

FTCAndroidLibrary

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

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Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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com.lasarobotics.library.util.Constants	6
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com.lasarobotics.library.sensor.generic.LiDAR	11
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com.lasarobotics.library.sensor.modernrobotics.Touch	28
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com.lasarobotics.library.android.Util	30
com.lasarobotics.library.util.Vector3< T >	30

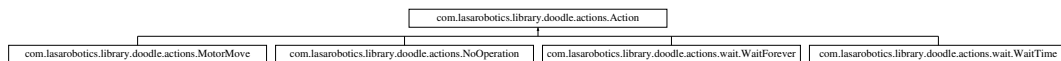
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Chapter 3

Class Documentation

3.1 com.lasrobotics.library.doodle.actions.Action Class Reference

Inheritance diagram for com.lasrobotics.library.doodle.actions.Action:



Public Member Functions

- abstract void **run** ([DoodleRunData](#) data)
- abstract String **toString** ()

Protected Member Functions

- **Action** (String name)

3.1.1 Detailed Description

Defines a custom robot action These actions are stored in the same file as the instruction data

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/actions/Action.java

3.2 com.lasrobotics.library.controller.ButtonState Class Reference

Static Public Attributes

- static final int **NOT_PRESSED** = 0
- static final int **PRESSED** = 1
- static final int **RELEASED** = 2
- static final int **HELD** = 3

3.2.1 Detailed Description

Contains button state variables

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/controller/ButtonState.java

3.3 com.lasrobotics.library.util.Constants Class Reference

Static Public Attributes

- static final long **MONKEYC_STARTING_CONSTANT** = -1000

3.3.1 Detailed Description

Created by Ehsan on 7/12/2015.

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/util/Constants.java

3.4 com.lasrobotics.library.controller.Controller Class Reference

Public Member Functions

- **Controller** ([Controller](#) another)
- **Controller** (Gamepad g)
- void **update** (Gamepad g)
- String **toString** ()

Public Attributes

- int **dpad_up**
- int **dpad_down**
- int **dpad_left**
- int **dpad_right**
- int **a**
- int **b**
- int **x**
- int **y**
- int **guide**
- int **start**
- int **back**
- int **left_bumper**
- int **right_bumper**
- float **left_trigger**
- float **right_trigger**
- float **left_stick_x**
- float **left_stick_y**
- float **right_stick_x**
- float **right_stick_y**

3.4.1 Detailed Description

Implements a functional controller with an event API

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/controller/Controller.java

3.5 com.lasrobotics.library.util.DistanceUnit Enum Reference

Public Attributes

- **ENCODER_COUNTS**
- **REVOLUTIONS**
- **INCHES**
- **FEET**
- **CENTIMETERS**
- **METERS**

3.5.1 Detailed Description

OpticalDistance Units for Encoder Counts to OpticalDistance conversion

The documentation for this enum was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/util/DistanceUnit.java

3.6 com.lasrobotics.library.doodle.DoodleDo Class Reference

3.6.1 Detailed Description

Performs actions created by the [DoodleWrite](#) library

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/DoodleDo.java

3.7 com.lasrobotics.library.doodle.DoodleMap Class Reference

Classes

- enum [MotorFlags](#)

3.7.1 Detailed Description

Specifies the motors and servos encoded in the Doodle specification These specs will be written into a config text file in human-readable JSON

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/DoodleMap.java

3.8 com.lasrobotics.library.doodle.maps.DoodleMap Class Reference

Classes

- enum [RangeOfMotion](#)

Public Member Functions

- abstract void **move** (float amplitude, float rotation, float translation)
- void **update** (HardwareMap map)
- void **move** (float amplitude)
- void **move** (float amplitude, float rotation)
- void **move** (float amplitude, Float translation)

Protected Member Functions

- **DoodleMap** (HardwareMap map, [RangeOfMotion](#) rangeOfMotion)

3.8.1 Detailed Description

Maps robot movement to specific motors

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/maps/DoodleMap.java

3.9 com.lasrobotics.library.doodle.DoodleRunData Class Reference

Public Member Functions

- **DoodleRunData** (HardwareMap map, OpMode mode)
- HardwareMap **map** ()
- OpMode **mode** ()

3.9.1 Detailed Description

A struct containing the data needed when any Doodle action is called

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/DoodleRunData.java

3.10 com.lasrobotics.library.doodle.DoodleWrite Class Reference

3.10.1 Detailed Description

Created by arthur on 7/10/15.

