Kpi-best

Міністерство освіти та науки України

Національний технічний університет України “Київський політехнічний інститут”

Факультет інформатики та обчислювальної техніки

Кафедра обчислювальної техніки

Лабораторна робота № 5

з курсу "Графічне та географічне моделювання"

Виконав: студент 4 курсу

групи ІП-32

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**Завдання:**

Відтворити рух довільно обраного об’єкту за заданою траєкторією по варіанту.  
13. По верхній частині квадрата за годинниковою стрілкою

**Код програми**

**package** acid.a2softin.org.lab1\_model;  
  
**import** android.content.Context;  
**import** android.graphics.Canvas;  
**import** android.graphics.Color;  
**import** android.graphics.Paint;  
**import** android.graphics.Point;  
**import** android.os.Bundle;  
**import** android.support.v7.app.ActionBar;  
**import** android.support.v7.app.AppCompatActivity;  
**import** android.view.Display;  
**import** android.view.View;  
**import** android.view.ViewGroup;  
**import** android.view.animation.AnimationUtils;  
**import** android.widget.RelativeLayout;  
  
**public class** MainActivity **extends** AppCompatActivity  
{  
  
 @Override  
 **protected void** onCreate(Bundle savedInstanceState)  
 {  
 **super**.onCreate(savedInstanceState);  
 setContentView(R.layout.***activity\_main***);  
 RelativeLayout relativeLayout = (RelativeLayout) findViewById(R.id.***relative\_layout***);  
 */\*ActionBar.LayoutParams layoutParams = new ActionBar.LayoutParams(ViewGroup.LayoutParams.WRAP\_CONTENT, ViewGroup.LayoutParams.WRAP\_CONTENT);  
 final View sceneView = new SceneDraw(getBaseContext(), (short) 9, (short) 50);  
 sceneView.setLayoutParams(layoutParams);  
 relativeLayout.addView(sceneView);\*/* findViewById(R.id.***fab***).setOnClickListener(**new** View.OnClickListener()  
 {  
 @Override  
 **public void** onClick(View view)  
 {  
 findViewById(R.id.***imageView***).startAnimation(AnimationUtils.*loadAnimation*(getBaseContext(), R.anim.***rotate***));  
 }  
 });  
 }  
  
 **private class** SceneDraw **extends** View  
 {  
 Paint **paint** = **new** Paint();  
 **private short offset** = 0;  
 **private short countOfFigures** = 1;  
 **private** FigureSetting[] **rects**;  
 **private int startX**;  
 **private int startY**;  
 **private int sizeFigure** = 40;  
  
  
 **public** SceneDraw(Context context, **short** countOfFigures, **short** offset)  
 {  
 **super**(context);  
 **paint**.setColor(Color.***BLACK***);  
 **paint**.setStrokeWidth(5);  
 **this**.**offset** = offset;  
 **this**.**countOfFigures** = countOfFigures;  
 Display mdisp = getWindowManager().getDefaultDisplay();  
 **startX** = mdisp.getWidth() / 2 - 50;  
 **startY** = mdisp.getHeight() / 2 + 200;  
 **rects** = getFigureSettings(countOfFigures, offset);  
 }  
  
 **private** FigureSetting[] getFigureSettings(**short** count, **short** offset)  
 {  
 FigureSetting[] figureSettings = **new** FigureSetting[count];  
 figureSettings[0] = **new** FigureSetting(**startX**, **startY**, **sizeFigure**);  
 **if** (count == 1) **return** figureSettings;  
 **int** lastLeftX = **startX**, lastRightX = **startX**;  
 **int** lastLeftY = **startY**, lastRightY = **startY**;  
 **for** (**int** i = 1; i < figureSettings.**length**; i++) {  
 **if** (i % 2 == 0) {  
 figureSettings[i] = **new** FigureSetting(lastRightX + **sizeFigure** + offset, lastRightY - **sizeFigure** - offset, **sizeFigure**);  
 lastRightX = figureSettings[i].**centerX**;  
 lastRightY = figureSettings[i].**centerY**;  
 } **else** {  
 figureSettings[i] = **new** FigureSetting(lastLeftX - **sizeFigure** - offset, lastLeftY - **sizeFigure** - offset, **sizeFigure**);  
 lastLeftX = figureSettings[i].**centerX**;  
 lastLeftY = figureSettings[i].**centerY**;  
 }  
 }  
 **return** figureSettings;  
 }  
  
 @Override  
 **protected void** onDraw(Canvas canvas)  
 {  
 canvas.drawRect(**startX** - 100, **startY** - 100, **startX** + 100, **startY** + 100, **paint**);  
  *for (FigureSetting figureSetting : rects) {  
 drawBaseFigure(canvas, figureSetting.centerX, figureSetting.centerY, figureSetting.size);  
 }* }  
  
