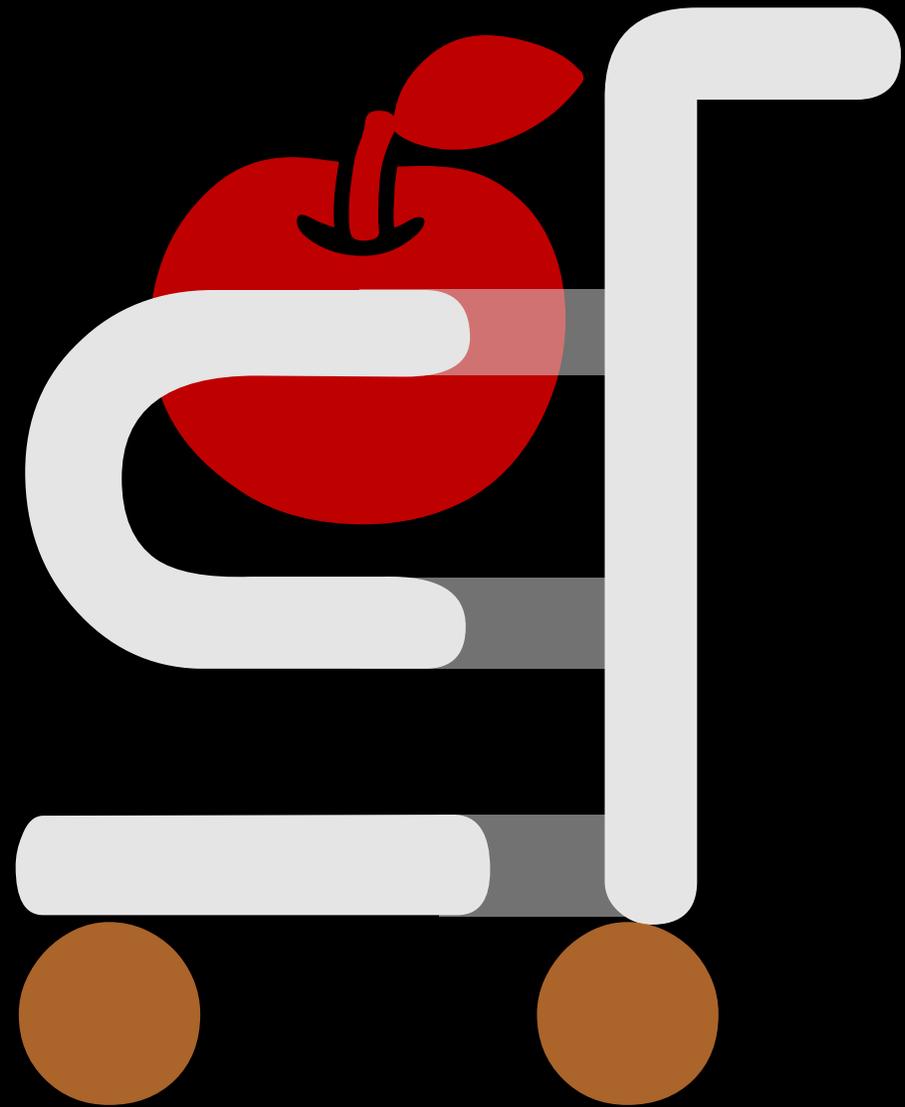


APLcart



Adám Brudzewsky

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APLcart

A novel approach to finding your way in APL

How do I ...

What is  ...

How do I ...

What is  ...

What is ...

- help.dyalog.com
= F1,]Help

-  Welcome
-  Release Notes V17.0
-  Installation and Configuration Guide
-  UNIX Installation and Configuration Guide
-  Programming Reference Guide
-  Language Reference Guide
 -  Symbols
 -  Language Elements
 -  Brackets
 -  Special Symbols
 -  Primitive Functions
 -  Primitive Operators
 -  The I-Beam Operator
 -  System Functions
 -  System Commands
 -  PCRE Specifications
 -  Object Reference
 -  UI Guide
 -  Interface Guide
 -  .NET Interface Guide
 -  UNIX User Guide
 -  Old Release Notes
 -  Licences for third-party components

Language Elements

Table 6: Primitive

$+$	$-$	\times	\div	\perp	\lceil	\lfloor	$*$	\otimes
\circ	$!$	$?$	\sim	\wedge	\vee	$\tilde{\wedge}$	$\tilde{\vee}$	
$<$	\leq	\equiv	$>$	\geq	\neq	\equiv	\neq	
ρ	ρ	ρ	ϕ	θ	ϕ	\uparrow	\downarrow	
\subset	\subseteq	\supset	\in	\in	$/$	\neq	\setminus	Δ
\cap	\cup	\cap	\cap	\perp	Δ	Ψ	ϕ	ϕ
\perp	\perp	\boxplus	θ	\rightarrow	\leftarrow			

