Using □String

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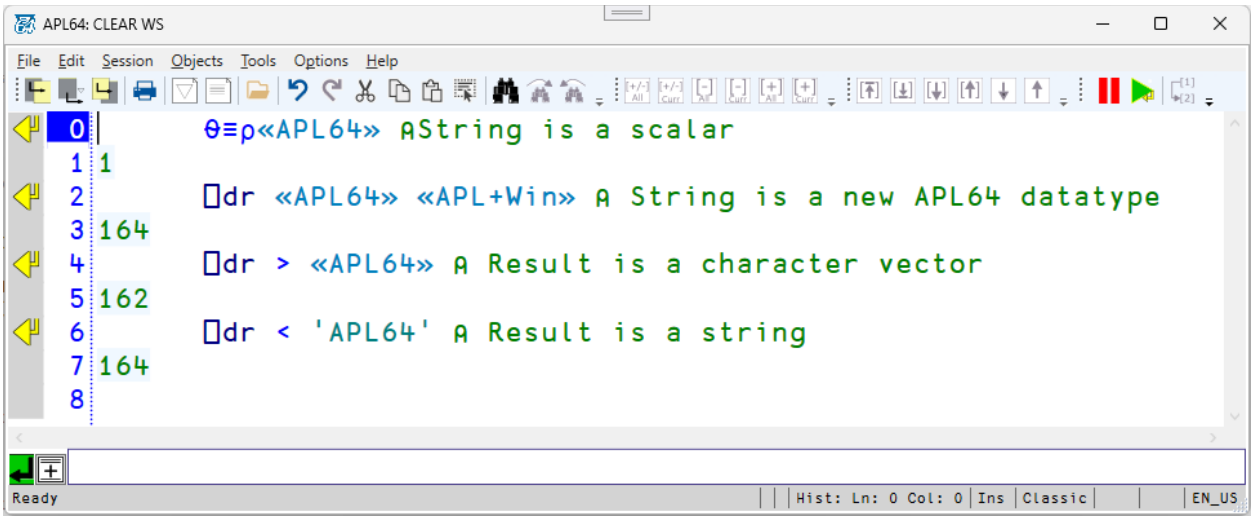
String Datatype in APL64

APL64 and .Net support the string and character array datatypes, but the string datatype is most frequently used for text data in in .Net.

A string is a scalar, not a character vector. The APL64 enstring (<) and destring functions (>) may be used to convert between string and character arrays.



⎕String System Function

The APL64 ⎕string system function is an interface to the .Net String class. Learn more about the .Net string datatype here.

Purpose:
⎕string exposes many of the methods and properties of the .Net String class.

Syntax: result ← larg ⎕string action rarg

Arguments:
larg are the optional arguments to the action.

action is a text vector that determines how the system function will operate on the left and right argument.

rarg are the optional arguments to the action.

Result:
The result, if any, depends on the action called. For most □string actions the result has the APL64 string datatype.

Remarks:

- A □String action which accepts a scalar String left argument will also accept a rank zero or one, character value left argument.
- A □String action which accepts a String[] vector left argument will also accept a vector left argument with elements which can be a string scalar or rank zero or one character values.

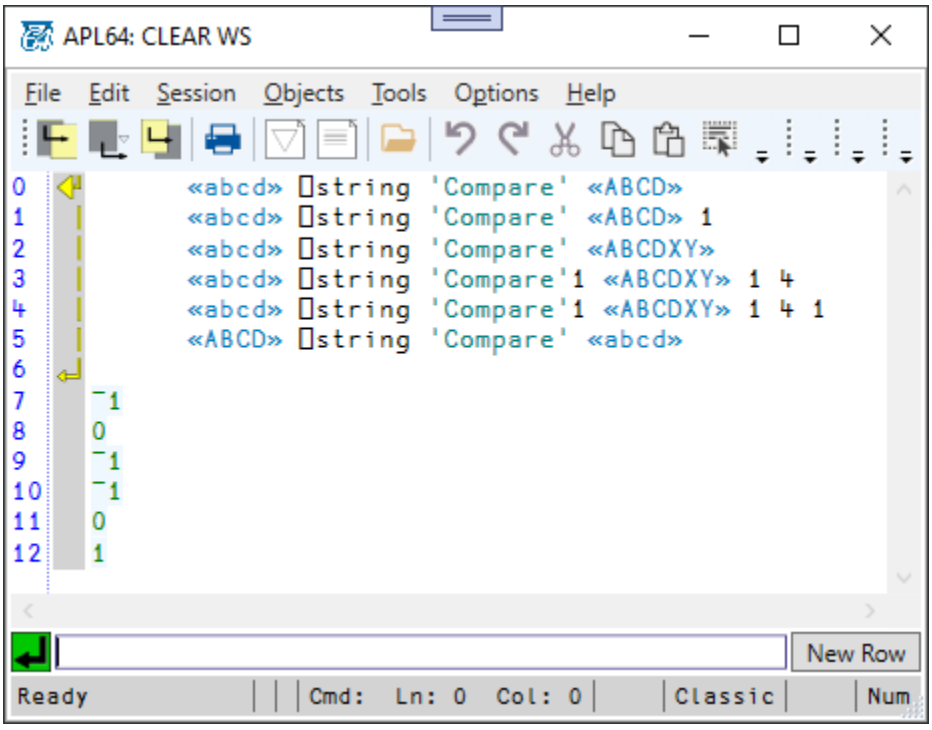
□String Actions

COMPARE

Int32←String □STRING "COMPARE" String
Int32←String □STRING "COMPARE" String IgnoreCase
Int32←String □STRING "COMPARE" StartPosInLarg String StartPosInRarg #CharsToCompare
Int32←String □STRING "COMPARE" StartPosInLarg String StartPosInRarg #CharsToCompare IgnoreCase

StartPosInLarg is □IO-sensitive.

```
«abcd» □string 'Compare' «ABCD»
«abcd» □string 'Compare' «ABCD» 1
«abcd» □string 'Compare' «ABCDXY»
«abcd» □string 'Compare'1 «ABCDXY» 1 4
«abcd» □string 'Compare'1 «ABCDXY» 1 4 1
«ABCD» □string 'Compare' «abcd»
```

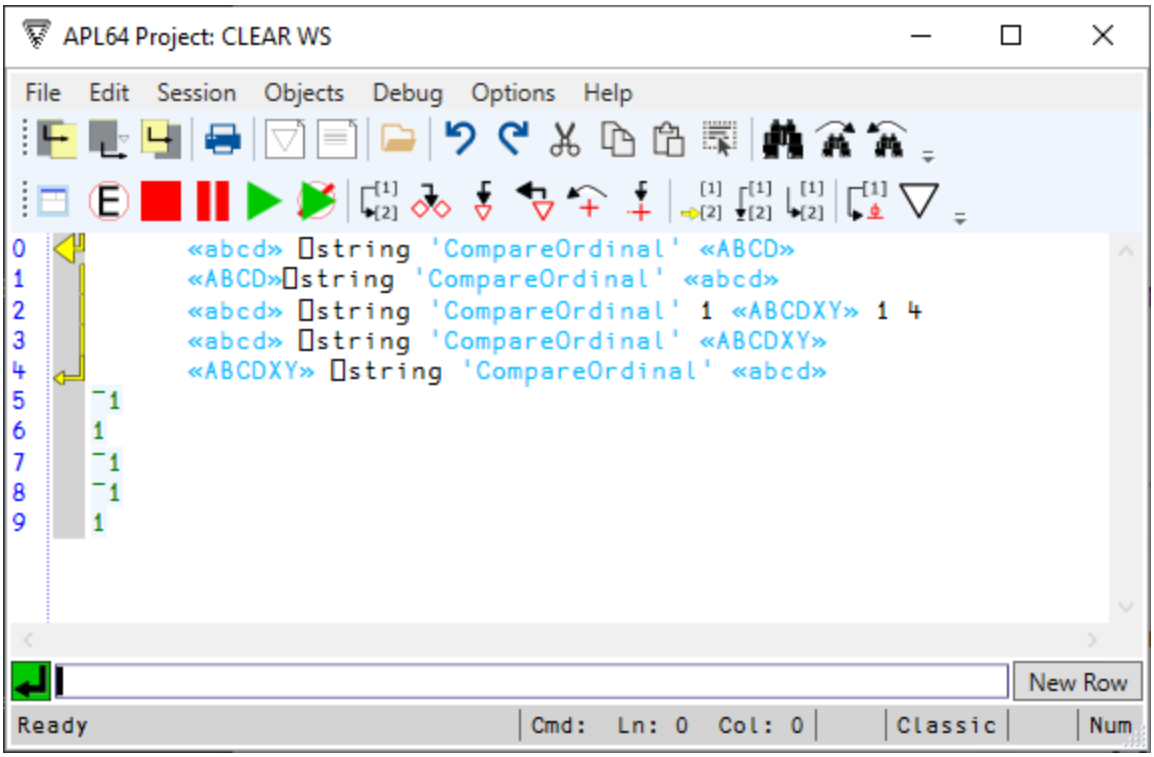


COMPAREORDINAL

Int32←String ⎕STRING "COMPAREORDINAL" String
Int32←String ⎕STRING "COMPAREORDINAL" StartPosInLarg String StartPosInRarg #CharsToCompare

StartPosInLarg is ⎕IO-sensitive.

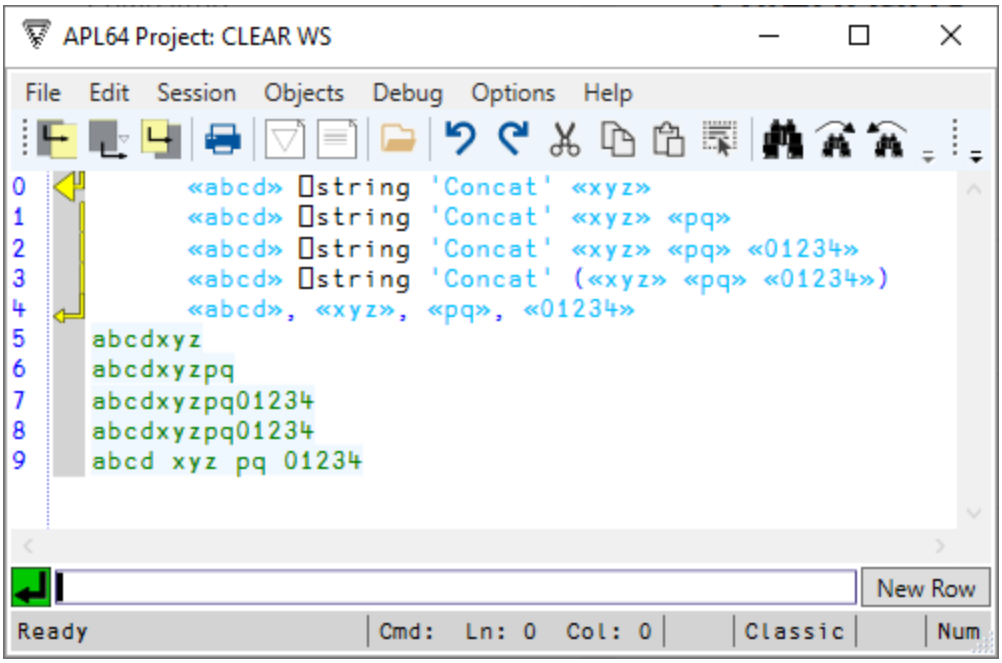
```
«abcd» ⎕string 'CompareOrdinal' «ABCD»
«ABCD» ⎕string 'CompareOrdinal' «abcd»
«abcd» ⎕string 'CompareOrdinal'1 «ABCDXY» 1 4
«abcd» ⎕string 'CompareOrdinal' «ABCDXY»
«ABCDXY» ⎕string 'CompareOrdinal' «abcd»
```



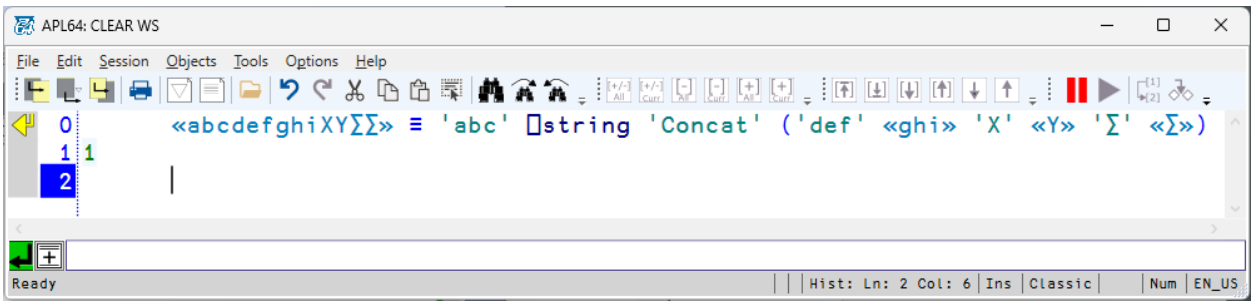
CONCAT

String←String ⍀STRING "CONCAT" String
String←String ⍀STRING "CONCAT" String String
String←String ⍀STRING "CONCAT" String String String
String←String ⍀STRING "CONCAT" String[]

```
«abcd»⍀string 'Concat' «xyz»
«abcd» ⍀string 'Concat' «xyz» «pqr»
«abcd» ⍀string 'Concat' «xyz» «pqr» «01234»
«abcd» ⍀string 'Concat' («xyz» «pqr» «01234»)
(«abcd», «xyz», «pqr», «01234»
```



