

(D05) RIDE 4.1 and Next Generation Integrations

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Development team



Gil



Mike



Cal

- Callum Floume set the path for 4.1
 - Move to ES6
 - Airbnb style guide adopted
 - Trial of Monaco editor
 - CSS to Less
- Left the team in end of 2017



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RIDE 4.0 Priorities Review

- Upwards Compatibility. ✓
- Secure Communications. ✓
- Floating Windows. ✗
- Raspberry Pi Version. ✓
- Zero Footprint Operation. ⚙️
- SSH Tunnelled Connection. ✓
- Workspace Explorer. ✓
- Debug Panel (Threads and Stack). ✓
- User Experience. ⚙️
- Enhanced Search Functionality. ✓
- Interpreter Level Formatting. ✓



RIDE 4.1 Priorities

- Floating Windows
- Zero Footprint Operation
- User Experience
- Stability - Bug Fixing

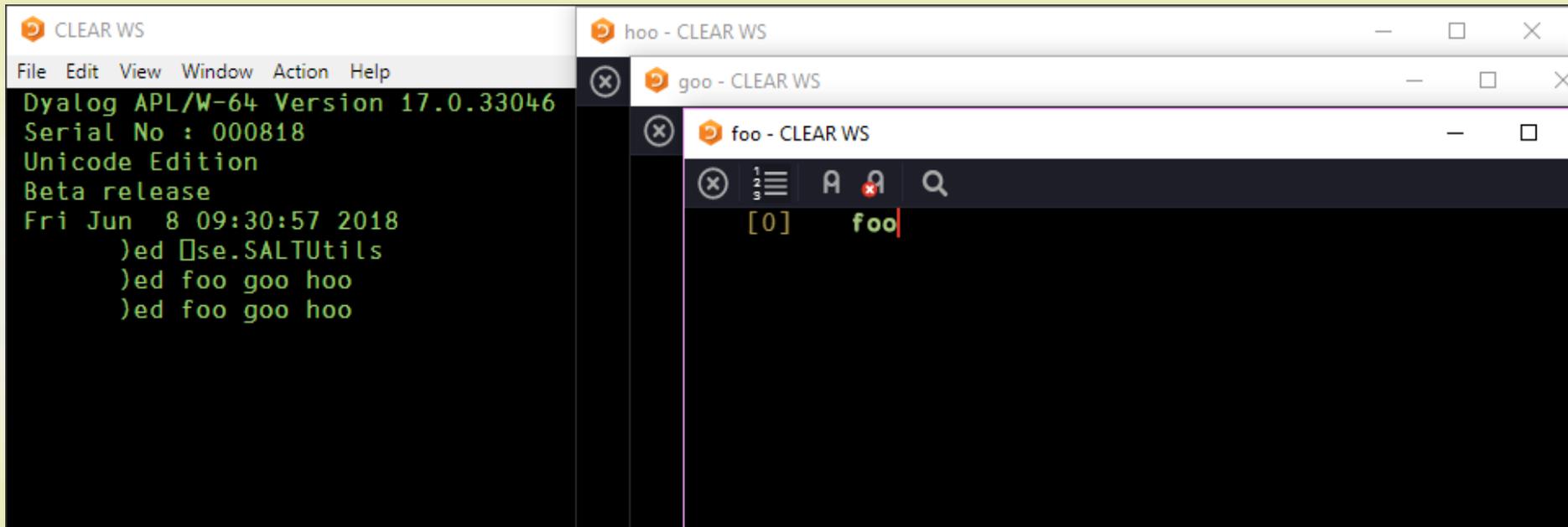


Floating Windows

- Undocked/floating editor windows
- Single floating editor
- Preferences
- About
- Dialogs