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/DoodleWrite.java

3.11 com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope Class Reference

Public Member Functions

- **Gyroscope** (GyroSensor g)
- void **update** (GyroSensor g)
- void **reset** ()
- double **getRate** ()
- double **getHeading** ()
- double **getRotation** ()
- double **getTimeDifference** ()
- double **getOffset** ()
- void **setOffset** (double offset)
- String **toString** ()

Static Public Member Functions

- static double **normalize** (double heading)

3.11.1 Detailed Description

Implements additional Gyroscopic control methods and events

3.11.2 Member Function Documentation

3.11.2.1 double com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope.getHeading ()

Gets the gyroscope heading in degrees, between 0 and 360

Returns

The gyro heading, between 0 and 360s

3.11.2.2 double com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope.getOffset ()

Gets the gyroscope offset, in degrees per second.

Returns

The offset, in degrees per second.

3.11.2.3 double com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope.getRate ()

Gets the gyroscope rotation rate in degrees per second

Returns

The offset gyroscope rotation in degrees per second

3.11.2.4 `double com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope.getRotation ()`

Gets the gyroscope rotation in degrees

Returns

The gyroscope rotation in degrees

3.11.2.5 `double com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope.getTimeDifference ()`

Gets the time difference between the last readings.

Returns

The current time delay in seconds.

3.11.2.6 `static double com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope.normalize (double heading) [static]`

Normalize [Gyroscope](#) bounds to within 0 and 360

Parameters

<i>heading</i>	The current Gyroscope value
----------------	---

Returns

The normalized [Gyroscope](#) value, between 0 and 360.

3.11.2.7 `void com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope.reset ()`

Resets the gyroscope to a value of zero.

3.11.2.8 `String com.lasrobotics.library.sensor.legacy.hitechnic.Gyroscope.toString ()`

Gets the status of the gyroscope

Returns

The gyroscope status as a string

The documentation for this class was generated from the following file:

- `ftc-library/src/main/java/com/lasrobotics/library/sensor/legacy/hitechnic/Gyroscope.java`

3.12 `com.lasrobotics.library.sensor.generic.IR` Class Reference

Public Member Functions

- **IR** (`IrSeekerSensor s`)
- void **update** (`IrSeekerSensor s`)
- double **getStrength** ()
- double **getAngle** ()
- Boolean **hasSignal** ()
- `IrSeekerSensor.IrSeekerIndividualSensor[]` **getSensors** ()

3.12.1 Detailed Description

Implements an [IR](#) sensor with additional advanced methods

TODO ungenericify to HT and ModernRobotics when testing equipment available

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/sensor/generic/IR.java

3.13 com.lasrobotics.library.skynet.Kalman Class Reference

3.13.1 Detailed Description

[Kalman](#) filter implementation Takes in multiple sensors' data to produce highly-accurate position and velocity vector fields

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/skynet/Kalman.java

3.14 com.lasrobotics.library.sensor.generic.LiDAR Class Reference

3.14.1 Detailed Description

We should really do this

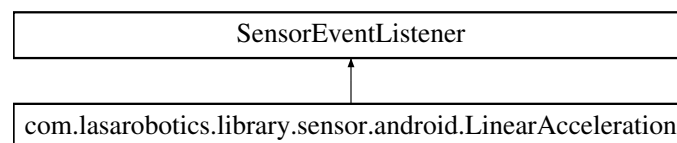
Be sure to use a Class ONE laser - past that, we get into additional FCC restrictions :)

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/sensor/generic/LiDAR.java

3.15 com.lasrobotics.library.sensor.android.LinearAcceleration Class Reference

Inheritance diagram for com.lasrobotics.library.sensor.android.LinearAcceleration:



Public Member Functions

- void **onAccuracyChanged** (Sensor sensor, int i)
- void **onSensorChanged** (SensorEvent event)
- [Vector3](#)< Float > **getAcceleration** ()

3.15.1 Detailed Description

Gets the forces placed upon the object in the x, y, and z directions excluding gravity in m/s²

The documentation for this class was generated from the following file:

- [ftc-library/src/main/java/com/lasrobotics/library/sensor/android/LinearAcceleration.java](#)

3.16 `com.lasrobotics.library.util.LookupTable< T >` Class Template Reference

Public Member Functions

- [LookupTable](#) ()
- [LookupTable](#) (Hashtable< String, T > other)
- [LookupTable](#) ([LookupTable](#)< T > other)
- void [setValue](#) (String id, T value)
- T [getValue](#) (String id)
- void [deleteValue](#) (String id)
- int [count](#) ()

Protected Member Functions

- Hashtable< String, T > [getTable](#) ()

3.16.1 Detailed Description

Implements a variable LUT.

