

CGore-Utilities:
A Library for ANSI Common Lisp

Christopher Mark Gore
cgore@cgore.com
<http://www.cgore.com>

February 26, 2013

Contents

1	The Behave Package	9
1.1	Macros	10
1.1.1	The Behavior Macro	10
1.1.2	The Spec Macro	10
1.1.3	The Should Macro	10
1.1.4	The Should-Not Macro	10
1.1.5	The Should-Be-Null Macro	10
1.1.6	The Should-Be-A Macro	10
1.1.7	The Should= Macro	10
1.1.8	The Should/= Macro	10
1.1.9	The Should< Macro	10
1.1.10	The Should> Macro	10
1.1.11	The Should<= Macro	10
1.1.12	The Should>= Macro	10
1.1.13	The Should-Eq Macro	10
1.1.14	The Should-Not-Eq Macro	10
1.1.15	The Should-Eql Macro	10
1.1.16	The Should-Not-Eql Macro	10
1.1.17	The Should-Equal Macro	10
1.1.18	The Should-Not-Equal Macro	10
1.1.19	The Should-EqualP Macro	10
1.1.20	The Should-Not-EqualP Macro	10
1.1.21	The Should-String= Macro	10
1.1.22	The Should-Not-String= Macro	10
1.1.23	The Should-String/= Macro	10
1.1.24	The Should-Not-String/= Macro	10
1.1.25	The Should-String< Macro	10
1.1.26	The Should-Not-String< Macro	10
1.1.27	The Should-String> Macro	10
1.1.28	The Should-Not-String> Macro	10
1.1.29	The Should-String<= Macro	10
1.1.30	The Should-Not-String<= Macro	10
1.1.31	The Should-String>= Macro	10
1.1.32	The Should-Not-String>= Macro	10

1.1.33	The Should-String-Equal Macro	11
1.1.34	The Should-Not-String-Equal Macro	11
1.1.35	The Should-String-Not-Equal Macro	11
1.1.36	The Should-Not-String-Not-Equal Macro	11
1.1.37	The Should-String-LessP Macro	11
1.1.38	The Should-Not-String-LessP Macro	11
1.1.39	The Should-String-GreaterP Macro	11
1.1.40	The Should-Not-String-GreaterP Macro	11
1.1.41	The Should-String-Not-GreaterP Macro	11
1.1.42	The Should-Not-String-Not-GreaterP Macro	11
1.1.43	The Should-String-Not-LessP Macro	11
1.1.44	The Should-Not-String-Not-LessP Macro	11
2	The Control Package	13
2.1	Macros	14
2.1.1	The AIf Macro	14
2.1.2	The A?If Macro	14
2.1.3	The AAnd Macro	14
2.1.4	The A?And Macro	14
2.1.5	The ALambda Macro	14
2.1.6	The A?Lambda Macro	14
2.1.7	The ABlock Macro	14
2.1.8	The A?Block Macro	14
2.1.9	The ACond Macro	14
2.1.10	The A?Cond Macro	14
2.1.11	The AWhen Macro	14
2.1.12	The A?When Macro	14
2.1.13	The AWhile Macro	14
2.1.14	The A?While Macro	14
2.1.15	The DeleteF Macro	14
2.1.16	The Do-While Macro	14
2.1.17	The Do-Until Macro	14
2.1.18	The For Macro	14
2.1.19	The Forever Macro	14
2.1.20	The Multicond Macro	14
2.1.21	The OpF Macro	14
2.1.22	The Swap Macro	14
2.1.23	The Swap-Unless Macro	14
2.1.24	The Swap-When Macro	14
2.1.25	The Until Macro	14
2.1.26	The While Macro	14
2.2	Functions	14
2.2.1	The Compose Function	14
2.2.2	The Conjoin Function	14
2.2.3	The Curry Function	14
2.2.4	The Disjoin Function	14