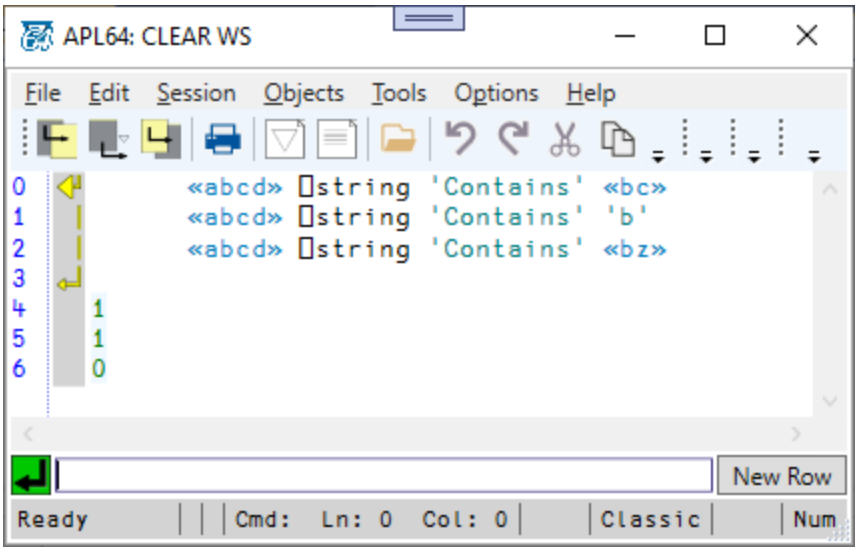

```
«abcdefghiXY∑∑» ≡ 'abc' ⎕string 'Concat' ('def' «ghi» 'X' «Y» '∑' «∑»)
```



CONTAINS

Bool←String ⎕STRING "CONTAINS" String
Bool←String ⎕STRING "CONTAINS" Char

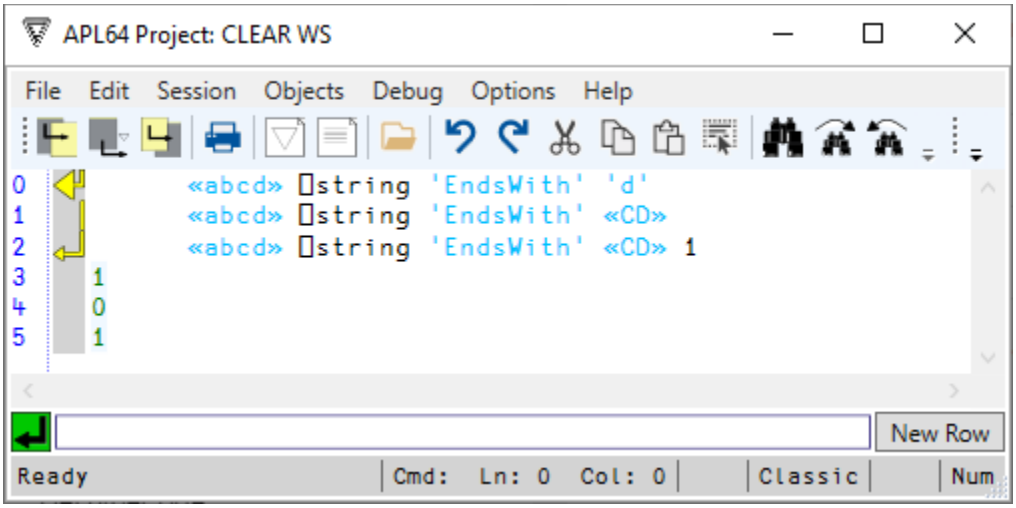
```
«abcd» ⎕string 'Contains' «bc»
«abcd» ⎕string 'Contains' 'b'
«abcd» ⎕string 'Contains' «bz»
```



ENDSWITH

Bool← String ⍷STRING "ENDSWITH" Char
Bool← String ⍷STRING "ENDSWITH" String
Bool← String ⍷STRING "ENDSWITH" String IgnoreCase

```
«abcd» ⍷string 'EndsWith' 'd'
«abcd» ⍷string 'EndsWith' "«CD»
«abcd» ⍷string 'EndsWith' «CD» 1
```

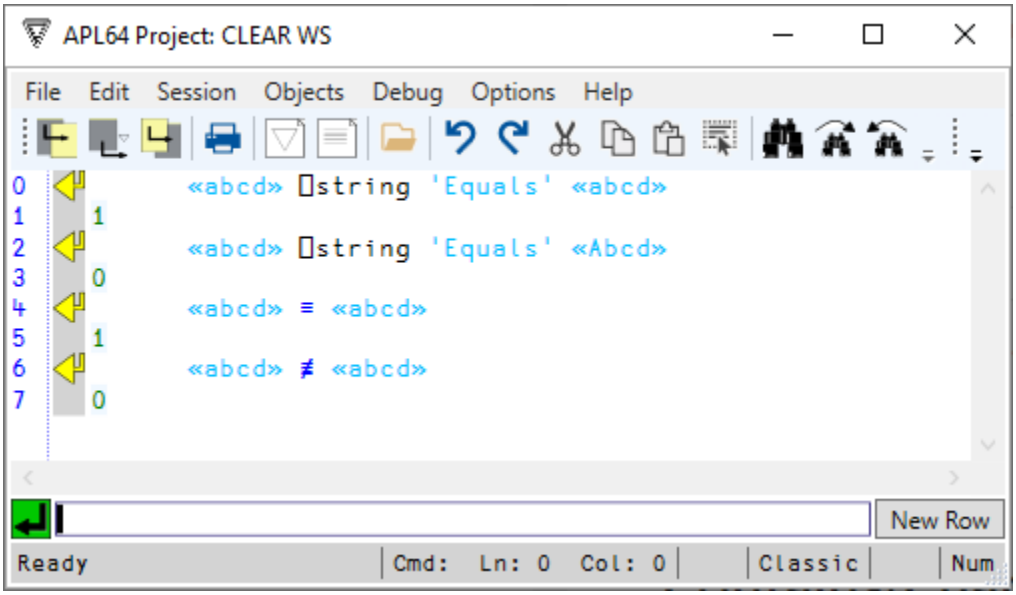


EQUALS

Bool← String ⍷STRING "EQUALS" String

```
«abcd» ⍷string 'Equals' «abcd»
«abcd» ⍷string 'Equals' «Abcd»
«abcd» ≡ «abcd»"
```

```
«abcd» ≢ «abcd»"
```



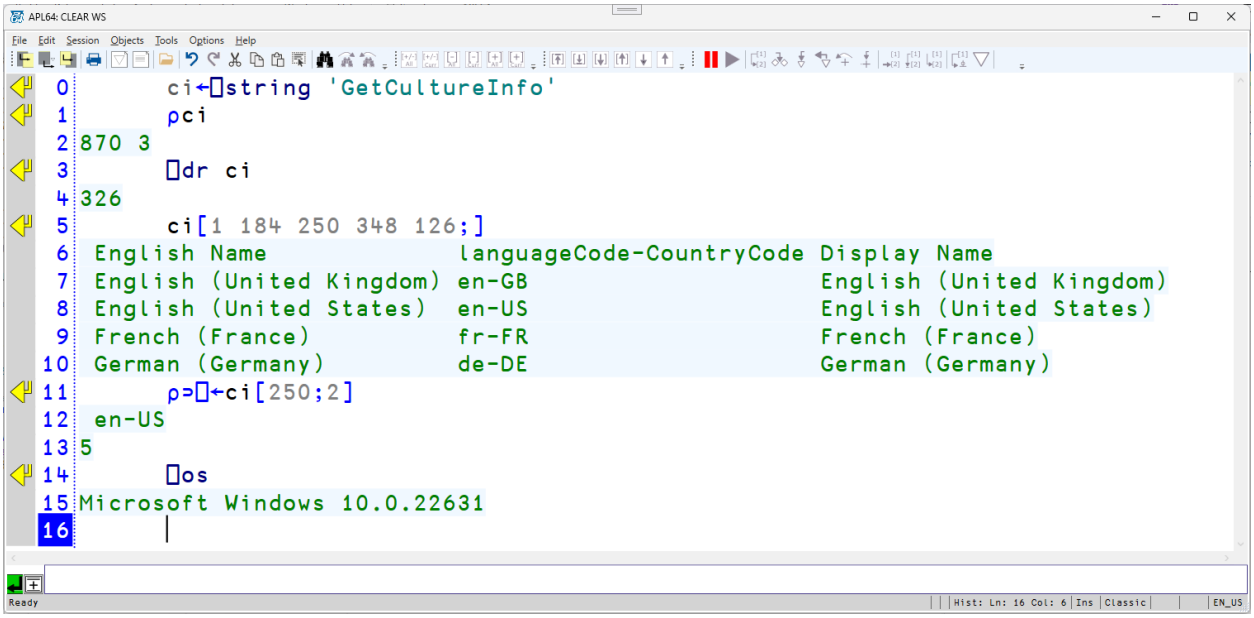
GETCULTUREINFO

AplArray←⎕STRING "GetCultureInfo"

Obtain the supported .Net cultures at application runtime, which vary with the operating system environment.

Use the 'LanguageCode-CountryCode' value when specifying culture information for actions such as ToLower and ToUpper.

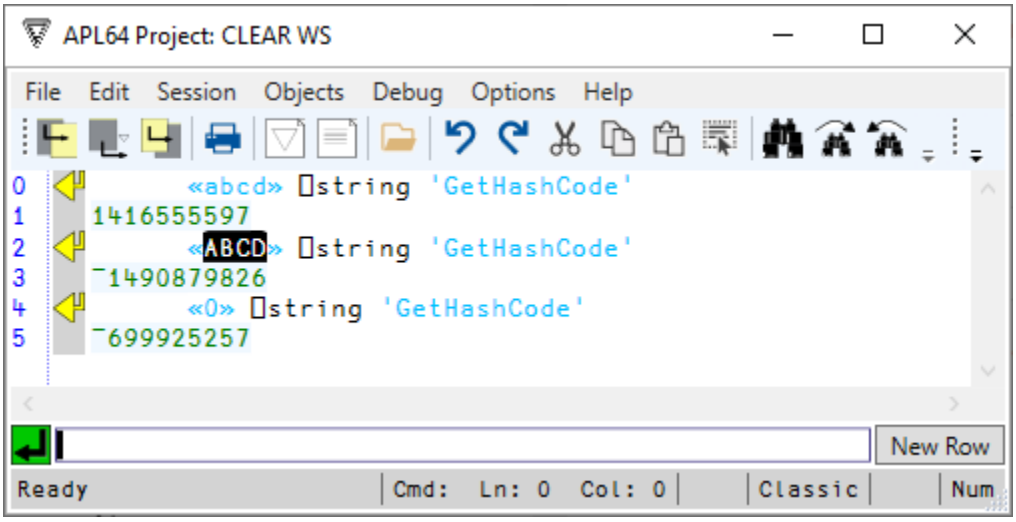
```
ci←⎕string 'GetCultureInfo'
⍴ci
⎕dr ci
ci[1 184 250 348 126;]
⍴⊃⎕←ci[250;2]
⎕os
```



GETHASHCODE

Int32←String ⎕STRING "GETHASHCODE"

The result values will not transcend an APL64 instance.

