

Practical-1

Aim: Configuring Android Development Environment.

Step 1 - Setup Java Development Kit JDK

You can download the latest version of Java JDK from Oracle's Java site: [Java SE Downloads](#). You will find instructions for installing JDK in downloaded files, follow the given instructions to install and configure the setup. Finally set `PATH` and `JAVA_HOME` environment variables to refer to the directory that contains **java** and **javac**, typically `java_install_dir/bin` and `java_install_dir` respectively.

If you are running Windows and installed the JDK in `C:\jdk1.8.0_111`, you would have to put the following line in your `C:\autoexec.bat` file.

```
set PATH=C:\jdk1.8.0_111\bin;%PATH%
set JAVA_HOME=C:\jdk1.8.0_111
```

Alternatively, you could also right-click on *My Computer*, select *Properties*, then *Advanced*, then *Environment Variables*. Then, you would update the `PATH` value and press the OK button.

On Linux, if the SDK is installed in `/usr/local/jdk1.8.0_111` and you use the C shell, you would put the following code into your `.cshrc` file.

```
setenv PATH /usr/local/jdk1.8.0_111/bin:$PATH
setenv JAVA_HOME /usr/local/jdk1.8.0_111
```

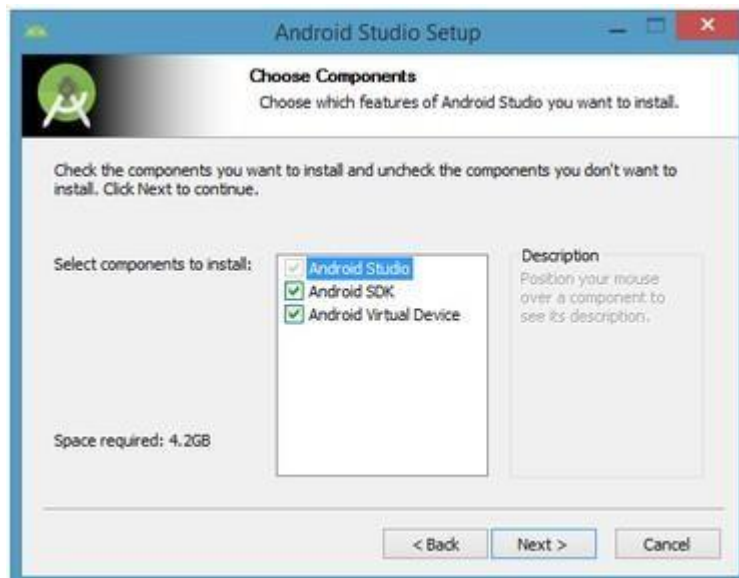
Alternatively, if you use an Integrated Development Environment IDE Eclipse, then it will know automatically where you have installed your Java.

Step 2 - Setup Android Studio IDE

Check the system requirements for Android Studio/SDK @ <https://developer.android.com/sdk/index.html#Requirements>, e.g., Windows 7/8/10, recommended 8GB of RAM and 4GB of disk space.

Goto "Android Developer" @ <https://developer.android.com/index.html> ⇒ Select "Get Android Studio" ⇒ "Download Android Studio 3.x.x for Windows (927 MB)", e.g., `android-studio-ide-181.xxxxxxx-windows.exe`.

Run the downloaded installer ⇒ In "Choose Components", select "Android Studio" and "Android Virtual Device". ⇒ Follow the on-screen instruction and accept the defaults to complete the installation. You need about 3-4GB of free disk space! Take note (and take photo) on the installation locations of "Android Studio" (by default @ `C:\Program Files\Android\Android Studio`) and the "Android SDK" (by default @ `C:\Users\username\AppData\Local\Android\Sdk`).