2.2.5	The Function-Alias Function	14
2.2.6	The Operator-To-Function Function	14
2.2.7	The RCompose Function	14
2.2.8	The RCurry Function	14
2.2.9	The Unimplemented Function	14
2.3	Generics	14
2.3.1	The Duplicate Generic	14
3	The Numeric Package	15
3.1	Macros	16
3.1.1	The DivF Macro	16
3.1.2	The MultF Macro	16
3.2	Functions	16
3.2.1	The Bit? Function	16
3.2.2	The Fractional-Part Function	16
3.2.3	The Fractional-Value Function	16
3.2.4	The Integer-Range Function	16
3.2.5	The Nonnegative? Function	16
3.2.6	The Nonnegative-Integer? Function	16
3.2.7	The Positive-Integer? Function	16
3.2.8	The Product Function	16
3.2.9	The Sum Function	16
3.2.10	The Unsigned-Integer? Function	16
3.3	Types	16
3.3.1	The Nonnegative-Float Type	16
3.3.2	The Nonnegative-Integer Type	16
3.3.3	The Positive-Float Type	16
3.3.4	The Positive-Integer Type	16
4	The OS Package	17
4.1	Functions	17
4.1.1	The Perl Function	17
4.1.2	The Python Function	17
4.1.3	The Read-File Function	17
4.1.4	The Read-Lines Function	17
4.1.5	The Ruby Function	17
4.2	Parameters	17
4.2.1	The *Perl-Path* Parameter	17
4.2.2	The *Python-Path* Parameter	17
4.2.3	The *Ruby-Path* Parameter	17
5	The Probability Package	19
5.1	Macros	19
5.1.1	The Decaying-Probabiliity? Macro	19
5.2	Functions	19
5.2.1	The Probability? Function	19

5.3	Types	19
5.3.1	The Probability Type	19
6	The Random Package	21
6.1	Macros	21
6.1.1	The NShuffle Macro	21
6.2	Functions	21
6.2.1	The Gauss Function	21
6.2.2	The Random-Argument Function	21
6.2.3	The Coin-Toss Function	21
6.2.4	The Random-In-Range Function	21
6.2.5	The Random-In-Ranges Function	21
6.2.6	The Random-Range Function	21
6.2.7	The Randomize-Array Function	21
6.2.8	The Random-Array Function	21
6.3	Generics	21
6.3.1	The Random-Element Generic	21
6.3.2	The Shuffle Generic	21
7	The Sequence Package	23
7.1	Macros	24
7.1.1	The Arefable? Macro	24
7.1.2	The NConcF Macro	24
7.1.3	The Nthable? Macro	24
7.1.4	The Set-NthCdr Macro	24
7.2	Functions	24
7.2.1	The Array-Values Function	24
7.2.2	The Nth-From-End Function	24
7.2.3	The Sequence? Function	24
7.2.4	The Empty-Sequence? Function	24
7.2.5	The Join-Symbol-To-All-Following Function	24
7.2.6	The Join-Symbol-To-All-Preceeding Function	24
7.2.7	The List-To-Vector Function	24
7.2.8	The Set-Equal Function	24
7.2.9	The Simple-Vector-To-List Function	24
7.2.10	The Sort-Order Function	24
7.2.11	The The-Last Function	24
7.2.12	The Vector-To-List Function	24
7.3	Generics	24
7.3.1	The Best Generic	24
7.3.2	The Minimum Generic	24
7.3.3	The Minimum? Generic	24
7.3.4	The Maximum Generic	24
7.3.5	The Maximum? Generic	24
7.3.6	The Sort-On Generic	24
7.3.7	The Slice Generic	24

7.3.8	The <code>Split</code> Generic	24
7.3.9	The <code>Worst</code> Generic	24
8	The String Package	25
8.1	Functions	25
8.1.1	The <code>Character-Range</code> Function	25
8.1.2	The <code>Character-Ranges</code> Function	25
8.1.3	The <code>Escape-Tildes</code> Function	25
8.1.4	The <code>Replace-Char</code> Function	25
8.1.5	The <code>StrCat</code> Function	25
8.1.6	The <code>StrMult</code> Function	25
8.1.7	The <code>String-Join</code> Function	25
8.1.8	The <code>Stringify</code> Function	25
8.1.9	The <code>To-String</code> Function	25
8.2	Methods	25
8.2.1	The <code>Split</code> Methods	25
9	The Time-Series Package	27
9.1	Macros	27
9.1.1	The <code>Snap-Index</code> Macro	27
9.2	Functions	27
9.2.1	The <code>Array-Raster-Line</code> Function	27
9.2.2	The <code>Distance</code> Function	27
9.2.3	The <code>Norm</code> Function	27
9.2.4	The <code>Raster-Line</code> Function	27
9.2.5	The <code>Similar-Points?</code> Function	27
9.2.6	The <code>Time-Series?</code> Function	27
9.2.7	The <code>Time-Multiseries?</code> Function	27
9.2.8	The <code>TMSref</code> Function	27
9.2.9	The <code>TMS-Dimensions</code> Function	27
9.2.10	The <code>TMS-Raster-Line</code> Function	27
9.2.11	The <code>TMS-Values</code> Function	27
9.3	Types	27
9.3.1	The <code>Time-Multiseries</code> Type	27
10	The Truth Package	29
10.1	Functions	29
10.1.1	The <code>[?]</code> Function	29
10.1.2	The <code>Toggle</code> Function	29
10.2	Generics	29
10.2.1	The <code>?</code> Generic	29

