MAKE

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1 REVISIONS

DATE	CHANGE	AUTHOR(S)
2024-04-22	translated doc to markdown	Carston Wiebe
2024-04-21	'largemotor' & 'button'	Carston Wiebe
2024-04-12	'dc_motors', 'servos', 'stopall'	Carston Wiebe
2024-04-10	PHILOSOPHY	Carston Wiebe
2024-04-06	techdoc creation	Carston Wiebe

2 PURPOSE

Created for the University of Nebraska-Lincoln's SPARK student organization

3 DESCRIPTION

Wrapper for CIRCUITPython (also written in Python) to be used on the MakerPI RP2040 in order to allow the simple creation of code by elementary and middle school students for educational purposes.

4 PHILOSOPHY

Classes and functions should be written with ease of use in mind– a minimum amount of knowledge on coding should be assumed and expected, and the users

may not have access to a proper IDE with features like intelligent syntax high-lighting.

As such, convention should be disregarded when it conflicts with ease of under-standing; for instance, *all* names should be lowercase only so as to prevent simple issues with capitalization that young users might encounter (and that won't be caught by the computer without an IDE).

(Incomplete) list of rules:

- all flatcase (lowercase, no underscores)

- prioritize one-word names

- if possible, lines should read like English; i.e. 'until(button.pressed)'

- use simple words without complicated spelling

- abstract complexities away; i.e. rather than require users to input 'board.GP10', create a dict with the key '10' and value 'board.GP10'

5   CONTENT

5.1   CLASSES

5.1.1   button

button(pin)

Represents a button, either one of the two mounted to the board or one attached later. Requires only a port to be constructed, and can be built from either one of the 'BUTTON_PIN's or one of the 'GROVE_PINs'.

pressed

button.pressed()

Returns 'true' if the button is pressed, and 'false' otherwise.

5.1.2   largemotor

largemotor(pinset)

Represents a DC motor mounted on one of the 2 DC motor ports. Requires only a 'pinset' in 'DC_PIN's to be constructed, which limits the number of 'largemotor's to 2.

spin

largemotor.spin(speed, time)

Takes a 'speed' in the range '[-100, 100]' (all values outside the range are constrained) and runs the motor at that speed. Optionally, a 'time' can be passed in seconds and the motor will only spin for the allotted time before stopping.

stop

largemotor.stop()

Equivalent to 'largemotor.spin(0)'.

5.1.3   sensor

distance

5.1.4   smallmotor

spin

stop

5.2 CONSTANTS

5.2.1 BUTTON_PIN

5.2.2 CYCLE

5.2.3 DC_PIN

5.2.4 FRQ

5.2.5 GROVE_PIN

5.2.6 SERVO_PIN

5.3 FUNCTIONS

5.3.1 loop

5.3.2 pause

pause(time)

If a 'time' is passed, waits for the allotted 'time'. Otherwise, waits for 0.005 seconds.

5.3.3 until

until(condition)

Pauses the program until the passed 'condition' is satisfied.

5.3.4 stopall

stopall()

Halts all constructed 'large'/'smallmotors' (tracked in 'dc_motors' and 'servos').

5.4 VARIABLES

5.4.1 dc_motors

Tracks all constructed 'largemotors'.

5.4.2   servos

Tracks all constructed 'smallmotors'.