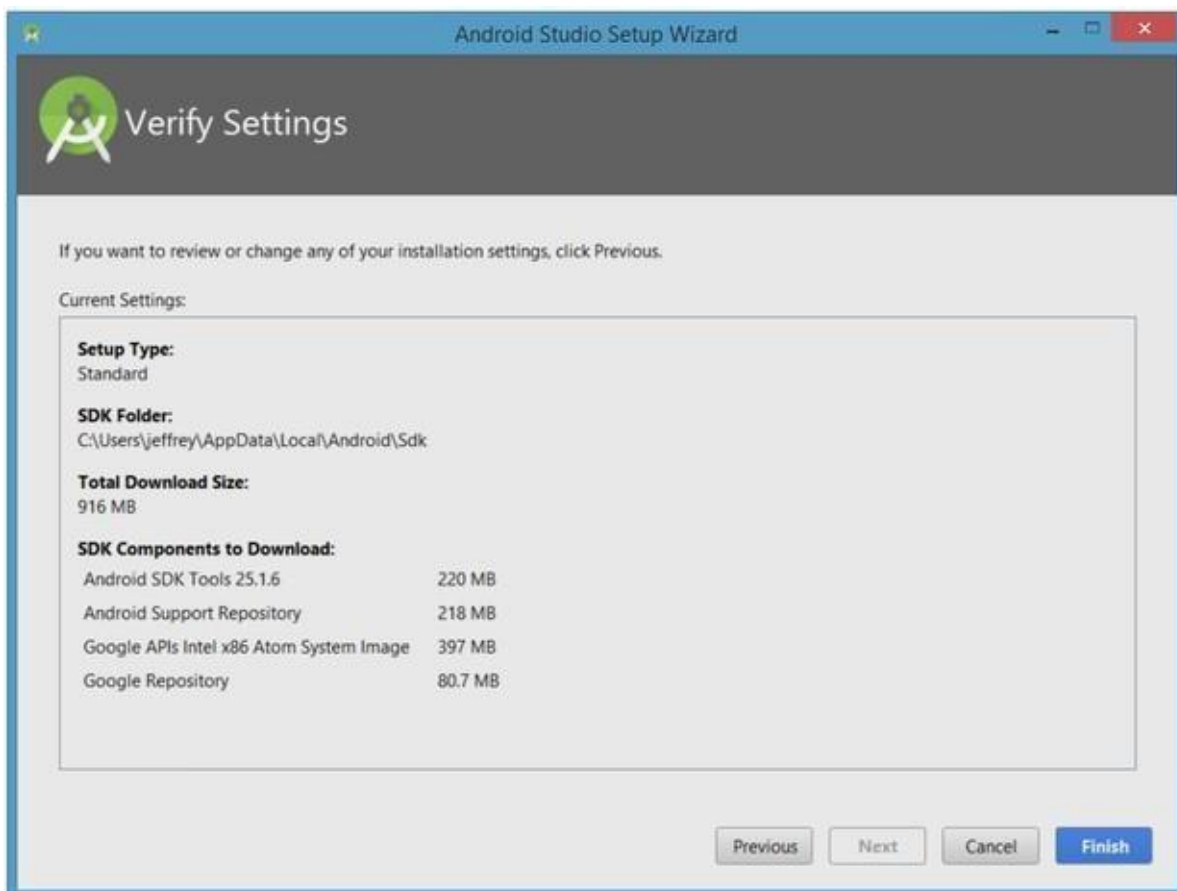
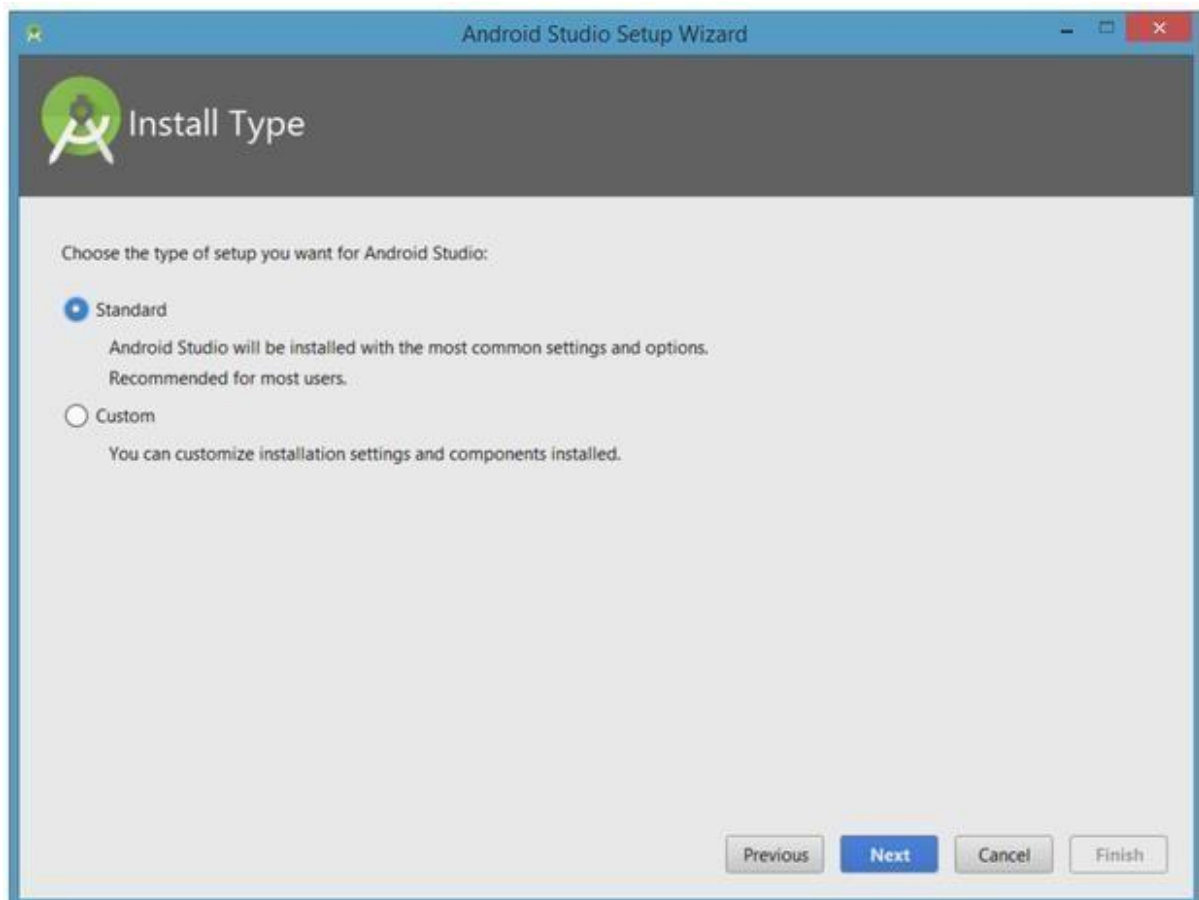
Step 3 – Installing Android SDK

