# Using the ⎕ASKx System Functions

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## Overview

An APL-based command line application uses the APL64 developer version rather than a runtime version of APL64. The ⎕ASKx system functions facilitate the development of command line applications which use the APL64 developer version with a GUI format employing independent field-level user queries.

Syntax:

| | | |
|---|---|---|
| APL64 CharVector | ← [TextCaption] TextPrompt ⎕ASK | TextDefaultValue |
| APL64 Value | ← [TextCaption] TextPrompt ⎕ASKEX | TextDefaultValue |
| APL64 IntegerValue | ← [TextCaption] OptionsList ⎕ASKL | NumericDefaultValue |
| APL64 NumericValue | ← [TextCaption] TextPrompt ⎕ASKN | NumericDefaultValue(s) |

When an ⎕ASKx dialog is presented, the default value is highlighted and contains the keyboard focus.

The ⎕ASKx dialogs are modal. The user can close these dialogs clicking the close button in the dialog title bar, Enter/Return or Esc key.

The ⎕ASKx dialogs are implemented without dependence on ⎕WI Win32 technology.

The ⎕ASKx dialogs are available only the APL64 developer version.

The caption argument is optional. If present, the caption value must be a character scalar, character vector or a string scalar.

A prompt argument is required. The prompt argument may be a character scalar, character vector, character matrix, or a string scalar.

## ⎕ASK

⎕ASK can be used to present a dialog with user defined text caption, text prompt and text default value. The result of ⎕ASK is an APL64 character vector containing the user-edited default value. The default value must be a possibly empty, character scalar, character vector or a string scalar.

## ⎕ASKEX

⎕ASKEX can be used to present a dialog with user defined text caption, text prompt and text default value. The result of ⎕ASKEX is a two-element vector:

| Element # | Element Description |
|---|---|
| 1 | User-entered text |
| 2 | Interpreter evaluation of user-entered text |

The default value must be a possibly empty, character scalar, character vector or a string scalar. When the user closes the ⎕ASKEX dialog, the APL64 interpreter evaluates the user-provided text input to obtain the second element of the ⎕ASKEX result. The user-provided text input for ⎕ASKEX cannot be an empty text value. If the user-provided text value cannot be evaluated by the APL64 interpreter, an exception is thrown and the ⎕ASKEX dialog is displayed again until the user-provided text input can be evaluated and produce a result.

## ⎕ASKL

⎕ASKL can be used to present a dialog with user defined text caption, options list and integer default selected item# (index origin zero). The result of ⎕ASKL is an APL64 integer value containing the index (index origin zero) in the options list of the user-selected item. If the default value is outside of the range of available options, no option will be pre-selected when the ⎕ASKL dialog is presented. The user must selection an available option to exit the ⎕ASKL dialog. The default value must be an integer scalar.

The OptionsList argument of ⎕ASKL must be A:

- Character scalar, vector or matrix or
- String scalar, string vector or string 2-column matrix or
- A vector with each element a character scalar, character vector or string scalar
- A 1-column matrix where each row is a character scalar, character vector or string scalar

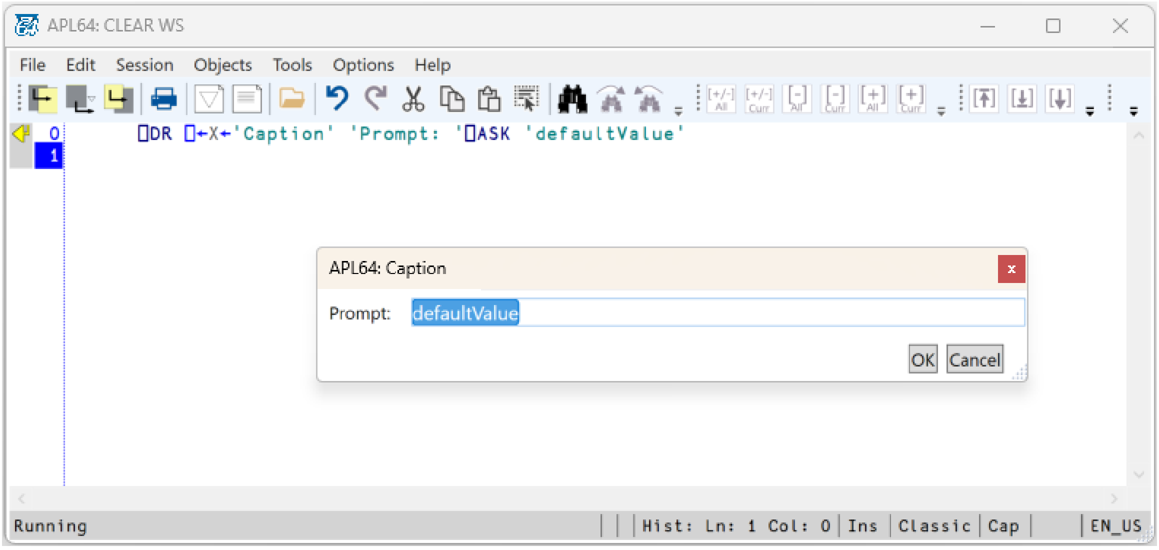
## ⎕ASKN

⎕ASKN can be used to present a dialog with user defined text caption, text prompt and a numeric scalar or vector (rank 1) default value. The result of ⎕ASKN is an APL64 vector (rank 1) value containing the user-edited numeric value(s). The user must enter a valid numeric value or values to exit the ⎕ASKN dialog. The default value or valuers must be numeric scalar or numeric vector or zilde.

# □ASK Examples

```
□DR □←X←'Caption' 'Prompt: '□ASK 'defaultValue'
```

Before the user closes the dialog:



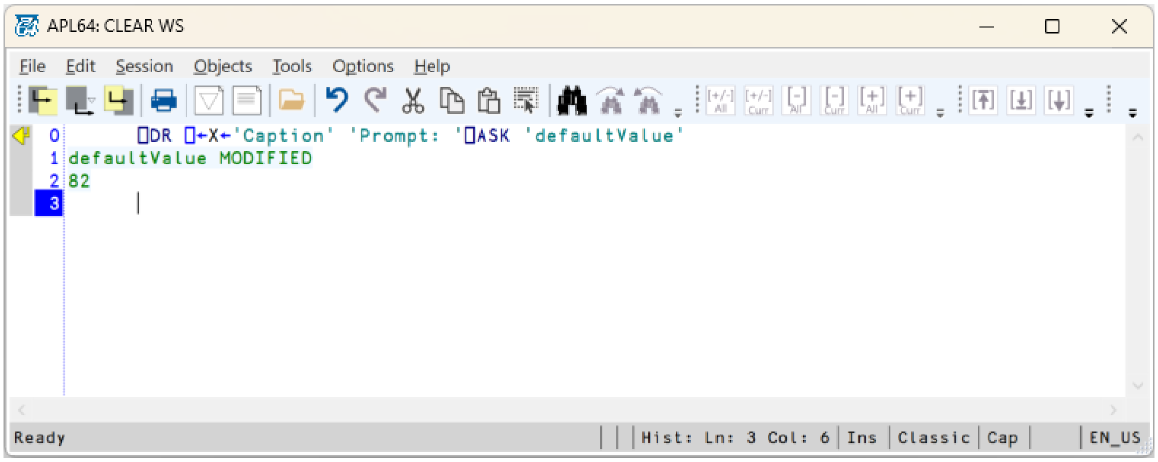
```
0       ⎕DR ⎕←X←'Caption' 'Prompt: '⎕ASK 'defaultValue'
1
```

APL64: Caption

Prompt: defaultValue

```
Running | | Hist: Ln: 1 Col: 0 | Ins | Classic | Cap | | EN_US
```

After the user edits the default value and closes the □ASK dialog:



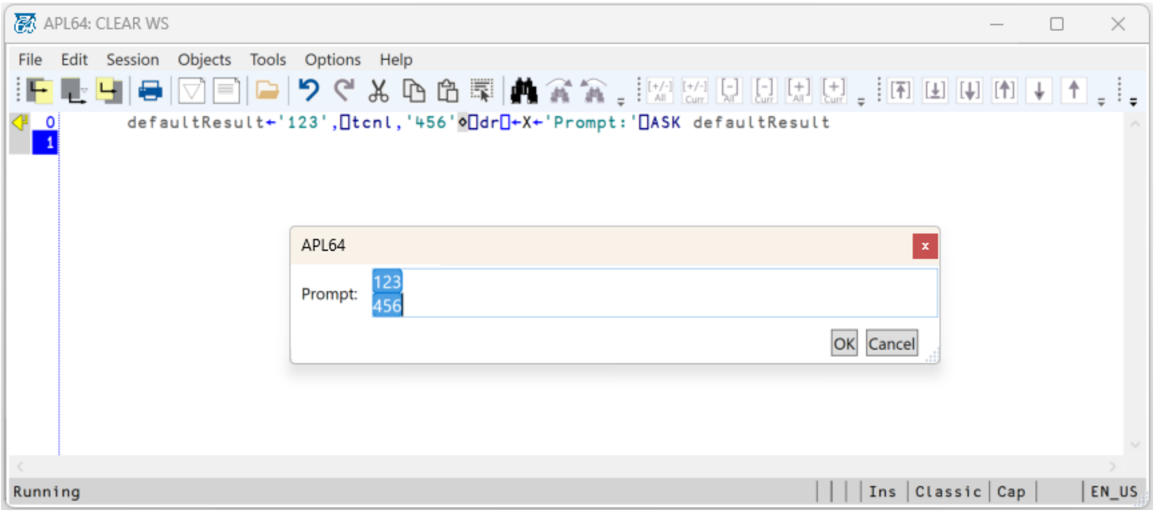
```
0       ⎕DR ⎕←X←'Caption' 'Prompt: '⎕ASK 'defaultValue'
1 defaultValue MODIFIED
2 82
3
```

```
Ready | | Hist: Ln: 3 Col: 6 | Ins | Classic | Cap | | EN_US
```

```
defaultResult←'123',□tcnl,'456'⋄□dr□←X←'Prompt:'□ASK defaultResult
```

The default result (right argument of □ASK) may contain □tcnl characters, so that a multi-line default value is presented in the dialog.

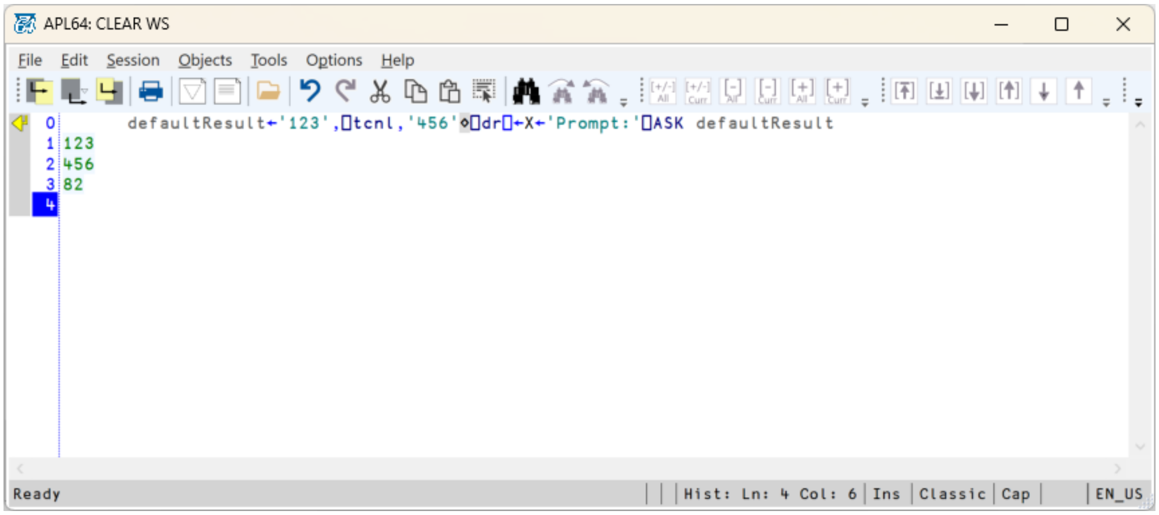
Before the user closes the dialog:



```
      defaultResult←'123',⎕tcnl,'456'⋄⎕dr⎕←X←'Prompt:'⎕ASK defaultResult
```

```
123
456
```

After the user closes the dialog:



APL64: CLEAR WS
File Edit Session Objects Tools Options Help
Ready
Hist: Ln: 4 Col: 6 Ins Classic Cap EN_US

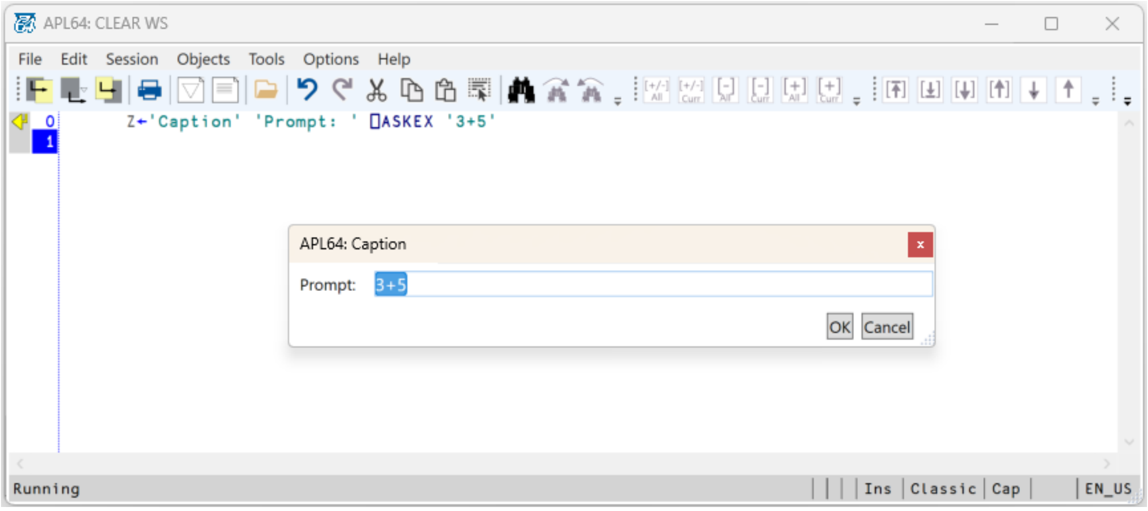
```
      defaultResult←'123',⎕tcnl,'456'⋄⎕dr⎕←X←'Prompt:'⎕ASK defaultResult
123
456
82
```

## ⎕ASKEX Examples

The user can enter APL64 executable expressions in the ⎕ASKEX dialog with a caption and prompt. If the user enters an invalid expression which cannot be executed, the prompt window is re-displayed until a valid user response, if provided.

```
Z←'Caption' 'Prompt: ' ⎕ASKEX '3+5'
```

The ⎕ASKEX dialog is presented:

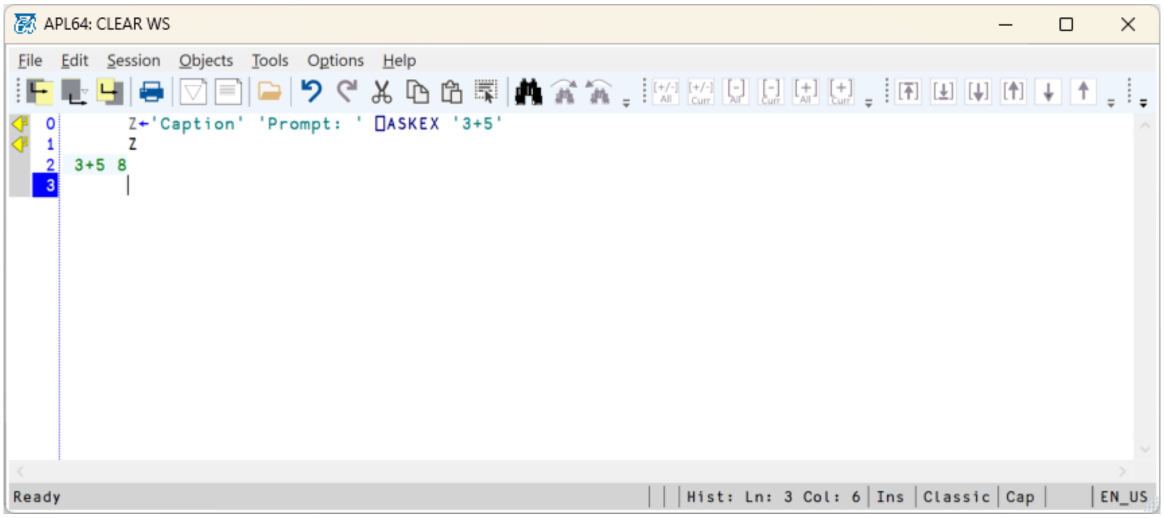


```
Z←'Caption' 'Prompt: ' ⎕ASKEX '3+5'
```