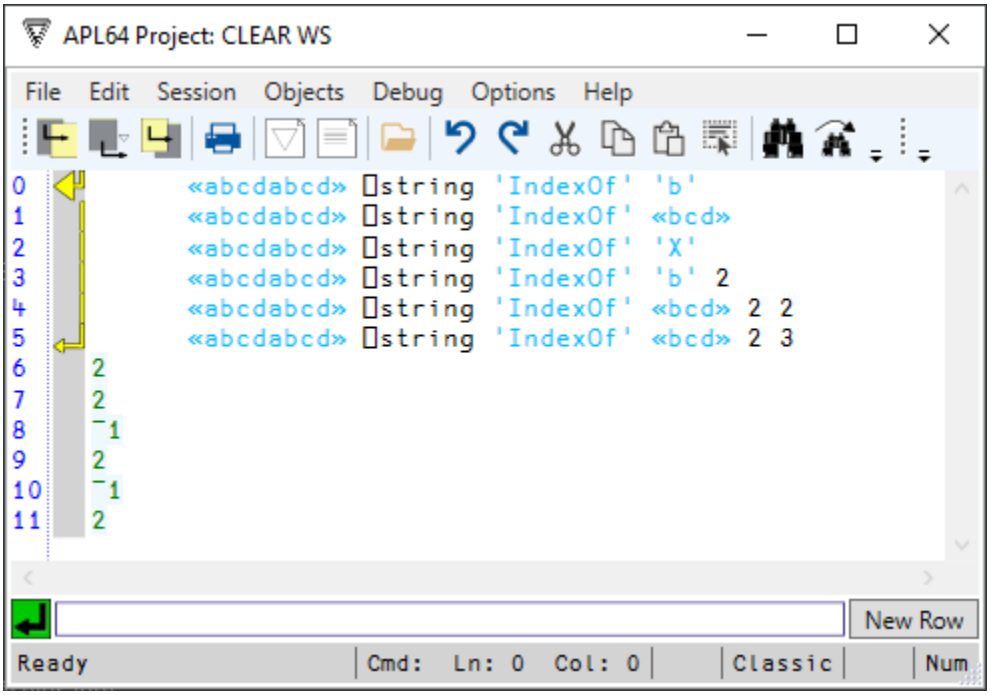


INDEXOF

Int32←String ⎕STRING "INDEXOF" Char
Int32←String ⎕STRING "INDEXOF" String
Int32←String ⎕STRING "INDEXOF" Char StartPosInLarg
Int32←String ⎕STRING "INDEXOF" String StartPosInLarg
Int32← String⎕STRING "INDEXOF" Char StartPosInLarg #CharsToExamine
Int32← String⎕STRING "INDEXOF" String StartPosInLarg #CharsToExamine

StartPosInLarg is ⎕IO-sensitive.

```
«abcdabcd» ⎕string 'IndexOf' 'b'
«abcdabcd» ⎕string 'IndexOf' «bcd»
«abcdabcd» ⎕string 'IndexOf' 'X'
«abcdabcd» ⎕string 'IndexOf' 'b' 2
«abcdabcd» ⎕string 'IndexOf' «bcd» 2 2
«abcdabcd» ⎕string 'IndexOf' «bcd» 2 3
```

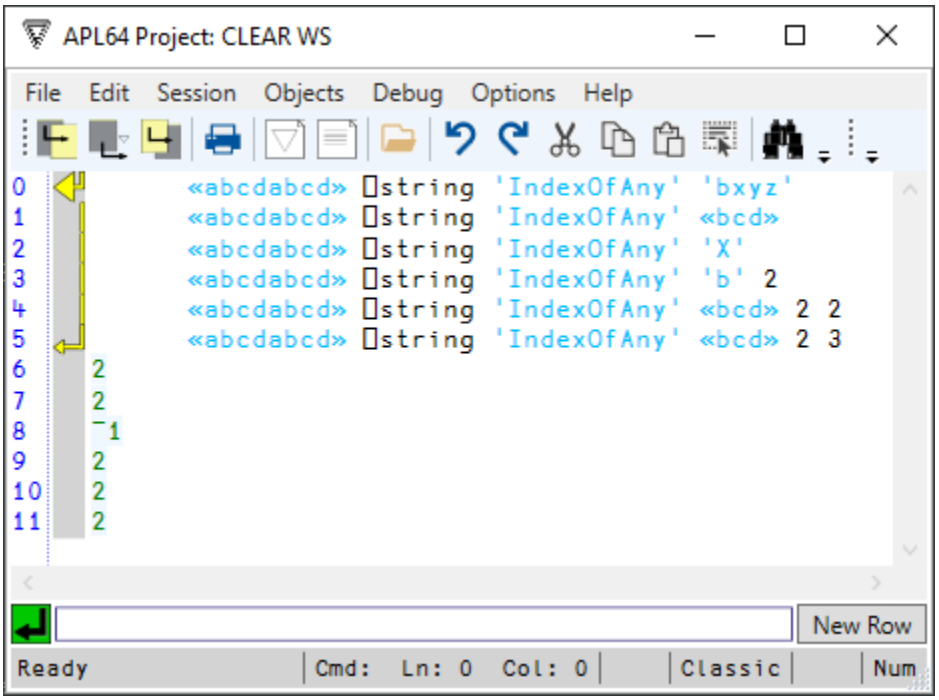


INDEXOFANY

Int32←String ⎕STRING "INDEXOFANY" Char[]
Int32←String ⎕STRING "INDEXOFANY" Char[] StartPosInLarg
Int32←String ⎕STRING "INDEXOFANY" Char[] StartPosInLarg #CharsToExamine
Int32←String ⎕STRING "INDEXOFANY" String
Int32←String ⎕STRING "INDEXOFANY" String StartPosInLarg
Int32←String ⎕STRING "INDEXOFANY" String StartPosInLarg #CharsToExamine

StartPosInLarg is ⎕IO-sensitive.

```
«abcdabcd» ⎕string 'IndexOfAny' 'bxy'
«abcdabcd» ⎕string 'IndexOfAny' «bcd»
«abcdabcd» ⎕string 'IndexOfAny' 'X'
«abcdabcd» ⎕string 'IndexOfAny' 'b' 2
«abcdabcd» ⎕string 'IndexOfAny' «bcd» 2 2
«abcdabcd» ⎕string 'IndexOfAny' «bcd» 2 3
```

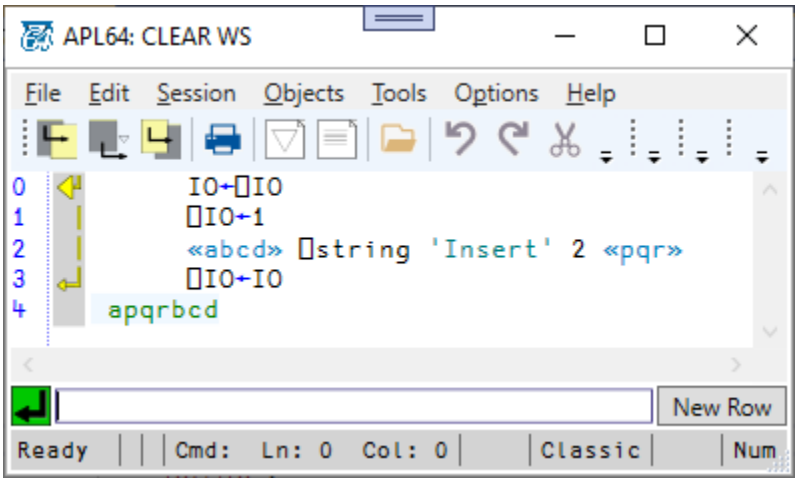


INSERT

String←String ⍞STRING "INSERT" StartPosInLarg String

StartPosInLarg is ⍞IO-sensitive.

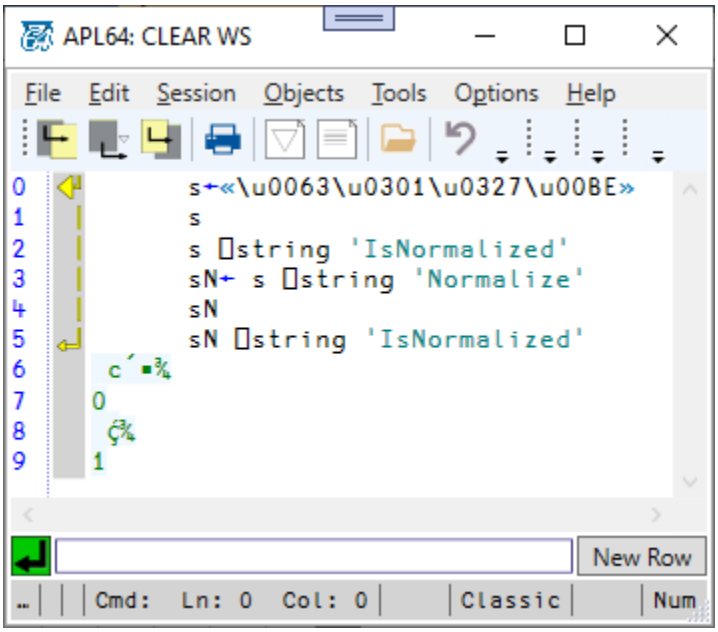
```
⎕IO←⍞IO
⍞IO←1
«abcd» ⍞string 'Insert' 2 «pqr»
⍞IO←⎕IO
```



ISNORMALIZED

String←String ⎕STRING "ISNORMALIZED"

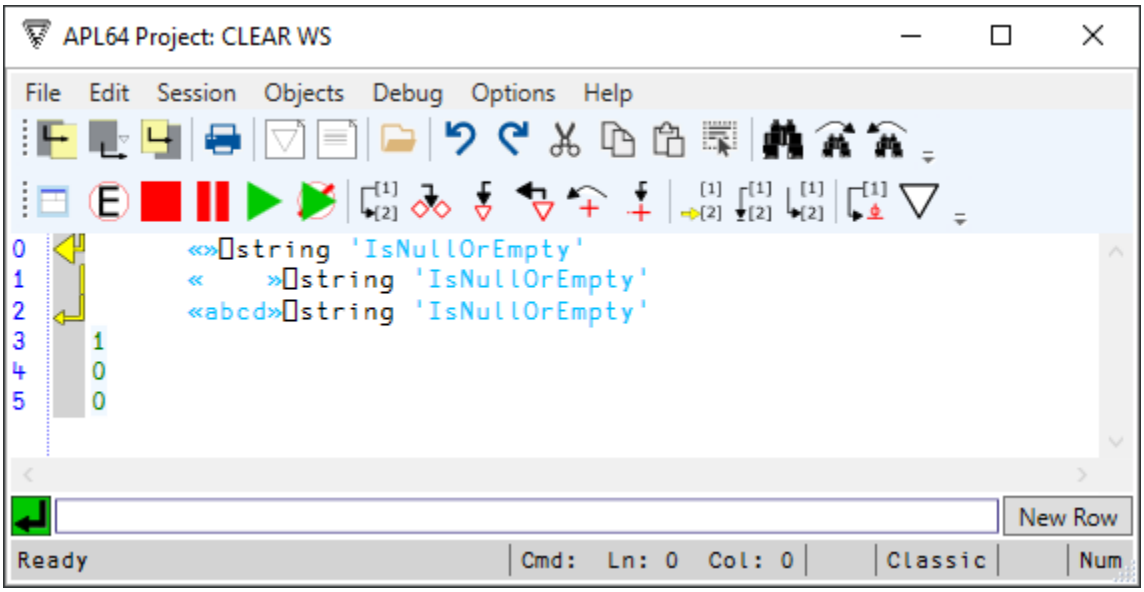
```
s←«\u0063\u0301\u0327\u00BE»
s
s ⎕string 'IsNormalized'
sN← s ⎕string 'Normalize'
sN
sN ⎕string 'IsNormalized'
```



ISNULLOREMPTY

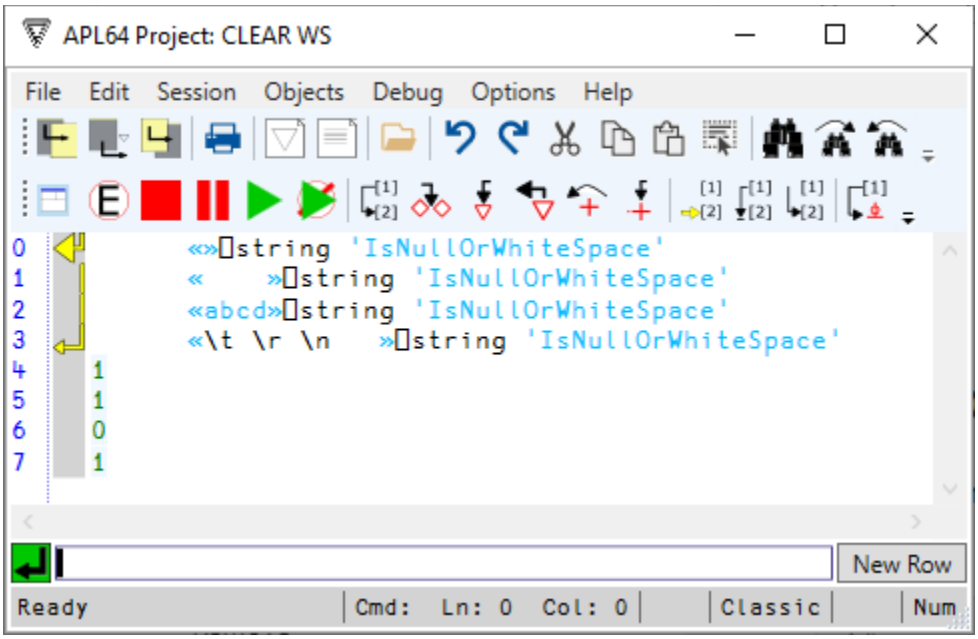
String←String ⎕STRING "ISNULLOREMPTY"

```
«» ⎕string 'IsNullOrEmpty'
«      » ⎕string 'IsNullOrEmpty'
«abcd» ⎕string 'IsNullOrEmpty'
```



ISNULLORWHITESPACE

String←String ⍁STRING "ISNULLORWHITESPACE"



