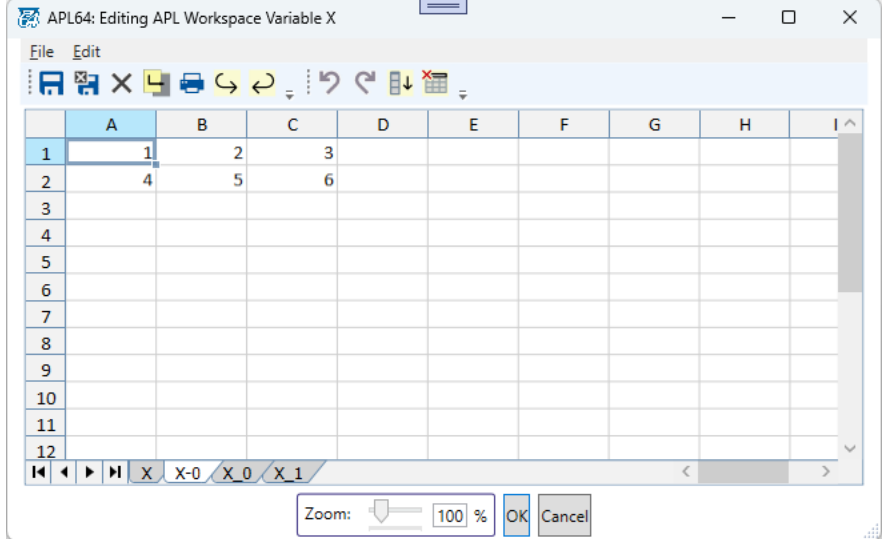


EDSS: New option to print the Worksheet or Current Selection in the Worksheet

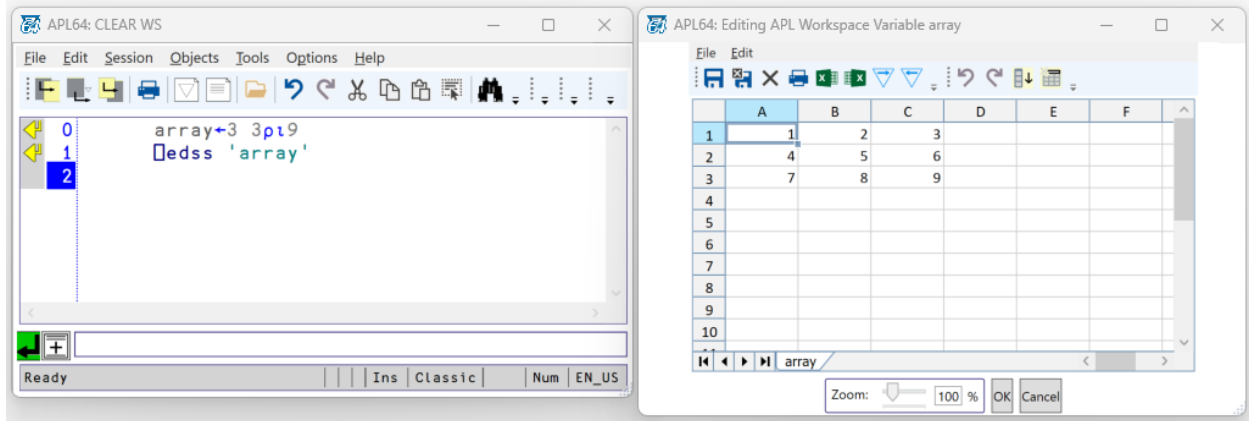


Note: When the *Current Selection* option is selected, the selection will be printed, however the printer dialog option button for Selection is not checked. This behavior has been reported to the third-party vendor.

EDSS: Active worksheet tab is more prominent with a white background



□ EDSS: When there is only one worksheet, its tab will now be visible



Consistent Borders in the APL64 Developer GUI

The same border thickness border was applied to the following:

- Status bars for variable editor, function editor
- Classic, Sequential, Grouped and Separated history panes
- Editors docking area
- Debug docking area
- Gridsplitter