Multiple floating editors

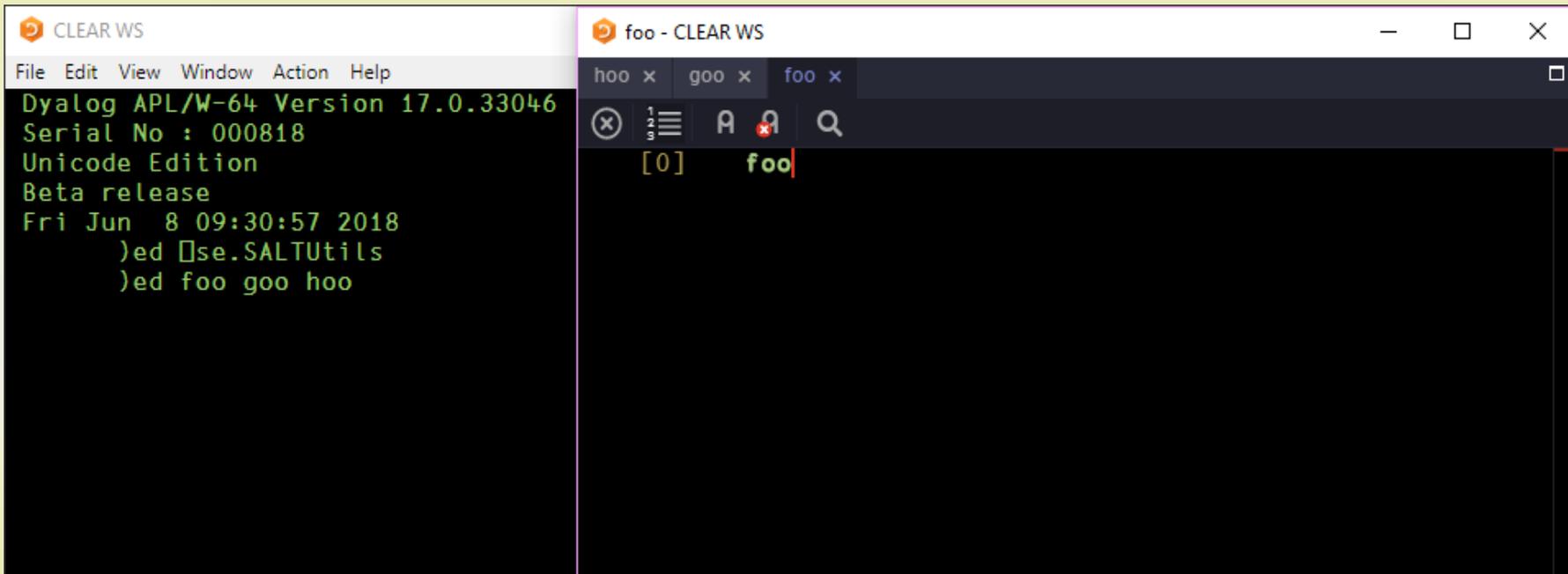


```
File Edit View Window Action Help
Dyalog APL/W-64 Version 17.0.33046
Serial No : 000818
Unicode Edition
Beta release
Fri Jun 8 09:30:57 2018
)ed []se.SALTUtils
)ed foo goo hoo
)ed foo goo hoo
```