Table 7: Primitive

$\ddot{_}$	$\ddot{_}$	\circ	\cdot	$\circ\cdot$	$/$
\neq	\setminus	Δ	\ast	$\&$	\perp
\boxplus	\boxplus	\boxtimes	$\ddot{_}$	$@$	

Table 8: Other Lan

[Brackets](#)

[Special Syntax](#)

[Variables](#)

What is ...

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- docs.dyalog.com
= PDFs in install directory

Chapter 1: Primitive Functions	
Key to Notation	
Migration Level	
Scalar Functions	
Mixed Functions	
Conformability	
Fill Elements	
Axis Operator	
Functions (A-Z)	
Abort	
Add	
And, Lowest Common Multiple	
Assignment	
Assignment (Indexed)	
Assignment (Selective)	
Binomial	
Branch	
Catenate/Laminate	
Catenate First	
Ceiling	
Circular	
Conjugate	

What is ...

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- docs.dyalog.com
= PDFs in install directory
- Stack Exchange lessons
≈ TryAPL tutorials

Bookmarked Jan 3 '18 at 20:03 by [Adám](#)

Lesson 9 - APL functions: $\lfloor \in \subseteq \cup \cap \sim / \setminus A, \bar{\cdot}$

Dec 13 '17 at 18:30, 1 hour 32 minutes total – 206 messages, 5 users, 0 stars

Bookmarked Dec 13 '17 at 20:53 by [Adám](#)

Lesson 7 - APL functions: $\subset \supset \subseteq \square$

Nov 29 '17 at 18:30, 1 hour 34 minutes total – 225 messages, 8 users, 0 stars

Bookmarked Nov 29 '17 at 20:19 by [Adám](#)

Lesson 5 - Even more APL operators: $\boxtimes \boxplus$

Nov 15 '17 at 18:30, 1 hour 24 minutes total – 193 messages, 7 users, 0 stars

Bookmarked Nov 15 '17 at 20:11 by [Adám](#)

Lesson 3 - Some APL Operators: $/ \neq \setminus \setminus \text{''} * \sim$

Nov 1 '17 at 18:30, 1 hour 36 minutes total – 365 messages, 9 users, 0 stars

What is ...

- help.dyalog.com
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≈ TryAPL tutorials
- TryAPL's primer
≈ IDE/RIDE language bar

Try APL

Hi!

Learn

Primer

Links

About

APL Cheat Sheet

Click to insert purple glyph, function, or command into the session. Get information by clicking links, hovering over glyphs, or by entering]Help followed by a single glyph.