3.16.2 Constructor & Destructor Documentation

3.16.2.1 `com.lasrobotics.library.util.LookupTable< T >.LookupTable ()`

Instantiate a lookup table for variables.

3.16.2.2 `com.lasrobotics.library.util.LookupTable< T >.LookupTable (Hashtable< String, T > other)`

Create a clone from another Hashtable.

Parameters

<i>other</i>	Another Hashtable.
--------------	--------------------

3.16.2.3 `com.lasrobotics.library.util.LookupTable< T >.LookupTable (LookupTable< T > other)`

Create a clone based on another [LookupTable](#).

Parameters

<i>other</i>	Another LookupTable of the same type.
--------------	---

3.16.3 Member Function Documentation

3.16.3.1 `int com.lasrobotics.library.util.LookupTable< T >.count ()`

The count of items in the table.

Returns

The count of items in the table.

3.16.3.2 void com.lasrobotics.library.util.LookupTable< T >.deleteValue (String *id*)

Remove a value from the table at a specific ID.

Parameters

<i>id</i>	The ID of an item in the table.
-----------	---------------------------------

3.16.3.3 Hashtable<String, T> com.lasrobotics.library.util.LookupTable< T >.getTable () [protected]

Gets the underlying Hashtable instance.

Returns

The underlying Hashtable.

3.16.3.4 T com.lasrobotics.library.util.LookupTable< T >.getValue (String *id*)

Get the value of an id in the LUT.

Parameters

<i>id</i>	The ID of the item to retrieve.
-----------	---------------------------------

Returns

The value of the item at the id.

3.16.3.5 void com.lasrobotics.library.util.LookupTable< T >.setValue (String *id*, T *value*)

Set the value of an item in the table, or create if new.

Parameters

<i>id</i>	The ID of the item in the LUT.
<i>value</i>	The value to set the id to.

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/util/LookupTable.java

3.17 com.lasrobotics.library.util.MathUtil Class Reference

Static Public Member Functions

- static double [deadband](#) (double deadband, double value)
- static Boolean [equal](#) (double a, double b)
- static Boolean [equal](#) (double a, double b, double distance)
- static double [filter](#) (double value, double lastvalue, double fail)
- static double [coerce](#) (double min, double max, double value)
- static boolean [inBounds](#) (double min, double max, double value)

3.17.1 Detailed Description

Mathematical and Precision Utilities

3.17.2 Member Function Documentation

3.17.2.1 static double com.lasrobotics.library.util.MathUtil.coerce (double *min*, double *max*, double *value*) [static]

Forces a numerical value to be between a min and a max

Parameters

<i>min</i>	If less than min, returns min
<i>max</i>	If greater than max, returns max
<i>value</i>	Value to test

Returns

Coerced value

3.17.2.2 static double com.lasrobotics.library.util.MathUtil.deadband (double *deadband*, double *value*) [static]

Gives a "deadzone" where any value less than this would return zero.

Parameters

<i>deadband</i>	Maximum value that returns zero
<i>value</i>	Value to test

Returns

Deadbanded value

3.17.2.3 static Boolean com.lasrobotics.library.util.MathUtil.equal (double *a*, double *b*) [static]

Returns if two double values are equal to within epsilon.

Parameters

<i>a</i>	First value
<i>b</i>	Second value

Returns

True if the values are equal, false otherwise

3.17.2.4 static Boolean com.lasrobotics.library.util.MathUtil.equal (double *a*, double *b*, double *distance*) [static]

Returns if two double values are equal to within a distance.

Parameters

<i>a</i>	First value
<i>b</i>	Second value
<i>distance</i>	Maximum distance between a and b

Returns

True if the values are equal or within distance, false otherwise

3.17.2.5 static double com.lasrobotics.library.util.MathUtil.filter (double *value*, double *lastvalue*, double *fail*) [static]

Ignores values equal to the fail value (normally zero).

Parameters

<i>value</i>	Current value
<i>lastvalue</i>	Previous value
<i>fail</i>	Filter this value, normally zero

Returns

Filtered value

3.17.2.6 `static boolean com.lasrobotics.library.util.MathUtil.inBounds (double min, double max, double value)`
`[static]`

Tests if a number is between the bounds, inclusive.