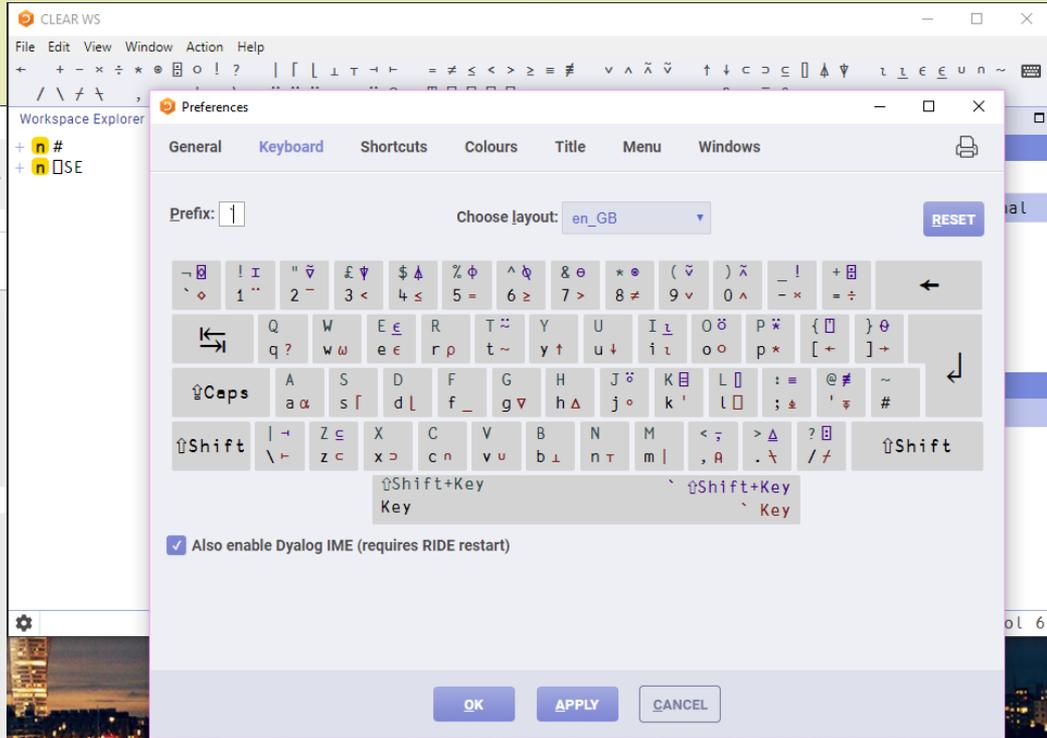
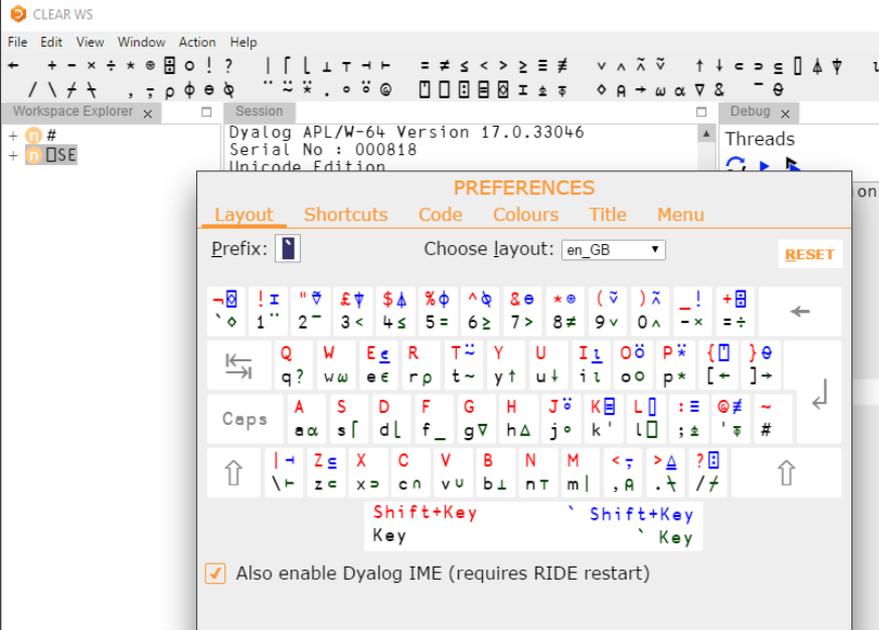
```
hoo - CLEAR WS
foo - CLEAR WS
[0] foo
```



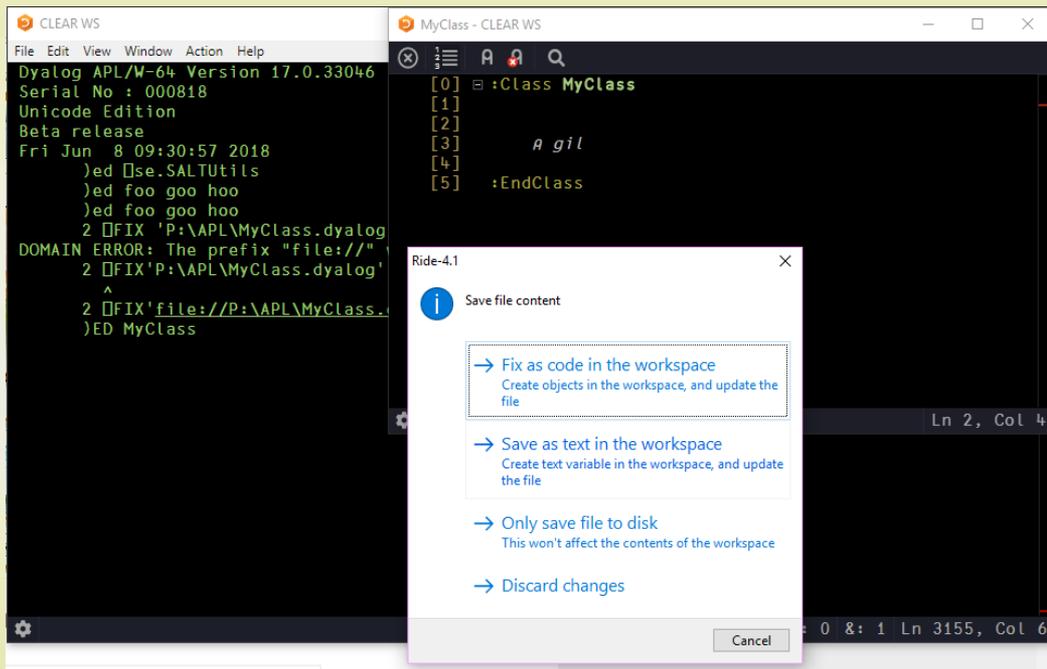
Single floating editor



Preferences



Native dialogs where available



Zero Footprint Operation

- No installation required for client
- Interpreter serving RIDE client directly via browser
- Consistent look and feel
- No floating editors
- Preferences stored in local storage