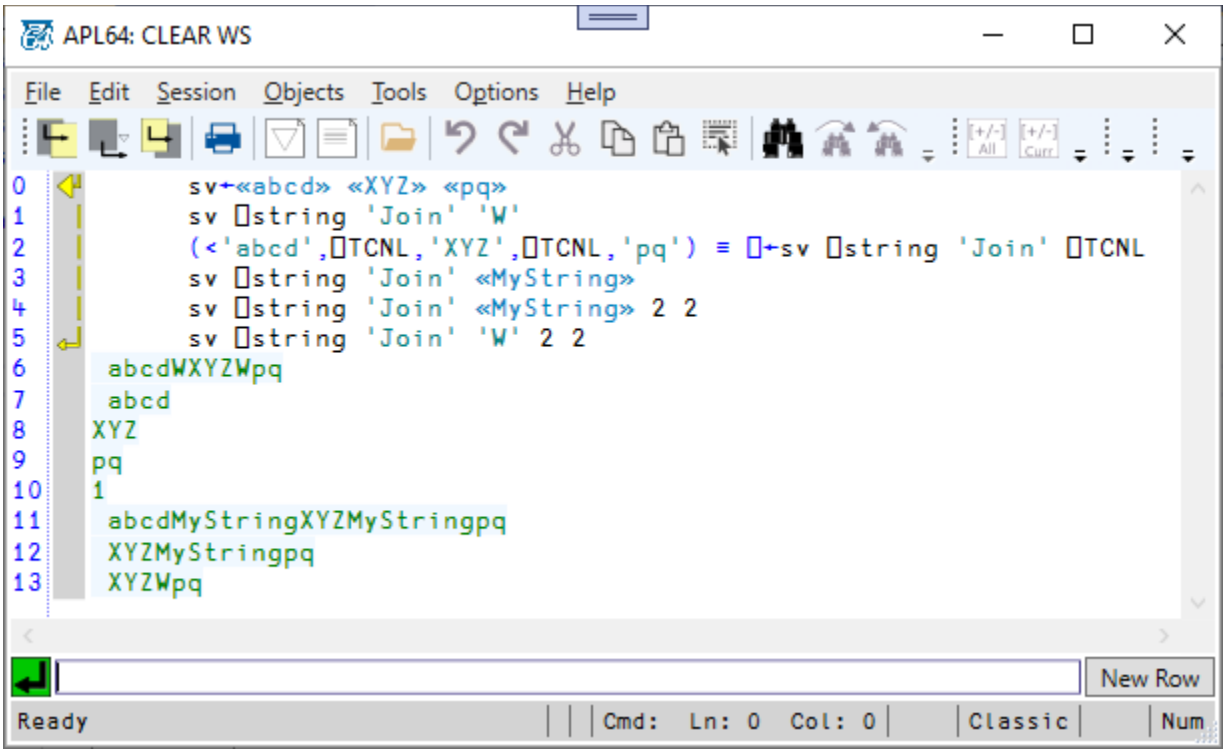
JOIN

String←String[] ⍁STRING "JOIN" (Char)delimChar
String←String[] ⍁STRING "JOIN" (String)delimString
String←String[] ⍁STRING "JOIN" (Char)delimChar StartItem# #Items
String←String[] ⍁STRING "JOIN" (String)delimChar StartItem# #Items

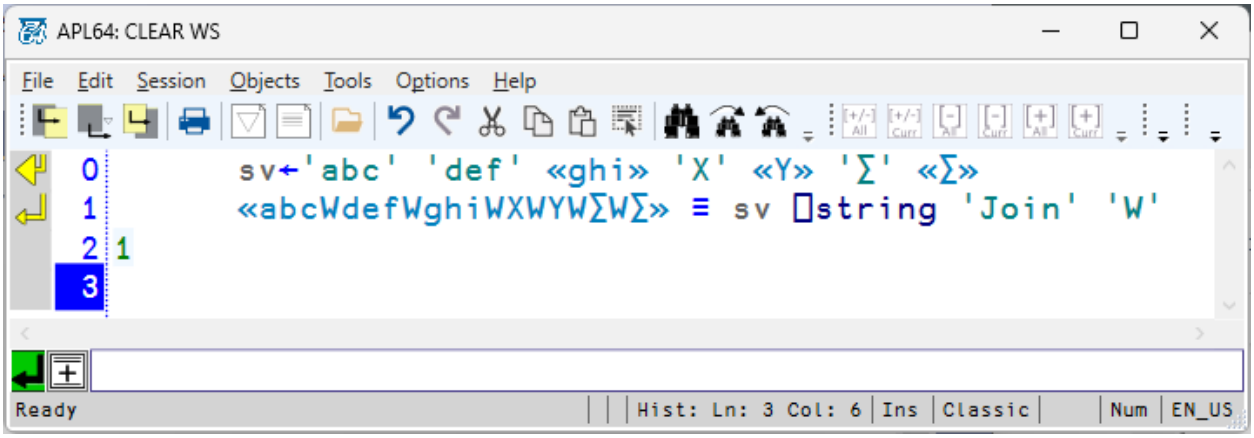
StartItem# is ⎕IO-sensitive.

```
sv←«abcd» «XYZ» «pq»
sv ⎕string 'Join' 'W'
(<'abcd',⎕TCNL,'XYZ',⎕TCNL,'pq') ≡ ⎕←sv ⎕string 'Join' ⎕TCNL
sv ⎕string 'Join' «MyString»
sv ⎕string 'Join' «MyString» 2 2
sv ⎕string 'Join' 'W' 2 2
```

Note: The monadic < and > operators in the example are called Enstring and Destring, respectively, and are used to convert between string and character objects.



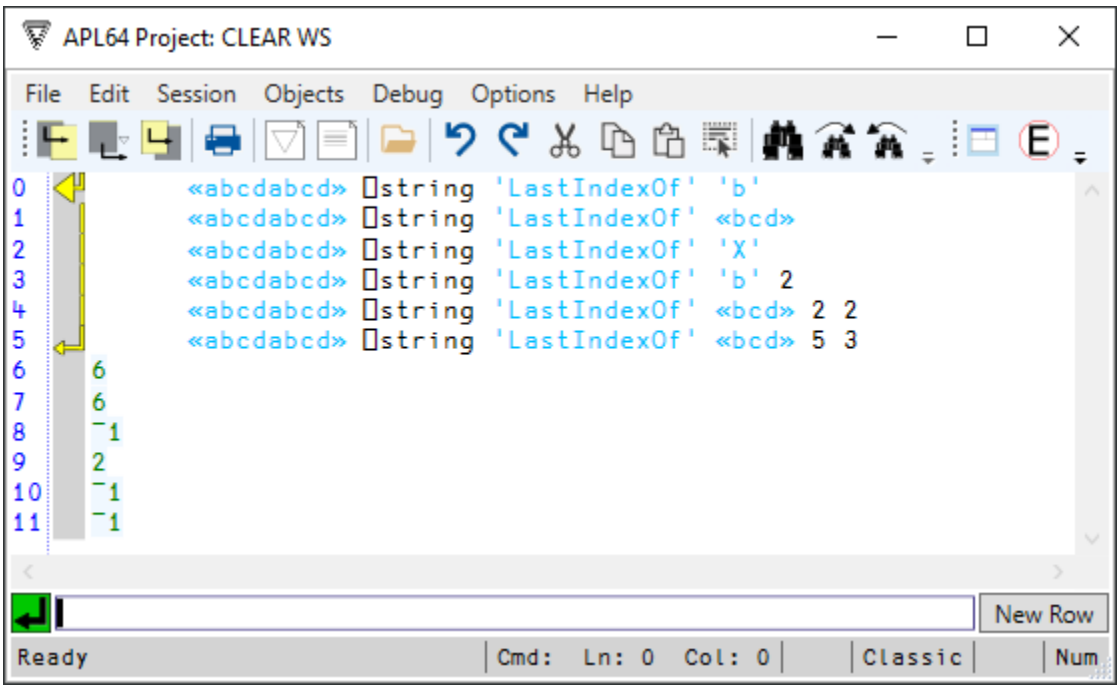

```
sv←'abc' 'def' «ghi» 'X' «Y» '∑' «∑»
«abcWdefWghiWXWYW∑W∑» ≡ sv ⎕string 'Join' 'W'
```



LASTINDEXOF

Int32← String ⎕STRING "LASTINDEXOF" Char
Int32← String ⎕STRING "LASTINDEXOF" String
Int32← String ⎕STRING "LASTINDEXOF" Char StartPosInLarg
Int32← String ⎕STRING "LASTINDEXOF" String StartPosInLarg
Int32← String ⎕STRING "LASTINDEXOF" Char StartPosInLarg #CharsToExamine
Int32← String ⎕STRING "LASTINDEXOF" String StartPosInLarg #CharsToExamine

StartPosInLarg is ⎕IO-sensitive.

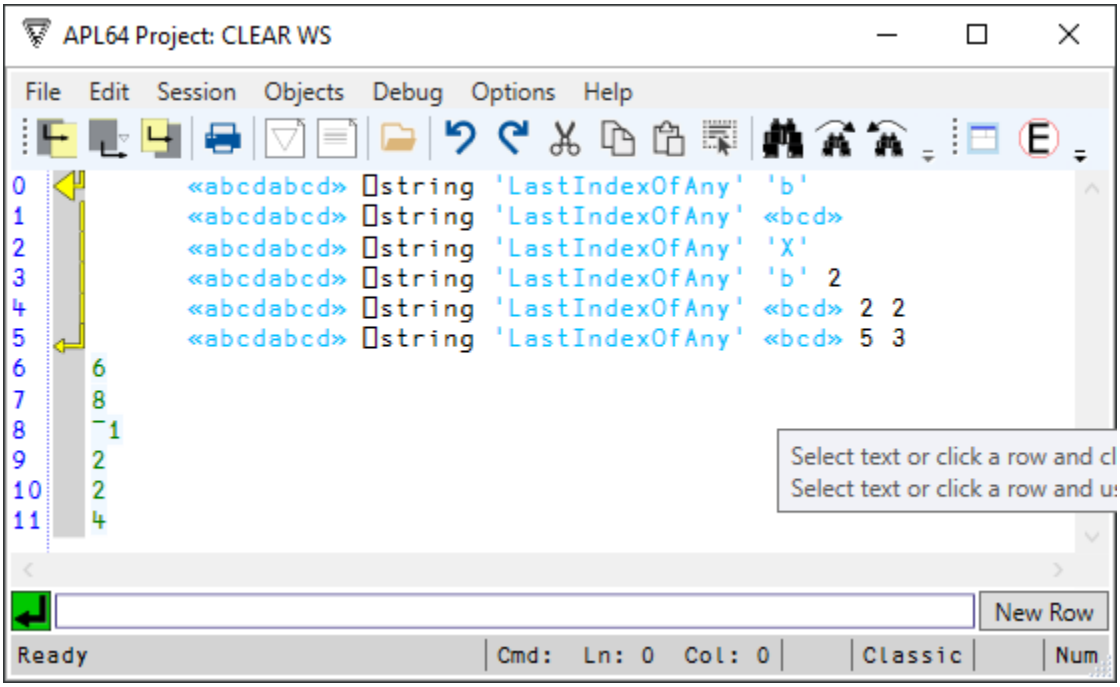


LASTINDEXOFANY

Int32←String ⎕STRING "LASTINDEXOFANY" Char[]
Int32←String ⎕STRING "LASTINDEXOFANY" Char[] StartPosInLarg
Int32←String ⎕STRING "LASTINDEXOFANY" Char[] StartPosInLarg #CharsToExamine

StartPosInLarg is ⎕IO-sensitive.

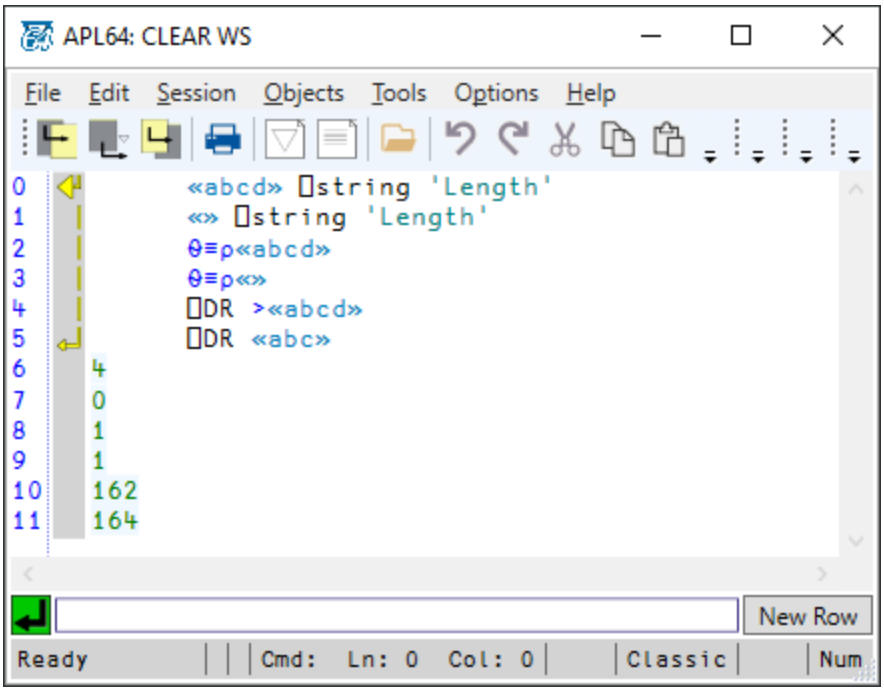
```
«abcdabcd» ⍸string 'LastIndexOfAny' 'b'
«abcdabcd» ⍸string 'LastIndexOfAny' «bcd»
«abcdabcd» ⍸string 'LastIndexOfAny' 'X'
2 ≡ «abcdabcd» ⍸string 'LastIndexOfAny' 'b' 2
«abcdabcd» ⍸string 'LastIndexOfAny' «bcd» 2 2
«abcdabcd» ⍸string 'LastIndexOfAny' «bcd» 5 3
```



LENGTH

Int32←String ⍸STRING "LENGTH"

```
«abcd» ⍸string 'Length'
«» ⍸string 'Length'
⍬≡⍴«abcd»
⍬≡⍴«»
⍸DR >«abcd»
⍸DR «abc»
```



NORMALIZE

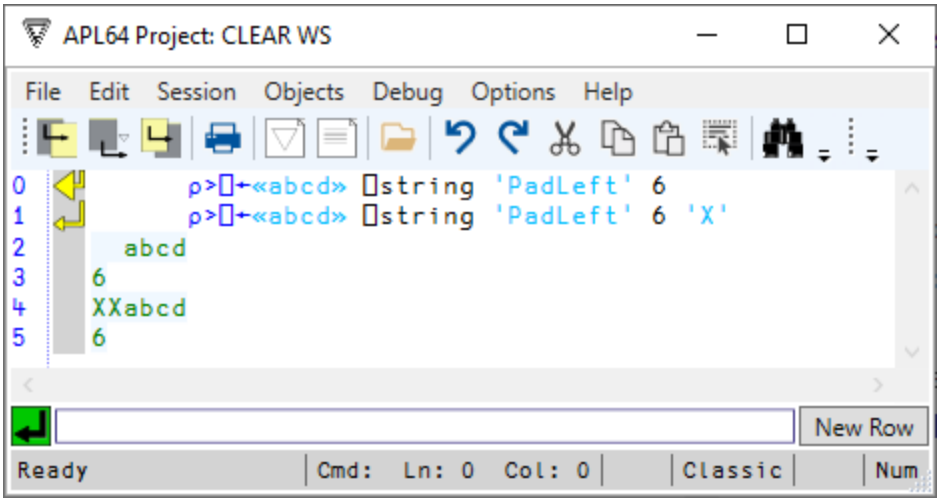
Bool←String ⎕STRING "NORMALIZE"

Refer to the ⎕STRING "ISNORMALIZED" example.