Prompt: 3+5

Running | Ins | Classic | Cap | EN_US

After the ⎕ASKEX dialog is closed:



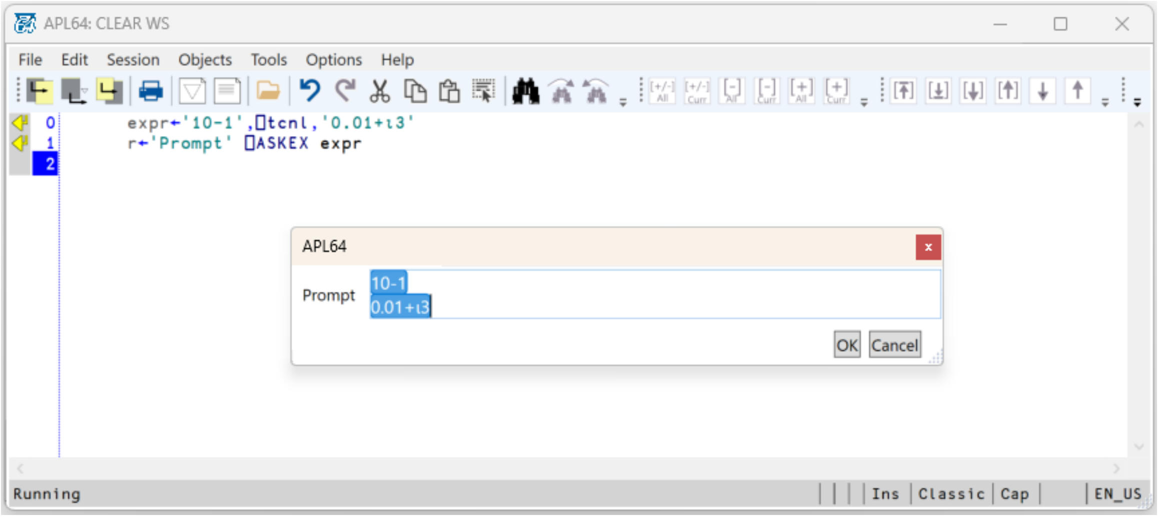
```
      Z←'Caption' 'Prompt: ' ⎕ASKEX '3+5'
      Z
 3+5  8
```

Ready | Hist: Ln: 3 Col: 6 | Ins | Classic | Cap | EN_US

```
expr←'10-1',⎕tcnl,'0.01+⍳3'
r←'Prompt' ⎕ASKEX expr
1⊃r
2⊃r
x←⍎expr
x
```

When the default response text of ⎕ASKEX contains a ⎕tcnl character, a multi-line default response is presented in the dialog. The result of ⎕ASKEX is the same as if the response was executed using the APL execute (⍎) function.

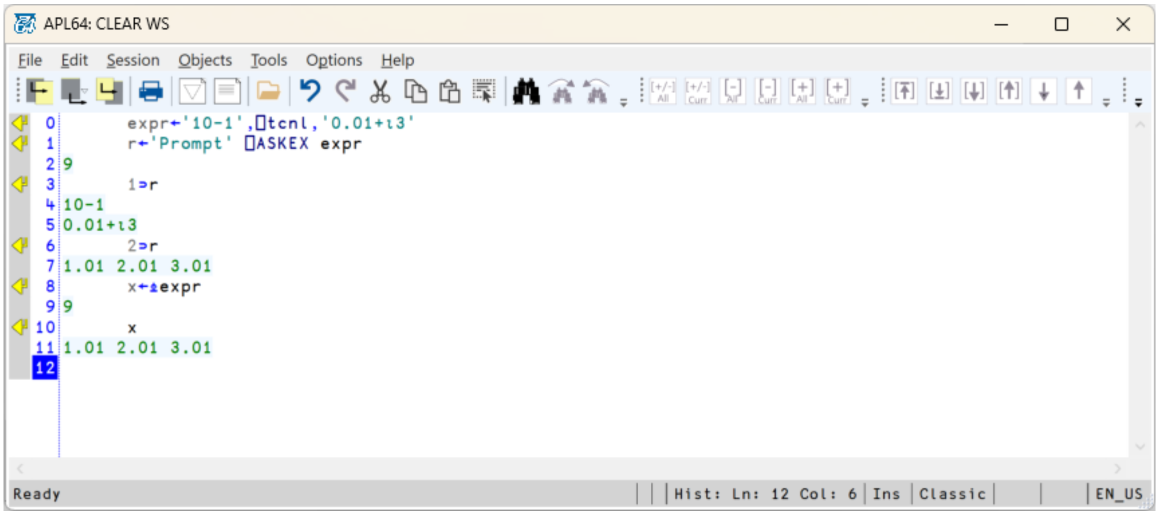
Before the user closes the dialog:



```
      expr←'10-1',⎕tcnl,'0.01+ι3'
      r←'Prompt' ⎕ASKEX expr
```

```
10-1
0.01+ι3
```

After the user closes the dialog:

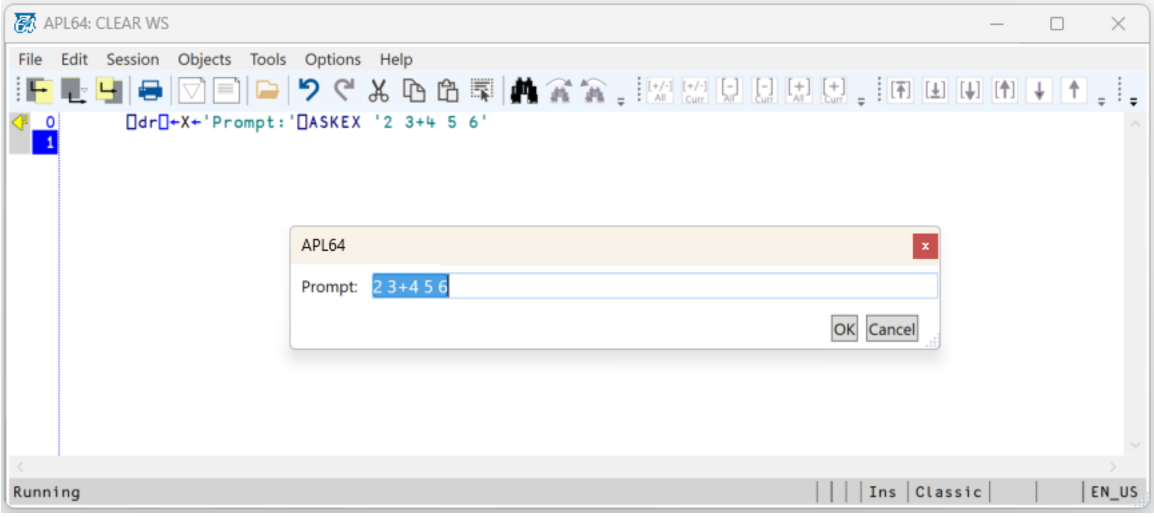


```
      expr←'10-1',⎕tcnl,'0.01+ι3'
      r←'Prompt' ⎕ASKEX expr
9
      1⊃r
10-1
0.01+ι3
      2⊃r
1.01 2.01 3.01
      x←⍎expr
9
      x
1.01 2.01 3.01
```

```
□dr□←X←'Prompt:'□ASKEX '2 3+4 5 6'
```

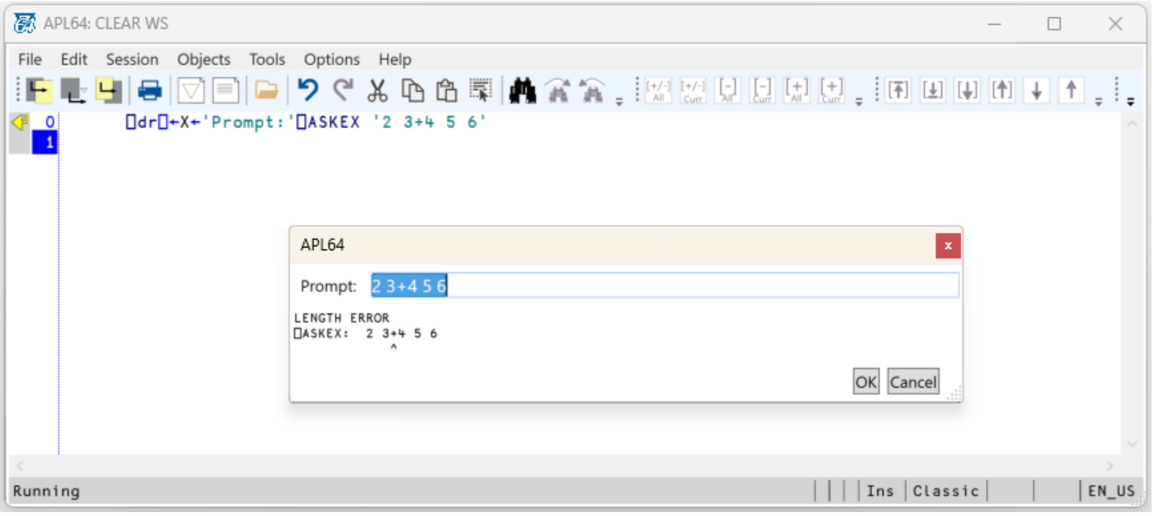
In case the default response cannot be evaluated by the interpreter, an exception message is presented in the dialog. The dialog requires the user to enter a response which can be successfully evaluated by the interpreter:

Before the dialog is closed:



```
      ⎕dr⎕←X←'Prompt:'⎕ASKEX '2 3+4 5 6'
```

After the user attempts to close the dialog without modifying the default response:



```
      ⎕dr⎕←X←'Prompt:'⎕ASKEX '2 3+4 5 6'
```

```
LENGTH ERROR
⎕ASKEX:  2 3+4 5 6
            ^
```

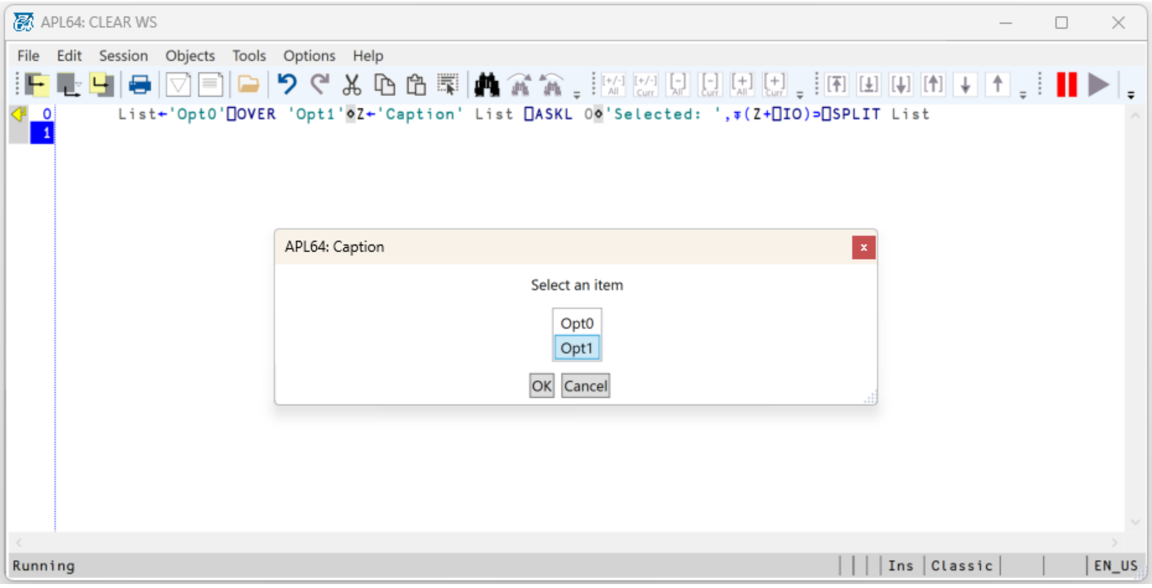
## ⎕ASKL Example

Show selected list item in history:

```
List←'Opt0'⎕OVER 'Opt1'⋄Z←'Caption' List ⎕ASKL 0⋄'Selected: ', ⍕(Z+⎕IO)⊃⎕SPLIT List
```

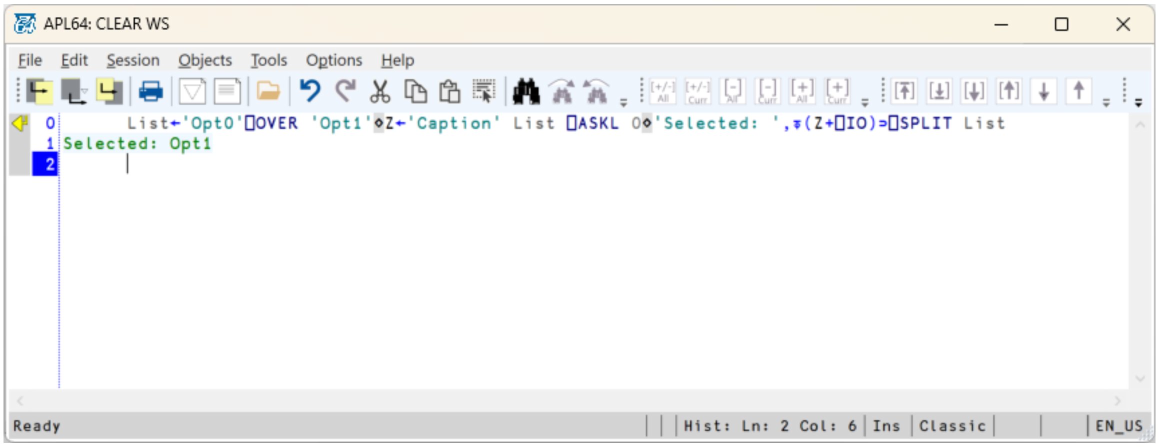
Caption is a character vector, list is a character matrix and the default list index is 0 (index origin 0):

Before user clicks [Enter/Return]:



```
      List←'Opt0'⎕OVER 'Opt1'⋄Z←'Caption' List ⎕ASKL 0⋄'Selected: ',⍕(Z+⎕IO)⊃⎕SPLIT List
```

After user clicks [Enter/Return]:



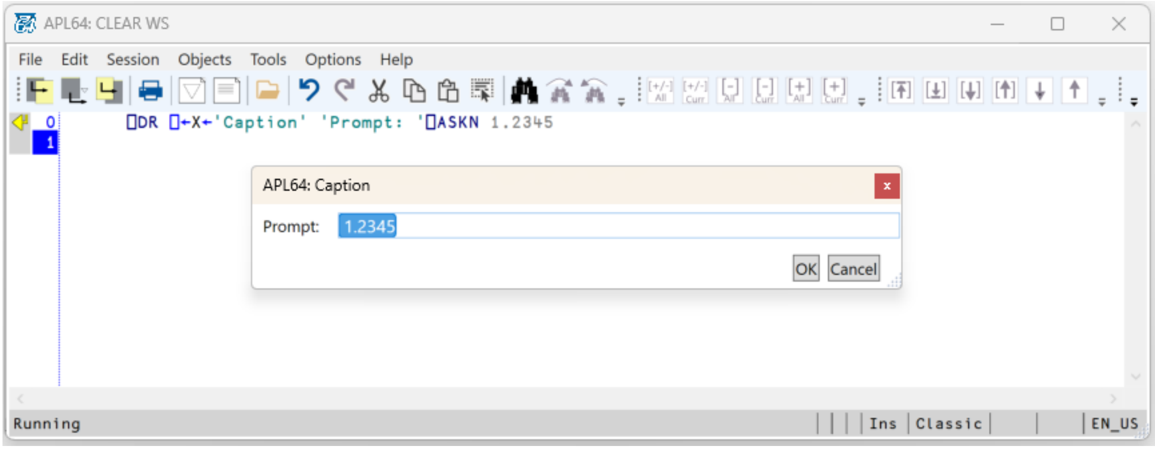
```
      List←'Opt0'⎕OVER 'Opt1'⋄Z←'Caption' List ⎕ASKL 0⋄'Selected: ',⍕(Z+⎕IO)⊃⎕SPLIT List
Selected: Opt1
```

