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// sensors.cpp: Source file for hardware abstraction of sensors
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//
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#include "../include/main.h"

namespace sensors {

    quad_t left(1, 2, false);
    quad_t right(3, 4, false);
    pot_t lift(1, false);
    gyro_t gyro(2, 197);

    quad_t::quad_t(unsigned char port1, unsigned char port2, bool _inverted) {
        ports[0] = port1;
        ports[1] = port2;
        inverted = _inverted;
        zero = 0;
        request = 0;
    }
    void quad_t::init(void) {
        enc = encoderInit(quad_t::ports[0], quad_t::ports[1], quad_t::inverted);
    }
    long quad_t::value(void) {
        return (encoderGet(enc) - zero);
    }
    void quad_t::reset(void) {
        zero = encoderGet(enc);
        request = 0;
    }

    gyro_t::gyro_t(unsigned char _port, unsigned int _calibration) {
        port = _port;
        calibration = _calibration;
    }

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    zero        = 0;
    request     = 0;
}
void gyro_t::init(void) {
    gyro_t::gyro = gyroInit(port, calibration);
}
long gyro_t::value(void) {
    return (gyroGet(gyro_t::gyro) - zero);
}
void gyro_t::reset(void) {
    zero      = gyroGet(gyro_t::gyro);
    request = 0;
}

pot_t::pot_t(unsigned char _port, bool _inverted) {
    port      = _port;
    inverted = _inverted;
    zero      = 0;
    request   = 0;
}
void pot_t::init(void) {
    analogCalibrate(port);
}
long pot_t::value(void) {
    return ((analogReadCalibrated(port) - zero) * ((inverted) ? -1 : 1));
}
void pot_t::reset(void) {
    zero      = analogReadCalibrated(port);
    request = 0;
}

sonic_t::sonic_t(unsigned char port1, unsigned char port2) {
    ports[0] = port1;
    ports[1] = port2;
}
void sonic_t::init(void) {
    sonic = ultrasonicInit(sonic_t::ports[0], sonic_t::ports[1]);
}
long sonic_t::value(void) {
    return ultrasonicGet(sonic);
}

button_t::button_t(unsigned char _port, bool _inverted) {
    port      = _port;
    inverted = _inverted;
}

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void button_t::init(void) {
    pinMode(port, INPUT);
}
bool button_t::value(void) {
    return (digitalRead(port)) ? ((inverted) ? false : true)
                                : ((inverted) ? true : false);
}

void init(void) {
    left.init();
    right.init();
    lift.init();
    gyro.init();
}

void reset(void) {
    left.reset();
    right.reset();
}
} // namespace sensors

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