Parameters

<i>min</i>	If less than min, returns false
<i>max</i>	If greater than max, returns false
<i>value</i>	Value to test

Returns

Returns true if value is between (inclusive) min and max, false otherwise.

The documentation for this class was generated from the following file:

- `ftc-library/src/main/java/com/lasrobotics/library/util/MathUtil.java`

3.18 com.lasrobotics.library.drive.Mecanum Class Reference

Static Public Member Functions

- static void [Arcade](#) (double *y*, double *x*, double *c*, DcMotor leftFront, DcMotor rightFront, DcMotor leftBack, DcMotor rightBack)
- static void [Arcade_FieldOriented](#) (double *y*, double *x*, double *c*, double gyroheading, DcMotor leftFront, DcMotor rightFront, DcMotor leftBack, DcMotor rightBack)

3.18.1 Detailed Description

Methods for the [Mecanum](#) multi-directional drive train

3.18.2 Member Function Documentation

3.18.2.1 `static void com.lasrobotics.library.drive.Mecanum.Arcade (double y, double x, double c, DcMotor leftFront, DcMotor rightFront, DcMotor leftBack, DcMotor rightBack)` `[static]`

Implements the Arcade drive train with three axis and four motors.

Parameters

<i>y</i>	The y-axis of the controller, forward/rev
<i>x</i>	The x-axis of the controller, strafe
<i>c</i>	The spin axis of the controller
<i>leftFront</i>	The motor on the front left
<i>rightFront</i>	The motor on the front right
<i>leftBack</i>	The motor on the back left
<i>rightBack</i>	The motor on the back right

3.18.2.2 `static void com.lasrobotics.library.drive.Mecanum.Arcade_FieldOriented (double y, double x, double c, double gyroheading, DcMotor leftFront, DcMotor rightFront, DcMotor leftBack, DcMotor rightBack) [static]`

Implements the Arcade drive train with field orientation based on Gyro input

Parameters

<i>y</i>	The y-axis of the controller, forward/rev
<i>x</i>	The x-axis of the controller, strafe
<i>c</i>	The spin axis of the controller
<i>gyroheading</i>	The current normalized gyro heading (between 0 and 360)
<i>leftFront</i>	The motor on the front left
<i>rightFront</i>	The motor on the front right
<i>leftBack</i>	The motor on the back left
<i>rightBack</i>	The motor on the back right

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/drive/Mecanum.java

3.19 com.lasrobotics.library.monkeyc.MonkeyC Class Reference

Public Member Functions

- void **add** ([Controller](#) c1, [Controller](#) c2)
- void **add** (Gamepad instruction, Gamepad instruction2)
- void **clear** ()
- void **write** (String filename, Context context)
- int **size** ()

3.19.1 Detailed Description

The [MonkeyC](#) (MonkeySee) library that handles recording and storing driver controls These controls can be inserted during runtime (when the robot is moving) or can be created prior to a match. [MonkeyDo](#) can then execute these commands.

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/monkeyc/MonkeyC.java

3.20 com.lasrobotics.library.monkeyc.MonkeyData Class Reference

Public Member Functions

- [Controller](#) **updateControllerOne** ([Controller](#) previous)

- [Controller](#) **updateControllerTwo** ([Controller](#) previous)
- boolean **hasUpdate** ()
- JsonObject **getDeltasGamepad1** ()
- void **setDeltasGamepad1** (JsonObject deltasGamepad1)
- JsonObject **getDeltasGamepad2** ()
- void **setDeltasGamepad2** (JsonObject deltasGamepad2)
- void **setTime** (long time)
- long **getTime** ()

3.20.1 Detailed Description

Contains a single time-stamped patched state of one Controller

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/monkeyc/MonkeyData.java

3.21 com.lasrobotics.library.monkeyc.MonkeyDo Class Reference

Public Member Functions

- **MonkeyDo** (String filename, Context context)
- [MonkeyData](#) **getNextCommand** ()
- String **getFilename** ()
- void **setFilename** (String filename)
- void **onStart** ()

3.21.1 Detailed Description

The [MonkeyDo](#) library handles executing commands generated by [MonkeyC](#).