## ⎕ASKN Examples

⎕ASKN with numeric scalar of type double

In this example the user modifies the default value and clicked the Enter key

```
⎕DR ⎕←X←'Caption' 'Prompt: '⎕ASKN 1.2345
```

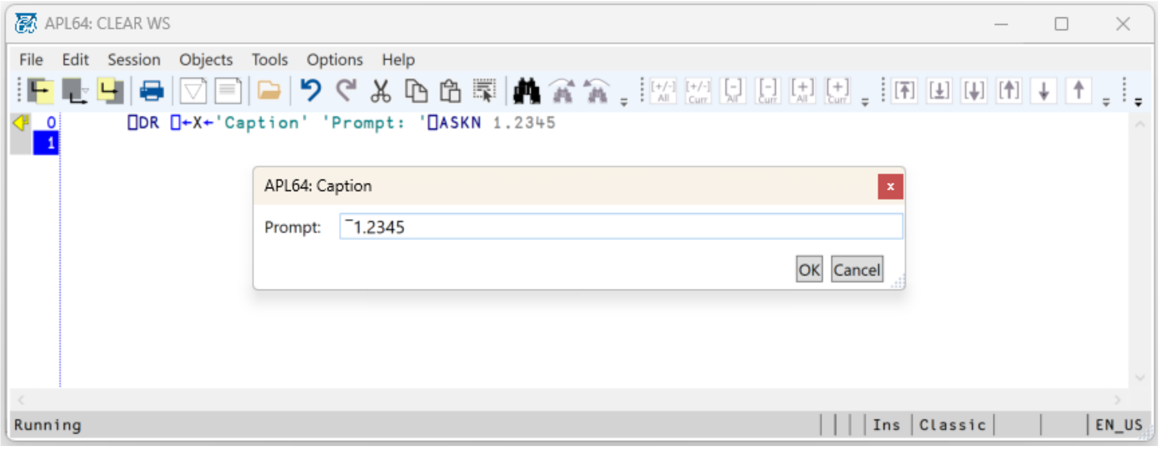


```
      ⎕DR ⎕←X←'Caption' 'Prompt: '⎕ASKN 1.2345
```

APL64: Caption

Prompt: 1.2345

User editing of the default value:

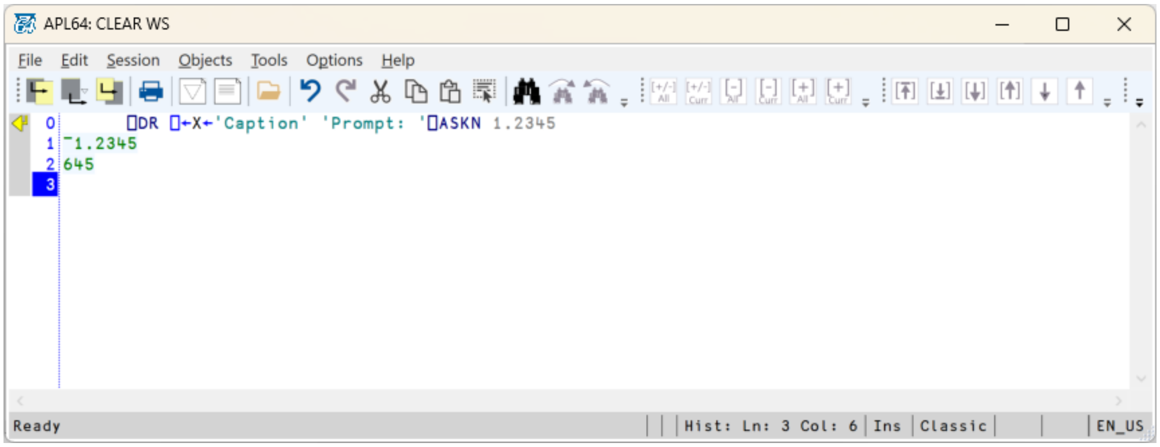


```
      ⎕DR ⎕←X←'Caption' 'Prompt: '⎕ASKN 1.2345
```

APL64: Caption

Prompt: ¯1.2345

After user clicks the Enter/Return key or OK button or the dialog close button:

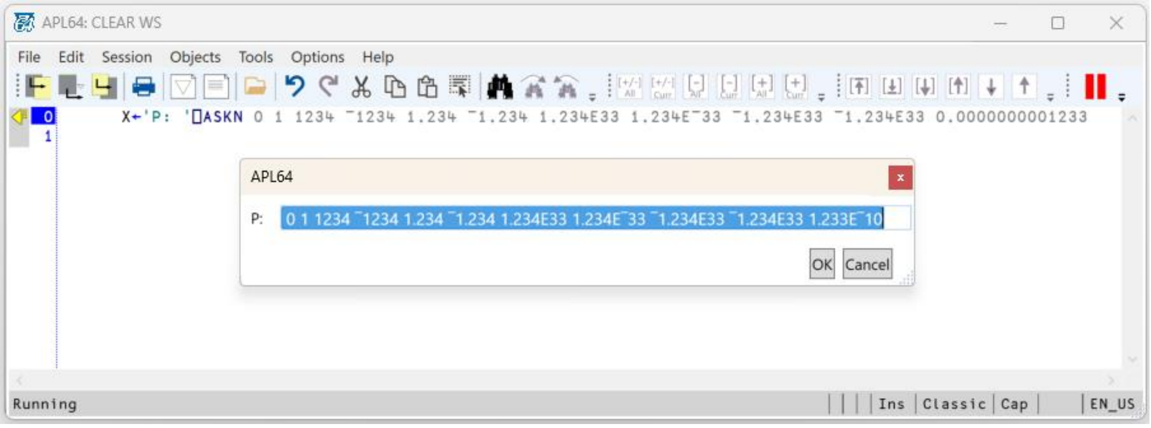


```
      ⎕DR ⎕←X←'Caption' 'Prompt: '⎕ASKN 1.2345
¯1.2345
645
```

⎕ASKN with numeric vector of mixed data types

In this example the user clicked the Enter key without editing the default values

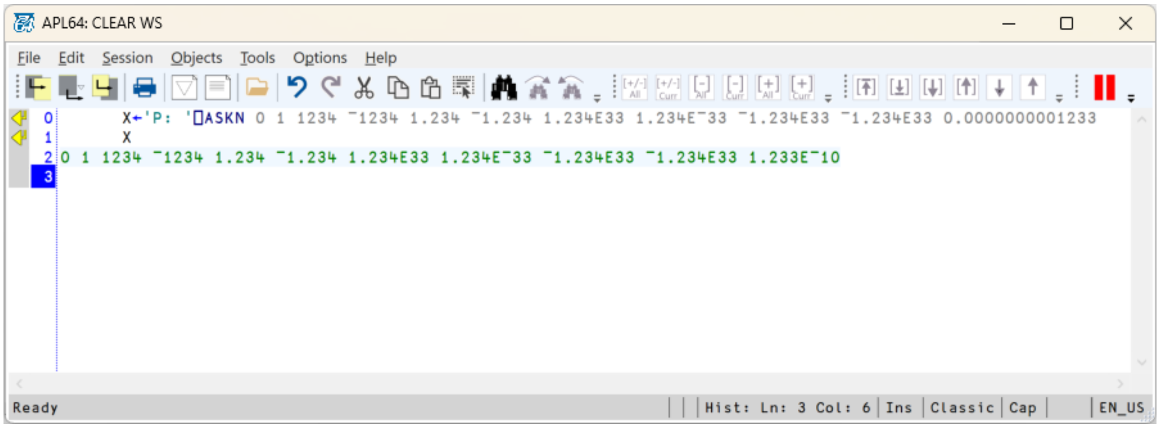
```
X←'P: '⎕ASKN 0 1 1234 ¯1234 1.234 ¯1.234 1.234E33 1.234E¯33 ¯1.234E33 ¯1.234E33 0.0000000001233
```



```
      X←'P: '⎕ASKN 0 1 1234 ¯1234 1.234 ¯1.234 1.234E33 1.234E¯33 ¯1.234E33 ¯1.234E33 0.0000000001233
```