Prior version:

```
APL64: C:\APLWIN19\Tools\WINDOWS.w3
File Edit Session Objects Tools Options Help
VCLIPPaste
0 R←CLIPPaste;hClipMemory;hSize;lpGlobalMemory;hApl
1 R←CLIPPaste -- Get CF_TEXT data from the Windows clipboard
2 R←''
3 A Get the handle for APL
4 hApl ← APLFrame
5 A Open the clipboard.
6 →(⊖vcall 'OpenClipboard' hApl)+0
7 A First see if the clipboard contains any data.
8 →(⊖vcall 'IsClipboardFormatAvailable' 'CF_TEXT')p1+1f⊖LC ⊗ 0 0 p⊖vcall 'CloseClipboard' ⊗ →0
9 A Get a handle to the clipboard data.
10 hClipMemory ← ⊖vcall 'GetClipboardData' 'CF_TEXT'
[0:0]

0 )Load C:\APLWIN19\Tools\WINDOWS.w3
1 "C:\APLWIN19\Tools\WINDOWS.w3" LAST SAVED 4/22/2019 6:54:16 PM
2 >[DLX] Describe
3 This is the WINDOWS workspace distributed with the APL+Win.
4 It contains a variety of utility functions to help you interact
5 with the Microsoft Windows environment and the APL+Win Windows
6 Interface.
7
8 A description of each function may be obtained by entering
9 Explain 'fname'. Run "Summary" for a synopsis of all of the
10 functions in the workspace.
11
12 Copyright 2005-2019, APLNow LLC.
13 )ed CLIPPaste
14
```

Updated version:

```
APL64: C:\APLWIN19\Tools\WINDOWS.w3
File Edit Session Objects Tools Options Help
VCLIPPaste
0 R←CLIPPaste;hClipMemory;hSize;lpGlobalMemory;hApl
1 R←CLIPPaste -- Get CF_TEXT data from the Windows clipboard
2 R←''
3 A Get the handle for APL
4 hApl ← APLFrame
5 A Open the clipboard.
6 →(⊖vcall 'OpenClipboard' hApl)+0
7 A First see if the clipboard contains any data.
8 →(⊖vcall 'IsClipboardFormatAvailable' 'CF_TEXT')p1+1f⊖LC ⊗ 0 0 p⊖vcall 'CloseClipboard' ⊗ →0
9 A Get a handle to the clipboard data.
10 hClipMemory ← ⊖vcall 'GetClipboardData' 'CF_TEXT'
11 →(hClipMemory≠0)p1+1f⊖LC ⊗ 0 0 p⊖vcall 'CloseClipboard' ⊗ →0
12 A Get the size of the data.
13 hSize ← ⊖vcall 'GlobalSize' hClipMemory
14 A Get a far pointer to the memory
[0:0]

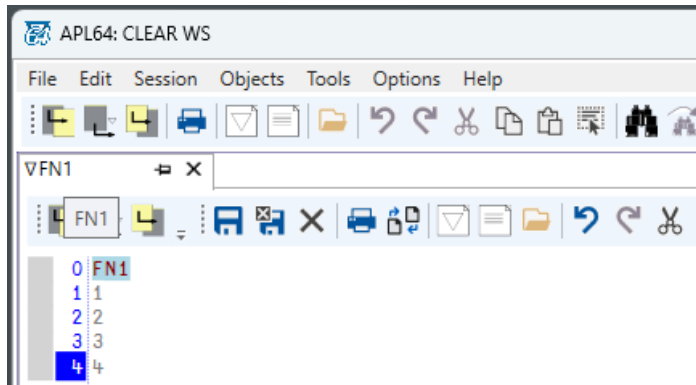
0 )Load C:\APLWIN19\Tools\WINDOWS.w3
1 "C:\APLWIN19\Tools\WINDOWS.w3" LAST SAVED 4/22/2019 6:54:16 PM
2 >[DLX] Describe
3 This is the WINDOWS workspace distributed with the APL+Win.
4 It contains a variety of utility functions to help you interact
5 with the Microsoft Windows environment and the APL+Win Windows
6 Interface.
7
8 A description of each function may be obtained by entering
9 Explain 'fname'. Run "Summary" for a synopsis of all of the
10 functions in the workspace.
11
12 Copyright 2005-2019, APLNow LLC.
13 )ed CLIPPaste
14
```

Find/Replace Tool Performance Improvements

The performance of the Find Next/Previous action is significantly improved for large source texts. The option, **Edit | Use Legacy Find Match Highlighting**, is provided to use the legacy behavior so that only the current match is highlighted.