Mathematics



Logic and



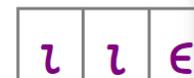
Structure



Selection



Search and



Divide

Key: $\backslash =$

Monadic function: Reciprocal

\div 1 2 3
1 0.5 0.333333

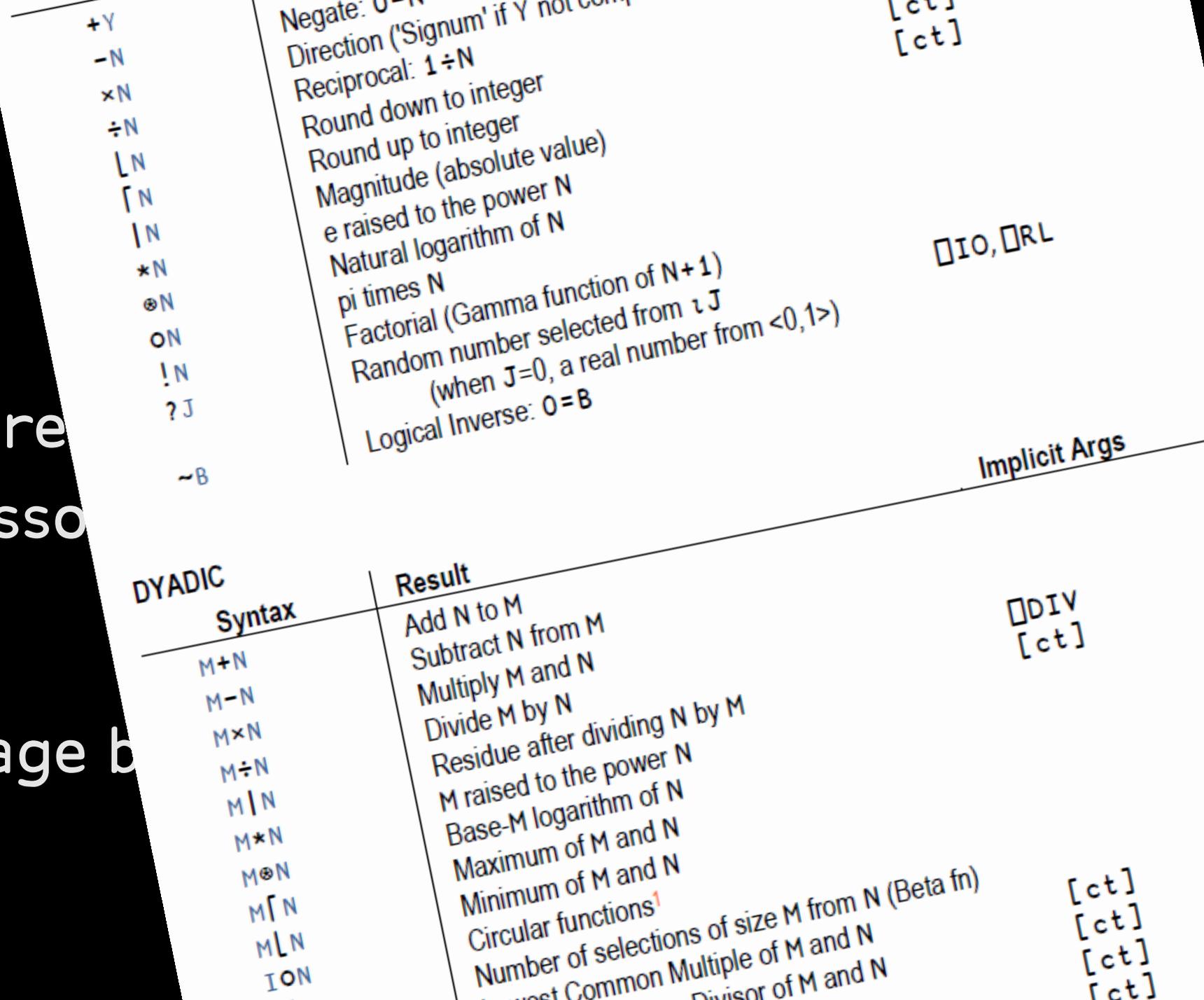
Dyadic function: Divide

1 2 3 \div 4 5 7
0.25 0.4 0.428571

10 \div $\bar{2}$ 0.5

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≈ TryAPL tutorials
- TryAPL's primer
≈ IDE/RIDE language book
- reference card



The image shows a portion of an APL reference card, tilted at an angle. It lists various functions and their results.

MONADIC	
Syntax	Result
+N	Negate: $0-N$
-N	Direction ('Signum' if N not complex)
$\times N$	Reciprocal: $1 \div N$
$\div N$	Round down to integer
$\lfloor N$	Round up to integer
$\lceil N$	Magnitude (absolute value)
$ N$	e raised to the power N
$\ast N$	Natural logarithm of N
$\odot N$	π times N
$\ominus N$	Factorial (Gamma function of $N+1$)
$\!N$	Random number selected from ιJ (when $J=0$, a real number from $\langle 0,1 \rangle$)
?J	Logical Inverse: $0=B$
$\sim B$	

DYADIC	
Syntax	Result
$M+N$	Add N to M
$M-N$	Subtract N from M
$M \times N$	Multiply M and N
$M \div N$	Divide M by N
$M \lfloor N$	Residue after dividing N by M
$M \lceil N$	M raised to the power N
$M \ast N$	Base- M logarithm of N
$M \odot N$	Maximum of M and N
$M \ominus N$	Minimum of M and N
$M \! N$	Circular functions ¹
$M \! N$	Number of selections of size M from N (Beta fn)
$I \ominus N$	Least Common Multiple of M and N
	Divisor of M and N

What is  ...

has plenty of answers

How do I ...

How do I ...