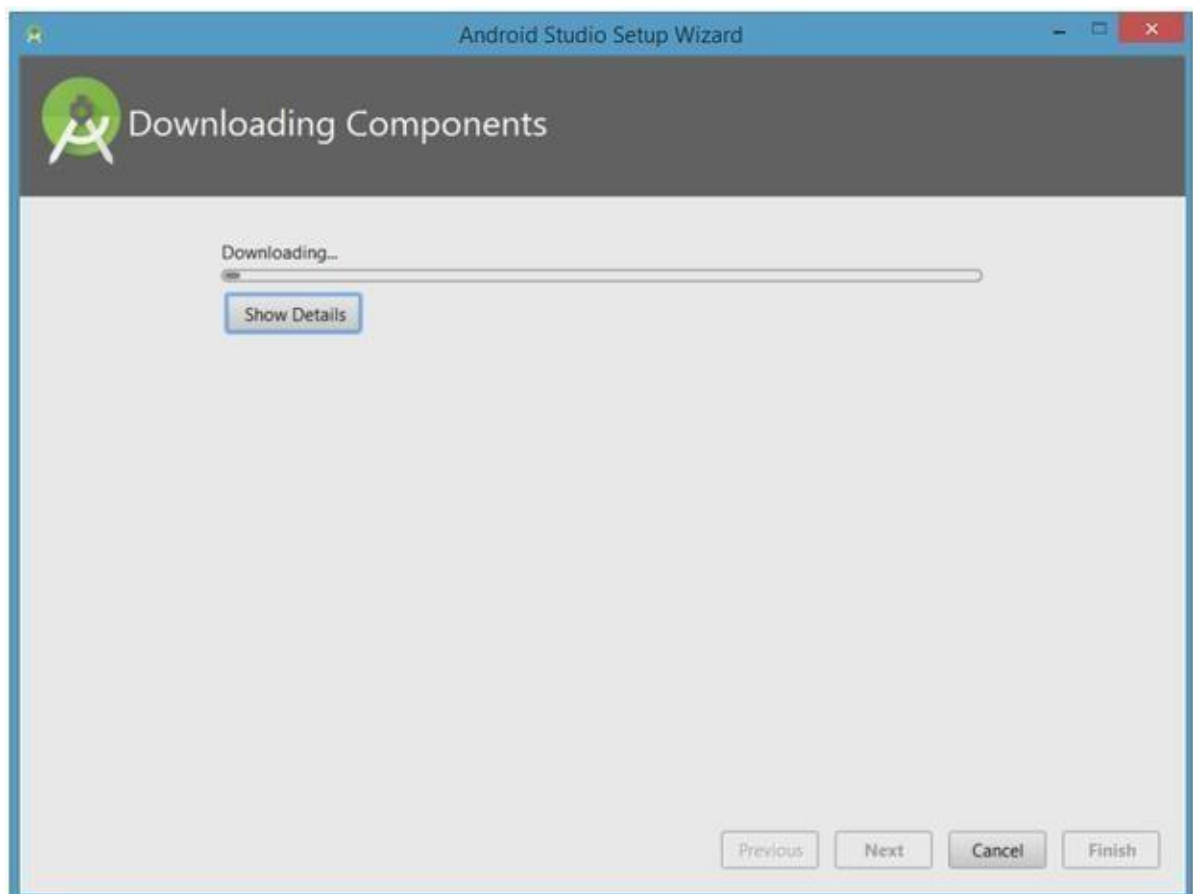
Launch Android Studio ⇒ It will run the "setup" wizard for the first launch ⇒ do not import previous settings ⇒ In "Installation Type", choose "Standard" ⇒ Check the SDK folder, by default @ c:\Users\username\AppData\Local\Android\Sdk ⇒ Finish.

This step will download another 1GB of SDK package and take times to complete.

Note: In Windows, "AppData" is a hidden directory. You need to choose "View" ⇒ Check "Show Hidden Items" to see this directory.







(Optional) You can check the SDK packages installed by selecting "Configure" ⇒ "SDK Manager":

Under "SDK Platforms":

Android API 27 Under "SDK

Tools":

Android SDK Build Tools

Android Emulator 27.x.x

Android SDK Platform-Tools 27.x.x

Android SDK Tools 26.x.x

Intel x86 Emulator Accelerator (HAXM installer)

Android Support Repository

Google Repository

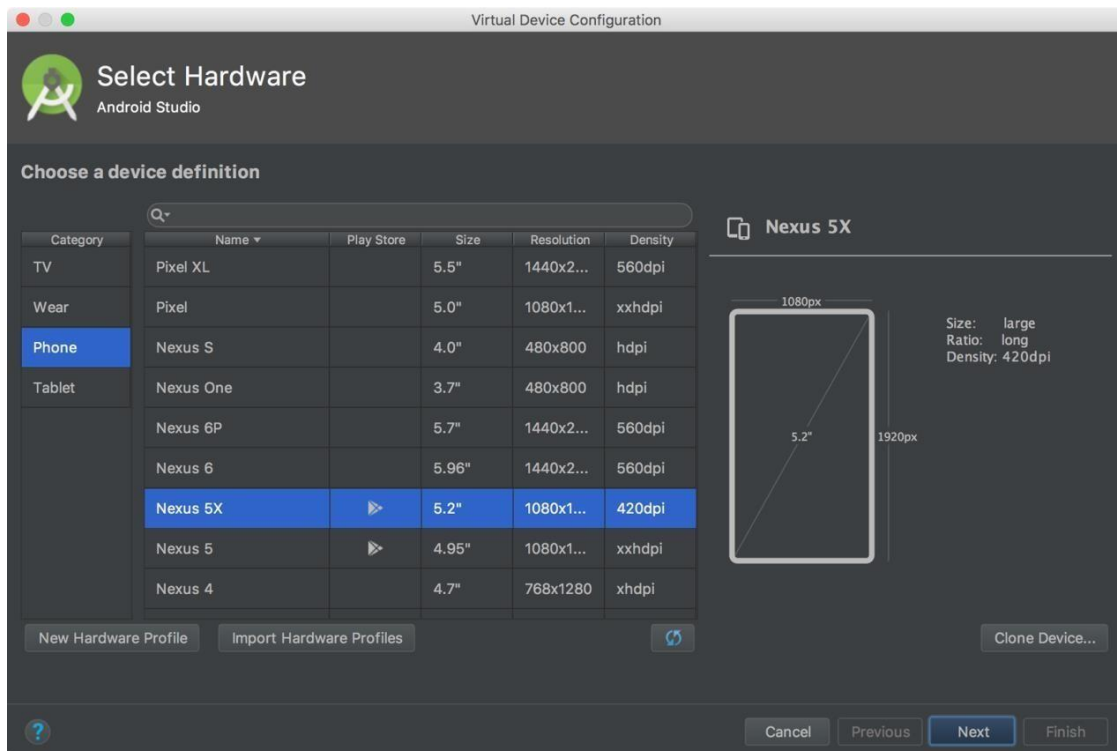
Step 4 - Create Android Virtual Device

To run your Android app under the emulator, you need to first create an Android Virtual Devices (AVD). An AVD models a specific device (e.g., your Phone or Tablet). You can create AVDs to emulate different android devices (e.g., phone/tablet, android version, screen size, and etc.).