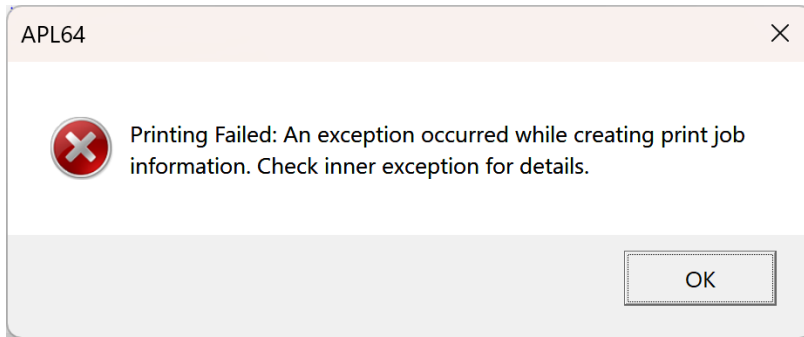
The Command Line, when hidden, is removed as an item in the Active Panes List

Function and Variable Editor Pane Tabs include Tool tips indicating the Object Name



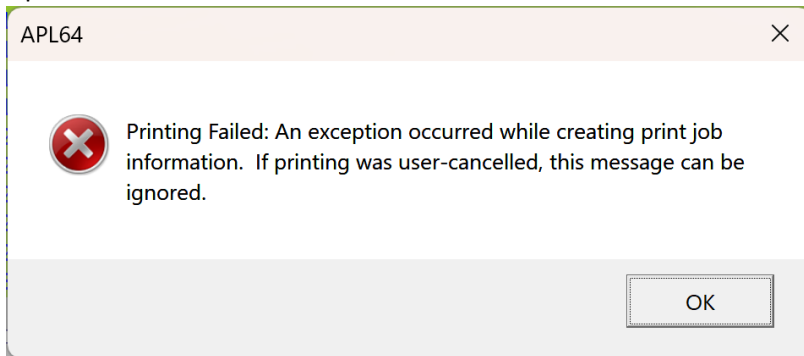
The exception message was improved for a canceled print task
Prior

version:



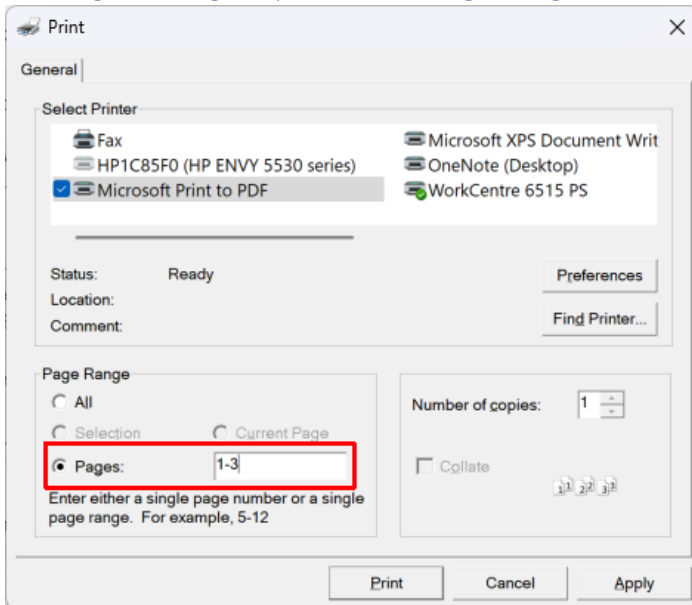
Updated

version:



Print Updates

Print dialog: The Pages option in the Page Range section is enabled



A heading is printed on each printed page

- Object type prefix: #/Variable or ∇/Function
- Object name

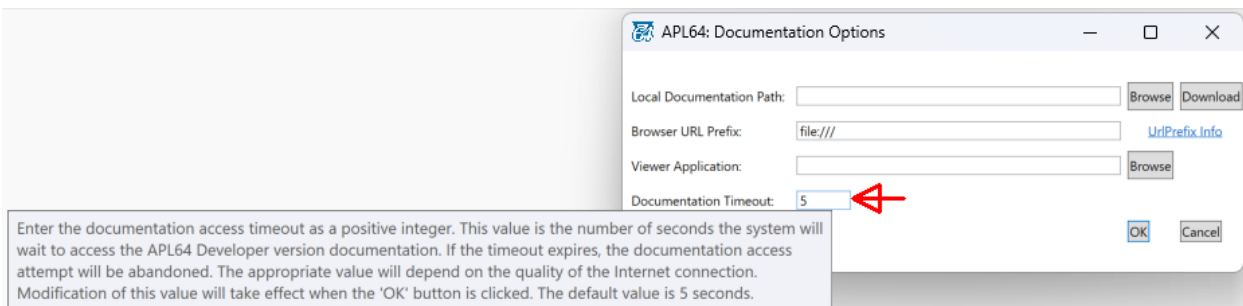
- Page # in the format “Page N of M”