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/monkeyc/MonkeyDo.java

3.22 com.lasrobotics.library.monkeyc.MonkeyUtil Class Reference

Static Public Member Functions

- static [MonkeyData](#) **createDeltas** ([Controller](#) current1, [Controller](#) previous1, [Controller](#) current2, [Controller](#) previous2, long time)
- static void **writeFile** (String filename, ArrayList< [MonkeyData](#) > commands, Context context)
- static ArrayList< [MonkeyData](#) > **readFile** (String filename, Context context)

Static Public Attributes

- static final String **FILE_DIR** = Environment.getExternalStorageDirectory() + "/MonkeyC/"

3.22.1 Detailed Description

[MonkeyUtil](#) handles reading and writing text files with instructions created by [MonkeyC](#)

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/monkeyc/MonkeyUtil.java

3.23 com.lasrobotics.library.doodle.actions.sensors.MotorEncoderReset Class Reference

3.23.1 Detailed Description

Reset a motor encoder

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/actions/sensors/MotorEncoderReset.java

3.24 com.lasrobotics.library.doodle.DoodleMap.MotorFlags Enum Reference

Public Member Functions

- **MotorFlags** (int flag)

Public Attributes

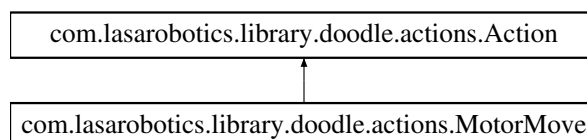
- **MOVEMENT** =(1)
- int **flag**

The documentation for this enum was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/DoodleMap.java

3.25 com.lasrobotics.library.doodle.actions.MotorMove Class Reference

Inheritance diagram for com.lasrobotics.library.doodle.actions.MotorMove:



Public Member Functions

- **MotorMove** (float power, String motor)
- void **run** ([DoodleRunData](#) data)
- String **toString** ()

Additional Inherited Members

3.25.1 Detailed Description

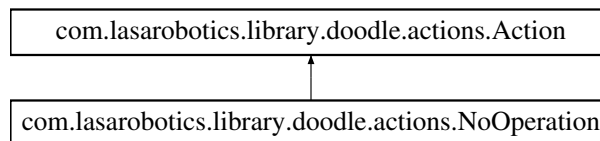
Move a motor at a specified power

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/actions/MotorMove.java

3.26 com.lasrobotics.library.doodle.actions.NoOperation Class Reference

Inheritance diagram for com.lasrobotics.library.doodle.actions.NoOperation:



Public Member Functions

- void **run** ([DoodleRunData](#) data)
- String **toString** ()

Additional Inherited Members

3.26.1 Detailed Description

Dummy action that does absolutely nothing but waste precious disk space. It's a great starting template though.

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/actions/NoOperation.java

3.27 com.lasrobotics.library.sensor.modernrobotics.OpticalDistance Class Reference

Public Member Functions

- **OpticalDistance** ([OpticalDistanceSensor](#) sensor)
- void **update** ([OpticalDistanceSensor](#) sensor)
- double [getLightDetected](#) ()
- Boolean [objectDetected](#) ()
- Boolean [objectNear](#) ()
- Boolean [objectClose](#) ()
- double [getDistance](#) ()

3.27.1 Detailed Description

Implements the Core Optical [OpticalDistance](#) Sensor with advanced methods

This sensor is only fully accurate UP TO 5 CM Different lighting conditions greatly affect distance read after 5 cm away from the object

3.27.2 Member Function Documentation

3.27.2.1 double com.lasrobotics.library.sensor.modernrobotics.OpticalDistance.getDistance ()

Gets an approximate distance from the object in centimeters Formula based on empirical measurements in 2700K lighting at room temperature with a white semi-reflective object perpendicular to the beam

Please note that these values are only SOMEWHAT ACCURATE between 0.5 and 5 cm!

Returns

An approximate distance in centimeters

3.27.2.2 double com.lasrobotics.library.sensor.modernrobotics.OpticalDistance.getLightDetected ()

Gets the raw light reflected as a decimal

Returns

The raw light reflected as a decimal

3.27.2.3 Boolean com.lasrobotics.library.sensor.modernrobotics.OpticalDistance.objectClose ()

Returns true if an object is close enough to get an accurate distance measurement of +- 1 cm, assuming light object

Returns

True if an object is close enough to get an accurate distance measurement

3.27.2.4 Boolean com.lasrobotics.library.sensor.modernrobotics.OpticalDistance.objectDetected ()

Returns true if an object is detected within the sensor's absolute maximum range (25 cm)

Returns

True if an object is detected

3.27.2.5 Boolean com.lasrobotics.library.sensor.modernrobotics.OpticalDistance.objectNear ()

Returns true if an object is near the sensor (within 5-10 cm)

