

Q Reference Card

Lists	
count, mcount	count/moving count
cross	cross product
cut	cut operator _
enlist	create list
except	exclude y from x
fills	replace nulls w prec non-null
fill ^	fills nulls with x
first, last	head tail items
flip	transpose
group	ret dict, keys items, vals index
in	is x in y
inter	intersection of x, y
next,prev	lags/leads list
raze	collapses nesting
reverse	reverses order
rotate	shifts y by x
sublist	x sublist of y
vs	y is cut by x delim
sv	joins strings, symbols, path
til	first x numbers
union	distinct x,y
where	indexes of list or dictionary keys
xprev	nearby x items in list y

Iterators	
'	each
':	peach, each prior
/:	each right
\:	each left
/	over
\	scan
Do	n v1\ x, n v1/x
Converge	(v1\)x, (v1/)x
While	t v1\ x,t v1/x

Tables	
cols	columnnames of a table
fkeys	foreign-key columns
insert	insert/append records
key	returns key of dictionary/table x
keys	gets or sets key columns of table
meta	table metadata
ungroup	returns normalized table
upsert	overwrite or append records
xasc	sorts (a) table y by x columns
xdesc	sorts (d) table y by x cols
xcol	rename table columns
xcols	reorder table columns
xgroup	returns y grouped by x
xkey	sets x columns primary key for y
asof,aj,aj0	asof joins trades, quotes
ij, lj, wj	inner, left, window joins

Sorts	
asc, desc	ascending, descending sort
bin binr	binary search, binsearch right
differ	where list items change value
distinct	unique list items
iasc, idesc	ascending, descending grades
rank	position in sorted list
xbar	y rounded down to x multiple
xrank	group y items by x buckets
List Statistics	
wavg sum wsum ceiling floor mod inv neg prd prds ratios	
Sliding Windows (width, list)	
mmax msum mdev med avg avgs deltas dev cor cov svar var	

Math	
ratios	ratios between items
prd, prds	product, cum product
lsq	Solve $Ax = B$ for x.
inv	Inverse of matrix
mmu	Multiply matrices x and y
deltas	returns
ema	EWMA with x = alpha
within	x atom/list, y ordered pair/list
flip	Matrix transpose of y
+ - * % min max mins maxs mmin	
mmax msum mdev med avg avgs dev cor cov svar var	
wavg sum wsum ceiling floor mod neg rand	
reciprocal scov sdev signum sums svar var	
abs exp acos asin atan log cos sin sqrt tan xexp xlog	

Tokens	
!	make a dictionary
\$	Cast cond mmul
.	apply index trap
@	index apply trap AT
?	find deal select
^	fill null with left
'	each raise compose
':	each parallel
_	cut
#	take set-attr
{}	lambda
^	fill coalesce
:	assign
::	null token/global assign
;	separator
`:	file/network path
`	symbol
0: 1: 2:	file text, file binary, dllload
Comparison	
~ = <> > >= < <= &	

IO	
getenv	get local env vars
dsave	global splayed save
get, set	read or set a variable or mmap
hopen, hclose	open, close a connection or file
hcount	file size in bytes
hdel	delete file/folder
hsym	symbols to file/ process
load,rload	load binary file/splayed table
read0,read1	read text,bytes from file/process
save,rsave	save var,table to file/splay
Launch with -p <portnumber> for IPC	

slash/syscmds	
\a	List tables in namespace
\b	List views in namespace
\c size	console rows/columns
\cd	change file directory
\d ns	change namespace to ns
\e 0 1 2	error trap level
\f	List the functions in a namespace
\g	gc mode
\l	Load file or directory
\p	show or change listening port
\s	Set or show random seed
\t:n	Set timer interval optional n
\ts exp	Show time/space for exp
\v	List variables in namespace
\w	Workspace memory use
\VAL	VAL executed by OS
.	push the stack

Queries	
delete	delete rows/columns
exec	return selected subtable
fby	conditional apply used with where
select ps by pb from t	usual sql select syntax
where p	
update from by where	

Attributes	
attr	attributes of object
null	is null ?
tables	list of tables in namespace
type	type of object
view	define a view
views	list views in namespace

Interpret	
eval	evaluate a parse tree
parse	parse string into tree
reval	restricted eval
show	writes x to console
system	executes returns char
value	recurse interp

Text tools	
like	x text matches y pattern
lower, upper	change case
ltrim, rtrim, trim	removes nulls from string
md5	md5 hash
ss	search x string y pattern
ssr	replc x string y pattern z replc
string	cast to string

Q types				
Example	name	n	sz	c
[dateTtime]	datetime	15	8	z
[2000.01.01]	date	14	4	d
[2001.01m]	month	13	4	m
dateDtimespan	timestamp	12	8	p
00:00:00.000000	timespan	16	8	n
00:00	minute	17	4	u
00:00:00	second	18	4	v
00:00:00.000	time	19	4	t
[1 2]	list	0		*
0b	bool	1	1	b
0x00	byte	4	1	x
0h	short	5	2	h
0i	int	6	4	i
0j	long	7	8	j
0e	real	8	4	e
0f	float	9	8	f
	char	10	8	c
-	symbol	11	8	s

flow control	
?[x;y;z;...]	x vector conditional/lazy eval
. [x;y;z]	trap try x on y/catch z
@[x;y;z]	unary try x on y cath z
do[count;e1;e2;...;en]	do count e expressions
if[test;e1;e2;...;en]	if test e expressions
while[test;e1;e2;...;en]	while test e expressions
,	signal abort
:	explicit return

Foreigns	
-16!x	reference count for x
ON!x	show x
-33!x	sha1 on string x
-8!x	to IPC bytes
-9!x	from IPC bytes
-11!(n;x)	stream exec ctrl, x logfile handle
-21!x	compression stats x file
.Q.w[]	memory stats