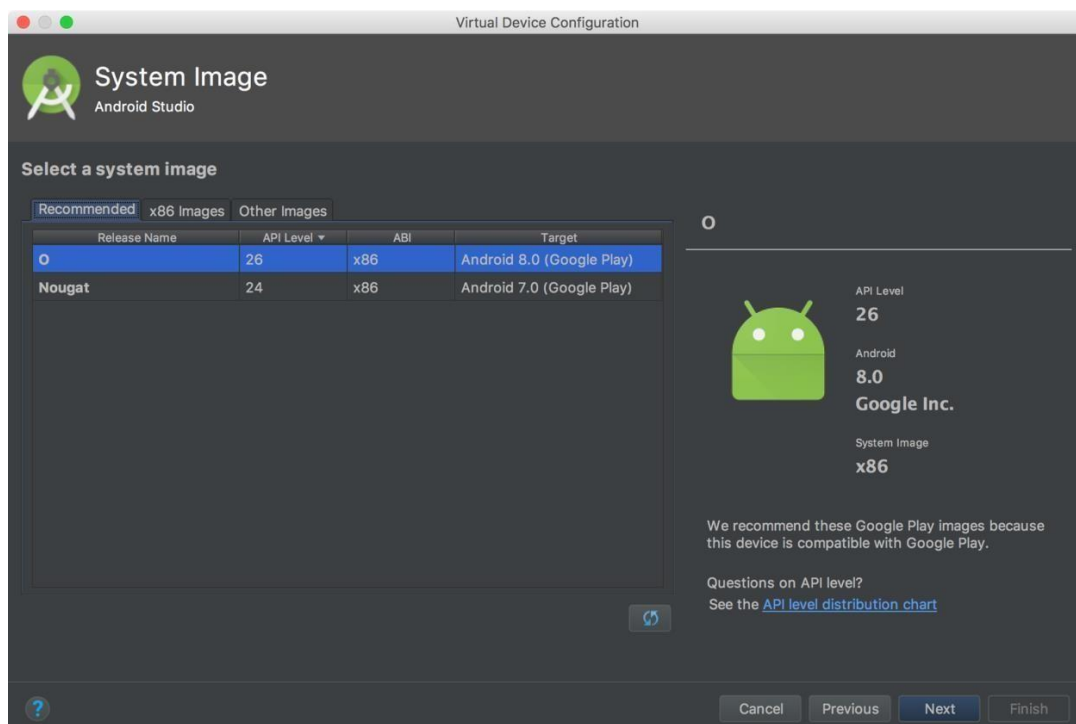
1. In Android studio, select "Tools" ⇒ Android ⇒ AVD Manager. See "CommonErrors" below if you cannot find "AVD manager".



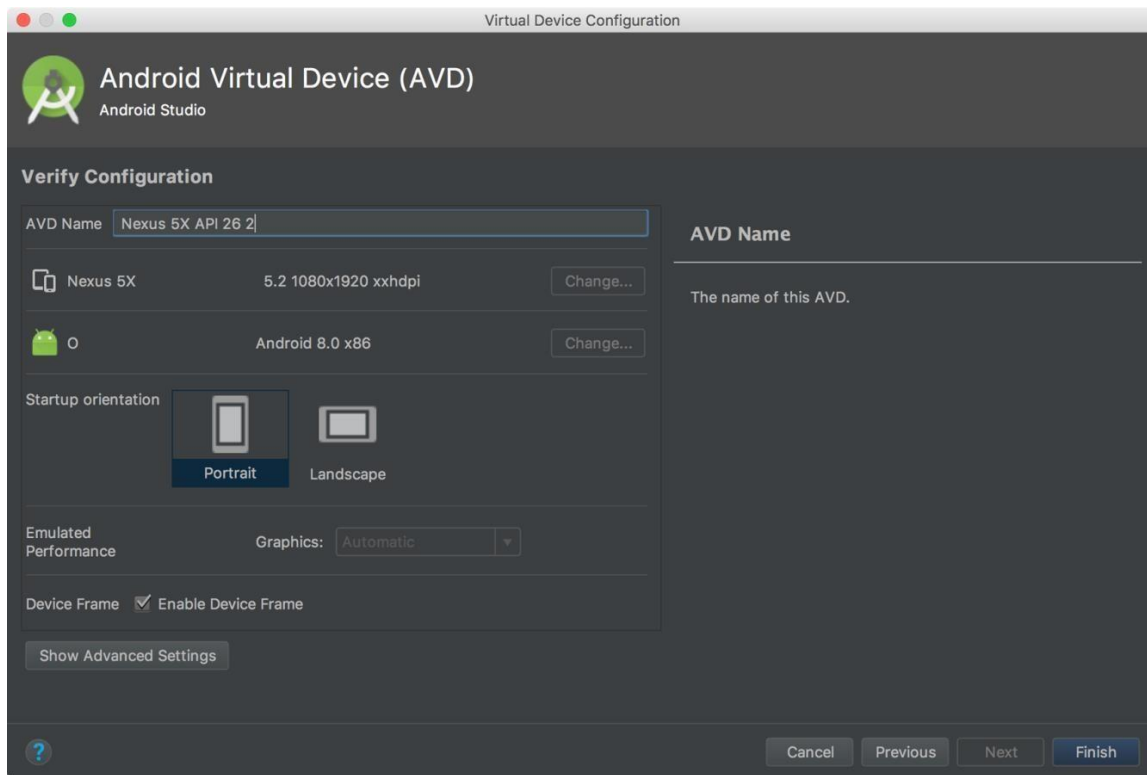
2. Click "Create Virtual Device".