 **private void** drawBaseFigure(Canvas canvas, **int** centerX, **int** centerY, **int** sizeFigure)  
 {  
 Point point1\_draw = **new** Point(centerX + sizeFigure, centerY + sizeFigure);  
 Point point2\_draw = **new** Point(centerX - sizeFigure, centerY + sizeFigure);  
 Point point3\_draw = **new** Point(centerX, centerY);  
 canvas.drawLine(point1\_draw.**x**, point1\_draw.**y**, point2\_draw.**x**, point2\_draw.**y**, **paint**);  
 canvas.drawLine(point2\_draw.**x**, point2\_draw.**y**, point3\_draw.**x**, point3\_draw.**y**, **paint**);  
 canvas.drawLine(point3\_draw.**x**, point3\_draw.**y**, point1\_draw.**x**, point1\_draw.**y**, **paint**);  
  
 Point point12\_draw = **new** Point(centerX + sizeFigure, centerY - sizeFigure);  
 Point point22\_draw = **new** Point(centerX - sizeFigure, centerY - sizeFigure);  
 Point point32\_draw = **new** Point(centerX, centerY);  
 canvas.drawLine(point12\_draw.**x**, point12\_draw.**y**, point22\_draw.**x**, point22\_draw.**y**, **paint**);  
 canvas.drawLine(point22\_draw.**x**, point22\_draw.**y**, point32\_draw.**x**, point32\_draw.**y**, **paint**);  
 canvas.drawLine(point32\_draw.**x**, point32\_draw.**y**, point12\_draw.**x**, point12\_draw.**y**, **paint**);  
 }  
 **private class** FigureSetting  
 {  
 **public int centerX**;  
 **public int centerY**;  
 **public int size**;  
  
 **public** FigureSetting(**int** centerX, **int** centerY, **int** size)  
 {  
 **this**.**centerX** = centerX;  
 **this**.**centerY** = centerY;  
 **this**.**size** = size;  
 }  
 }  
 }  
}

*<?***xml version="1.0" encoding="utf-8"***?>*<**set xmlns:android="http://schemas.android.com/apk/res/android"**>  
 <**scale  
 android:duration="1000"  
 android:fromXScale="100%"  
 android:fromYScale="100%"  
 android:pivotX="50%"  
 android:pivotY="50%"  
 android:repeatCount="infinite"  
 android:repeatMode="reverse"  
 android:toXScale="130%"  
 android:toYScale="130%"**/>  
</**set**>

*<?***xml version="1.0" encoding="utf-8"***?>*<**set xmlns:android="http://schemas.android.com/apk/res/android"**>  
 <**rotate  
 android:fromDegrees="0"  
 android:pivotX="50%"  
 android:pivotY="10%"  
 android:duration="3000"  
 android:repeatCount="infinite"  
 android:repeatMode="restart"  
 android:toDegrees="360"**/>  
</**set**>

*<?***xml version="1.0" encoding="utf-8"***?>*<**RelativeLayout  
 android:id="@+id/relative\_layout"  
 xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:paddingBottom="@dimen/activity\_vertical\_margin"  
 android:paddingLeft="@dimen/activity\_horizontal\_margin"  
 android:paddingRight="@dimen/activity\_horizontal\_margin"  
 android:paddingTop="@dimen/activity\_vertical\_margin"  
 tools:context="acid.a2softin.org.lab1\_model.MainActivity"**>  
  
 <**TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Лабораторная №5 \n Вариант 13"  
 android:textSize="19sp"  
 android:gravity="center"  
 android:layout\_alignParentTop="true"  
 android:layout\_centerHorizontal="true"**/>  
  
 <**android.support.design.widget.FloatingActionButton  
 android:id="@+id/fab"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentBottom="true"  
 android:layout\_alignParentEnd="true"  
 android:clickable="true"  
 android:src="@drawable/ic\_autorenew\_black\_24dp"**/>  
  
 <**ImageView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:id="@+id/imageView"  
 android:src="@drawable/rect"  
 android:layout\_centerVertical="true"  
 android:layout\_centerHorizontal="true"**/>  
</**RelativeLayout**>

apply **plugin**: **'com.android.application'**android {  
 compileSdkVersion 24  
 buildToolsVersion **"24.0.1"** defaultConfig {  
 applicationId **"acid.a2softin.org.lab5\_model"** minSdkVersion 18  
 targetSdkVersion 24  
 versionCode 1  
 versionName **"1.0"** }  
 buildTypes {  
 release {  
 minifyEnabled **false** proguardFiles getDefaultProguardFile(**'proguard-android.txt'**), **'proguard-rules.pro'** }  
 }  
}  
  
dependencies {  
 compile fileTree(**dir**: **'libs'**, **include**: [**'\*.jar'**])  
 testCompile **'junit:junit:4.12'** compile **'com.android.support:appcompat-v7:24.2.1'** compile **'com.android.support:design:24.2.1'**}

**Результат виконання:**