P: 0 1 1234 ¯1234 1.234 ¯1.234 1.234E33 1.234E¯33 ¯1.234E33 ¯1.234E33 1.233E¯10

After user clicks the Enter/Return key or OK button or the dialog close button then displays X:

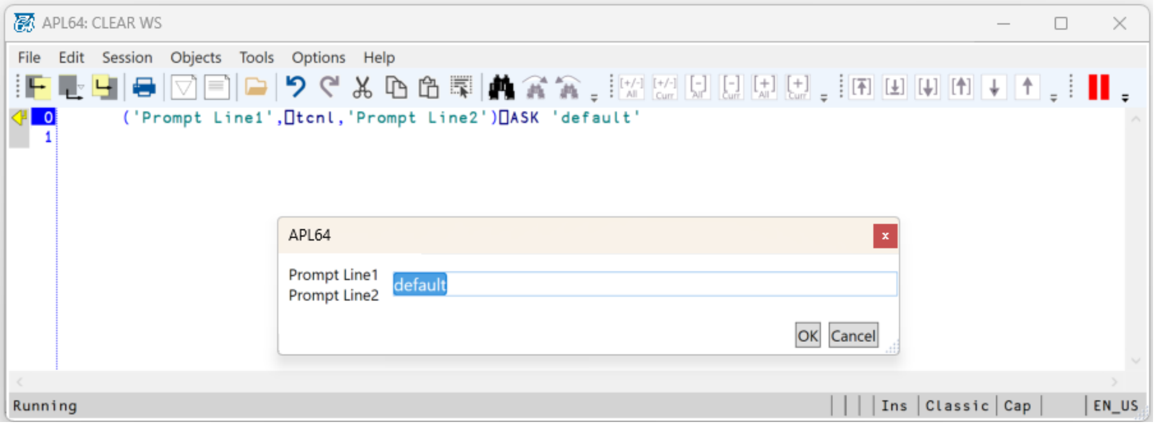


```
      X←'P: '⎕ASKN 0 1 1234 ¯1234 1.234 ¯1.234 1.234E33 1.234E¯33 ¯1.234E33 ¯1.234E33 0.0000000001233
      X
0 1 1234 ¯1234 1.234 ¯1.234 1.234E33 1.234E¯33 ¯1.234E33 ¯1.234E33 1.233E¯10
```

## Multi-line Prompt for ⎕ASK, ⎕ASKN or ⎕ASKL

A ‘new line’ delimited text value may be used as the prompt argument to ⎕ASK, ⎕ASKN or ⎕ASKL:

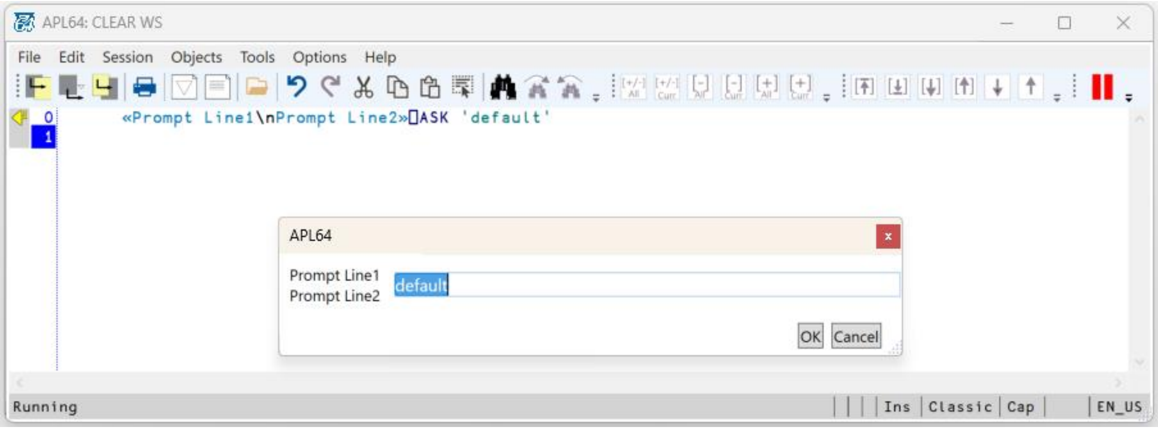
```
('Prompt Line1',⎕tcnl,'Prompt Line2')⎕ASK 'default'
```



```
      ('Prompt Line1',⎕tcnl,'Prompt Line2')⎕ASK 'default'
```

Prompt Line1
Prompt Line2 default

```
«Prompt Line1\nPrompt Line2»⎕ASK 'default'
```



```
«Prompt Line1\nPrompt Line2»⎕ASK 'default'
```

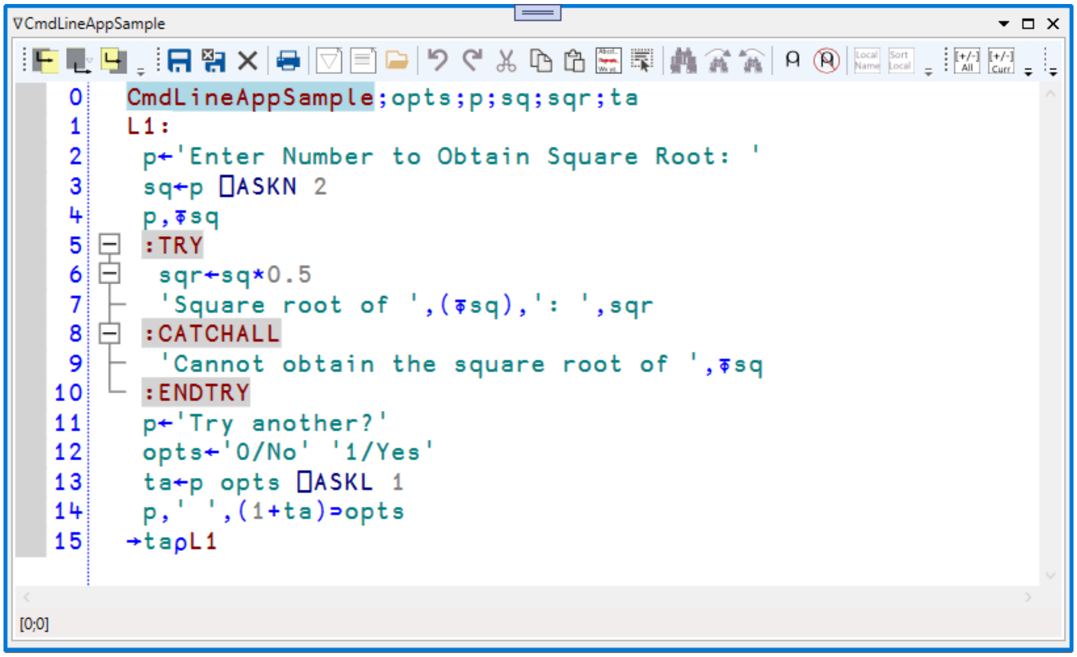
Prompt Line1
Prompt Line2

default

## Sample APL64 Command Line Application

The APL programmer-defined CmdLineAppSample function illustrates how the ⎕ASKx system functions can be used instead of Quad and Quote-Quad in an desktop application running in the APL64 developer version.

```
CmdLineAppSample;opts;p;sq;sqr;ta
L1:
 p←'Enter Number to Obtain Square Root: '
 sq←p ⎕ASKN 2
 p,⍕sq
 :TRY
  sqr←sq*0.5
  'Square root of ',(⍕sq),': ',sqr
 :CATCHALL
  'Cannot obtain the square root of ',⍕sq
 :ENDTRY
 p←'Try another?'
 opts←'0/No' '1/Yes'
 ta←p opts ⎕ASKL 1
 p,' ',(1+ta)⊃opts
→taρL1
```

