THADOMAL SHAHANI TSEC ENGINEERING COLLEGE

# EXPERIMENT NO. 1

Aim :- Write an Android application (WAA) to draw Basic graphical 2D primitives.

Theory :-

Android Studio is the official IDE for Android app development, offering a comprehensive toolkit for designing, coding and testing applications. Launched by Google in 2013, it has become an essential platform for developers of all skill levels.

Key Components and Features of Android Studio are Intuitive User Interface, Gradle Build System, Code Editor, XML Layout Editor, Emulator, Debugger and Profiler, and Version Control Integration.

Gradle Build System : Manages dependencies and builds in Android projects, flexibility, efficient incremental builds.
Code Editor : Core environment provided for coding and debugging, having features like code completion, syntax highlighting, debugging tools.
XML Layout Editor : Visual editor for designing Android layouts.
Emulator : It simulates android devices for testing and development purpose, test different screen sizes and simulate device features.

Android Studio projects are organized into layers, each serving a distinct purpose. The layers include the Presentation Layer, Domain Layer, and Data Layer. The Presentation layer handles UI components and user interactions, the Domain Layer contains business logic, and the Data Layer manages data persistence.

Steps

i) For initiating a new project, open Android Studio and select "Start a new Android Studio project".
ii) Choose the project template and set project's name and location. Select the form factors and target devices for your app.
iii) Choose the activity template that suits your project, such as "Empty Activity" for a clean slate. Customize additional project details and click "Finish" to create the project.

iv) For writing program, running the app and displaying the output, open the activity file (eg. MainActivity.java) to write program logic for creating a 2D figure.
v) Utilize the XML layout file (eg. activity_main.xml) to design the user interface with appropriate views. Run project by clicking the "Run" button. Observe the output in the emulatorcron desired connected device.

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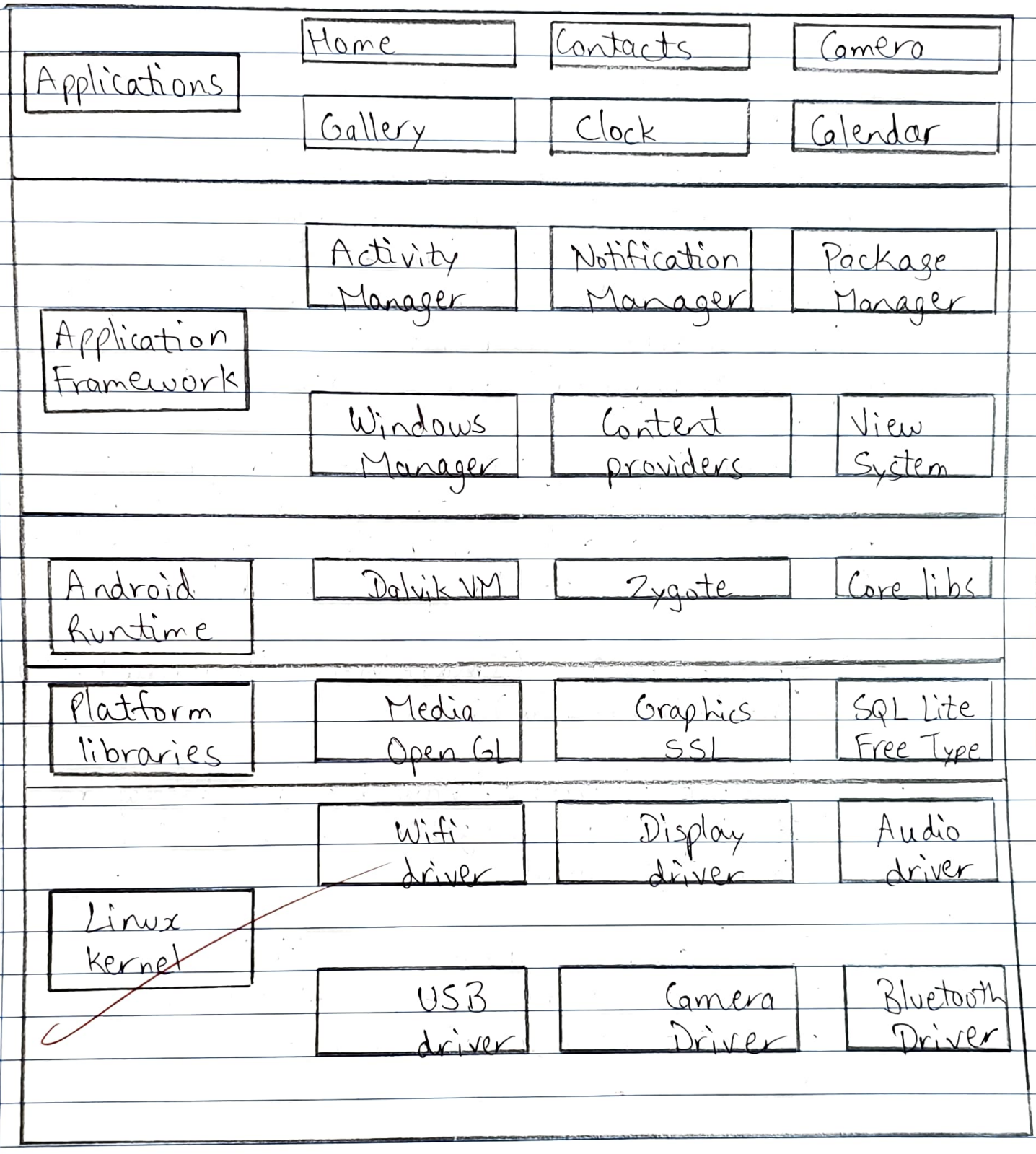
# Android Architecture :



The code explanation for 2D primitive is as follows :-

```
import android.app.Activity;
import android.graphics.Bitmap;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.drawable.BitmapDrawable;
import android.os.Bundle;
import android.widget.ImageView;
```

The above imports are utilized to provide methods for drawing on a bitmap or view, represent colors, styling and controlling appearances. OS.Bundle is used to pass data between activities.

→ `ImageView i = (ImageView) findViewById(R.id.imageView);`

→ `i.setBackgroundDrawable(new BitmapDrawable(bg));`
It finds the ImageView with id 'imageView' from the layout.

→ `Canvas canvas = new Canvas(bg);`
It creates a new canvas object associated with the bitmap. allowing drawing operations on it.

→ Paint paint = new Paint();
paint.setColor(Color.BLUE);
paint.setTextSize(50);
Paint Object creation. We have created a Paint object with blue color and a text size of 50.

→ Drawing Shape (Rectangle, Circle, Square, Line):
For circle, we use:
canvas.drawText("Circle", 120, 150, paint);
canvas.drawCircle(200, 350, 150, paint);
Similarly, we use drawLine, drawRect methods to draw similar 2D primitives.

Conclusion :-

The developed application uses built-in functions of Android Studio to display basic graphical 2D primitives.