#include <FEHLCD.h>

#include <FEHIO.h>

#include <FEHUtility.h>

#include <FEHServo.h>

#include <FEHMotor.h>

void moveStraight(FEHMotor rightMotor, FEHMotor leftMotor, float time);

void start(AnalogInputPin cdsCell);

void leverSwitch(FEHServo arm);

void stopMotors(FEHMotor rightMotor, FEHMotor leftMotor);

void back(FEHMotor rightMotor, FEHMotor leftMotor, float time);

void left(FEHMotor rightMotor, FEHMotor leftMotor, float time);

void right(FEHMotor rightMotor, FEHMotor leftMotor, float time);

void read(AnalogInputPin cdsCell);

//declare motors, servos, microswitches, and cdsCell

//front motor in motor port 0

FEHMotor rightMotor(FEHMotor::Motor0, 7.2);

//back motor in motor port 1

FEHMotor leftMotor(FEHMotor::Motor1, 7.2);

//arm servo in servo port 0

FEHServo armServo(FEHServo::Servo0);

//cds cell in pin P1\_7

AnalogInputPin cdsCell(FEHIO::P1\_7);

//sets servo for wheel orientation

FEHServo botServo(FEHServo::Servo1);

int main(void)

{

LCD.Clear();

//check to see if light is on and start moving once detected

start(cdsCell);

//call function for initial movement

armServo.SetMin(1200);

armServo.SetMax(2200);

armServo.SetDegree(0);

float time = 0.5;

left(rightMotor,leftMotor, time);

time = 2.5;

moveStraight(rightMotor,leftMotor, time);

time = 0.1;

right(rightMotor,leftMotor, time);

time = 0.75;

moveStraight(rightMotor,leftMotor, time);

time = 0.75;

leverSwitch(armServo);

back(rightMotor,leftMotor, time);

time = .85;

left(rightMotor,leftMotor, time);

time = 2.4;

back(rightMotor,leftMotor, time);

Sleep(3.0);

}

//function to stop motors

void stopMotors(FEHMotor rightMotor, FEHMotor leftMotor){

rightMotor.Stop();

leftMotor.Stop();

}

//function to move to lever

void moveStraight(FEHMotor rightMotor, FEHMotor leftMotor, float time)

{

float rightMotorPercent=-70.0;

float leftMotorPercent=-70.0;

rightMotor.SetPercent(rightMotorPercent);

leftMotor.SetPercent(leftMotorPercent);

Sleep(time);

stopMotors(rightMotor, leftMotor);

}

//function to detect start light

void start(AnalogInputPin cdsCell)

{

//declare maximum value for light being off

float thresholdValue=0.5;

//keep checking to see if start light is on

bool check=true;

while(check)

{

//check to see if light is turned on

if(cdsCell.Value()<thresholdValue)

{

check=false;

}

}

}

void leverSwitch(FEHServo arm)

{

float leverAngle = 180.00;

float postLever = 2.00;

arm.SetDegree(leverAngle);

Sleep(postLever);

}

void back(FEHMotor rightMotor, FEHMotor leftMotor, float time)

{

float rightMotorPercent=70.0;

float leftMotorPercent=70.0;

rightMotor.SetPercent(rightMotorPercent);

leftMotor.SetPercent(leftMotorPercent);

Sleep(time);

stopMotors(rightMotor, leftMotor);

}

void left(FEHMotor rightMotor, FEHMotor leftMotor, float time){

float rightMotorPercent=-60.0;

float leftMotorPercent=0.0;

rightMotor.SetPercent(rightMotorPercent);

leftMotor.SetPercent(leftMotorPercent);

Sleep(time);

stopMotors(rightMotor, leftMotor);

}

void read(AnalogInputPin cdsCell){

LCD.SetFontColor(WHITE);

while(true){

LCD.Clear(BLACK);

LCD.WriteLine(cdsCell.Value());

Sleep(50);

}

}

void right(FEHMotor rightMotor, FEHMotor leftMotor, float time){

float rightMotorPercent=0.0;

float leftMotorPercent=-60.0;

rightMotor.SetPercent(rightMotorPercent);

leftMotor.SetPercent(leftMotorPercent);

Sleep(time);

stopMotors(rightMotor, leftMotor);

}