Zero Footprint Operation

The screenshot shows a web browser window titled 'CLEAR WS 9980' with the address bar at 'localhost:8080'. The browser's developer tools are open, displaying a code diff for a file named 'wsdiff'. The code diff shows several lines of code, including a table of file names and a code block with various operations.

inshlink	insnode	int	iotag	isdfn	joy	just	just
life	lisp	list	lsys	ltov	m91	mac	matc
mscan	mtrim	ncpath	nicediv	nlines	nspack	osc	pack
packS	packT	packU	packX	packZ	parse	path	pco
rational		refmatch	refmt	refpath	refs	refw	refw
scc	search	segs	select	shannon	sieve	span	sque
subs	subvec	sudoku	test	tfmt	timestamp	tnes	tnes
unify	uns	unwrap	up	utf8get	utf8put	von	vtol
wsdiff	wsmerge	wspan	wsreq	xhtml	xpower	xrefs	xtab

```

wsdiff+{
  α+'ω'
  ω≡':α ∇'□WSID
  1≡,ω:α ∇'ω
  →α{
    0::(≠□EN),'::',1+□IO=□DM
    α±ω
  }{□IO □ML+0 1
  ex+αα+
  incl+'A ~∇□ω'~α
  cols+□0.5×□PW-1

  nsv+, '□IO' '□ML' '□DIV' '□CT' '□AVU'
  
```



User experience

- Improve performance (slow response on large files, eg. session log, scripts)
- Review styling of application
 - Dark and light chrome
 - Consistent styling of labels and controls
 - Connect page restyled
 - Scalable content

