Graphical Primitives

Aim

Develop an android application to draw the circle, ellipse, rectangle and some text using Android Graphical primitives.

Procedure:

Step 1: Setting Up Your Environment

1. Install Android Studio: Download and install Android Studio from the official Android Developer website if you haven't already.

2. Create a New Project:

o Launch Android Studio and start a new project by selecting "New Project".

o Choose "Empty Activity". o Name your project (e.g., "ShapeDrawerApp"), set "Kotlin" as the programming language, and choose a minimum API level (e.g., API 21 to support a wide range of devices).

Step 2: Creating a Custom View

1. Create a Kotlin Class for the Custom View: o In the java (or kotlin) directory of your project, right-click and choose New > Kotlin Class/File. Name it CustomView or a similar descriptive name.

o Extend this class from View and implement the constructor that accepts a Context and an AttributeSet? as parameters.

o Import necessary packages.

Step 3: Implementing the onDraw Method

1. Override the onDraw Method: Inside your CustomView class, override the onDraw method. This method provides a Canvas object that you can use to draw your shapes and text.

o Initialize a Paint object to specify the styles and colors for drawing.

o Use the Canvas methods like drawCircle, drawOval, drawRect, and drawText to draw your shapes and text.

Step 4: Updating Your Layout

1. Modify activity_main.xml: o Open app > res > layout > activity_main.xml.

o Replace the default layout with a reference to your custom view.

2. Replace your.package.name with your actual package name.

Step 5: Running Your Application 1. Select a Device: Choose an Android device or an emulator to run your app. 2. Run the App: Click the "Run" button in Android Studio to build and run your application. 3. View the Output: Your app should display a screen with a circle, rectangle, ellipse, and the text "Hello, World!" drawn on it.

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Exp3"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
</RelativeLayout>
```

MainActivity.kt

```kotlin
package com.example.exp_3

import android.graphics.Canvas
import android.graphics.Color
import android.graphics.Paint
import android.graphics.RectF
import android.os.Bundle
import android.view.View
import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)

        val drawView = object : View(this) {
            private val paint = Paint()

            override fun onDraw(canvas: Canvas) {
                super.onDraw(canvas)

                paint.color = Color.BLUE
                paint.strokeWidth = 5f
                paint.style = Paint.Style.FILL

                canvas.drawCircle(200f, 200f, 100f, paint)

                paint.color = Color.RED
                val rect = RectF(350f, 150f, 550f, 250f)
```

```
        canvas.drawOval(rect, paint)


        paint.color = Color.GREEN
        canvas.drawRect(100f, 300f, 400f, 500f, paint)


        paint.color = Color.BLACK
        paint.textSize = 50f
        canvas.drawText("Hello, Android!", 100f, 600f, paint)
      }
    }


    setContentView(drawView)
  }
}
```
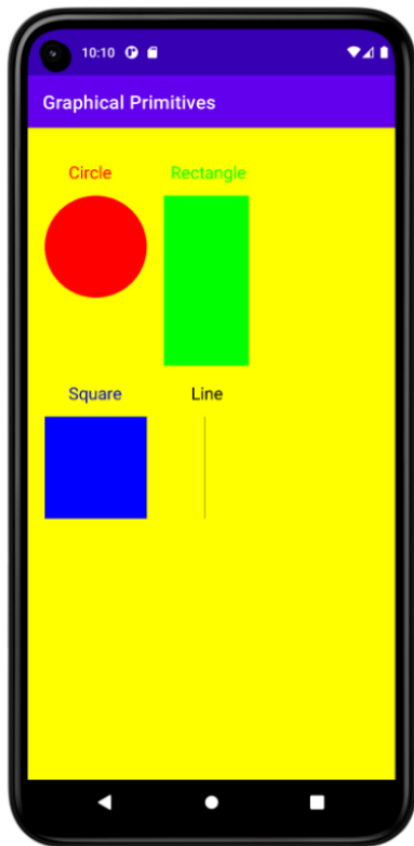
Output

Result:

The app draws a circle, ellipse, rectangle, and text on the screen. You can customize the design and add more features if needed and it is verified successfully