Returns

True if an object is near the sensor

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/sensor/modernrobotics/OpticalDistance.java

3.28 com.lasrobotics.library.doodle.maps.DoodleMap.RangeOfMotion Enum Reference

Public Attributes

- **DRIVE_AMPLITUDE_ONLY**
- **DRIVE_AMPLITUDE_ROTATION**

The documentation for this enum was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/maps/DoodleMap.java

3.29 com.lasrobotics.library.util.RollingAverage< T extends Number > Class Template Reference

Public Member Functions

- **RollingAverage** (int capacity)
- void **addValue** (T value)
- int **getCapacity** ()
- void **setCapacity** (int capacity)
- void **clear** ()
- int **getSize** ()
- double **getAverage** ()
- double **getTotal** ()

3.29.1 Detailed Description

Structure that performs a continuous rolling average on values Uses doubles as internal structures

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/util/RollingAverage.java

3.30 com.lasrobotics.library.sensor.android.Sensors Class Reference

Static Public Member Functions

- static List< Sensor > **getAllSensors** ()
- static Sensor **getSensor** (int type)
- static Boolean **hasSensor** (int type)

3.30.1 Detailed Description

Lists Android manager, converts manager to this library's format, and tests if certain sensor is present

Use for any Android internal device sensor implemented in hardware OR software

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/sensor/android/Sensors.java

3.31 com.lasrobotics.library.drive.Swerve Class Reference

Static Public Member Functions

- static void [Standard](#) (double y, double x, double rot, double gyroheading, DcMotor leftFront, DcMotor rightFront, DcMotor leftBack, DcMotor rightBack, Servo lf, Servo rf, Servo lb, Servo rb)

3.31.1 Detailed Description

Methods for the [Swerve](#) drive train

3.31.2 Member Function Documentation

- 3.31.2.1 static void com.lasrobotics.library.drive.Swerve.Standard (double y, double x, double rot, double gyroheading, DcMotor leftFront, DcMotor rightFront, DcMotor leftBack, DcMotor rightBack, Servo lf, Servo rf, Servo lb, Servo rb)
[static]

Implements the [Swerve](#) drive train with four motors and four lifting servos Requires gyro input

Parameters

y	The y-axis of the controller, forward/rev
x	The x-axis of the controller, strafe
rot	The spin axis of the controller
gyroheading	The current normalized gyro heading (between 0 and 360)
leftFront	The motor on the front left
rightFront	The motor on the front right
leftBack	The motor on the back left
rightBack	The motor on the back right
lf	The servo on the front left
rf	The servo on the front right
lb	The servo on the back left
rb	The servo on the back right

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/drive/Swerve.java

3.32 com.lasrobotics.library.drive.Tank Class Reference

Static Public Member Functions

- static void [Motor2](#) (DcMotor left, DcMotor right, double leftValue, double rightValue)
- static void [Motor4](#) (DcMotor leftFront, DcMotor rightFront, DcMotor leftBack, DcMotor rightBack, double leftValue, double rightValue)

3.32.1 Detailed Description

Methods for the [Tank](#) drive train.

3.32.2 Member Function Documentation

3.32.2.1 `static void com.lasrobotics.library.drive.Tank.Motor2 (DcMotor left, DcMotor right, double leftValue, double rightValue) [static]`

Implements the [Tank](#) drive train with two motors

Parameters

<i>left</i>	Left motor
<i>right</i>	Right motor
<i>leftValue</i>	Left motor target value
<i>rightValue</i>	Right motor target value

3.32.2.2 static void com.lasrobotics.library.drive.Tank.Motor4 (DcMotor *leftFront*, DcMotor *rightFront*, DcMotor *leftBack*, DcMotor *rightBack*, double *leftValue*, double *rightValue*) [static]

Implements the [Tank](#) drive train with four motors

Parameters

<i>leftFront</i>	The motor on the front left
<i>rightFront</i>	The motor on the front right
<i>leftBack</i>	The motor on the back left
<i>rightBack</i>	The motor on the back right
<i>leftValue</i>	Left motors target value
<i>rightValue</i>	Right motors target value

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/drive/Tank.java

3.33 com.lasrobotics.library.util.Timers Class Reference

Public Member Functions

- [Timers](#) ()
- [Timers](#) (int precision)
- void [startClock](#) (String name)
- void [resetClock](#) (String name)
- long [getClockValue](#) (String name)
- long [getClockValue](#) (String name, TimeUnit timeUnit)
- boolean [isAtTargetMillis](#) (String name, long target)
- boolean [isAtTargetMillis](#) (String name, long target, long precision)
- long [getPrecision](#) ()
- void [setPrecision](#) (int precision)

3.33.1 Detailed Description

Implements advanced timers with events and precision manipulation.

