Assignment 15

MainActivity.java

package com.example.animation;

import androidx.appcompat.app.AppCompatActivity;

import android.graphics.Bitmap;

import android.graphics.Color;

import android.graphics.drawable.BitmapDrawable;

import android.graphics.drawable.Drawable;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {

Button btnInvertImage, btnGrayImage;

ImageView imageView;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

imageView = findViewById(R.id.imageView);

btnInvertImage = findViewById(R.id.invertImageBtn);

btnGrayImage = findViewById(R.id.grayImageBtn);

btnInvertImage.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Drawable drawable;

Bitmap bitmap;

drawable = getResources().getDrawable(R.drawable.animal4);

bitmap = ((BitmapDrawable)drawable).getBitmap();

Bitmap newImg = invert(bitmap);

imageView.setImageBitmap(newImg);

}

});

btnGrayImage.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Drawable drawable;

Bitmap bitmap;

drawable = getResources().getDrawable(R.drawable.animal4);

bitmap = ((BitmapDrawable)drawable).getBitmap();

Bitmap newImg = gray(bitmap);

imageView.setImageBitmap(newImg);

}

});

}

private Bitmap gray(Bitmap bitmap) {

Bitmap bmp = Bitmap.createBitmap(bitmap.getWidth(), bitmap.getHeight(), bitmap.getConfig());

int alpha, red, green, blue;

for(int i = 0; i < bitmap.getWidth(); i++){

for (int j = 0; j < bitmap.getHeight(); j++){

int pixel = bitmap.getPixel(i, j);

alpha = Color.alpha(pixel);

red = Color.red(pixel);

green = Color.green(pixel);

blue = Color.blue(pixel);

red = (red + green + blue) / 3;

green = red;

blue = red;

bmp.setPixel(i, j, Color.argb(alpha, red, green, blue));

}

}

return bmp;

}

private Bitmap invert(Bitmap bitmap) {

Bitmap bmp = Bitmap.createBitmap(bitmap.getWidth(), bitmap.getHeight(), bitmap.getConfig());

int alpha, red, green, blue;

for(int i = 0; i < bitmap.getWidth(); i++){

for (int j = 0; j < bitmap.getHeight(); j++){

int pixel = bitmap.getPixel(i, j);

alpha = Color.alpha(pixel);

red = Color.red(pixel);

green = Color.green(pixel);

blue = Color.blue(pixel);

red = 255 - Color.red(pixel);

green = 255 - Color.green(pixel);

blue = 255 - Color.blue(pixel);

bmp.setPixel(i, j, Color.argb(alpha, red, green, blue));

}

}

return bmp;

}

}