11 The Utilities Package	31
11.1 Variables	31
11.1.1 The <code>*CGore-Utilities-Packages*</code> Variable	31
11.2 Functions	31
11.2.1 The <code>Use-All-CGore-Utilities</code> Function	31
11.2.2 The <code>Use-All-Utilities</code> Function	31

Chapter 1

The Behave Package

1.1 Macros

1.1.1 The Behavior Macro

1.1.2 The Spec Macro

1.1.3 The Should Macro

1.1.4 The Should-Not Macro

1.1.5 The Should-Be-Null Macro

1.1.6 The Should-Be-A Macro

1.1.7 The Should= Macro

1.1.8 The Should/= Macro

1.1.9 The Should< Macro

1.1.10 The Should> Macro

1.1.11 The Should<= Macro

1.1.12 The Should>= Macro

1.1.13 The Should-Eq Macro

1.1.14 The Should-Not-Eq Macro

1.1.15 The Should-Eql Macro

1.1.16 The Should-Not-Eql Macro

1.1.17 The Should-Equal Macro

1.1.18 The Should-Not-Equal Macro

1.1.19 The Should-EqualP Macro

1.1.20 The Should-Not-EqualP Macro

1.1.21 The Should-String= Macro

1.1.22 The Should-Not-String= Macro

1.1.23 The Should-String/= Macro

1.1.24 The Should-Not-String/= Macro

1.1.25 The Should-String< Macro

- 1.1.33 The Should-String-Equal Macro
- 1.1.34 The Should-Not-String-Equal Macro
- 1.1.35 The Should-String-Not-Equal Macro
- 1.1.36 The Should-Not-String-Not-Equal Macro
- 1.1.37 The Should-String-LessP Macro
- 1.1.38 The Should-Not-String-LessP Macro
- 1.1.39 The Should-String-GreaterP Macro
- 1.1.40 The Should-Not-String-GreaterP Macro
- 1.1.41 The Should-String-Not-GreaterP Macro
- 1.1.42 The Should-Not-String-Not-GreaterP Macro
- 1.1.43 The Should-String-Not-LessP Macro
- 1.1.44 The Should-Not-String-Not-LessP Macro

Chapter 2

The Control Package

2.1 Macros

- 2.1.1 The AIf Macro
- 2.1.2 The A?If Macro
- 2.1.3 The AAnd Macro
- 2.1.4 The A?And Macro
- 2.1.5 The ALambda Macro
- 2.1.6 The A?Lambda Macro
- 2.1.7 The ABlock Macro
- 2.1.8 The A?Block Macro
- 2.1.9 The ACond Macro
- 2.1.10 The A?Cond Macro
- 2.1.11 The AWhen Macro
- 2.1.12 The A?When Macro
- 2.1.13 The AWhile Macro
- 2.1.14 The A?While Macro
- 2.1.15 The DeleteF Macro
- 2.1.16 The Do-While Macro
- 2.1.17 The Do-Until Macro
- 2.1.18 The For Macro
- 2.1.19 The Forever Macro
- 2.1.20 The Multicond Macro
- 2.1.21 The OpF Macro
- 2.1.22 The Swap Macro
- 2.1.23 The Swap-Unless Macro
- 2.1.24 The Swap-When Macro
- 2.1.25 The Until Macro