Dyalog's idiom list

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performance/scope

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IBM's idiom list

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⊞ ? Tell me about:



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

\emptyset

Empty Numeric Vector

$\vdash Y$

Same: Y

$X \text{ dop } Y \vdash Z$

Separate dyadic operator's right operand from its right argument (same as $(X \text{ dop } Y)Z$)

$X \vdash Y$

Right: Y

$X \vdash Y$

Church Boolean false (X if false, else Y)

$\neg Y$

Same: Y

Showing 2204 of 2204



⊞ ? Tell me about:



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

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Same: Y

Showing 2204 of 2204



⌘ ? Tell me about: `stringify`



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

ϕY Format: Character representation of Y

$I v \phi Y$ Format Y using (width, decimals) pairs Iv

$I s \{ 0 \ 1 \downarrow (2 \uparrow 1 + \alpha) \phi \omega^\circ . + , 10 * \alpha \} J v$ Format with leading zeroes for non-negative Jv in fields of width Is



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

`ⓧY` Format: Character representation of Y

`IvⓧY` Format Y using (width, decimals) pairs Iv

`Is{0 1↓(2↑1+α)ⓧω°.+,10*α}Jv` Format with leading zeroes for non-negative Jv in fields of width Is

⌘ ? Tell me about: `stringify`



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

`⌘ Y` Format: Character representation of Y

`I v ⌘ Y` Format Y using (width, decimals) pairs Iv

`I s { 0 1 ↓ (2 ↑ 1 + α) ⌘ ω ° . + , 1 0 * α } J v` Format with leading zeroes for non-negative Jv in fields of width Is



⌘ ? Tell me about: `stringify`



`X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat`

`⌘ Y`

Format: Character representation of Y

`I v ⌘ Y`

Format Y using (width, decimals) pairs Iv

`I s {0 1 ↓ (2 ↑ 1 + α) ⌘ ω ° . + , 10 * α } J v`

Format with leading zeroes for non-negative Jv in fields of width Is



⌘ ? Tell me about: `flatten to list`



`X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat`

`,Y`

Ravel: Reshape into a vector

`∈Y`

Enlist: Simple vector from elements of Y

`X f@(1p~p)Y`

Handling array Y temporarily as a vector (optionally with left argument X)



⌘ ? Tell me about: hermitian?



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

($\phi \equiv +$) Nm

Is Nm a Hermitian matrix?



Showing 1 of 2204



⌘ ? Tell me about: `import javascript`



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

`r←0 □JSON data`

Convert JSON text to APL array

`r←0(□JSON□'M')data`

Convert JSON text to APL matrix



⌘ ? Tell me about: `sin()`



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

`1.00N`

Sine N

`-1.00N`

Arcsine N



Showing 2 of 2204



☰ ⓘ Tell me about:



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

X f{(ωω α)αα(ωω ω)}g Y

Over: preprocess (g) arguments before applying main function (f)



⌵ ? Tell me about: √



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

$M * \circ \div \sim N$

M'th Root of N

$(* \circ 0.5) N$

Square Root

$(* \circ \div \circ 3) N$

Cube Root



Showing 3 of 2204



⌘ ? Tell me about: $\sqrt{\quad}$



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

(* 0.5) N

Square Root



Showing 1 of 2204



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

≠ϕ!Δ□D

Meaning of life (short)

⊕ϕϕ⌈*o≡θ

Meaning of life (modern)

⊕θϕ>c | ⌊- * + o ⌈ × ÷ ! ϕϕ⊠~ρΔψ, ⊗? ι0

Meaning of life (traditional)



⌘ ? Tell me about:



X,Y,Z:array M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

\emptyset	Empty Numeric Vector
$\vdash Y$	Same: Y
$X \text{ dop } Y \vdash Z$	Separate dyadic operator's right operand from its right argument (same as $(X \text{ dop } Y)Z$)
$X \vdash Y$	Right: Y
$X \vdash Y$	Church Boolean false (X if false, else Y)
$\neg Y$	Same: Y



⌘ ? Tell me about:



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

\emptyset

Empty Numeric Vector

$\vdash Y$

Same: Y

$X \text{ dop } Y \vdash Z$

Separate dyadic operator's right operand from its right argument (same as $(X \text{ dop } Y)Z$)

$X \vdash Y$

Right: Y

$X \vdash Y$

Church Boolean false (X if false, else Y)

$\neg Y$

Same: Y

Showing 2204 of 2204



⌘ ? Tell me about:



X,Y,Z:any M,N:num I,J:int A,B:Bool C,D:char f,g,h:fn ax:axis s:scal v:vec m:mat

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Separate dyadic operator's right operand from its right argument (same as $(X \text{ dop } Y)Z$)

$X \vdash Y$

Right: Y

$X \vdash Y$

Church Boolean false (X if false, else Y)

$\rightarrow Y$

Same: Y

Thank you,
Nick & dzaima

adam@
aplcart.info