THADOMAL SHAHANI TSEC ENGINEERING COLLEGE

EXPERIMENT NO. 2

Aim :- Write an Android application to draw the basic graphical 3D primitives.

Theory :-

The android graphics API is a powerful set of tools and classes provided by the Android SDK for creating and manipulating the graphical elements in Android applications. It enables developers to render visual content, draw shapes, handle images, and perform various other graphical operations.

Program Description :

The program for the above experiment uses the Android SDK to create a graphical representation of various 3D figures using android Graphics API.

Structure : The program is structured as an Android activity, extending the AppCompactActivity class. In the onCreate method, the layout is set using the setContentView to associate the activity with the XML layout defined in the activity_mail.xml. A bitmap is created with a specified width and height, serving as a canvas for drawing 3D primitives.

An ImageView is then used to display the created bitmap as its background. The Canvas object is employed to draw shapes, lines and text, utilizing Paint objects to define styles and colors.

Built-in-Functions :

1) Bitmap.createBitmap :

Used to create a Bitmap object with a specified width, height and color configuration of RGB_565.

2) ImageView.setBackgroundDrawable :

Sets the background of the ImageView to the Bitmap created, making it the Canvas for subsequent drawings.

3) Canvas Constructor :

Initializes a canvas object, associating it with the previously created Bitmap for drawing operations.

4) Paint.setColor :

Sets the color of the paint used for the drawing.

In this case, two paint objects (paintBlack and paintBlue) are created, one for yellow text and another for green lines.

5) Paint.setTextSize :

Defines the text size for the paint. It sets the size of the text that will actually be drawn on the canvas.

6) Canvas.drawText :

Defines the text size for the paint it sets the size of the text that will be drawn, defined by Paint.setTextSize and is used to label the shapes like Cube, Cone or Prism.

7) Canvas.drawLine :

Draws a line on the canvas, defining its start and end points as parameters. Used extensively to outline the edges of geometric shapes.

8) Canvas.drawArc :

Draws an arc on the canvas. In this case, it is used to represent the base of the cone that has been drawn.

9) RectF constructor:

Initializes a RectF (rectangle) object, specifying co-ordinates for drawing arcs. Used in the conjunction with Canvas.drawArc to create the semi-circle for the cone base.

10) Canvas.drawLines:

Draws a series of lines on the canvas. Utilized to represent the edges of the prism.
The program follows the standard structure of an Android application with activities and layouts. It employs various built-in functions from the Android Graphics API to create and draw 3D shapes. The program showcases the versatility of Android's graphics capatibility of creating visually engaging applications.

Conclusion :-

Thus, we implemented the above experiment successfully by understanding the use of different built-in functions, present in Android Studio, meant for designing.