



Enhancements in Dyalog v20.0

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v20.0 has lots of stuff

- Array notation
- Inline tracing
- Behind (◦)
- □VSET and □VGET
- □SHELL

Writing Big Arrays

```
v ← ∅
```

```
v, ← 'Alice' 12
```

```
v, ← 'Bob' 34
```

```
v, ← 'Claus' 56
```

```
m ← ∅, 'Name Age'
```

```
m, ← 'Alice 12'
```

```
m, ← 'Bob 34'
```

```
m, ← 'Claus 56'
```

Vector Notation

(' APL ' ' Germany ' ♦ 2025+1)



Matrix Notation

1 2 3
4 5 6
7 8 9

[1 3 ♦ 4 5 6 ♦ 7 8 9]

Writing Big Arrays

```
v ← ∅
```

```
v, ← 'Alice' 12
```

```
v, ← 'Bob' 34
```

```
v, ← 'Claus' 56
```

```
m ← ∅, 'Name' 'Age'
```

```
m, ← 'Alice' 12
```

```
m, ← 'Bob' 34
```

```
m, ← 'Claus' 56
```

Writing Big Arrays

```
v ← (  
    'Alice' 12  
    'Bob'   34  
    'Claus' 56  
)  
v
```



Writing Big Arrays

```
m←[  
  'Name  Age'  
  'Alice 12'  
  'Bob   34'  
  'Claus 56'  
]
```

```
m  
Name  Age  
Alice 12  
Bob   34  
Claus 56
```

In the IDE

Writing Namespaces

```
'ns'␣NS'
```

```
ns.foo←1 2 3
```

```
ns.bar←4 5 6
```

```
(foo: 1 2 3 ⋄ bar: 4 5 6)
```

```
(
```

```
foo: 1 2 3
```

```
bar: 4 5 6
```

```
)
```

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Explain this expression

$\{\uparrow ' \square ' / \ddot{''} \lfloor 0.5 + \omega \div (\lceil / \omega) \div \alpha \}$

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- ~~◆ Array notation~~
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- ◆ Behind (◦)
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- ◆ □SHELL

Compose (◦)

Compose (\circ)

NegRecip $\leftarrow -\circ\div$

Compose (◦)

NegRecip $\leftarrow -\circ\div$

NegRecip 1 2 3

-1 -0.5 -0.333333333333

Compose (◦)

```
NegRecip ← -◦÷  
NegRecip 1 2 3  
-1 -0.5 -0.333333333333  
IsReflection ← ≡◦φ
```

Compose (◦)

```
NegRecip ← -◦÷  
NegRecip 1 2 3  
-1 -0.5 -0.33333333333  
IsReflection ← ≡◦ϕ  
'foo' IsReflection 'oof'  
1
```

Compose (\circ)

$$\begin{array}{ccccc} & f \circ g & y & \leftrightarrow & f & g & y \\ x & f \circ g & y & \leftrightarrow & x & f & g & y \end{array}$$

Behind (o)

$$\begin{array}{l} f \circ g \ y \leftrightarrow f \ g \ y \\ x \ f \circ g \ y \leftrightarrow x \ f \ g \ y \end{array}$$

$$\begin{array}{l} f _o g \ y \leftrightarrow (f \ y) \ g \ y \\ x \ f _o g \ y \leftrightarrow (f \ x) \ g \ y \end{array}$$

v20.0 has lots of stuff

- ~~• Array notation~~
- ~~• Inline tracing~~
- ~~• Behind (•)~~
- `□VSET` and `□VGET`
- `□SHELL`

□VSET and □VGET

- ◆ To the session!

v20.0 has lots of stuff

- ~~◆ Array notation~~
- ~~◆ Inline tracing~~
- ~~◆ Behind (◡)~~
- ~~◆ □VSET and □VGET~~
- ◆ □SHELL

□SH and □CMD

- ◆ Give a string to the OS
- ◆ Wait

□SHELL

- ◆ □SHELL can...
 - ◆ use a specified shell (eg cmd vs powershell)
 - ◆ bypass the shell,
 - ◆ specify environment variables,
 - ◆ set a timeout,
 - ◆ and more!

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- ✖ ~~Array notation~~
- ✖ ~~Inline tracing~~
- ✖ ~~Behind (◡)~~
- ✖ ~~□VSET and □VGET~~
- ✖ ~~□SHELL~~