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/*************************************************
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* File Name           : Makeblockrobot3.ino
* Author              : David Cotterill-Drew
* Updated             : 10/01/2017
* Version             : V1.0
* Date                : 23/12/2016
* Description         : Program to be used with Mbot
BT.py to control robot via bluetooth.
* License             : Open Source
* Copyright (C) 2016 RoboTonics.
* https://r0b0t.wordpress.com/
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************************/
#include "MeOrion.h"
#include <Arduino.h>
#include <SoftwareSerial.h>
#include <Wire.h>
#include "MatrixGraphics.h"

MeDCMotor MotorL(M1);
MeDCMotor MotorR(M2);
MeDCMotor Holder(PORT_1);
MeDCMotor Hand(PORT_2);
MePort port(PORT_3);
MeRGBLed led(PORT_8);
MeInfraredReceiver infraredReceiverDecode(PORT_6);
MeUltrasonicSensor ultraSensor(PORT_7);
MeLEDMatrix ledMx(PORT_4);
MeBluetooth bluetooth(PORT_5);
int distance=0;
int HolderSpeed = 250;
int HandSpeed = 250;
int moveSpeed = 190;
boolean leftflag,rightflag;
int minSpeed = 55;
int factor = 23;
int range=0;
Servo myservo1;
int16_t servo1pin =  port.pin1();

void setup()
```

```
{

    myservo1.attach(servo1pin);
    myservo1.write(90);
    ledsoff();
    infraredReceiverDecode.begin();
    ledMx.setBrightness(6);
    ledMx.setColorIndex(1);
    ledMx.drawBitmap(0, 0, sizeof(Bitmap_Logo), Bit
map_Logo);
    bluetooth.begin(115200);
}

void loop()
{

 int inByte = bluetooth.read();
 if(inByte=='f')
  {
    TurnRight();
  }
 if(inByte=='s')
  {
    Stop();
  }
 if(inByte=='l')
  {
    Backward();
  }
 if(inByte=='b')
  {
    TurnLeft();
  }
 if(inByte=='r')
  {
    Forward();
  }
 if(inByte=='a')
  {
    Holder_down();
  }
 if(inByte=='c')
```

```
 {
   Holder_up();
 }
if(inByte=='e')
 {
   Hand_close();
 }
if(inByte=='d')
 {
   Hand_open();
 }
if(inByte=='1')
 {
  ChangeSpeed(factor*1+minSpeed);
 }
if(inByte=='2')
 {
  ChangeSpeed(factor*2+minSpeed);
 }
if(inByte=='3')
 {
  ChangeSpeed(factor*3+minSpeed);
 }
if(inByte=='4')
 {
  ChangeSpeed(factor*4+minSpeed);
 }
if(inByte=='5')
 {
  ChangeSpeed(factor*5+minSpeed);
 }
if(inByte=='6')
 {
  ChangeSpeed(factor*6+minSpeed);
 }
if(inByte=='7')
 {
  ChangeSpeed(factor*7+minSpeed);
 }
if(inByte=='8')
 {
  ChangeSpeed(factor*8+minSpeed);
```

```
 }
if(inByte=='9')
 {
  ChangeSpeed(factor*9+minSpeed);
 }
if(inByte=='m')
 {
  RangeMatOn();
 }
if(inByte=='n')
 {
  RangeMatOff();
 }
 if(inByte=='g')
 {
  ledsoff();
 }
 if(inByte=='h')
 {
  ledson();
 }
 if(inByte=='i')
 {
  servo0();
 }
 if(inByte=='j')
 {
  servo90();
 }
 if(inByte=='k')
 {
  servo180();
 }
  if(inByte=='x')
 {
  ledsblue();
 }
  if(inByte=='y')
 {
  ledsred();
 }
  if(inByte=='z')
```

```
  {
   ledsgreen();
  }
}

void Forward()
{
  MotorL.run(moveSpeed);
  MotorR.run(moveSpeed);
}
void Backward()
{
  MotorL.run(-moveSpeed);
  MotorR.run(-moveSpeed);
}
void TurnLeft()
{
  MotorL.run(-moveSpeed);
  MotorR.run(moveSpeed);
}
void TurnRight()
{
  MotorL.run(moveSpeed);
  MotorR.run(-moveSpeed);
}
void Stop()
{
  MotorL.run(0);
  MotorR.run(0);
  Holder.run(0);
  Hand.run(0);
}
void ChangeSpeed(int spd)
{
  moveSpeed = spd;
}
void Holder_up()
{
  Holder.run(HolderSpeed);
}
void Holder_down()
{
```

```
  Holder.run(-HolderSpeed);
}
void Hand_close()
{
  Hand.run(HandSpeed);
}
void Hand_open()
{
  Hand.run(-HandSpeed);
}
 void RangeMatOn()
 {
  range=ultraSensor.distanceCm();
  ledMx.showNum(range);
  bluetooth.write(range);
 }
 void RangeMatOff()
 {
  ledMx.drawBitmap(0, 0, sizeof(Bitmap_Logo), Bitma
p_Logo);
 }
void ledson()
{
  led.setColorAt(0, 255, 255, 255);
  led.setColorAt(1, 255, 255, 255);
  led.setColorAt(2, 255, 255, 255);
  led.setColorAt(3, 255, 255, 255);
  led.show();
}

void ledsoff()
{
  led.setColorAt(0, 0, 0, 0);
  led.setColorAt(1, 0, 0, 0);
  led.setColorAt(2, 0, 0, 0);
  led.setColorAt(3, 0, 0, 0);
  led.show();
}

void ledsblue()
{
  led.setColorAt(0, 0, 0, 255);
```

```
  led.setColorAt(1, 0, 0, 255);
  led.setColorAt(2, 0, 0, 255);
  led.setColorAt(3, 0, 0, 255);
  led.show();
}

void ledsred()
{
  led.setColorAt(0, 255, 0, 0);
  led.setColorAt(1, 255, 0, 0);
  led.setColorAt(2, 255, 0, 0);
  led.setColorAt(3, 255, 0, 0);
  led.show();
}

void ledsgreen()
{
  led.setColorAt(0, 0, 255, 0);
  led.setColorAt(1, 0, 255, 0);
  led.setColorAt(2, 0, 255, 0);
  led.setColorAt(3, 0, 255, 0);
  led.show();
}



void servo0()
{
  myservo1.write(0);
}

void servo90()
{
  myservo1.write(90);
}

void servo180()
{
  myservo1.write(180);
}
```