PADLEFT

String←String ⎕STRING "PADLEFT"
String←String ⎕STRING "PADLEFT" TotalWidth PadChar

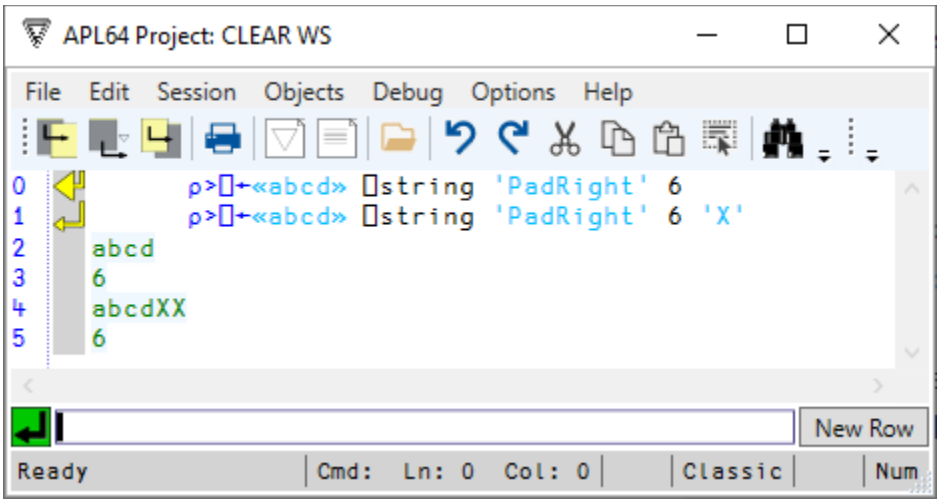
```
⍴>⎕←«abcd» ⎕string 'Padleft' 6
⍴>⎕←«abcd» ⎕string 'Padleft' 6 'X'
```



PADRIGHT

String←String ⍞STRING "PADRIGHT" TotalWidth
String←String ⍞STRING "PADRIGHT" TotalWidth PadChar

```
      ⍴⍞←«abcd» ⍞string 'Padright' 6
      ⍴⍞←«abcd» ⍞string 'Padright' 6 'X'
```

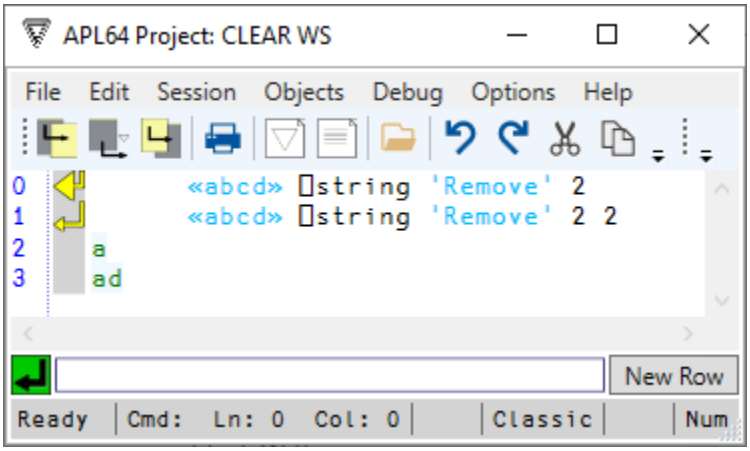


REMOVE

String←String ⍞STRING "REMOVE" StartPos
String←String ⍞STRING "REMOVE" StartPos #CharsToRemove

StartPos is ⍞IO-sensitive.

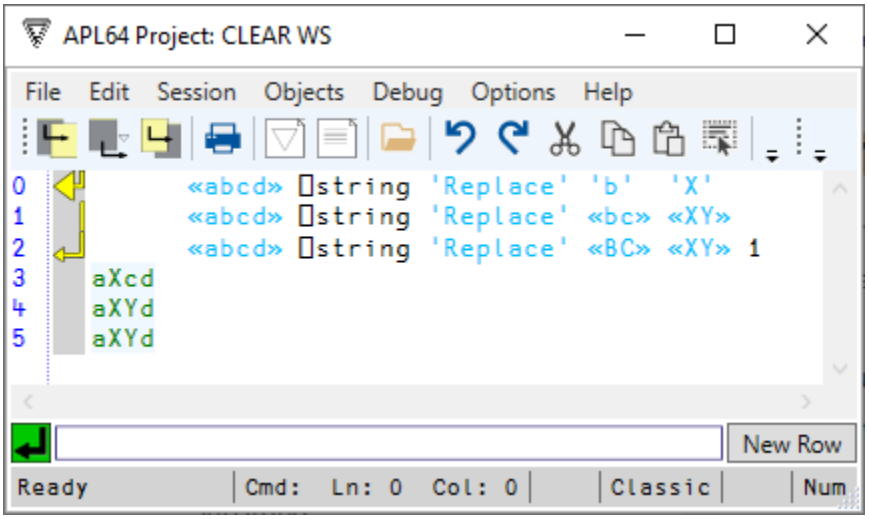
```
      «abcd» ⍞string 'Remove' 2
      «abcd» ⍞string 'Remove' 2 2
```



REPLACE

String←String ⎕STRING "REPLACE" CharTarget CharReplace
String←String ⎕STRING "REPLACE" StringTarget StringReplace
String←String ⎕STRING "REPLACE" StringTarget StringReplace IgnoreCase

```
«abcd» ⎕string 'Replace' 'b' 'X'
«abcd» ⎕string 'Replace' «bc» «XY»
«abcd» ⎕string 'Replace' «BC» «XY» 1
```



SORTINDEX

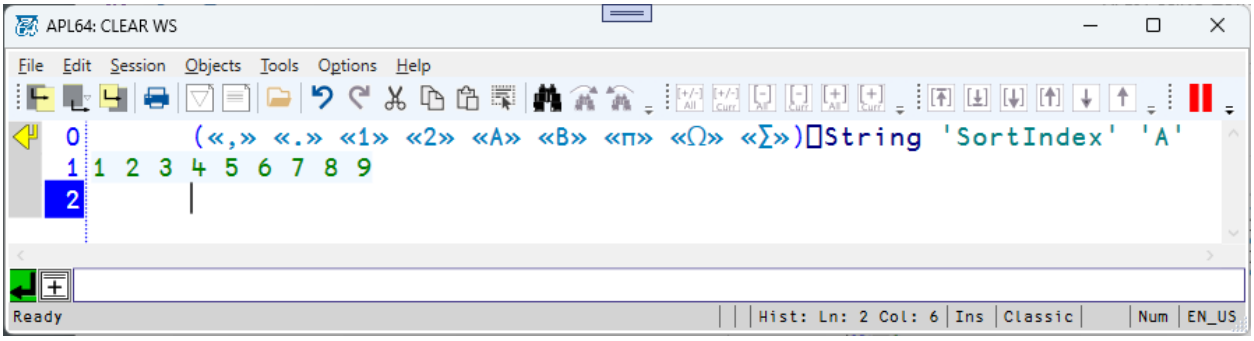
Indices←StringArray ⎕String 'SortIndex' [SortOrder] [Permutation]

StringArray is an array of string elements. StringArray may have any rank.
SortOrder is a character singleton: A(default)/Ascending, D/Descending.
Permutation is an optional text scalar or vector which may be used to adjust the sorting order of characters in the string elements of StringArray.

Indices is a vector of integers which may be used to sort StringArray according to the SortOrder.

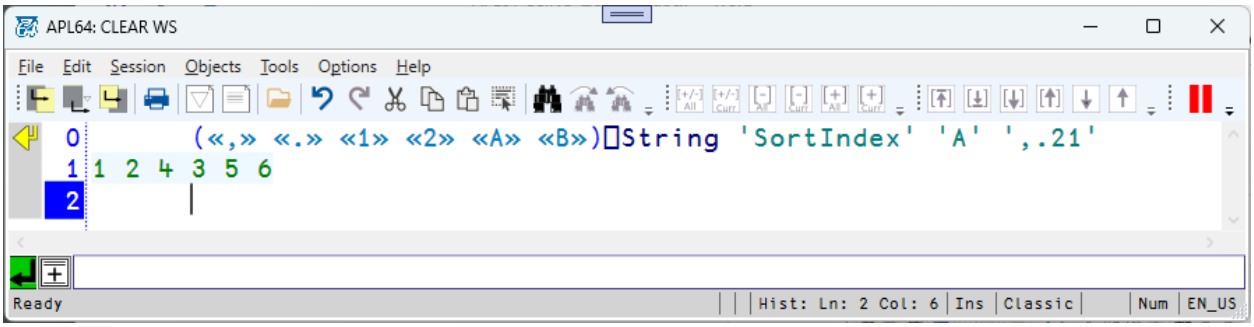
The SortIndex action uses a .Net algorithm to produce the Indices.

```
(«,» «.» «1» «2» «A» «B» «π» «Ω» «∑»)⎕String 'SortIndex' 'A'
```

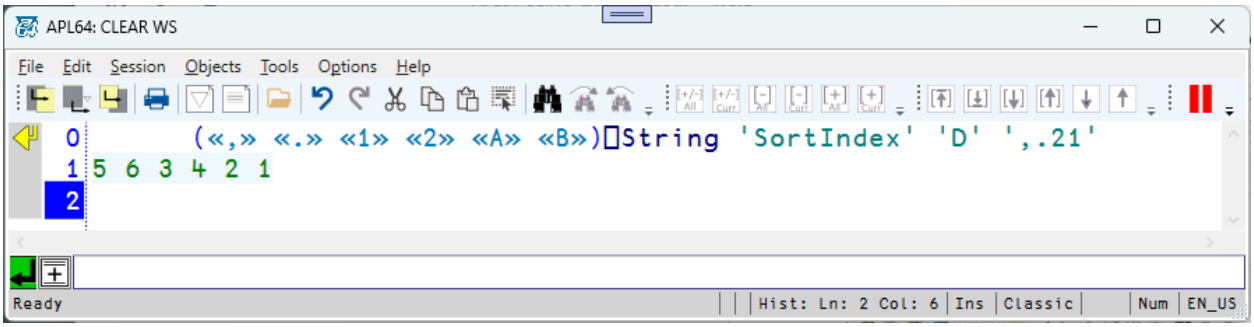


(«,» «.» «1» «2» «A» «B»)⍞String 'SortIndex' 'D'

(«,» «.» «1» «2» «A» «B»)⍞String 'SortIndex' 'A' ',.21'