- In "Select Hardware: Choose a device definition" dialog ⇒ In "Category", choose "Phone" ⇒ In "Name", choose "2.7 QVGA" (the smallest device available - you can try a bigger device later) ⇒ Next.
- In "System Image: Recommended" ⇒ Select the version with the highest API level ⇒ Click "Download" ⇒ Next.



5. In "AVD Name", enter "2.7 QVGA API 27" (default) ⇒ Finish.



6. If you see "VT-x is disabled in BIOS": Check your BIOS setting to ensure that "Virtualization Technology" is enabled. Shutdown and re-boot your PC to enter the BIOS setup. This is machine dependent. Google "Your-PC-brand-and-model enter BIOS setup". For example, for my HP computer ⇒ Boot ⇒ "ESC" to enter BIOS setup ⇒ Advanced ⇒ System Options ⇒ Check "Virtualization Technology (VTx)" ⇒ Save ⇒ Exit.

Practical-2

Aim: Develop an android application that uses GUI components, Font and Colors.

➤ Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
```

```
<TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Name:Ayush"
    android:textColor="#ff0006"
    android:textSize="30dp"
    app:layout_constraintBottom_toTopOf="@+id/textView2"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.497"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.77" />
```

```
<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="EnrollNo:12102040503001"
    android:textColor="#00ffce"
    android:textSize="30dp"
    app:layout_constraintBottom_toTopOf="@+id/textView"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.49"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.808" />
```

```
<TextView
    android:id="@+id/textView"
```

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Department:Computer Engineering"
android:textColor="#e0af1f"
android:textSize="25dp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.499" />
```

<Button

```
android:id="@+id/btn2"
android:layout_width="0dp"
android:layout_height="0dp"
android:layout_marginStart="16dp"
android:layout_marginEnd="16dp"
android:layout_marginBottom="95dp"
android:text="Color"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btn1" />
```

<Button

```
android:id="@+id/btn1"
android:layout_width="0dp"
android:layout_height="0dp"
android:layout_marginStart="9dp"
android:layout_marginTop="469dp"
android:layout_marginEnd="9dp"
android:layout_marginBottom="57dp"
android:text="Size"
app:layout_constraintBottom_toTopOf="@+id/btn2"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
```

</androidx.constraintlayout.widget.ConstraintLayout>

➤ MainActivity.java

```
package com.example.be_pract1;

import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;

import android.os.Bundle;
import android.widget.*;
import android.view.*;

public class MainActivity extends AppCompatActivity {

    Button s_btn1,c_btn2;
    TextView nam,rollno,dept;
    int font = 24;

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

        s_btn1 =(Button)findViewById(R.id.btn1);
        c_btn2 = (Button) findViewById(R.id.btn2);
        nam = (TextView) findViewById(R.id.textView1);
        rollno = (TextView) findViewById(R.id.textView2);
        dept = (TextView) findViewById(R.id.textView);
        s_btn1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                nam.setTextSize(font);
                rollno.setTextSize(font);
```

```
        dept.setTextSize(font);

        font += 4;

        if(font == 40){
            font = 20;
        }
    }
});

c_btn2.setOnClickListener(new View.OnClickListener() {

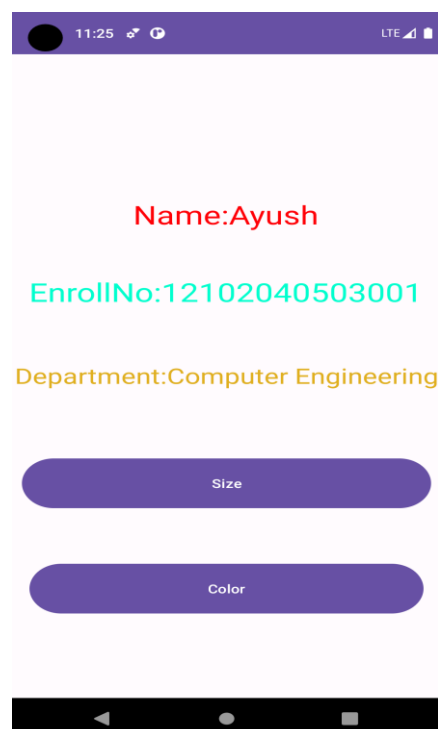
    @Override

    public void onClick(View view) {

        nam.setTextColor(Color.parseColor("#5b39c6"));
        dept.setTextColor(Color.parseColor("#3aa8c1"));
        rollno.setTextColor(Color.parseColor("#8bbe1b"));

    }
});
}
```

➤ **Output:**



Practical-3

Aim: Develop an android application that uses Layout Managers and event listeners.