3.33.2 Constructor & Destructor Documentation

3.33.2.1 com.lasrobotics.library.util.Timers.Timers ()

Instantiates the timer class with the default millisecond precision.

3.33.2.2 com.lasrobotics.library.util.Timers.Timers (int *precision*)

Instantiates the timer class with an arbitrary precision in milliseconds.

Parameters

<i>precision</i>	Precision of the clock, in milliseconds.
------------------	--

3.33.3 Member Function Documentation**3.33.3.1** `long com.lasrobotics.library.util.Timers.getClockValue (String name)`

Get clock value. Defaults to millisecond precision.

Parameters

<i>name</i>	Name of the clock
-------------	-------------------

Returns

Value of clock in milliseconds

3.33.3.2 `long com.lasrobotics.library.util.Timers.getClockValue (String name, TimeUnit timeUnit)`

Get clock value with precision in a given time unit

Parameters

<i>name</i>	Name of the clock
<i>timeUnit</i>	TimeUnit the output should be in

Returns

The value of the clock converted to the time unit specified (may lose precision)

3.33.3.3 `long com.lasrobotics.library.util.Timers.getPrecision ()`

Gets the precision in milliseconds

Returns

Precision in milliseconds

3.33.3.4 `boolean com.lasrobotics.library.util.Timers.isAtTargetMillis (String name, long target)`

Returns whether the clock is at the specified amount of milliseconds

Parameters

<i>name</i>	The clock name
<i>target</i>	The target time in milliseconds

Returns

True if at the target (+- precision), false otherwise

3.33.3.5 `boolean com.lasrobotics.library.util.Timers.isAtTargetMillis (String name, long target, long precision)`

Returns whether the clock is at the specified amount of milliseconds

Parameters

<i>name</i>	The clock name
<i>target</i>	The target time in milliseconds
<i>precision</i>	How much target and clock value can differ by in milliseconds

Returns

True if at the target (+- precision), false otherwise

3.33.3.6 void com.lasrobotics.library.util.Timers.resetClock (String *name*)

Reset a clock with the specified name. Clock will continue running immediately.

Parameters

<i>name</i>	The clock name
-------------	----------------

3.33.3.7 void com.lasrobotics.library.util.Timers.setPrecision (int *precision*)

Sets the precision to a value

Parameters

<i>precision</i>	The precision of the clock, in milliseconds.
------------------	--

3.33.3.8 void com.lasrobotics.library.util.Timers.startClock (String *name*)

Start (and create, if nonexistent) a clock with a specified name.

Parameters

<i>name</i>	The clock name
-------------	----------------

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/util/Timers.java

3.34 com.lasrobotics.library.sensor.legacy.lego.Touch Class Reference

Inherits com.lasrobotics.library.sensor.legacy.lego.TouchInternal.

Public Member Functions

- **Touch** (LegacyModule legacyModule, int physicalPort)
- void [update](#) ()
- int [getState](#) ()
- boolean [isPressed](#) ()
- boolean [isReleased](#) ()
- boolean [isHeldDown](#) ()

3.34.1 Detailed Description

Implements the NXT touch sensor

3.34.2 Member Function Documentation

3.34.2.1 `int com.lasrobotics.library.sensor.legacy.lego.Touch.getState ()`

Gets the ButtonState instance of this button

Returns

A ButtonState instance as an integer

3.34.2.2 `boolean com.lasrobotics.library.sensor.legacy.lego.Touch.isHeldDown ()`

Checks if the sensor is held down

Returns

True if pressed or held, false otherwise

3.34.2.3 `boolean com.lasrobotics.library.sensor.legacy.lego.Touch.isPressed ()`

Checks if the sensor was JUST PRESSED

Returns

True if just pressed, false otherwise

3.34.2.4 `boolean com.lasrobotics.library.sensor.legacy.lego.Touch.isReleased ()`

Checks if the sensor was JUST RELEASED

Returns

True if just released, false otherwise

3.34.2.5 `void com.lasrobotics.library.sensor.legacy.lego.Touch.update ()`

Update the sensor events - run this every loop()

The documentation for this class was generated from the following file:

- `ftc-library/src/main/java/com/lasrobotics/library/sensor/legacy/lego/Touch.java`