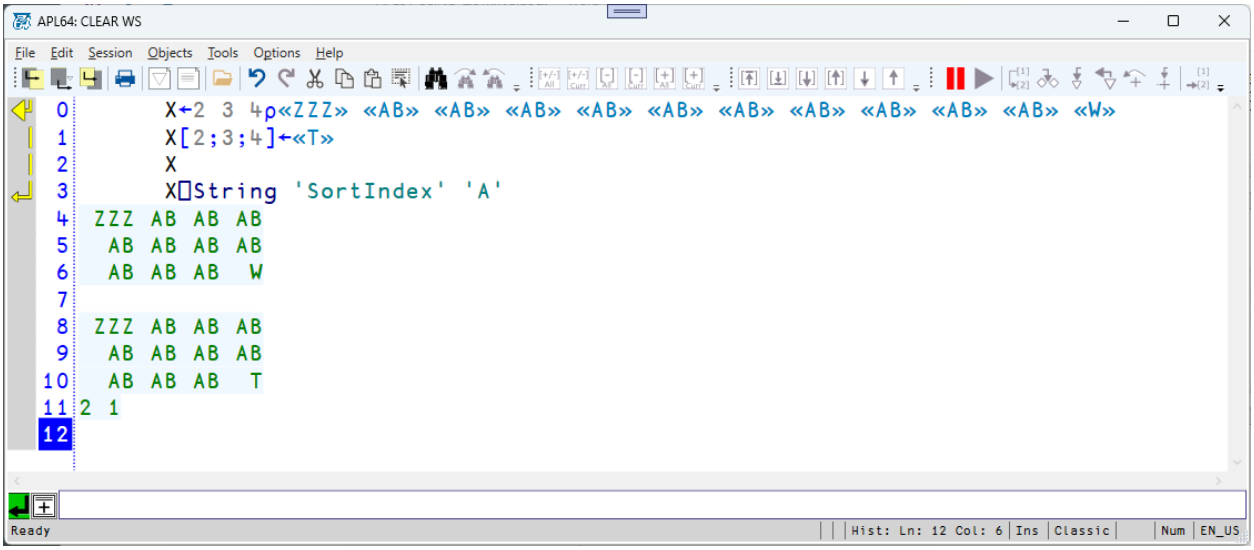


(«,» «.» «1» «2» «A» «B»)⍞String 'SortIndex' 'D' ',.21'

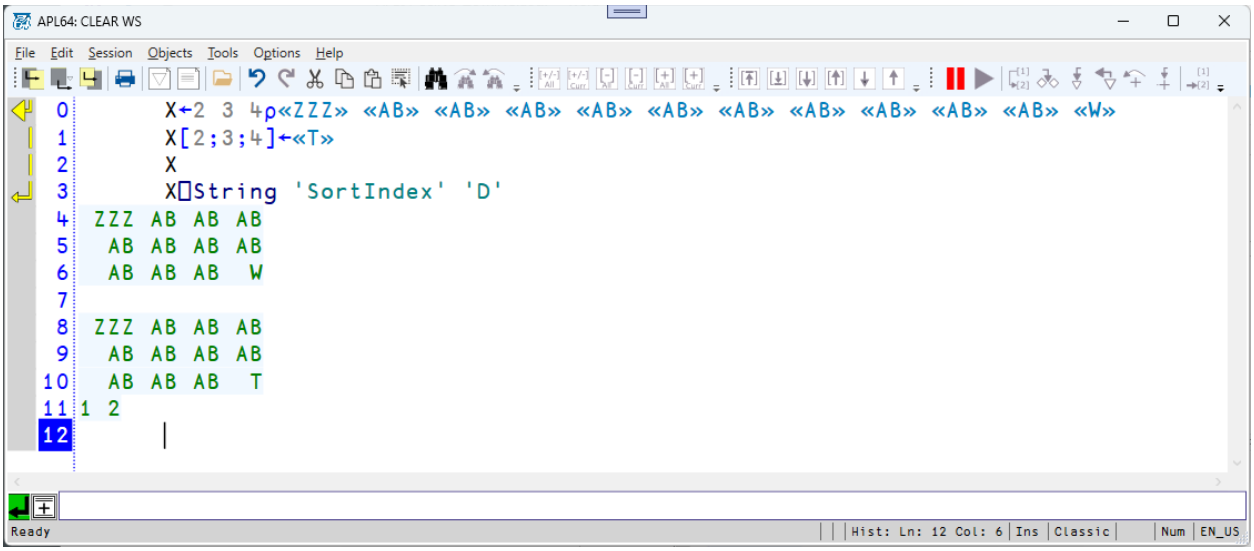


X←2 3 4⍴«ZZZ» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «W»

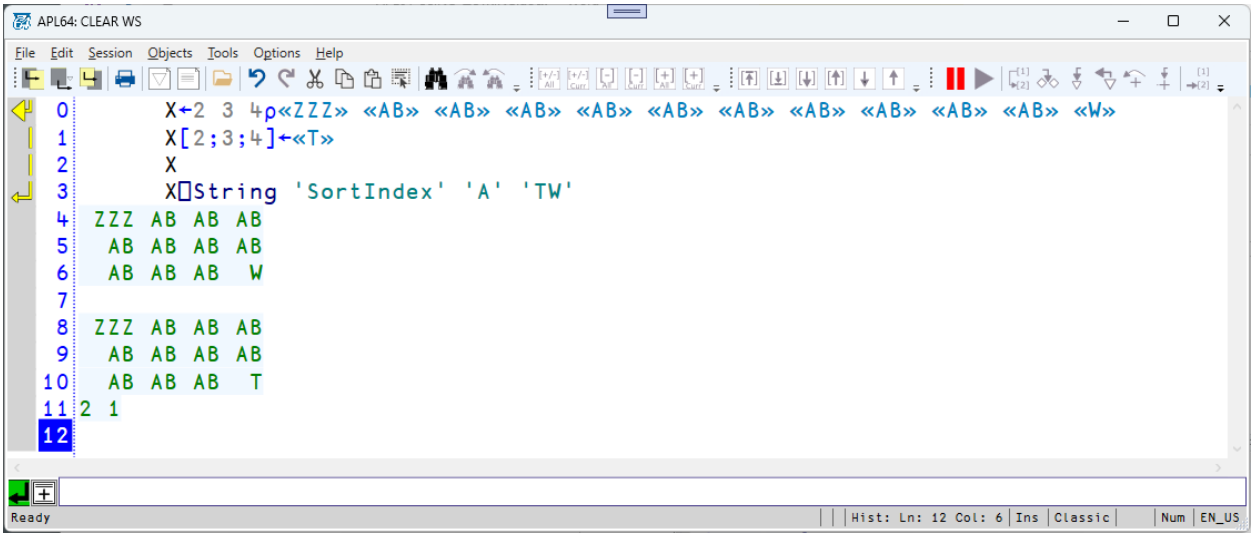
```
X[2;3;4]←«T»
X
X⎕String 'SortIndex' 'A'
```



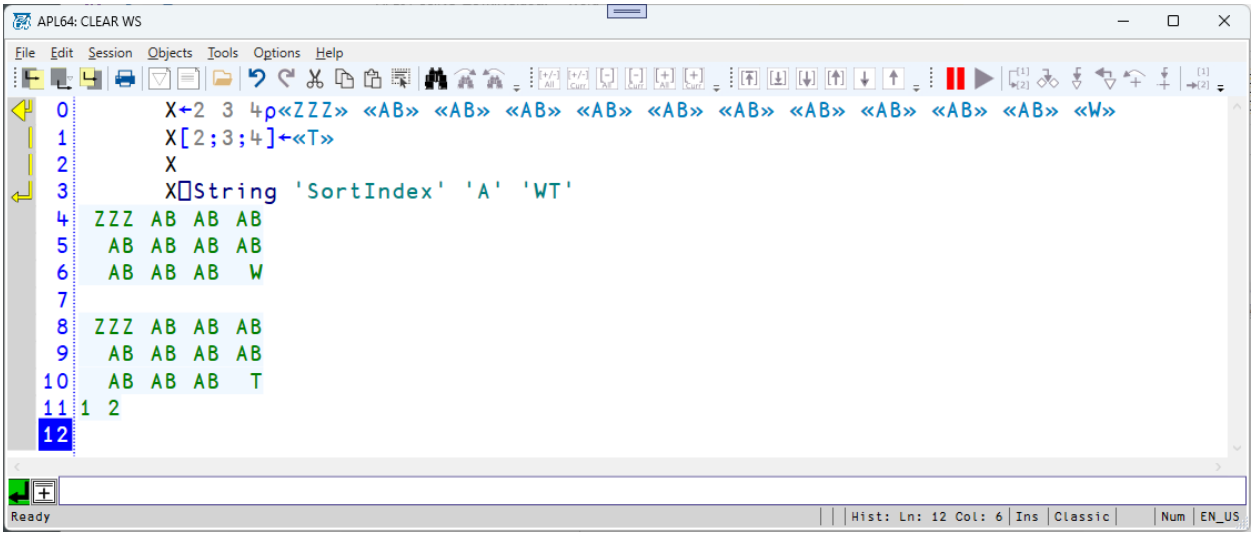

```
X←2 3 4⍴«ZZZ» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «W»
X[2;3;4]←«T»
X
X⎕String 'SortIndex' 'D'
```




```
X←2 3 4⍴«ZZZ» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «W»
X[2;3;4]←«T»
X
X⎕String 'SortIndex' 'A' 'TW'
```




```
X←2 3 4ρ«ZZZ» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «AB» «W»
X[2;3;4]←«T»
X
X⎕String 'SortIndex' 'A' 'WT'
```



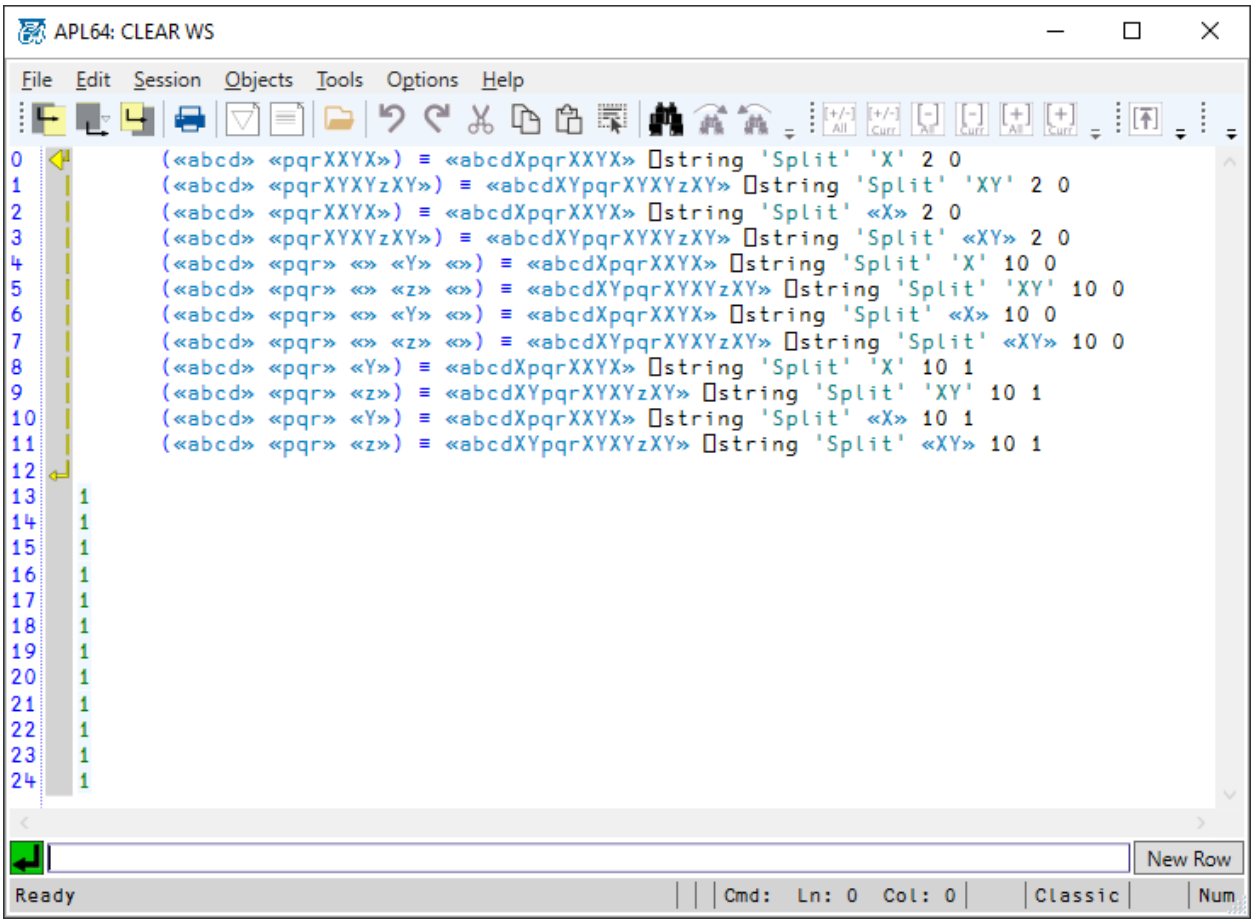
SPLIT

String[]←String ⎕STRING "SPLIT" (Char[])Delimiters Max#Substrings [RemoveEmptyEntries]
String[]←String ⎕STRING "SPLIT" (Char)Delimiter Max#Substrings [RemoveEmptyEntries]
String[]←String ⎕STRING "SPLIT" (String[])Delimiters Max#Substrings [RemoveEmptyEntries]
String[]←String ⎕STRING "SPLIT" (String)Delimiter Max#Substrings [RemoveEmptyEntries]

For no limit on the number of substrings, set Max#Substrings to -1.
The RemoveEmptyEntries argument is optional. If not present, the default is 0.

```
(«abcd» «pqrXXYX») ≡ «abcdXpqrXXYX» ⎕string 'Split' 'X' 2 0
```

```
(«abcd» «pqrXYXYzXY») ≡ «abcdXYpqrXYXYzXY» ⍷string 'Split' 'XY' 2 0
(«abcd» «pqrXXYX») ≡ «abcdXpqrXXYX» ⍷string 'Split' «X» 2 0
(«abcd» «pqrXYXYzXY») ≡ «abcdXYpqrXYXYzXY» ⍷string 'Split' «XY» 2 0
(«abcd» «pqr» «» «Y» «») ≡ «abcdXpqrXXYX» ⍷string 'Split' 'X' 10 0
(«abcd» «pqr» «» «z» «») ≡ «abcdXYpqrXYXYzXY» ⍷string 'Split' 'XY' 10 0
(«abcd» «pqr» «» «Y» «») ≡ «abcdXpqrXXYX» ⍷string 'Split' «X» 10 0
(«abcd» «pqr» «» «z» «») ≡ «abcdXYpqrXYXYzXY» ⍷string 'Split' «XY» 10 0
(«abcd» «pqr» «Y») ≡ «abcdXpqrXXYX» ⍷string 'Split' 'X' 10 1
(«abcd» «pqr» «z») ≡ «abcdXYpqrXYXYzXY» ⍷string 'Split' 'XY' 10 1
(«abcd» «pqr» «Y») ≡ «abcdXpqrXXYX» ⍷string 'Split' «X» 10 1
(«abcd» «pqr» «z») ≡ «abcdXYpqrXYXYzXY» ⍷string 'Split' «XY» 10 1
```

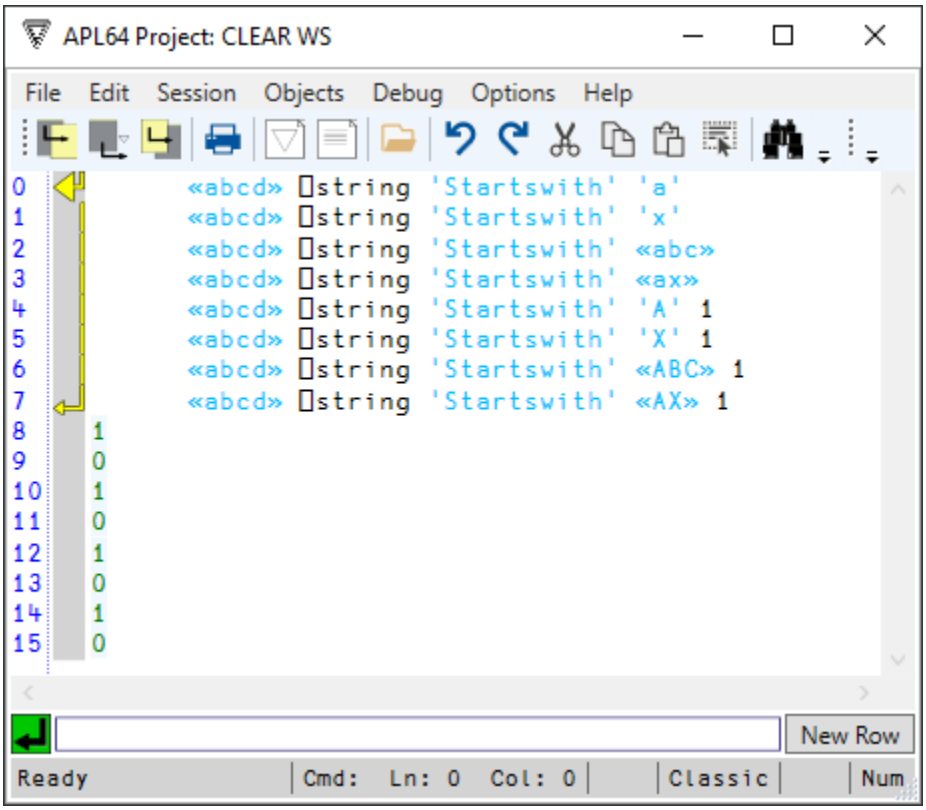


STARTSWITH

Bool←String ⍷STRING "STARTSWITH" Char
Bool←String ⍷STRING "STARTSWITH" String
Bool←String ⍷STRING "STARTSWITH" String IgnoreCase

```
«abcd» ⍷string 'StartsWith' 'a'
«abcd» ⍷string 'StartsWith' 'X'
«abcd» ⍷string 'StartsWith' «abc»
«abcd» ⍷string 'StartsWith' «ax»
```

```
«abcd» ⍷string 'StartsWith' 'A' 1
«abcd» ⍷string 'StartsWith' 'X' 1
«abcd» ⍷string 'StartsWith' «ABC» 1
«abcd» ⍷string 'StartsWith' «AX» 1
```

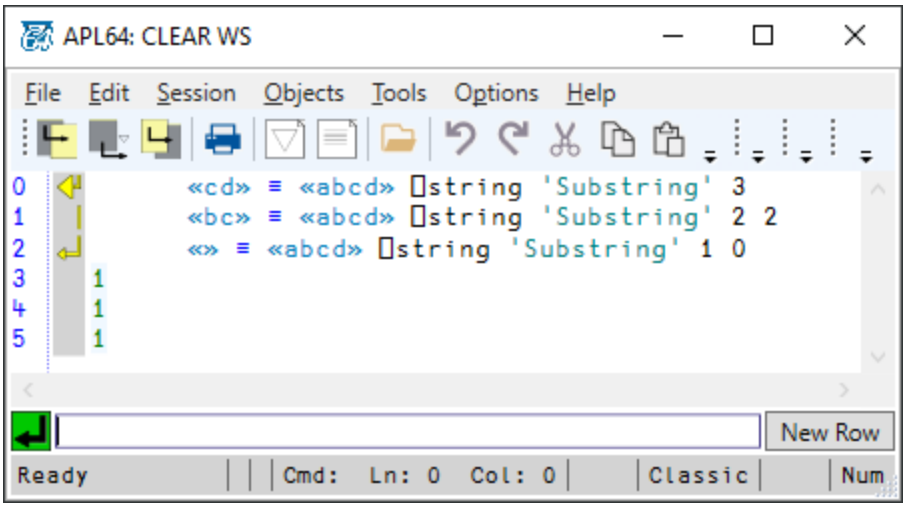


SUBSTRING

String←String ⍷STRING "SUBSTRING" (Int32)StartPos
String←String ⍷STRING "SUBSTRING" (Int32)StartPos (Int32)#Chars

StartPosInLarg is ⍷IO-sensitive.

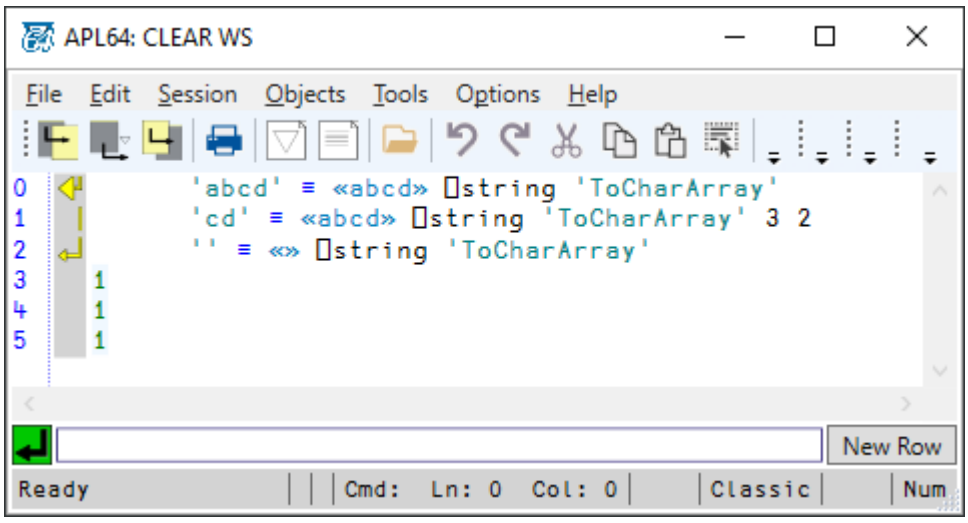
```
«cd» ≡ «abcd» ⍷string 'Substring' 3
«bc» ≡ «abcd» ⍷string 'Substring' 2 2
«» ≡ «abcd» ⍷string 'Substring' 1 0
```



TOCHARARRAY

Char[]←String ⎕STRING "TOCHARARRAY"
Char[]←String ⎕STRING "TOCHARARRAY" (Int32)StartPos (Int32)#Chars

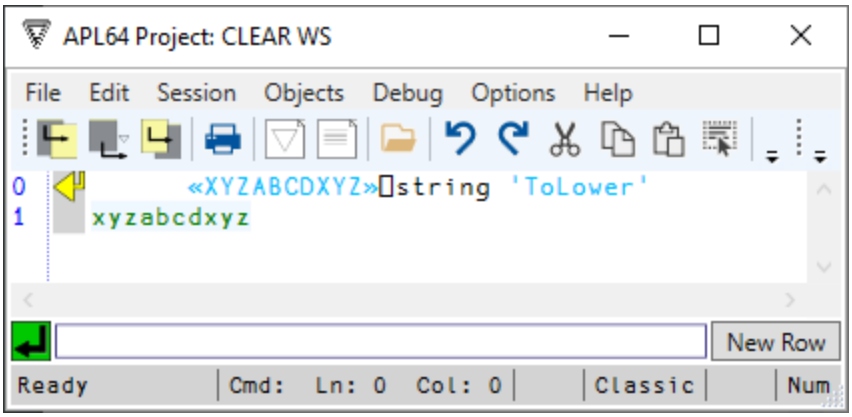
```
'abcd' ≡ «abcd» ⎕string 'ToCharArray'
'cd' ≡ «abcd» ⎕string 'ToCharArray' 3 2
'' ≡ «» ⎕string 'ToCharArray'
```



TOLOWER

Use current culture: String←String ⎕STRING "ToLower"

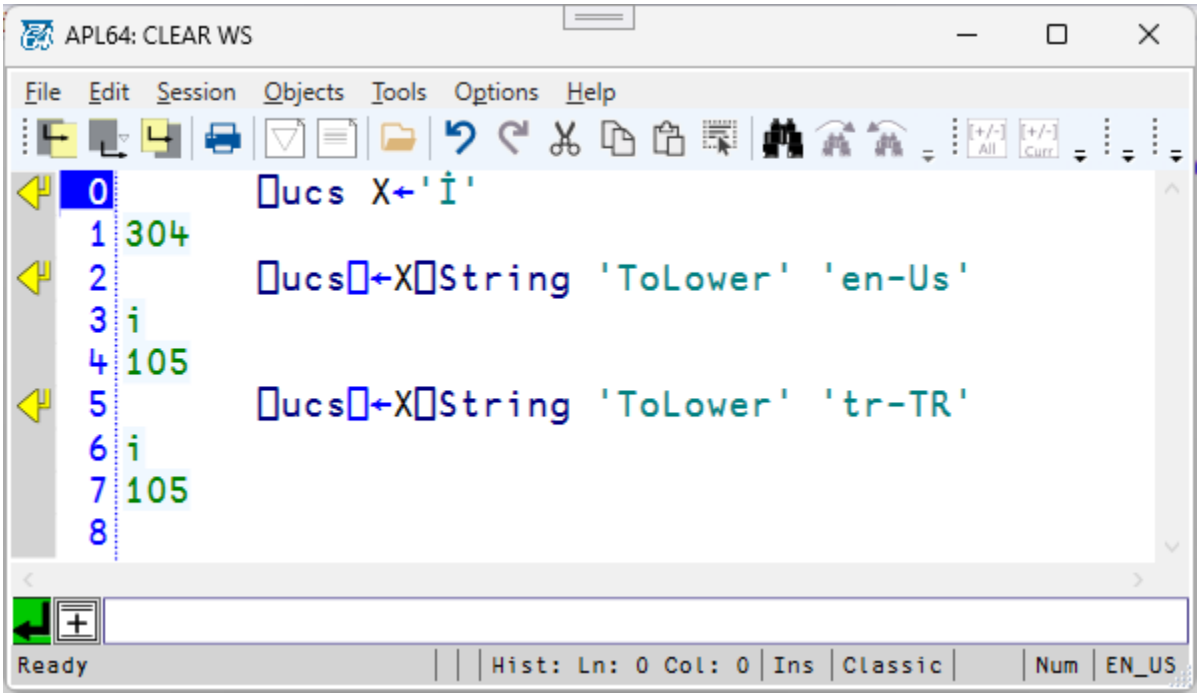
```
«XYZABCDXYZ» ⎕string 'ToLower'
```



Use selected culture: String←String ⎕STRING "ToLower" "CultureName"

The available options for CultureName depend on the operating system environment, e.g. for the Windows operating system environment. Use ⎕string 'GetCultureInfo' at application runtime to obtain a list of available culture names for the current operation system environment. The .Net-supported culture name is not case-sensitive