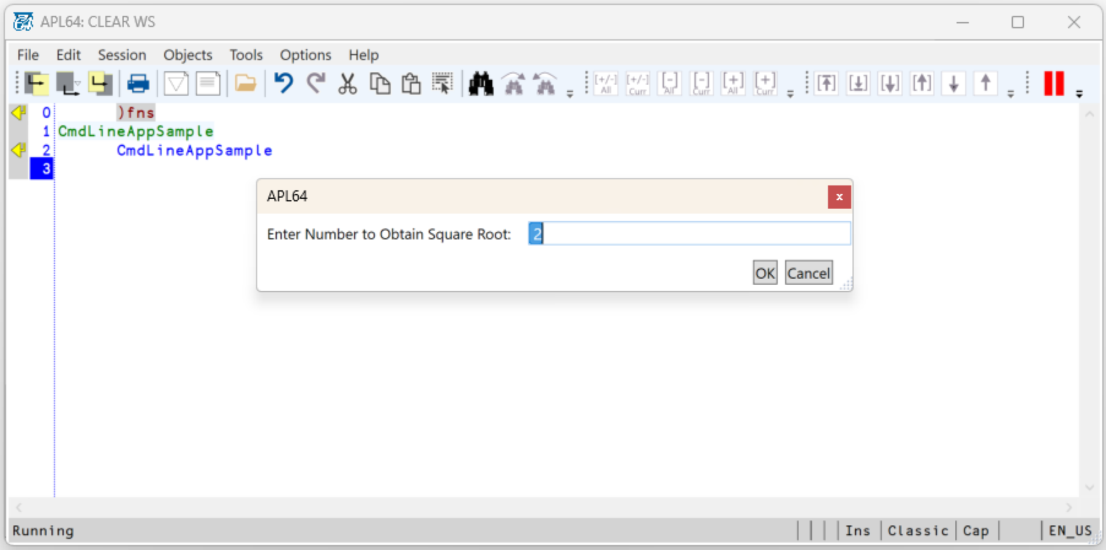


```
CmdLineAppSample;opts;p;sq;sqr;ta
L1:
 p←'Enter Number to Obtain Square Root: '
 sq←p ⎕ASKN 2
 p,⍕sq
 :TRY
  sqr←sq*0.5
  'Square root of ',(⍕sq),': ',sqr
 :CATCHALL
  'Cannot obtain the square root of ',⍕sq
 :ENDTRY
 p←'Try another?'
 opts←'0/No' '1/Yes'
 ta←p opts ⎕ASKL 1
 p,' ',(1+ta)⊃opts
→tapL1
```

Sample usage of the CmdLineAppSample function

- Calculated the square root of 2

The ⎕ASKN dialog is presented:

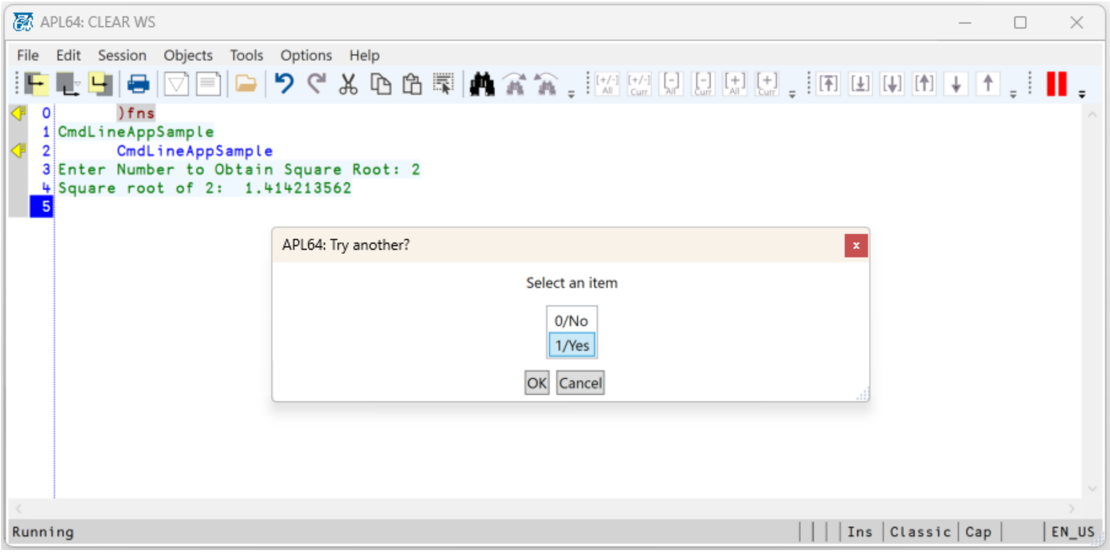


```
      )fns
CmdLineAppSample
      CmdLineAppSample
```

APL64

Enter Number to Obtain Square Root: 2

After user clicks the Enter/Return key or OK button:



```
      )fns
CmdLineAppSample
      CmdLineAppSample
Enter Number to Obtain Square Root: 2
Square root of 2:  1.414213562
```

APL64: Try another?

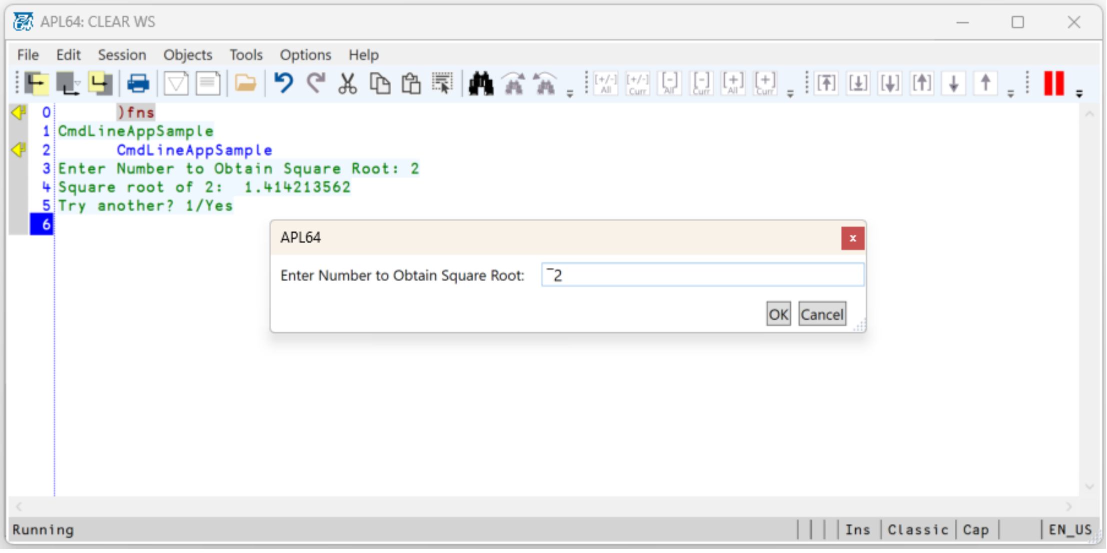
Select an item

0/No
1/Yes

OK Cancel

- Attempt to calculate the square root of -2

After user clicks the Enter/Return key or OK button then enters ¯2:



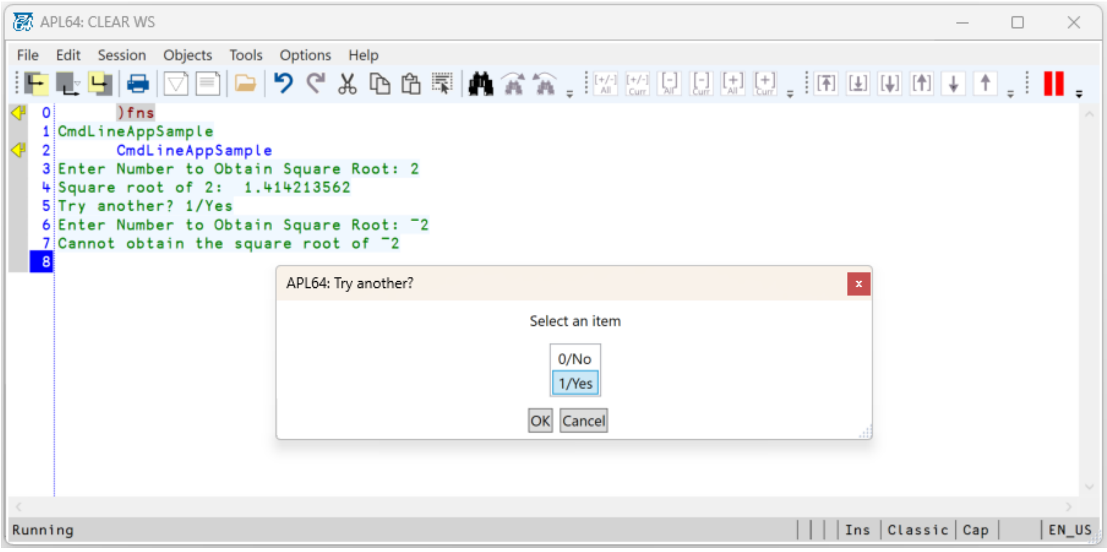
```
      )fns
CmdLineAppSample
      CmdLineAppSample
Enter Number to Obtain Square Root: 2
Square root of 2:  1.414213562
Try another? 1/Yes
```