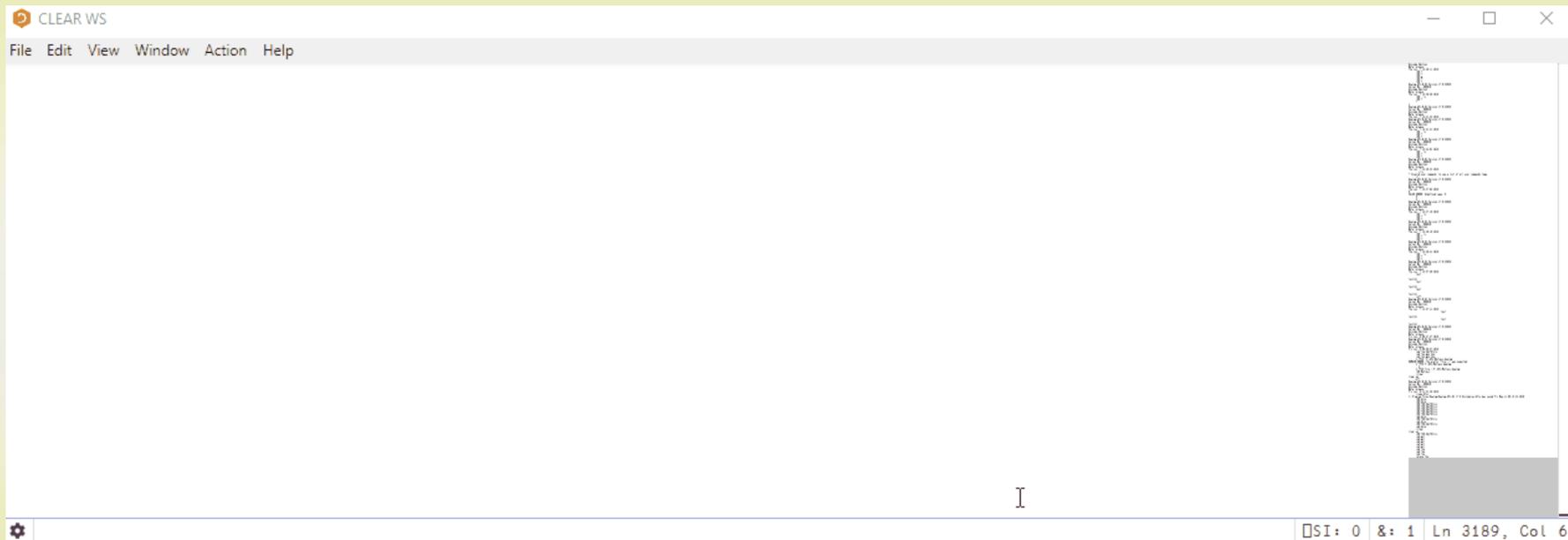


Editor performance

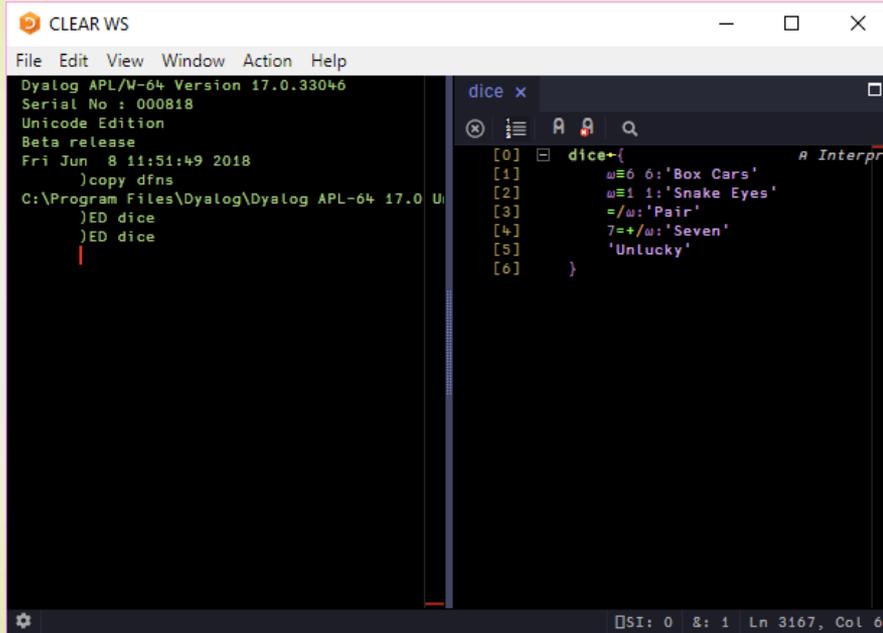
- Editor module “CodeMirror” replaced with “Monaco Editor”.
- Microsoft module lifted from VS Code (cross platform editor application).
- Many new features available, some yet to be taken advantage of (e.g. diff editor).
- Significant improvement in speed.



Some Monaco editor features



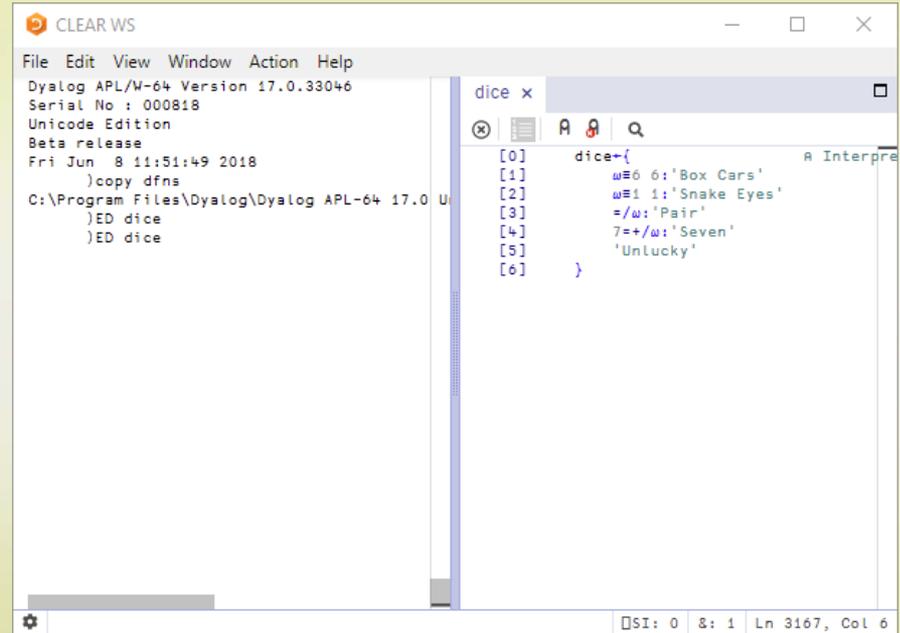
Dark and light theme



A screenshot of the Dyalog APL IDE in dark theme. The window title is 'CLEAR WS'. The menu bar includes 'File', 'Edit', 'View', 'Window', 'Action', and 'Help'. The main editor area shows a Dyalog APL program with the following code:

```
Dyalog APL/W-64 Version 17.0.33046
Serial No : 000818
Unicode Edition
Beta release
Fri Jun 8 11:51:49 2018
)copy dfns
C:\Program Files\Dyalog\Dyalog APL-64 17.0 U
)ED dice
)ED dice
```