Example:

```
▽APLFrame: Page 1 of 1
[0] H←APLFrame;N;I;J
[1] A Return handle of the APL64 window.
[2] A Assumes the main window is the only one with
[3] A a caption that begins with "APL64:" and that its
[4] A process id matches t[]SYSINIT.
[5] I←t[]sysinit
[6] H←[]wcall 'FindWindow' 0 0
[7] →(×H←[]wcall 'GetWindow' H 'GW_HWNDFIRST')↓0
[8] :Repeat
[9]     (N J)←[]wcall 'GetWindowThreadProcessId' H (,0)
[10]    :If I=J
[11]        N←tt/[]wcall 'GetWindowText' H (64p[]TCNUL) 64
[12]        →(1+N []SS 'APL64:')/0
[13]    :EndIf
[14] :Until 0=H←[]wcall 'GetWindow' H 'GW_HWNDNEXT'
[15]
```

New Documentation Timeout option in the Documentation Options window

This value is the number of seconds the system will wait to access the online APL64 Developer version documentation.



WRE and CPC Utility

[Cross-platform Component in Azure On-demand Function: documentation & example improved](#)

The documentation and example for an APL64 CPC in a Serverless Application has been improved. The menu item pointing to this information in APL64 is **Help | Developer Version GUI | Cross-platform Component | Cross-platform Component in Azure On-demand Function**.

[New CPC Example: Using CPC in a Webserver with an HTML Browser-based GUI](#)

The documentation and example for an APL64 CPC in a Webserver Application is available from the **Help | Developer Version GUI | Cross-platform Component | Cross-Platform Component in Webserver with Browser GUI** menu in APL64.

[Adding an entire folder of Additional Files for the Application is improved](#)

The selected folder is compressed in the WRE or CPC container. The WRE and CPC documentation is updated to illustrate this improvement.

[Error occurred when creating a WRE with duplicate files present in the Additional Files for the Application area](#)

[Exception occurred when creating a WRE with an invalid runtime workspace filename](#)

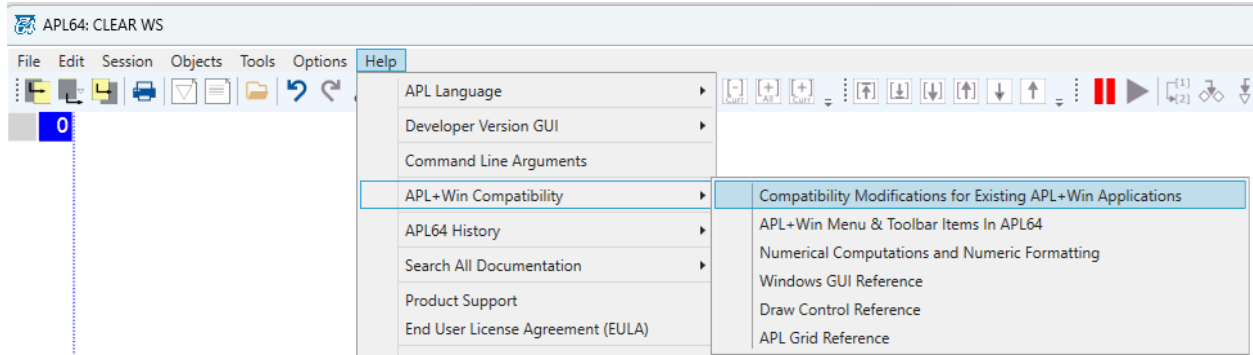
Miscellaneous

[Additional fields added to System Information document in Help | About APL64 menu:](#)

These fields were added:

<input type="checkbox"/> ACBD	<input type="checkbox"/> SYSINIT
<input type="checkbox"/> EXEPATH	<input type="checkbox"/> SYSVERN
<input type="checkbox"/> CT	<input type="checkbox"/> USERID
<input type="checkbox"/> SYSCONFIGFILE	<input type="checkbox"/> WA
<input type="checkbox"/> SYSID	<input type="checkbox"/> WSSIZE

Programmer documentation Updated – APL64 Compatibility with APL+Win



Improved double clicking the mouse selecting a whole word containing delta (Δ) and delta-underscore ($\underline{\Delta}$) character

Bug Fixes

Interpreter

Bug in Monadic \uparrow (first function) w/ axis (aka \square mix) in evolution level 1

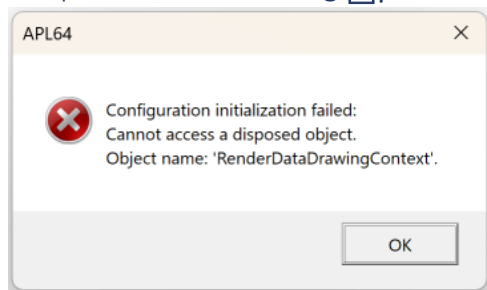
The Boolean array was corrupted after an indexed assignment

1!2147483647 returned Limit Error instead of **2147483647**

Querying a workspace (fns/vars) using **@path\wsname** returned a null object reference message

The disclose function with axis returned "APL64 SYSTEM ERROR: Aval.Categorize encountered an undemoted child element at index=9"

Exception when executing $\square pw \leftarrow 0 \diamond \iota 2150$



Index into with an axis that is a nested empty array produced DOMAIN ERROR

Disclose with axis produced NONCE ERROR in evolution levels 1 and 2

Reduction of an empty dimension produced incorrect results

❑ UCS returned a spurious leading character when translating from UTF-16

❑ ROWFIND didn't return the first instance for duplicate rows in the arguments

❑ SSASSIGN didn't allow indices separated by a comma like the SSASSIGN function in APL+Win

Enclose with Empty Axis with more than one array returned incorrect result

An exception occurred when executing a statement with a leading ←← in a function

An exception occurred when executing ❑ uppercase instead of ❑ ucase in a function

An exception occurred when running a function in)evlevel 2 when intended to run in)evlevel 1

Developer Version GUI

A mouse click in the history or editor panes could result in undesirable scrolling and selection

The keyboard shortcuts Ctrl+/- and Ctrl+Shift+/- to comment and uncomment lines did not work
The keyboard shortcuts did not display or remove the comment glyphs at the start of the line/row.

The down arrow on the last line to insert a new line in the function editor did not work

This feature is enabled with the menu: **Objects | Function Editor | Down Key On Last Non-empty Line Adds A New Line**

The Jump to line feature in editor didn't scroll the line into view

When using Ctrl+J to jump to a line in a function, the cursor moved but didn't scroll the line into view.

The Selection option wasn't enabled by default in the Print dialog for a selection

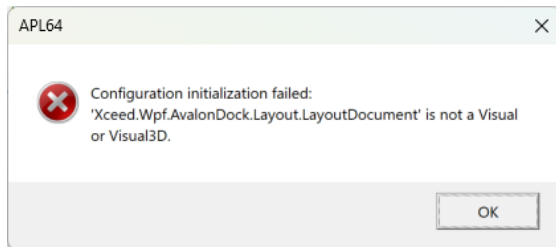
The Selection option will now be enabled in the Print dialog when a selection is made in any pane other than the State Indicator.

Canceling the Print dialogue didn't return the focus to APL64

Printing a selection in APL64 didn't maintain the selection after being printed

Without a selection, everything is selected after printing with Page Range set to All

Exception when typing Shift+F10



The caret was not visible in the newly floated Editor, Debug or State Indicator pane

A different keyboard definition selection didn't take affect when restarting APL64

Alt+F9 and Alt+Shift+F9 keyboard shortcut didn't scroll the visible line into view

An exception occurred when the Menu Text and Action Text in the Configure User Tools window matched

1 telprint charmat returned DOMAIN ERROR

textrepl allowed for overlapping replacements to occur in the resulting segmented text

The update avoids overlapping replacements in the resulting segmented string. The previous behavior was incompatible with the assembler TEXTREPL function in APL+Win. Refer to textrepl in the System Function manual for information on how to make textrepl revert to the previous behavior.