APL64

Enter Number to Obtain Square Root: ¯2

OK Cancel

After user clicks the Enter/Return key or OK button:



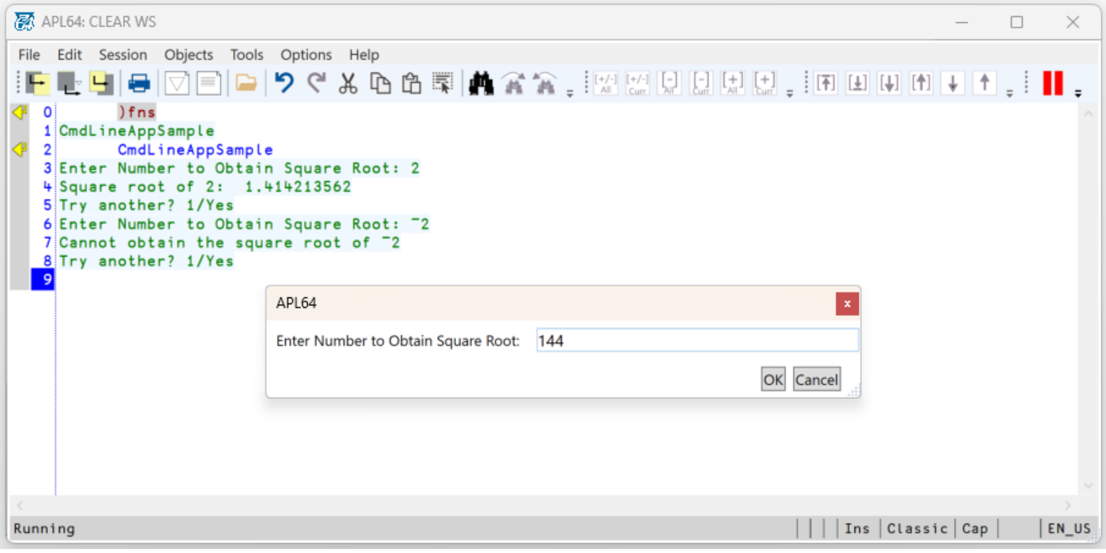
```
      )fns
CmdLineAppSample
      CmdLineAppSample
Enter Number to Obtain Square Root: 2
Square root of 2:  1.414213562
Try another? 1/Yes
Enter Number to Obtain Square Root: ¯2
Cannot obtain the square root of ¯2
```

APL64: Try another?

Select an item

0/No
[✓ 1/Yes]

- After user clicks the Enter/Return key or OK button then enters 144:

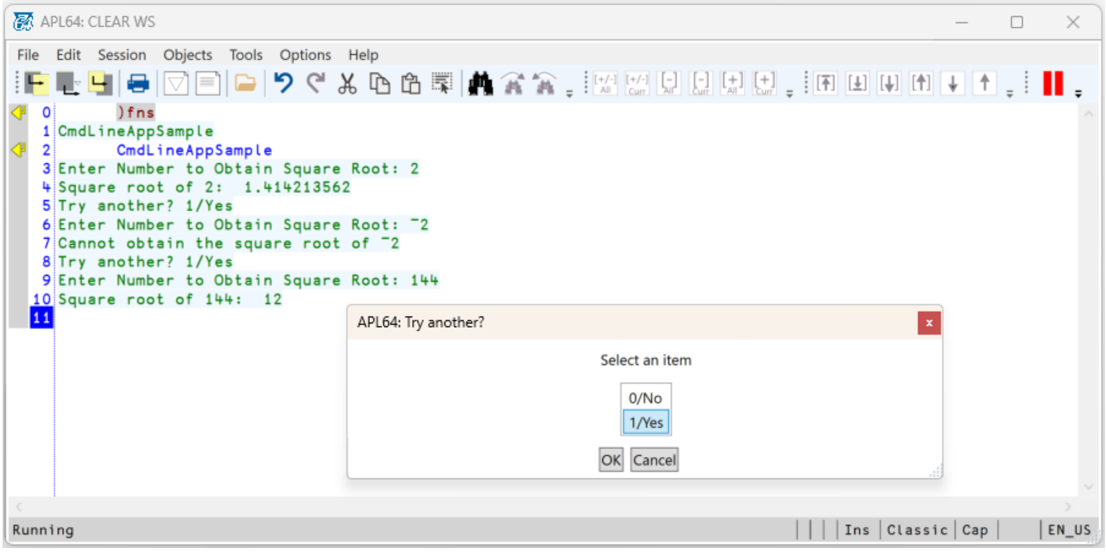


```
      )fns
CmdLineAppSample
      CmdLineAppSample
Enter Number to Obtain Square Root: 2
Square root of 2:  1.414213562
Try another? 1/Yes
Enter Number to Obtain Square Root: ¯2
Cannot obtain the square root of ¯2
Try another? 1/Yes
```

APL64

Enter Number to Obtain Square Root: 144

After user clicks the Enter/Return key or OK button:

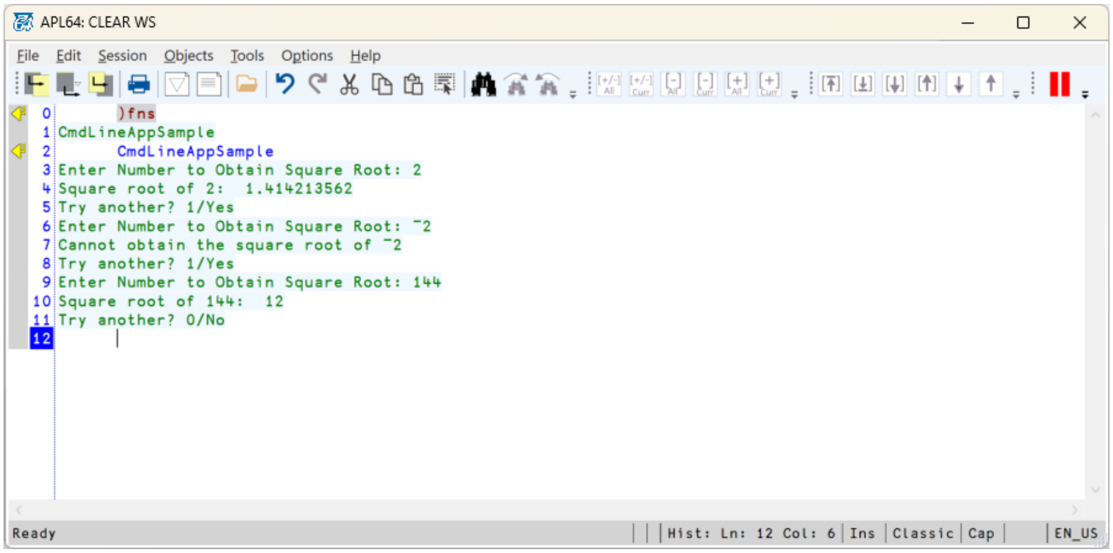


```
      )fns
CmdLineAppSample
      CmdLineAppSample
Enter Number to Obtain Square Root: 2
Square root of 2:  1.414213562
Try another? 1/Yes
Enter Number to Obtain Square Root: ¯2
Cannot obtain the square root of ¯2
Try another? 1/Yes
Enter Number to Obtain Square Root: 144
Square root of 144:  12
```

APL64: Try another?

Select an item

After user selects No then clicks the Enter/Return key or OK button:



```
      )fns
CmdLineAppSample
      CmdLineAppSample
Enter Number to Obtain Square Root: 2
Square root of 2:  1.414213562
Try another? 1/Yes
Enter Number to Obtain Square Root: ¯2
Cannot obtain the square root of ¯2
Try another? 1/Yes
Enter Number to Obtain Square Root: 144
Square root of 144:  12
Try another? 0/No
```