#include <Adafruit\_NeoPixel.h>

#define FADE\_MAX 1000

#define NUM\_PIXEL 12

#define LED\_PIN   0

#define LS\_PIN 2

int Reds[9]={0,191,0,0,154,255,255,25,176};

int Greens[9]={0,62,0,245,205,193,20,25,23};

int Blues[9]={0,255,238,255,50,37,147,112,31};

int color1[NUM\_PIXEL]={3,1,7,4,7,6,8,2,4,6,8,7};

int color2[NUM\_PIXEL]={5,2,6,5,3,5,1,6,2,7,6,2};

int fSpeed[NUM\_PIXEL]={1,2,4,2,1,3,2,1,3,4,1,2};

int colorWheel=8;

int Fade[NUM\_PIXEL];

int times[12] ={750,675,600,550,475,450,375,350,320,225,75,0};

               //{0,75,225,320,350,375,450,475,550,600,675,750};

Adafruit\_NeoPixel  strip = Adafruit\_NeoPixel(NUM\_PIXEL, LED\_PIN, NEO\_GRB + NEO\_KHZ800);

void setup(){

  strip.begin();

  strip.show(); // Initialize all pixels to 'off'

  pinMode (LS\_PIN, INPUT);

}

void loop() {

  int sensorValue = analogRead(LS\_PIN);

  if (sensorValue >300 )

    fadeAll();

  else if(sensorValue >150)

        sweep();

  else

    runfade();

}

void moveColorWheel(){

  ++colorWheel;

  if (colorWheel>8)

    colorWheel=1;

}

void fadeAll(){

  int c1=colorWheel;

    moveColorWheel();

   int c2=colorWheel;

  for(int fade=0;fade<FADE\_MAX;++fade){

    uint32\_t c=getcolor(c1,c2,fade);

    for (int i=0;i<NUM\_PIXEL;++i){

      strip.setPixelColor(i,c);

    }

    strip.show();

    delay(1);

  }

}

int gethue(int RGB[],int c1,int c2,int f){

  return RGB[c1]+(RGB[c2]-RGB[c1])\*f/FADE\_MAX;

}

uint32\_t getcolor(int c1,int c2,int f){

  return strip.Color(gethue(Reds,c1,c2,f),gethue(Greens,c1,c2,f),gethue(Blues,c1,c2,f));

}

void sweep(){

  for(int i;i<NUM\_PIXEL;++i)

    Fade[i]=0;

  int c=colorWheel;

  moveColorWheel();

  for (int t=0;t<3000;++t){

    for(int i=0;i<NUM\_PIXEL;++i){

      if(t>times[i]&&Fade[i]<FADE\_MAX)

        Fade[i]+=2;

      else if(t>=1750-times[i]&&Fade[i]>0)

        Fade[i]-=2;

      strip.setPixelColor(i,getcolor(0,c,Fade[i]));

    }

    strip.show();

    delay(1);

  }

}

void moveFade(){

  for (int i=0;i<NUM\_PIXEL;++i){

    Fade[i]+=fSpeed[i];

    if (Fade[i]<0){

      Fade[i]=0;

      fSpeed[i]=abs(fSpeed[i]);

    }else if(Fade[i]>FADE\_MAX){

      Fade[i]=FADE\_MAX;

      fSpeed[i]=-abs(fSpeed[i]);

    }

  }

}

void runfade(){

  for(int t=0;t<1000;++t){

    for (int i=0;i<NUM\_PIXEL;++i){

      strip.setPixelColor(i,getcolor(color1[i],color2[i],Fade[i]));

    }

    moveFade();

    strip.show();

    delay(3);

  }

}