➤ Activity_main.xml

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

```
<EditText  
    android:id="@+id/send_text_id"  
    android:layout_width="300dp"  
    android:layout_height="wrap_content"  
    android:layout_marginLeft="40dp"  
    android:layout_marginTop="20dp"  
    android:hint="Input"  
    android:textSize="25dp"  
    android:textStyle="bold" />
```

```
<Button  
    android:id="@+id/send_button_id"  
    android:layout_width="wrap_content"  
    android:layout_height="40dp"  
    android:layout_marginLeft="150dp"
```

```
    android:layout_marginTop="150dp"
    android:text="send"
    android:textStyle="bold" />
</RelativeLayout>
```

➤ Activity_main2.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.example.be_pract2.MainActivity2">

    <TextView
        android:id="@+id/received_value_id"
        android:layout_width="300dp"
        android:layout_height="50dp"
        android:layout_marginLeft="40dp"
        android:layout_marginTop="20dp"
        android:textSize="40sp"
        android:textStyle="bold"
        android:layout_marginStart="40dp" />

</RelativeLayout>
```


MainActivity.java

```
package com.example.be_pract2;
import android.content.Intent;

import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    Button send_button;
    EditText send_text;

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

        send_button = findViewById(R.id.send_button_id);
        send_text = findViewById(R.id.send_text_id);

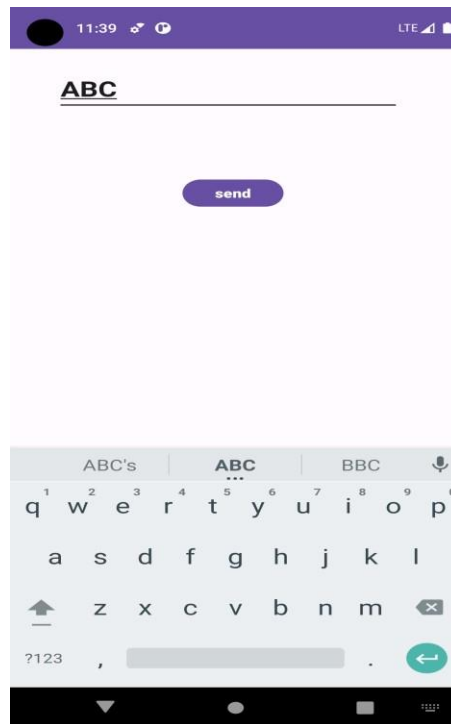
        send_button.setOnClickListener(v -> {
            String str = send_text.getText().toString();
            Intent intent = new Intent(getApplicationContext(), MainActivity2.class);
            intent.putExtra("message_key", str);
            startActivity(intent);
        });
    }
}
```

```
    });  
}  
}
```

➤ MainActivity2.java

```
package com.example.be_pract2;  
import android.content.Intent;  
  
import android.os.Bundle;  
  
import android.widget.TextView;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity2 extends AppCompatActivity {  
  
    TextView receiver_msg;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main2);  
  
        receiver_msg = findViewById(R.id.received_value_id);  
        Intent intent = getIntent();  
        String str = intent.getStringExtra("message_key");  
        receiver_msg.setText(str);  
    }  
}
```

➤ **Output:**



Practical-4

Aim: Develop a standard calculator android application to perform basic calculations like addition, subtraction, multiplication, and division.

➤ Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<TableLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TableRow>
        <EditText
            android:id="@+id/editText1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginTop="100dp"
            android:ems="10"
            android:hint="Enter Number 1"
            android:inputType="number" />
    </TableRow>
    <TableRow>
        <EditText
            android:id="@+id/editText2"
            android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"
        android:ems="10"
        android:hint="Enter Number 2"
        android:inputType="number" />
</TableRow>
<TableRow>
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="+" />

    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="-" />
</TableRow>
<TableRow>
    <Button
        android:id="@+id/button3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="*" />
```

```
<Button
    android:id="@+id/button4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="/" />
```

```
</TableRow>
```

```
<TableRow>
```

```
<Button
    android:id="@+id/button5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="^" />
```

```
<Button
    android:id="@+id/button6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="square" />
```

```
</TableRow>
```

```
<TableRow>
```

```
<Button
    android:id="@+id/button7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="factorial" />
```

```
<Button
    android:id="@+id/button8"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="squareroot" />
```

```
</TableRow>
```

```
</TableLayout>
```

➤ MainActivity.java

```
package com.example.be_pract3;
import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.view.View;
import android.widget.*;

public class MainActivity extends AppCompatActivity {

    EditText et1,et2;
    TextView t1;
    Button b1,b2,b3,b4,b5,b6,b7,b8;
    int x,y,ans=0,fact=1;
    String s1,s2;
    @SuppressWarnings("MissingInflatedId")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
```



```
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);

et1 = (EditText)findViewById(R.id.editText1);
et2 = (EditText)findViewById(R.id.editText2);
b1 = (Button)findViewById(R.id.button1);
b2 = (Button)findViewById(R.id.button2);
b3 = (Button)findViewById(R.id.button3);
b4 = (Button)findViewById(R.id.button4);
b5 = (Button)findViewById(R.id.button5);
b6 = (Button)findViewById(R.id.button6);
b7 = (Button)findViewById(R.id.button7);
b8 = (Button)findViewById(R.id.button8);

b1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        s1 = et1.getText().toString();
        s2 = et2.getText().toString();
        x = Integer.parseInt(s1);
        y = Integer.parseInt(s2);
        ans = x + y;
        Toast t = Toast.makeText(MainActivity.this,String.valueOf(ans),Toast.LENGTH_LONG);
        t.show();
    }
});
```

```
b2.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        s1 = et1.getText().toString();  
        s2 = et2.getText().toString();  
        x = Integer.parseInt(s1);  
        y = Integer.parseInt(s2);  
        ans = x - y;  
  
        Toast t = Toast.makeText(MainActivity.this,String.valueOf(ans),Toast.LENGTH_LONG);  
        t.show();  
    }  
});  
  
b3.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        s1 = et1.getText().toString();  
        s2 = et2.getText().toString();  
        x = Integer.parseInt(s1);  
        y = Integer.parseInt(s2);  
  
        ans = x * y;  
  
        Toast t = Toast.makeText(MainActivity.this,String.valueOf(ans),Toast.LENGTH_LONG);  
        t.show();  
    }  
});
```

```
b4.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
```