3.35 `com.lasrobotics.library.sensor.modernrobotics.Touch` Class Reference

Public Member Functions

- **Touch** (TouchSensor t)
- void [update](#) (TouchSensor t)
- int [getState](#) ()
- boolean [isPressed](#) ()
- boolean [isReleased](#) ()
- boolean [isHeldDown](#) ()

3.35.1 Detailed Description

Implements a [Touch](#) Sensor with advanced events

3.35.2 Member Function Documentation

3.35.2.1 `int com.lasrobotics.library.sensor.modernrobotics.Touch.getState ()`

Gets the ButtonState instance of this button

Returns

A ButtonState instance as an integer

3.35.2.2 `boolean com.lasrobotics.library.sensor.modernrobotics.Touch.isHeldDown ()`

Checks if the sensor is held down

Returns

True if pressed or held, false otherwise

3.35.2.3 `boolean com.lasrobotics.library.sensor.modernrobotics.Touch.isPressed ()`

Checks if the sensor was JUST PRESSED

Returns

True if just pressed, false otherwise

3.35.2.4 `boolean com.lasrobotics.library.sensor.modernrobotics.Touch.isReleased ()`

Checks if the sensor was JUST RELEASED

Returns

True if just released, false otherwise

3.35.2.5 `void com.lasrobotics.library.sensor.modernrobotics.Touch.update (TouchSensor t)`

Update the sensor events - run this every loop()

Parameters

<i>t</i>	The current TouchSensor variable
----------	----------------------------------

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/sensor/modernrobotics/Touch.java

3.36 com.lasrobotics.library.sensor.legacy.lego.Ultrasonic Class Reference

3.36.1 Detailed Description

Powers a LEGO ultrasonic sensor

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/sensor/legacy/lego/Ultrasonic.java

3.37 com.lasrobotics.library.android.Util Class Reference

Static Public Member Functions

- static Context **getContext** ()
- static String **getDataDirectory** (Context ctx)
- static String **getWorkingDirectory** ()
- static String **getDCIMDirectory** ()

3.37.1 Detailed Description

Android utilities

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/android/Util.java

3.38 com.lasrobotics.library.util.Vector3< T > Class Template Reference

Public Member Functions

- **Vector3** (T x, T y, T z)
- T **x** ()
- T **y** ()
- T **z** ()
- String **toString** ()

3.38.1 Detailed Description

3D Vector

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/util/Vector3.java

3.39 com.lasrobotics.library.sensor.modernrobotics.Voltage Class Reference

Public Member Functions

- **Voltage** (HardwareMap map)
- void **update** ()
- double **getVoltage** ()
- double **getVoltageInstantaneous** ()

Static Public Attributes

- static final int **samples** = 2000

3.39.1 Detailed Description

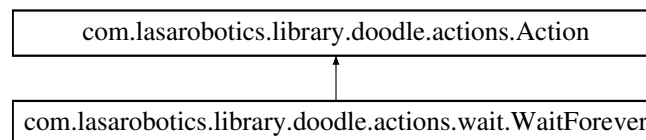
Reads the robot battery voltage

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/sensor/modernrobotics/Voltage.java

3.40 com.lasrobotics.library.doodle.actions.wait.WaitForever Class Reference

Inheritance diagram for com.lasrobotics.library.doodle.actions.wait.WaitForever:



Public Member Functions

- void **run** ([DoodleRunData](#) data)
- String **toString** ()

Additional Inherited Members

3.40.1 Detailed Description

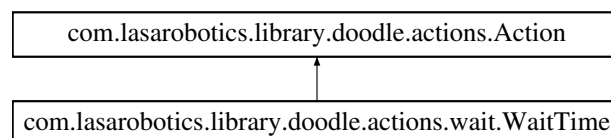
Waits a certain period of time

The documentation for this class was generated from the following file:

- ftc-library/src/main/java/com/lasrobotics/library/doodle/actions/wait/WaitForever.java

3.41 com.lasrobotics.library.doodle.actions.wait.WaitTime Class Reference

Inheritance diagram for com.lasrobotics.library.doodle.actions.wait.WaitTime:



Public Member Functions

- **WaitTime** (long ms)
- void **run** ([DoodleRunData](#) data)
- String **toString** ()

Additional Inherited Members

3.41.1 Detailed Description

Waits a certain period of time

The documentation for this class was generated from the following file:

- `ftc-library/src/main/java/com/lasarobotics/library/doodle/actions/wait/WaitTime.java`

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