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/**
 * @file opcontrol.c
 * @brief Controls what happens in operator control
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 *
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 */

#include <string.h>
#include "../include/robot.h"

#define MOGO_HOLD 300

extern bool isAuto;

int digital(unsigned char joyNum,
            unsigned char channel,
            unsigned char b1,
            unsigned char b2) {
    return joystickGetDigital(joyNum, channel, b2) * -1 +
        joystickGetDigital(joyNum, channel, b1) * 1;
} /* digital */

void moveDrive();
void moveMogo();
void skillsMogo();
void moveArm();
void moveClaw();
void clawPID();

void autonLeft22();
void autonLeft22T();

void operatorControl() {
    printf("Starting Driver Control...\n");

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reset();
update();
isAuto = false;

clawSettings.target = claw.sensor->value;
armSettings.target = arm.sensor->value;

/*
if (armLimit[0].value) {
    armSettings.target = ARM_QUARTER;
    PID(&armSettings);
}
*/

print("Beginning driver control loop\n");

bool isSkills = strstr(autons[selectedAuton].name, "skills");

while (true) {
    if (joystickGetDigital(1, 7, JOY_LEFT) &&
        joystickGetDigital(2, 7, JOY_LEFT)) {
        exit(0);
    }

    moveDrive();
    moveMogo();

    if (isSkills) {
        // skillsMogo();
        if (joystickGetDigital(2, 7, JOY_DOWN)) {
            reset();
            sensorReset(drive[0].sensor);
            sensorReset(drive[1].sensor);
            sensorReset(arm.sensor);
            sensorReset(mogo.sensor);
            sensorReset(&gyro);
            autonLeft22();
            /*
            TaskHandle autoHandle = GO(autonLeft22T, NULL);
            while (joystickGetDigital(2, 7, JOY_DOWN))
                delay(20);
            while (!joystickGetDigital(2, 7, JOY_DOWN))
                delay(20);
            if (taskGetState(autoHandle)) {
                taskDelete(autoHandle);
                mutexGive(gyro._mutex);
            }
            */

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        mutexGive(gyro.child->_mutex);
        mutexGive(arm.sensor->_mutex);
        mutexGive(mogo.sensor->child->_mutex);

        mutexGive(claw._mutex);
        mutexGive(arm._mutex);
        mutexGive(arm.child->_mutex);
        mutexGive(mogo.child->_mutex);

        for (int i = 0; i < 2; i++) {
            mutexGive(drive[i]._mutex);

            mutexGive(drive[i].sensor->_mutex);
            mutexGive(armLimit[i]._mutex);
        }
    }
    /*
    }
    moveArm();
    clawPID();
    update();

    delay(20);
}
} /* operatorControl */

void moveDrive() {
    drive[0].power = deadBand(joystickGetAnalog(1, 3), 10) +
        127 * digital(1, 7, JOY_UP, JOY_DOWN) +
        127 * digital(1, 7, JOY_RIGHT, JOY_LEFT);
    drive[1].power = deadBand(joystickGetAnalog(1, 2), 10) +
        127 * digital(1, 8, JOY_UP, JOY_DOWN) +
        127 * digital(1, 8, JOY_LEFT, JOY_RIGHT);
} /* moveDrive */

void moveMogo() {
    int power = 127 * digital(1, 6, JOY_UP, JOY_DOWN) +
        127 * digital(2, 5, JOY_UP, JOY_DOWN);
    if ((mogo.power == 127 || mogo.power == 9) && !power)
        power = 9;
    mogo.power = power;
} /* moveMogo */

void skillsMogo() {
    if ((mogo.sensor->value <= MOGO_HOLD) &&

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        !joystickGetDigital(1, 5, JOY_DOWN) &&
        !joystickGetDigital(2, 7, JOY_UP)) {
            mogo.power = clipNum(mogo.power,
                                127,
                                (MOGO_HOLD - mogo.sensor->value) * .9 + 13);
        }
    } /* skillsMogo */

    void moveArm() {
        static unsigned long lastPress;

        if (digital(2, 6, JOY_DOWN, JOY_UP) || (millis() - lastPress < 90)) {
            arm.power = 127 * digital(2, 6, JOY_UP, JOY_DOWN);

            if (arm.power) {
                lastPress = millis();
            }

            if (armLimit[0].value) {
                sensorReset(arm.sensor);
                arm.power = clipNum(arm.power, 0, -127);
            } else if (armLimit[1].value) {
                arm.sensor->zero = arm.sensor->value - 1000;
                arm.power = clipNum(arm.power, 127, 0);
            }
            armSettings.target = arm.sensor->value;
        } else if (armLimit[0].value) {
            sensorReset(arm.sensor);
            armSettings.target = 0;
            arm.power = 0;
        } else if (armLimit[1].value) {
            arm.sensor->zero = arm.sensor->value - 1000;
            armSettings.target = 1000;
            arm.power = 0;
        } else {
            PID(&armSettings);
        }
    } /* moveArm */

    void moveClaw() {
        if (deadBand(joystickGetAnalog(2, 4), 10)) {
            claw.power = joystickGetAnalog(2, 4);
        } else {
            claw.power = 0;
        }
    } /* moveClaw */

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void clawPID() {
    static unsigned long lastPress;
    static int power;

    power = joystickGetAnalog(2, 4);

    if (power) {
        claw.power          = power;
        clawSettings.target = claw.sensor->value;
        lastPress           = millis();
    } else if (millis() - lastPress < 230) {
        clawSettings.target = claw.sensor->value + 25;
    } else {
        PID(&clawSettings);
    }
} /* clawPID */

void autonLeft22T(void *none) {
    autonLeft22();
    taskDelete(NULL);
}

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