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Rainbowduino v3.0 Library examples: Cube1

Sets pixels on 3D plane (4x4x4 cube)

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#include <Rainbowduino.h>

void setup()

{

Rb.init(); //initialize Rainbowduino driver

}

void loop()

{

//Set (Z,X,Y):(0,0,0) pixel BLUE

Rb.setPixelZXY(0,0,0,0x0000FF); //uses 24bit RGB color Code

//Set (Z,X,Y):(0,3,0) pixel RED

Rb.setPixelZXY(0,3,0,0xFF,0,0); //uses R, G and B color bytes

//Set (Z,X,Y):(3,0,3) pixel GREEN

Rb.setPixelZXY(3,0,3,0x00FF00); //uses 24bit RGB color Code

}

Application Programming Interfaces

In the above example, we have used few of the below APIs

init()

First we need to initialize the driver using init()

Usage:

Rb.init();//initialize Rainbowduino driver. This should be placed inside setup()

To set a LED in the 3D Cube we use the below two APIs.

setPixelZXY(Z,X,Y,R,G,B)

To set a LED (Z,X,Y) we use setPixelZXY(Z,X,Y,R,G,B).

Usage:

Rb.setPixelZXY(unsigned char x, unsigned char y, unsigned char colorR, unsigned char colorG, unsigned char colorB); //This sets the pixel (z,x,y) by specifying each channel(color) with a 8bit number.

setPixelZXY(Z,X,Y,24bRGB)

Alternatively a LED (Z,X,Y) can be set by using setPixelZXY(Z,X,Y,24bRGB).

Usage:

Rb.setPixelZXY(unsigned char z, unsigned char x, unsigned char y, uint32\_t colorRGB /\*24-bit RGB Color\*/) //This sets the LED (z,x,y) by specifying a 24bit RGB color code

blankDisplay(void)

At times, it useful to blank all the LEDs. For this there is an API blankDisplay(void).

Usage:

Rb.blankDisplay();

//Clear the LEDs (make all LEDs blank)

setPixelZXY() Demo

To understand the (Z,X,Y) pixel addressing let us see another example. In this demo, the Layer 0 (i.e Z-0) is painted Green and Layer 3 is painted Blue.

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Rainbowduino v3.0 Library examples: Cube2

Sets pixels on 3D plane (4x4x4 cube)

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#include <Rainbowduino.h>

void setup()

{

Rb.init(); //initialize Rainbowduino driver

}

unsigned int z,x,y;

void loop()

{

for(x=0;x<4;x++)

{

for(y=0;y<4;y++)

{

//Paint layer 0 Green

Rb.setPixelZXY(0,x,y,0x00FF00); //uses 24bit RGB color Code

}

}

for(x=0;x<4;x++)

{

for(y=0;y<4;y++)

{

//Paint layer 3 Blue

Rb.setPixelZXY(3,x,y,0x0000FF); //uses 24bit RGB color Code

}

}

}

setPixelZXY() Random Colors Demo

In this demo, all LEDs are painted with some random color. After five seconds of delay, the whole cube is repainted with random colors.

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Rainbowduino v3.0 Library examples: Cube3

Sets pixels on 3D plane (4x4x4 cube)

\*/

#include <Rainbowduino.h>

void setup()

{

Rb.init(); //initialize Rainbowduino driver

}

unsigned int z,x,y;

void loop()

{

for(z=0;z<4;z++)

{

for(x=0;x<4;x++)

{

for(y=0;y<4;y++)

{

//Paint random colors

Rb.setPixelZXY(z,x,y,random(0xFF),random(0xFF),random(0xFF)); //uses R, G and B color bytes

}

}

}

delay(5000);

Rb.blankDisplay(); //Clear the LEDs (make all blank)

}

Night Lamp / Mood Lamp Demo

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Rainbowduino v3.0 Library examples : Mood Lamp

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#include <Rainbowduino.h>

// HSV to RGB array

unsigned char RED[64] = {255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,238,221,204,188,171,154,137,119,102,85,

68,51,34,17,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,17,35,52};

unsigned char GREEN[64] = {0,17,34,51,68,85,102,119,136,153,170,187,204,221,238,255,255,255,255,255,255,255,255,255,255,255,255,

255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,238,221,204,188,170,154,136,120,102,86,68,52,34,18,0,0,0,0};

unsigned char BLUE[64] = {0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,18,34,52,68,86,102,120,136,154,170,188,

204,221,238,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255};

void setup()

{

Rb.init(); //initialize Rainbowduino driver

}

unsigned int z,x,y;

void loop()

{

for(z=0; z<64 ;z++)

{

for(x=0;x<8;x++)

{

for(y=0;y<8;y++)

{

//Paint random colors

//Rb.setPixelZXY(z,x,y,RED[i],GREEN[i],BLUE[i]); //uses R, G and B color bytes

Rb.setPixelXY(x,y,RED[z],GREEN[z],BLUE[z]); //uses R, G and B color bytes

}

}

delay(100);

}

for(z=63; z > 0 ;z--)

{

for(x=0;x<8;x++)

{

for(y=0;y<8;y++)

{

//Paint random colors

//Rb.setPixelZXY(z,x,y,RED[i],GREEN[i],BLUE[i]); //uses R, G and B color bytes

Rb.setPixelXY(x,y,RED[z],GREEN[z],BLUE[z]); //uses R, G and B color bytes

}

}

delay(100);

}

}

Output

[[Image:|thumb|none|300px| .pde Demo]]

Plasma Cube

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Rainbowduino v3.0 Library examples : 3D Plasma

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#include <Rainbowduino.h>

// HSV to RGB array

unsigned char RED[64] = {255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,238,221,204,188,171,154,137,119,102,85,

68,51,34,17,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,17,35,52};

unsigned char GREEN[64] = {0,17,34,51,68,85,102,119,136,153,170,187,204,221,238,255,255,255,255,255,255,255,255,255,255,255,255,

255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,238,221,204,188,170,154,136,120,102,86,68,52,34,18,0,0,0,0};

unsigned char BLUE[64] = {0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,18,34,52,68,86,102,120,136,154,170,188,

204,221,238,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255};

unsigned char plasma[4][4][4];

void setup()

{

Rb.init(); //initialize Rainbowduino driver

for(unsigned char x = 0; x < 4; x++)

{

for(unsigned char y = 0; y < 4; y++)

{

for(unsigned char z = 0; z < 4; z++)

{

int color = int(32.0 + (32.0 \* sin(x / 1.0))+ 32.0 + (32.0 \* sin(y / 1.0)) + 32.0 + (32.0 \* sin(z / 1.0))) / 3;

plasma[x][y][z] = color;

}

}

}

}

unsigned char x,y,z,colorshift=0;

void loop()

{

for(x=0;x<4;x++)

{

for(y=0;y<4;y++)

{

for(z=0;z<4;z++)

{

Rb.setPixelZXY(z,x,y,(RED[plasma[x][y][z] + colorshift]) % 256,(GREEN[plasma[x][y][z] + colorshift]) % 256,(BLUE[plasma[x][y][z] + colorshift]) % 256); //uses R, G and B color bytes

}

}

}

delay(100);

colorshift= colorshift + 1;

}