Chapter 3

The Numeric Package

3.1 Macros

3.1.1 The DivF Macro

3.1.2 The MultF Macro

3.2 Functions

3.2.1 The Bit? Function

3.2.2 The Fractional-Part Function

3.2.3 The Fractional-Value Function

3.2.4 The Integer-Range Function

3.2.5 The Nonnegative? Function

3.2.6 The Nonnegative-Integer? Function

3.2.7 The Positive-Integer? Function

3.2.8 The Product Function

3.2.9 The Sum Function

3.2.10 The Unsigned-Integer? Function

3.3 Types

3.3.1 The Nonnegative-Float Type

3.3.2 The Nonnegative-Integer Type

3.3.3 The Positive-Float Type

3.3.4 The Positive-Integer Type

Chapter 4

The OS Package

4.1 Functions

4.1.1 The Perl Function

4.1.2 The Python Function

4.1.3 The Read-File Function

4.1.4 The Read-Lines Function

4.1.5 The Ruby Function

4.2 Parameters

4.2.1 The *Perl-Path* Parameter

4.2.2 The *Python-Path* Parameter

4.2.3 The *Ruby-Path* Parameter

Chapter 5

The Probability Package

5.1 Macros

5.1.1 The Decaying-Probabiliity? Macro

5.2 Functions

5.2.1 The Probability? Function

5.3 Types

5.3.1 The Probability Type

Chapter 6

The Random Package

6.1 Macros

6.1.1 The NShuffle Macro

6.2 Functions

6.2.1 The Gauss Function

6.2.2 The Random-Argument Function

6.2.3 The Coin-Toss Function

6.2.4 The Random-In-Range Function

6.2.5 The Random-In-Ranges Function

6.2.6 The Random-Range Function

6.2.7 The Randomize-Array Function

6.2.8 The Random-Array Function

6.3 Generics

6.3.1 The Random-Element Generic

6.3.2 The Shuffle Generic

Chapter 7

The Sequence Package

7.1 Macros

7.1.1 The Arefable? Macro

7.1.2 The NConcF Macro

7.1.3 The Nthable? Macro

7.1.4 The Set-NthCdr Macro

7.2 Functions

7.2.1 The Array-Values Function

7.2.2 The Nth-From-End Function

7.2.3 The Sequence? Function

7.2.4 The Empty-Sequence? Function

7.2.5 The Join-Symbol-To-All-Following Function

7.2.6 The Join-Symbol-To-All-Preceding Function

7.2.7 The List-To-Vector Function

7.2.8 The Set-Equal Function

7.2.9 The Simple-Vector-To-List Function

7.2.10 The Sort-Order Function

7.2.11 The The-Last Function

7.2.12 The Vector-To-List Function

7.3 Generics

7.3.1 The Best Generic

7.3.2 The Minimum Generic

7.3.3 The Minimum? Generic

7.3.4 The Maximum Generic

7.3.5 The Maximum? Generic

7.3.6 The Sort-On Generic

7.3.7 The Slice Generic

Chapter 8

The String Package

8.1 Functions

- 8.1.1 The Character-Range Function
- 8.1.2 The Character-Ranges Function
- 8.1.3 The Escape-Tildes Function
- 8.1.4 The Replace-Char Function
- 8.1.5 The StrCat Function
- 8.1.6 The StrMult Function
- 8.1.7 The String-Join Function
- 8.1.8 The Stringify Function
- 8.1.9 The To-String Function

8.2 Methods

- 8.2.1 The Split Methods

Chapter 9

The Time-Series Package

9.1 Macros

9.1.1 The Snap-Index Macro

9.2 Functions

9.2.1 The Array-Raster-Line Function

9.2.2 The Distance Function

9.2.3 The Norm Function

9.2.4 The Raster-Line Function

9.2.5 The Similar-Points? Function

9.2.6 The Time-Series? Function

9.2.7 The Time-Multiseries? Function

9.2.8 The TMSref Function

9.2.9 The TMS-Dimensions Function

9.2.10 The TMS-Raster-Line Function

9.2.11 The TMS-Values Function

9.3 Types

9.3.1 The Time-Multiseries Type

Chapter 10

The Truth Package

10.1 Functions

10.1.1 The `[?]` Function

10.1.2 The Toggle Function

10.2 Generics

10.2.1 The `?` Generic

Chapter 11

The Utilities Package

11.1 Variables

11.1.1 The `*CGore-Utilities-Packages*` Variable

11.2 Functions

11.2.1 The `Use-All-CGore-Utilities` Function

11.2.2 The `Use-All-Utilities` Function