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

```
        s1 = et1.getText().toString();
```

```
        s2 = et2.getText().toString();
```

```
        x = Integer.parseInt(s1);
```

```
        y = Integer.parseInt(s2);
```

```
        ans = x / y;
```

```
        Toast t = Toast.makeText(MainActivity.this,String.valueOf(ans),Toast.LENGTH_LONG);
```

```
        t.show();
```

```
    }
```

```
});
```

```
b5.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
```

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

```
        s1 = et1.getText().toString();
```

```
        s2 = et2.getText().toString();
```

```
        x = Integer.parseInt(s1);
```

```
        y = Integer.parseInt(s2);
```

```
        ans = (int) Math.pow(x,y);
```

```
        Toast t = Toast.makeText(MainActivity.this,String.valueOf(ans),Toast.LENGTH_LONG);
```

```
        t.show();
```

```
    }
```

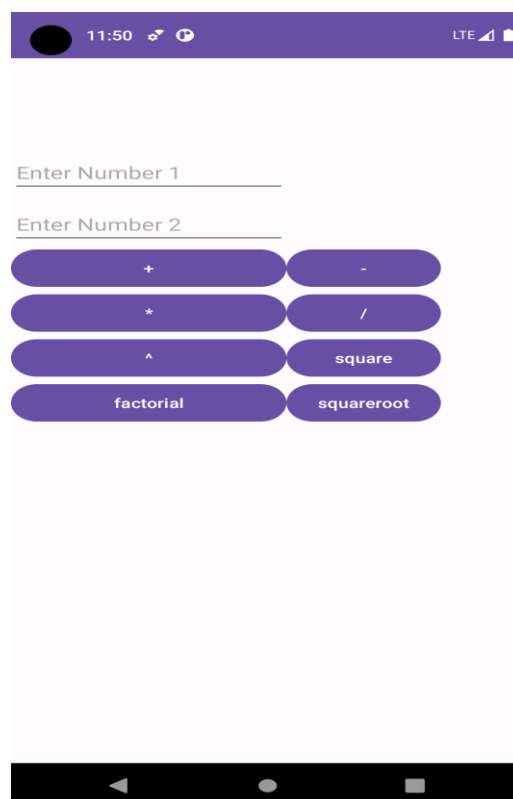
```
});
```

```
b6.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        s1 = et1.getText().toString();  
        x = Integer.parseInt(s1);  
  
        ans = x*x;  
        Toast t = Toast.makeText(MainActivity.this,String.valueOf(ans),Toast.LENGTH_LONG);  
        t.show();  
    }  
});
```

```
b7.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        s1 = et1.getText().toString();  
        x = Integer.parseInt(s1);  
  
        for(int i=x;i>0;i--){  
            fact = fact * i;  
        }  
        Toast t = Toast.makeText(MainActivity.this,String.valueOf(fact),Toast.LENGTH_LONG);  
        t.show();  
    }  
});
```

```
b8.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        s2 = et2.getText().toString();  
        double number = Double.parseDouble(s2);  
        double result = Math.sqrt(number);  
        Toast t = Toast.makeText(MainActivity.this,String.valueOf(result),Toast.LENGTH_LONG);  
        t.show();  
    }  
});  
}  
}
```

➤ **Output:**



Practical-5

Aim: Develop an android application that create, save, update, and delete data in database.

➤ Activity_main.xml

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

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Name"
        android:id="@+id/textView"
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:layout_alignParentTop="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Surname"
        android:id="@+id/textView1"
```

```
android:textAppearance="?android:attr/textAppearanceLarge"
android:layout_below="@+id/textView"
android:layout_alignParentLeft="true"
android:layout_alignParentStart="true" />
```

<TextView

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="EnrollNo"
android:id="@+id/textView2"
android:textAppearance="?android:attr/textAppearanceLarge"
android:layout_below="@+id/textView1"
android:layout_alignParentLeft="true"
android:layout_alignParentStart="true" />
```

<TextView

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Email"
android:id="@+id/textView3"
android:textAppearance="?android:attr/textAppearanceLarge"
android:layout_below="@+id/textView2"
android:layout_alignParentLeft="true"
android:layout_alignParentStart="true" />
```


<EditText

```
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/editText_name"
    android:layout_alignTop="@+id/textView"
    android:layout_toRightOf="@+id/textView"
    android:layout_toEndOf="@+id/textView" />
```

<EditText

```
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/editText_surname"
    android:layout_alignTop="@+id/textView1"
    android:layout_toRightOf="@+id/textView1"
    android:layout_toEndOf="@+id/textView1" />
```

<EditText

```
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/editText_Enroll"
    android:layout_alignTop="@+id/textView2"
    android:layout_toRightOf="@+id/textView2"
    android:layout_toEndOf="@+id/textView2" />
```

<EditText

```
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/editText_Mail"
    android:layout_alignTop="@+id/textView3"
    android:layout_toRightOf="@+id/textView3"
    android:layout_toEndOf="@+id/textView3" />
```

<Button

```
    android:id="@+id/button_add"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/editText_Mail"
    android:layout_alignParentStart="true"
    android:layout_alignParentLeft="true"
    android:layout_marginStart="49dp"
    android:layout_marginLeft="49dp"
    android:layout_marginTop="90dp"
    android:text="Add Data" />
```

<Button

```
    android:id="@+id/button_viewAll"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/editText_Mail"
    android:layout_alignParentStart="true"
```

