04 - Basic Graphical Primitives

Ex. No. : 4 **Roll No. :**

Date : **Reg. No. :**

Aim

Develop an application that draws basic graphical primitives on the screen.

Objective

This application uses View class which is used to draw graphical items on to the android app screen.

This exercise draws some graphic primitives using Paint, View, Canvas and a method onDraw().

The android.graphics.Canvas can be used to draw graphics in android. It provides methods to draw oval, rectangle, picture, text, line etc.

The android.graphics.Paint class is used with canvas to draw objects. It holds the information of color and style.

Procedure

Create a new private class named SampleCanvas.

```
private class SampleCanvas {

}
```

Extend the View class to the SampleCanvas class we just created.

```
private class SampleCanvas extends View {

}
```

Go ahead and edit the Java File.

Now you can see an error message.

So Press [ALT] + [ENTER] on your keyboard.

Now you will get a pop-up saying create constructor matching super.

Go ahead and select it.

Now another window will open up with different constructors.

Select the one with just a context as parameter:

```
View(context:Context)
```

```
public SampleCanvas(Context context) {
     super(context);
}
```

Now a constructor is automatically generated for you.

Now place the cursor below the constructor definition and press [ALT] + [Insert] and select Override Methods from the popup Menu.

Find the onDraw() override method from the list onDraw(canvas:Canvas):void.

Click OK.

```
@Override
protected void onDraw(Canvas canvas) {
    super.onDraw(canvas);
}
```

Delete the super.onDraw(canvas).

```
@Override
protected void onDraw(Canvas canvas) {

}
```

Now we need to create a Paint object.

So above the constructor definition add the following code:

```
Paint paint = new Paint();
```

Now we will start drawing inside the onDraw method.

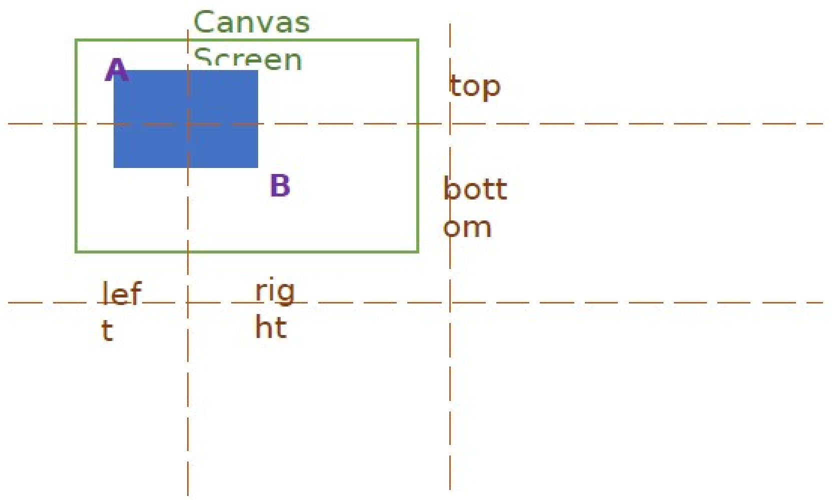
Set the paint color:

```
paint.setColor(Color.YELLOW);
canvas.drawPaint(paint);
paint.setTextSize(50);
```

Draw a rectangle : To draw a rectangle we use the function:

```
canvas.drawRect(float left, float top, float right, float bottom,
Paint paint);
```

The arguments can be depicted as shown below:



The co-ordinates of:

A = (left, top)
B = (right, bottom)
paint is the paint object we created.

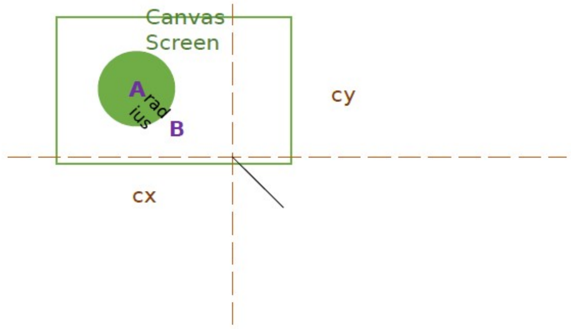
Lets draw a rectangle now:

```
paint.setColor(Color.GREEN);
canvas.drawText("Rectangle", 420, 150, paint);
canvas.drawRect(400, 200, 650, 700, paint);
```

Drawing a circle:

```
canvas.drawCircle(float cx, float cy, float radius, Paint paint);
```

Depiction:



The co-ordinates of A = (cx,cy).
And the length AB = radius.

Let's draw a circle with fill color green center at (200,350) and radius 150.

```
paint.setColor(Color.RED);
canvas.drawText("Circle", 120, 150, paint);
canvas.drawCircle(200, 350, 150, paint);
```

Drawing a line:

```
canvas.drawLine(float startX, float startY, float stopX, float stopY, Paint paint);
```

Depiction

Draws a line with initial point at (startX, startY) and end point at (stopX, stopY)

Let’s draw a line from point (520,850) to (520,1150):

```
paint.setColor(Color.BLACK);
canvas.drawText("Line", 480, 800, paint);
canvas.drawLine(520, 850, 520, 1150, paint);
```

There are more graphics that we can draw into the canvas let’s check them out:

```
paint.setColor(Color.BLACK);
paint.setStrokeWidth(3);
canvas.drawPoint(200, 200, paint);
```

Displaying the drawings.

Define a SampleCanvas object:

```
SampleCanvas drawView = new SampleCanvas(this);

protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    SampleCanvas drawView = new SampleCanvas(this);
    setContentView(R.layout.activity_main);
}
```

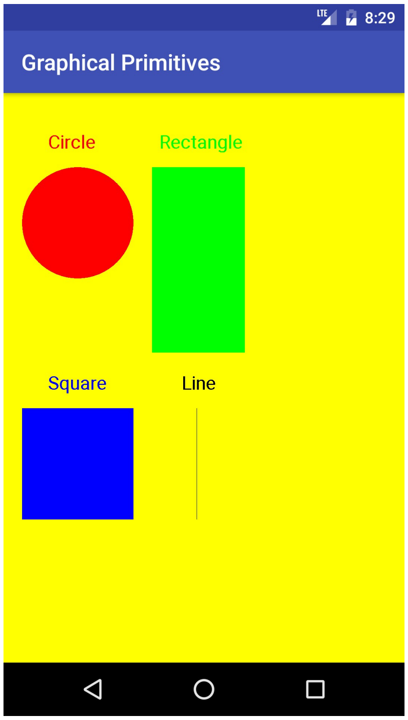
Now set the content view to drawView.

```
setContentView(drawView);

protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    SampleCanvas drawView = new SampleCanvas(this);
    setContentView(drawView);
}
```

Now Run the application.

Output


8:29
Graphical Primitives
Circle
Rectangle
Square
Line