The code is displayed in a dark font on a black background. The status bar at the bottom shows 'SI: 0 &: 1 Ln 3167, Col 6'.



A screenshot of the Dyalog APL IDE in light theme. The window title is 'CLEAR WS'. The menu bar includes 'File', 'Edit', 'View', 'Window', 'Action', and 'Help'. The main editor area shows the same Dyalog APL program as in the dark theme screenshot:

```
Dyalog APL/W-64 Version 17.0.33046
Serial No : 000818
Unicode Edition
Beta release
Fri Jun 8 11:51:49 2018
)copy dfns
C:\Program Files\Dyalog\Dyalog APL-64 17.0 U
)ED dice
)ED dice
```

The code is displayed in a light font on a white background. The status bar at the bottom shows 'SI: 0 &: 1 Ln 3167, Col 6'.



Stability – Bug fixing

- New test framework has been introduced (Spectron + avajs)
- About 200 issues closed since October 2017
- At the time of writing:
 - 102 open issues of which
 - 42 are enhancement requests



VSCoDe Integration

- Language Configuration
- Language Server
- Debug Adapter



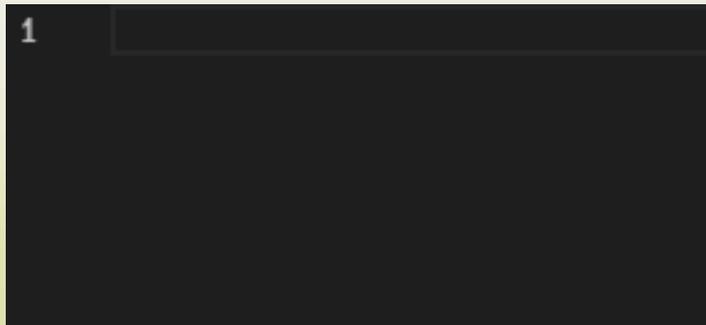
VSCoDe – APL Language

- Recognise language
 - File extensions
 - First line match (shebang)
- Syntax grammar
- Snippets
 - Control structures
 - Keywords
- APL font
- Word pattern and separators
 - Navigate code
 - Select names

```

1 dfspan←{ A Depth-first spanning tree: graph α from vertex ω.
2 graph←α A α is graph vector.
3 trav←{ A initial vertex and parent
4   ~2≠α→ω:=ω A vertex visited: backtrack
5   next←⊖α→graph A edges from vertex α
6   tree←αα@α←ω A αα is α's parent
7   →α ∇∇/next,←tree A visiting each edge in order
8 } A := tree + vtx (vtx ∇∇) tree
9 ω(~1 trav)~2←"α A depth-first traversal of graph ω
10

```



Language Server Protocol

- Single protocol for tools (IDEs) to communicate with Language Servers (LS)
- Each tool implements a client once
- Each language implements a server once
- Some tools that implement LSP already:
 - Eclipse
 - IntelliJ/JetBrains
 - VSCode
 - vim/neovim
 - Kakoune
 - Sublime Text 3
- Work in progress:
 - Atom
 - Emacs



APL Language Server

- Implement Language Server Protocol
- Provide features such as:
 - Hover/tooltips
 - Folding/outlining rules
 - Autocomplete/intellisense
 - Diagnostics (warnings/errors)
 - Goto (definition/implementation)
 - Actions (e.g. refactor code, fix issues, etc.)



VSCode – Debug Adapter

- VSCode provides a UI for debugging
- Communicates with debugger using the Debug Adapter Protocol (DAP)
- Debug Adapter translates between DAP and native debugger API (eg. RIDE protocol)



VSCoDe – Integrated terminal

- Integrated terminal allows TTY version to run in an embedded panel
- Can be used for simple testing of statements while coding
- Can also be used as a development session with]link or]acre



VSCoDe Integration

- Work very much in progress
- Extensions already published, but still not on version 1.0.0
- Feedback and suggestions welcome

