

EX NO 3: APPLICATION DEVELOPMENT USING BASIC GRAPHICAL PRIMITIVES

AIM: To develop an application using graphical primitives like shapes, gifs, rotations and animations.

DESCRIPTION:

a. Draw shapes such as Line, Circle, Rectangle and Arc

Components used:

Android Canvas - OnDraw() method which is implemented by the canvas is used for drawing shapes like line, circle, rectangle and an arc. The coordinate system of the canvas is used for specifying the coordinates and the size of the shape to be drawn.

Paint() - Using Paint class the color, style, stroke width/fill type can be set for the shapes.

b. Perform animation using any Image (Gif, Jpeg)

c. Perform transformation – Rotation, Zooming

Inside android resource directory/res create a anim folder inside which the animation files are placed.

Zoom - The scale of X and Y axis of the image are changed continuously for a particular duration to view the zoom effect.

Clockwise Rotation - The image is rotated from 360 degree to 0 degree.

Fading Image - fromAlpha 1 and toAlpha 0 is set for fading, and fromAlpha0 and toAlpha 1 is set for the image to appear.

Blink - Fading is done continuously to view the blink effect.

Slide - fromXScale="1.0" and fromYScale="1.0", is changed to toXScale="1.0" and toYScale="0.0"

d. Draw a car and animate the car.

Drawing the car - The android canvas is used to draw a car using rectangle, two circles and an arc.

Painting the car - The drawn car is painted using the Paint() class with different colors and fill type.

Moving Left and Right - The coordinates of the X axis is changed continuously to view the movement.

XML CODE:

Activity_main:

```
<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout

    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button

        android:id="@+id/draw"
        android:layout_width="wrap_content"
        android:layout_height="33dp"
        android:text="Draw" />

    <Button

        android:id="@+id/draw2"
        android:layout_width="wrap_content"
        android:layout_height="33dp"
        android:layout_centerHorizontal="true"
        android:text="Draw2" />

    <Button

        android:id="@+id/animate"
        android:layout_width="wrap_content"
        android:layout_height="34dp"
```

```
    android:layout_below="@+id/car"
    android:layout_centerHorizontal="true"
    android:text="Animate" />
```

<Button

```
    android:id="@+id/car"
    android:layout_width="wrap_content"
    android:layout_height="36dp"
    android:layout_below="@+id/draw"
    android:layout_centerHorizontal="true"
    android:text="Car" />
```

<Button

```
    android:id="@+id/forward"
    android:layout_width="wrap_content"
    android:layout_height="36dp"
    android:layout_below="@+id/animate"
    android:layout_centerHorizontal="true"
    android:text="Forward" />
```

<Button

```
    android:id="@+id/backward"
    android:layout_width="wrap_content"
    android:layout_height="39dp"
    android:layout_below="@+id/forward"
    android:layout_alignParentStart="true"
    android:layout_alignParentEnd="true"
    android:layout_marginStart="158dp"
```

```
    android:layout_marginTop="7dp"
    android:layout_marginEnd="154dp"
    android:text="Backward" />
```

<Button

```
    android:id="@+id/gif"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/forward"
    android:layout_alignParentStart="true"
    android:layout_alignParentEnd="true"
    android:layout_marginStart="164dp"
    android:layout_marginTop="47dp"
    android:layout_marginEnd="159dp"
    android:text="GIF" />
```

<ImageView

```
    android:id="@+id/image_car"
    android:layout_width="200dp"
    android:layout_height="150dp"
    android:layout_below="@id/backward"
    android:layout_alignParentStart="true"
    android:layout_alignParentEnd="true"
    android:layout_marginStart="104dp"
    android:layout_marginTop="51dp"
    android:layout_marginEnd="107dp"
    android:background="@drawable/car"
    android:visibility="invisible" />
```

```
<com.example.myapplication.DrawView
    android:id="@+id/drawview"
    android:layout_width="372dp"
    android:layout_height="252dp"
    android:layout_below="@id/image_car"
    android:layout_alignParentStart="true"
    android:layout_alignParentEnd="true"
    android:layout_marginStart="17dp"
    android:layout_marginTop="1dp"
    android:layout_marginEnd="22dp"
    android:orientation="horizontal"
    android:visibility="invisible" />
```

</RelativeLayout>

Anim:

```
<animation-list xmlns:android="http://schemas.android.com/apk/res/android" >
    <item android:drawable="@drawable/p1" android:duration="50"/>
    <item android:drawable="@drawable/p2" android:duration="50"/>
    <item android:drawable="@drawable/p3" android:duration="50"/>
    <item android:drawable="@drawable/p4" android:duration="50"/>
    <item android:drawable="@drawable/p5" android:duration="50"/>
    <item android:drawable="@drawable/p6" android:duration="50"/>
    <item android:drawable="@drawable/p7" android:duration="50"/>
    <item android:drawable="@drawable/p8" android:duration="50"/>
</animation-list>
```

JAVA CODE:

MainActivity.java:

```
package com.example.myapplication;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Context;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.drawable.AnimationDrawable;
import android.os.Bundle;
import android.view.View;
import android.view.animation.AnimationUtils;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {

    DrawView drawview;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        Button draw = (Button) findViewById(R.id.draw);
        Button draw2 = (Button) findViewById(R.id.draw2);
```

```
Button animate = (Button) findViewById(R.id.animate);
Button car = (Button) findViewById(R.id.car);
Button forward = (Button) findViewById(R.id.forward);
Button backward = (Button) findViewById(R.id.backward);
Button gif = (Button) findViewById(R.id.gif);

final ImageView image_car = (ImageView) findViewById(R.id.image_car);
```

```
draw.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        drawview.setVisibility(View.INVISIBLE);
        drawview.activateFlag();
        drawview = (DrawView) findViewById(R.id.drawview);
        drawview.setVisibility(View.VISIBLE);
    }
});
```

```
draw2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
//        //drawview.setVisibility(View.INVISIBLE);
        drawview.deactivateFlag();
        drawview = (DrawView) findViewById(R.id.drawview);
        drawview.setVisibility(View.VISIBLE);
    }
});
```

```
});
```

```
car.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
```

```
    public void onClick(View v) {
```

```
        image_car.setImageResource(R.drawable.car);
```

```
        image_car.setVisibility(View.VISIBLE);
```

```
    }
```

```
});
```

```
animate.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
```

```
    public void onClick(View v) {
```

```
        image_car.startAnimation(AnimationUtils.loadAnimation(getApplicationContext(),  
R.anim.zoom_in));
```

```
    }
```

```
});
```

```
forward.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
```

```
    public void onClick(View v) {
```

```
        drawview.animate().translationXBy(-300f).setDuration(500);
```

```
    }
```

```
});
```

```
backward.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
```

```
    public void onClick(View v) {
```

```
        drawview.animate().translationXBy(300f).setDuration(500);
```



```

    }
});

gif.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        image_car.setImageResource(R.drawable.anim);
        image_car.setVisibility(View.VISIBLE);
        AnimationDrawable idleAnimation = (AnimationDrawable)image_car.getDrawable();
        idleAnimation.start();
    }
});

}

}

```

DrawView.java

```

package com.example.myapplication;

import android.content.Context;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.RectF;
import android.os.Build;
import android.util.AttributeSet;
import android.view.View;
import android.widget.Toast;

```

```
import androidx.annotation.RequiresApi;
```

```
import java.util.jar.Attributes;
```

```
public class DrawView extends View {
```

```
    Paint p1 = new Paint();
```

```
    Paint p2 = new Paint();
```

```
    Paint p3 = new Paint();
```

```
    Paint p4 = new Paint();
```

```
    static boolean Flag=false;
```

```
    private void init() {
```

```
        p1.setColor(Color.BLUE);
```

```
        p2.setColor(Color.BLACK);
```

```
        p3.setColor(Color.YELLOW);
```

```
        p4.setColor(Color.GREEN);
```

```
    }
```

```
    public DrawView(Context context) {
```

```
        super(context);
```

```
        init();
```

```
    }
```

```
    public static void activateFlag(){
```

```
        Flag =true;
```

```
}
```

```
public static void deactivateFlag(){  
    Flag =false;  
}
```

```
public DrawView(Context context, AttributeSet attrs) {  
    super(context, attrs);  
    init();  
}
```

```
public DrawView(Context context, AttributeSet attrs, int defStyle) {  
    super(context, attrs, defStyle);  
    init();  
}
```

```
@RequiresApi(api = Build.VERSION_CODES.LOLLIPOP)
```

```
@Override
```

```
public void onDraw(Canvas canvas) {  
    if(Flag){  
        //canvas.drawLine(0, 0, 300, 300, p1);  
        canvas.drawCircle(450, 400, 50, p2);  
        canvas.drawCircle(600, 400, 50, p2);  
        canvas.drawRect(350, 200, 700, 350, p3);  
        //canvas.drawArc(219F, 269F, 169F, 69F, 0F, 69F, false, p4);  
        Toast toast=Toast.makeText(getContext(),"true",Toast.LENGTH_LONG);  
        toast.show();  
    }  
}
```

```
else{  
    canvas.drawLine(0, 0, 300, 300, p1);  
    canvas.drawCircle(500, 500, 50, p2);  
    //canvas.drawCircle(600, 400, 50, p2);  
    canvas.drawRect(350, 200, 700, 350, p3);  
    Paint p = new Paint();  
    RectF rectF = new RectF(10, 10, 510, 510);  
    p.setColor(Color.BLACK);  
    canvas.drawArc (rectF, 90, 45, true, p);  
    Toast toast=Toast.makeText(getContext(),"false",Toast.LENGTH_LONG);  
    toast.show();  
}  
  
}  
  
}
```

OUTPUT SCREENSHOTS:

CAR ANIMATION, ROTATIONS, GIF:

