

engDevTools Documentation

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1 Architecture Overview

2 Function Types

1. MEM: Functions dealing with handling memory allocation and access.
2. SET: Functions for initializing or setting data.
3. CHECK: Functions for checking properties of data.
4. OPS: Functions that conduct arithmetic operations.
5. FREE: Functions that free memory.
6. PRINT: Functions that conduct printing operations.
7. READ: Functions that conduct reading operations.
8. WRITE: Functions that conduct writing operations.

3 Base Modules

3.1 vmaOps (math)

3.1.1 vectorOps

Status: In Development

Purpose: Handle vector operations

Capability:

1. Vector Arithmetic
 - (a) Vector Addition
 - (b) Vector Subtraction
2. Vector Operations
 - (a) Cross Product
 - (b) Dot Product
 - (c) Unit Vector
 - (d) Vector Magnitude

3.1.2 matrixOps

Status: In Development

Purpose: Handle 3x3 matrix operations

Capability:

1. Initialization/Freeing
 - (a) Matrix Initialization
2. Set Matrix
 - (a) Zeros Matrix
 - (b) Ones Matrix
 - (c) Identity Matrix
3. Matrix Arithmetic
 - (a) Matrix Addition
 - (b) Matrix Subtraction
 - (c) Matrix Multiplication
 - (d) Scalar * Matrix
4. Matrix Operations
 - (a) Matrix Trace
 - (b) Matrix Determinant
 - (c) Matrix Transpose
5. Matrix Checks
 - (a) Matrix isEqual

3.1.3 arrayOps

Status: In Development

Purpose: Handle nxn matrix operations

Capability:

1. Initialization/Freeing
 - (a) Array Initialization
 - (b) Array Free
2. Set Array
 - (a) Zeros Array
 - (b) Ones Array

- (c) Identity Array
- 3. Array Arithmetic
 - (a) Array Addition
 - (b) Array Subtraction
 - (c) Array Multiplication
 - (d) Scalar * Array
- 4. Array Operations
 - (a) Array Transpose
- 5. Array Checks
 - (a) Array isEqual
- 6. Miscellaneous
 - (a) 2x2 Determinant

3.1.4 printOps

Status: In Development Purpose: Basic printing capability Capability:

- 1. Printing Variables
 - (a) Print Boolean
 - (b) Print Scalar
 - (c) Print Vector
 - (d) Print Matrix
 - (e) Print Array

3.1.5 writeOps

Status: Not Started

3.1.6 readOps

Status: Not Started

4 Basic Simulation Modules

4.1 Modules

4.1.1 Astrodynamics

Status: Not Started

4.1.2 Electronics

Status: Not Started

4.1.3 Thermodynamics

Status: Not Started

4.1.4 Aerodynamics

Status: Not Started

4.1.5 Mass Properties

Status: Not Started

5 Advanced Simulation Modules

1. Hello!

6 User Interface

1. Hello!

7 Unit/Regression Testing

1. Hello!

8 Data Pre-processing

1. Hello!

9 Data Post-processing

1. Hello!

10 Support Functions/Scripts

1. Hello!