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// zmiany barwy/nasylenia/jasnosci obrazu
// koloryzacja obrazu
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unit Unit1;

interface

uses
  Windows, Messages, SysUtils, Variants, Classes, Graphics,
  Controls, Forms,
  Dialogs, StdCtrls, ComCtrls, ExtCtrls;

type
  TForm1 = class(TForm)
    Image1: TImage;
    Image2: TImage;
    Label1: TLabel;
    Label2: TLabel;
    Label3: TLabel;
    TrackBar1: TTrackBar;
    TrackBar2: TTrackBar;
    TrackBar3: TTrackBar;
    Edit1: TEdit;
    Edit2: TEdit;
    Edit3: TEdit;
    CheckBox1: TCheckBox;
    Button1: TButton;
    procedure TrackBar1Change(Sender: TObject);
    procedure TrackBar2Change(Sender: TObject);
    procedure TrackBar3Change(Sender: TObject);
    procedure Edit1Change(Sender: TObject);
    procedure Edit2Change(Sender: TObject);
    procedure Edit3Change(Sender: TObject);
    procedure CheckBox1Click(Sender: TObject);
    procedure Button1Click(Sender: TObject);
  private
    { Private declarations }
  public
    { Public declarations }
  end;

var
  Form1: TForm1;

implementation
uses rgbhsv;

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{ $R *.dfm }  
  
function IntToByte(v: integer): byte;  
begin  
    if v>255 then result:=255  
    else if v<0 then result:=0  
    else result:=v;  
end;  
  
procedure TForm1.TrackBar1Change(Sender: TObject);  
begin  
    Edit1.Text:=IntToStr(TrackBar1.Position);  
end;  
  
procedure TForm1.TrackBar2Change(Sender: TObject);  
begin  
    Edit2.Text:=IntToStr(TrackBar2.Position);  
end;  
  
procedure TForm1.TrackBar3Change(Sender: TObject);  
begin  
    Edit3.Text:=IntToStr(TrackBar3.Position);  
end;  
  
procedure TForm1.Edit1Change(Sender: TObject);  
begin  
    TrackBar1.Position:=StrToInt(Edit1.Text);  
end;  
  
procedure TForm1.Edit2Change(Sender: TObject);  
begin  
    TrackBar2.Position:=StrToInt(Edit2.Text);  
end;  
  
procedure TForm1.Edit3Change(Sender: TObject);  
begin  
    TrackBar3.Position:=StrToInt(Edit3.Text);  
end;  
  
procedure TForm1.CheckBox1Click(Sender: TObject);  
begin  
    if CheckBox1.Checked then  
        begin  
            TrackBar1.Min:=0;  
            TrackBar1.Max:=360;  
            TrackBar2.Min:=0;  
            TrackBar2.Max:=100;  
        end  
    else
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begin
    TrackBar1.Min:=-180;
    TrackBar1.Max:=180;
    TrackBar2.Min:=-100;
    TrackBar2.Max:=100;
end;
end;

procedure TForm1.Button1Click(Sender: TObject);
var
    i, j: integer;
    r, g, b: byte;
    r1, g1, b1: integer;
    h, s, v: single;
    col: TColor;
begin
    for j:=0 to Image1.Height-1 do
        begin
            for i:=0 to Image1.Width-1 do
                begin
                    col:=Image1.Picture.Bitmap.Canvas.Pixels[i,j];
                    r:=GetRValue(col);
                    g:=GetGValue(col);
                    b:=GetBValue(col);
                    //----- konwersja RGB na HSV -----
                    RGBTOHSV(r,g,b,h,s,v);
                    if CheckBox1.Checked then //koloryzuj
                        begin
                            h:=TrackBar1.Position/360;
                            s:=TrackBar2.Position/100;
                            v:=v+TrackBar3.Position;
                        end
                    else
                        begin
                            h:=h+TrackBar1.Position/360;
                            s:=s+TrackBar2.Position/100;
                            v:=v+TrackBar3.Position;
                        end;
                    if v>255 then v:=255 //ograniczenie V
                    else if v<0 then v:=0;
                    if s>1 then s:=1 //ograniczenie nasycenia
                    else if s<0 then s:=0;
                    if h>1 then h:=h-1 //ograniczenie barwy
                    else if h<0 then h:=h+1;
                    HSVToRGB(h,s,v,r1,g1,b1);
                    r:=IntToByte(r1);
                    g:=IntToByte(g1);

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        b:=IntToByte(b1);  
        col:= r + (g shl 8) + (b shl 16);  
        Image2.Canvas.Pixels[i,j]:=col;  
    end;  
end;  
end;  
end.
```