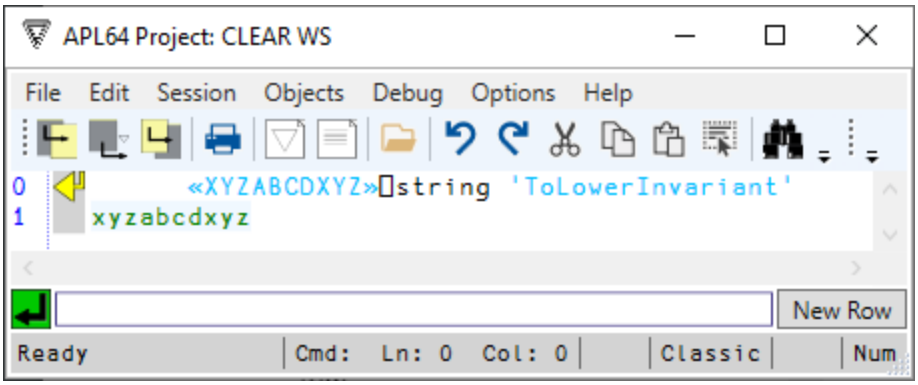
```
⎕ucs⎕←(⎕←«ABC123İ»)⎕String 'ToLower' 'en-US'
```



TOLOWERINVARIANT

String←String ⎕STRING "TOLOWERINVARIANT"

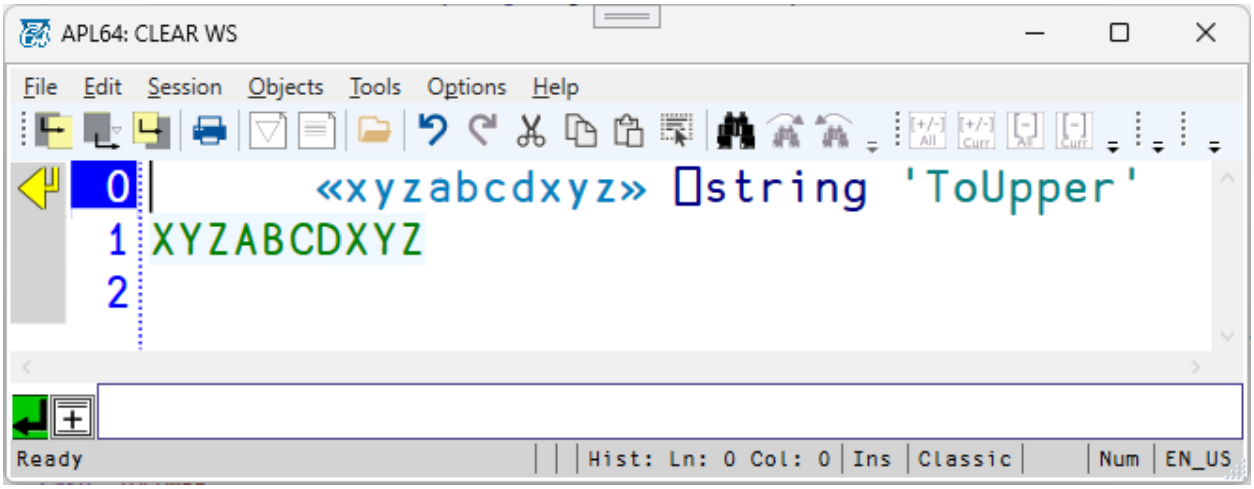
```
«XYZABCDXYZ» ⎕string 'ToLowerInvariant'
```



TOUPPER

Use current culture: String←String ⎕STRING "TOUPPER"

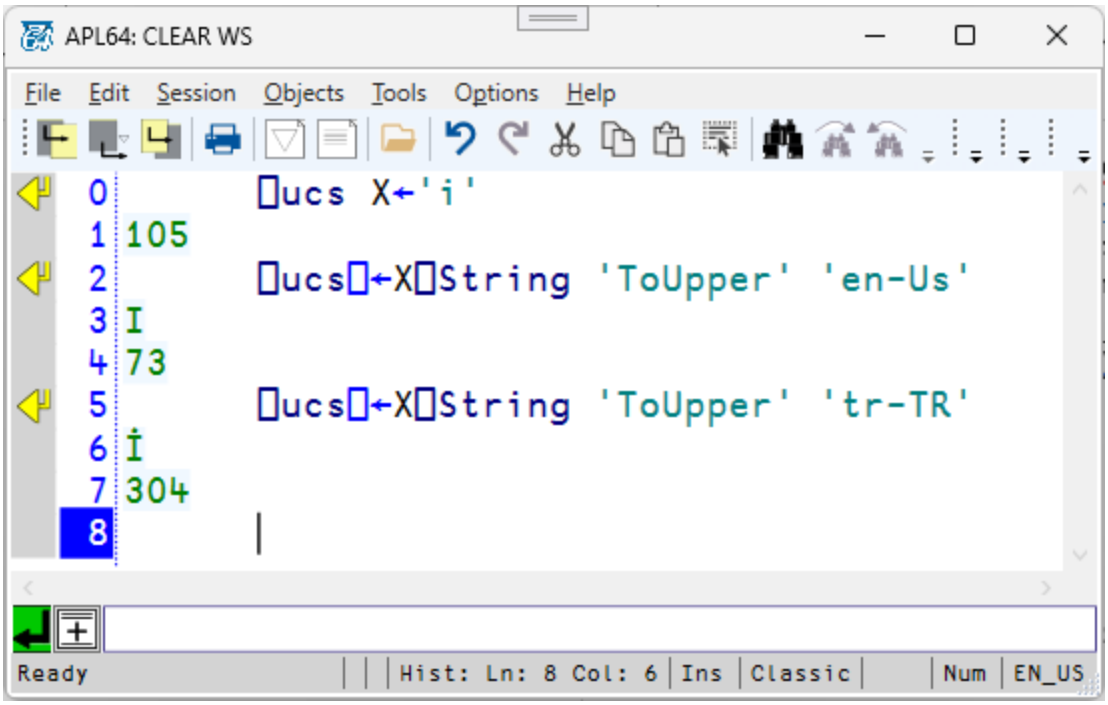
```
«xyzabcdxyz» ⎕string 'ToUpper'
```



Use selected culture: String←String ⎕STRING "TOUPPER" "CultureName"

The available options for CultureName depend on the operating system environment, e.g. for the Windows operating system environment. Use ⎕string 'GetCultureInfo' at application runtime to obtain a list of available culture names for the current operation system environment. The .Net-supported culture name is not case-sensitive

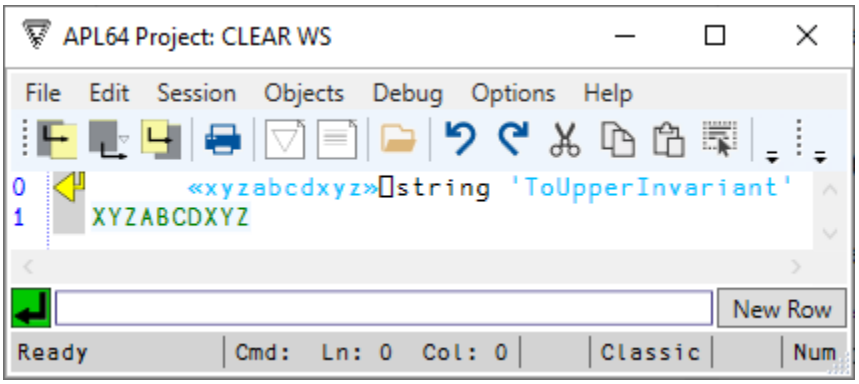
```
⎕ucs⎕←(⎕←«abc123i»)⎕String 'ToUpper' 'en-US'
```



TOUPPERINVARIANT

String←String ⎕STRING "TOUPPERINVARIANT"

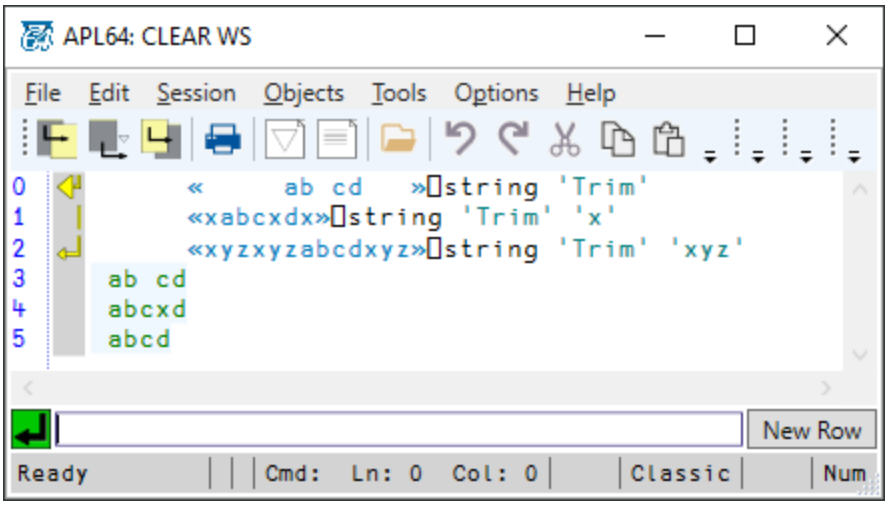
```
«xyzabcdxyz» ⎕string 'ToUpperInvariant'
```



TRIM

String←String ⎕STRING "TRIM"
String←String ⎕STRING "TRIM" (char)charToTrim
String←String ⎕STRING "TRIM" (char[])charsToTrim

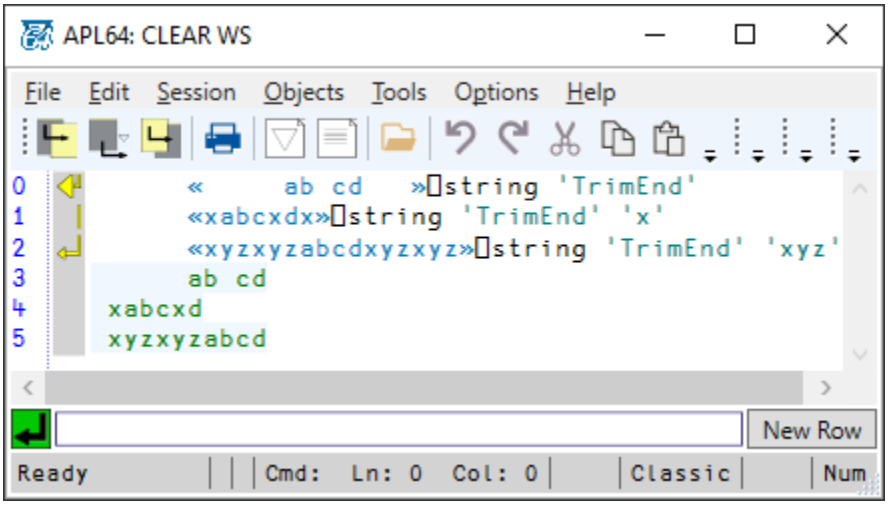
```
«    ab cd  »⎕string 'Trim'
«xabcxdx»⎕string 'Trim' 'x'
«xyzxyzabcdxyz»⎕string 'Trim' 'xyz'
```



TRIMEND

String←String ⎕STRING "TRIMEND"
String←String ⎕STRING "TRIMEND" (char)charToTrim
String←String ⎕STRING "TRIMEND" (char[])charsToTrim

```
«    ab cd   »⎕string 'TrimEnd'
«xabcxdx»⎕string 'TrimEnd' 'x'
«xyzxyzabcdxyzxyz»⎕string 'TrimEnd' 'xyz'
```

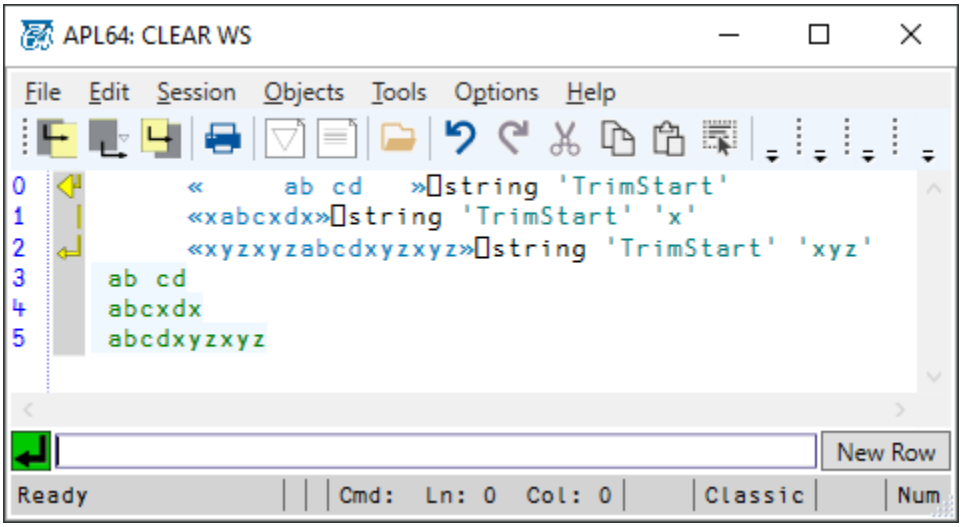


TRIMSTART

String←String ⎕STRING "TRIMSTART"
String←String ⎕STRING "TRIMSTART" (char)charToTrim
String←String ⎕STRING "TRIMSTART" (char[])charsToTrim

```
«    ab cd   »⎕string 'TrimStart'
«xabcxdx»⎕string 'TrimStart' 'x'
```

```
«xyzxyzabcdxyzxyz»⎕string 'TrimStart' 'xyz'
```



? (Documentation Summary)

Char[] ← String ⎕STRING "?"

```
⎕dr⎕String '?'
⍴⎕String '?'
1500↑⎕String '?'
```