// Movement Functions

void movement(int movementFrm, int movementTo, unsigned int delayTime, unsigned int wheel)

{

int i = movementFrm;

while (i != movementTo) // Acceleralte slowly to stop Backlash

{

if (i > movementTo) { i--; }

else { i++; }

if (wheel == BOTH) { set\_motors(i, i); }

else if (wheel == RIGHT\_ONLY) { set\_motors(movementFrm, i); }

else if (wheel == LEFT\_ONLY) { set\_motors(i, movementFrm); }

delay\_ms(delayTime);

}

if (wheel == BOTH) { set\_motors(movementTo, movementTo); }

else if (wheel == RIGHT\_ONLY) { set\_motors(movementFrm, movementTo); }

else if (wheel == LEFT\_ONLY) { set\_motors(movementTo, movementFrm); }

}

void back\_off(int timeForBackOff, int turnValue, int reversalTime)

{

movement(0, negSpeed, 2, BOTH);

delay\_ms(reversalTime);

set\_motors(negSpeed, (negSpeed + turnValue));

delay\_ms(timeForBackOff);

movement(negSpeed, 0, 2, BOTH);

}

void initialize()

{

pololu\_3pi\_init(2000);

// PololuQTRSensorsRC(pins, 5, 4000, 255);

menu(PRI\_MENU);

print("Go!");

}

int main()

{

play\_from\_program\_space(startup);

initialize();

read\_line(sensors,IR\_EMITTERS\_ON); // Read the sensor values into the 'sensors' array.

unsigned int allSensors = (sensors[0] + sensors[1] + sensors[2] + sensors[3] + sensors[4]);

unsigned int leftSensors = (sensors[0] + sensors[1]);

unsigned int rightSensors = (sensors[3] + sensors[4]);

unsigned int turningValue = 0;

if (allSensors <= 0)

{

movement(0, speed, 10, BOTH);

red\_led(0);

green\_led(1);

}

while(1)

{

read\_line(sensors,IR\_EMITTERS\_ON); // Read the sensor values into the 'sensors' array.

allSensors = (sensors[0] + sensors[1] + sensors[2] + sensors[3] + sensors[4]);

leftSensors = (sensors[0] + sensors[1]);

rightSensors = (sensors[3] + sensors[4]);

turningValue = 0;

}

// If there is a void

if (allSensors > 0)

{

movement(speed, 0, 2, BOTH);

int a = (largest\_sensor\_value()); // Outside left sensor is 1, inside is 2

if (mute != TRUE)

{

play\_cliff\_alert();

}

red\_led(1);

green\_led(0);

clear();

print("Correct.");

lcd\_goto\_xy(0, 1);

// If the void's on the left

if (a < 2)

{

a = (a + 1);

int b = 0;

if (a == 1) { a = 2; } // Sets sensor 1 to have a value of 2 and vice versa

else if (a == 2) { a = 1; } // for easier manipulation

if (a == 1) { b = (sensors[1]); } // Increases turningValue if outside sensor has a value

turningValue = ((a \* 100) + b);

back\_off(80, turningValue, 100);

print\_long(turningValue);

set\_motors(0, 0);

}

// If the voids on the right

else if (a > 2)

{

a = (((a - 4) \* -1) + 1); // Outside right sensor is 1, inside is 2

int b = 0;

// if (a == 1) { b = (sensors[1] \* 5); } // Increases turningValue if inside sensor has a value

turningValue = ((50 \* a) + b);

back\_off(100, turningValue, 0);

print\_long(turningValue);

set\_motors(0, 0);

}