```
android:layout_alignParentLeft="true"
android:layout_marginStart="179dp"
android:layout_marginLeft="179dp"
android:layout_marginTop="90dp"
android:text="View All" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Update"
    android:id="@+id/button_update"
    android:layout_marginLeft="49dp"
    android:layout_below="@+id/button_add"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Delete"
    android:id="@+id/button_delete"
    android:layout_centerVertical="true"
    android:layout_below="@+id/button_viewAll"
    android:layout_alignLeft="@+id/button_viewAll"
    android:layout_alignStart="@+id/button_viewAll" />
```

```
</RelativeLayout>
```

➤ Databasehelper.java

```
package com.example.be_pract4;
import android.content.Context;

import android.content.ContentValues;

import android.database.Cursor;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;


public class DatabaseHelper extends SQLiteOpenHelper {

    public static final String DATABASE_NAME="student.db";

    public static final String TABLE_NAME="student_table";

    public static final String COL_1 = "Enroll";

    public static final String COL_2 = "Name";

    public static final String COL_3 = "Surname";

    public static final String COL_4 = "Email";


    public DatabaseHelper (Context context){

        super(context, DATABASE_NAME, null,1);

    }

    @Override

    public void onCreate(SQLiteDatabase db) {

        db.execSQL("create table "+ TABLE_NAME +"(Enroll INTEGER,Name TEXT,Surname TEXT,Email TEXT)");

    }

    @Override
```

```
public void onUpgrade(SQLiteDatabase db, int i, int i1) {

    db.execSQL("DROP TABLE IF EXISTS "+TABLE_NAME);

    onCreate(db);

}

public boolean insertData(String Enroll, String Name, String Surname, String Email){

    SQLiteDatabase db = this.getWritableDatabase();
    ContentValues contentValues = new ContentValues();

    contentValues.put(COL_1,Enroll);

    contentValues.put(COL_2,Name);

    contentValues.put(COL_3,Surname);

    contentValues.put(COL_4,Email);


    long result = db.insert(TABLE_NAME,null, contentValues);

    if(result== -1)

        return false;

    else

        return true;

}

public Cursor getAllData(){

    SQLiteDatabase db = this.getWritableDatabase();

    Cursor res = db.rawQuery("select * from "+TABLE_NAME,null);

    return res;

}

public boolean updateData(String Enroll, String Name, String Surname, String Email){

    SQLiteDatabase db = this.getWritableDatabase();

    ContentValues contentValues = new ContentValues();
```

```
contentValues.put(COL_1,Enroll);

contentValues.put(COL_2,Name);
contentValues.put(COL_3,Surname);
contentValues.put(COL_4,Email);
db.update(TABLE_NAME, contentValues, "Enroll = ?",new String[] {Enroll});
return true;
}

public Integer deleteData(String Enroll){
    SQLiteDatabase db = this.getWritableDatabase();
    return db.delete(TABLE_NAME,"Enroll = ?", new String[] {Enroll});
}
}
```

➤ MainActivity.class

```
package com.example.be_pract4;
import androidx.appcompat.app.AppCompatActivity;
import android.app.AlertDialog;

import android.os.Bundle;
import android.view.*;
import android.widget.*;
import android.database.Cursor;

public class MainActivity extends AppCompatActivity {

    DatabaseHelper mydb;

    EditText editName,editSurname,editEnroll,editMail;
```

```
Button btnAddData,btnviewall,btnDelete,btnviewupdate;
```

```
@Override
```

```
protected void onCreate(Bundle savedInstanceState) {
```

```
    super.onCreate(savedInstanceState);
```

```
    setContentView(R.layout.activity_main);
```

```
    mydb = new DatabaseHelper(this);
```

```
    editName = (EditText) findViewById(R.id.editText_name);
```

```
    editSurname = (EditText) findViewById(R.id.editText_surname);
```

```
    editEnroll = (EditText) findViewById(R.id.editText_Enroll);
```

```
    editMail = (EditText) findViewById(R.id.editText_Mail);
```

```
    btnAddData = (Button) findViewById(R.id.button_add);
```

```
    btnviewall = (Button) findViewById(R.id.button_viewAll);
```

```
    btnviewupdate = (Button) findViewById(R.id.button_update);
```

```
    btnDelete = (Button) findViewById(R.id.button_delete);
```

```
    AddData();
```

```
    viewAll();
```

```
    updatedata();
```

```
    deletedata();
```

```
}
```

```
public void deletedata(){
```

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

```
        @Override
```



```
public void onClick(View view) {

    Integer deleteRows = mydb.deleteData(editEnroll.getText().toString());
    if(deleteRows>0){
        Toast.makeText(MainActivity.this,"Data
Deleted",Toast.LENGTH_LONG).show();
    }
    else{
        Toast.makeText(MainActivity.this,"Data not
Deleted",Toast.LENGTH_LONG).show();
    }
}

});

}

public void updatedata(){
    btnviewupdate.setOnClickListener(new View.OnClickListener() {
        @Override public void onClick(View view) {

            boolean isUpdate =
mydb.updateData(editEnroll.getText().toString(),editName.getText().toString(),editSurna
me.getText().toString(),editMail.getText().toString());

            if(isUpdate == true)

                Toast.makeText(MainActivity.this,"Data
Updated",Toast.LENGTH_LONG).show();

            else{

                Toast.makeText(MainActivity.this, "Data not updated",
Toast.LENGTH_LONG).show();

            }

        }
    }
}
```

```
});  
  
}  
  
public void AddData(){  
    btnAddData.setOnClickListener(new View.OnClickListener() {  
  
        @Override public void onClick(View view) {  
  
            boolean isInserted =  
mydb.insertData(editName.getText().toString(),editSurname.getText().toString(),editEnr  
oll.getText().toString(),editMail.getText().toString());  
  
            if(isInserted==true){  
  
                Toast.makeText(MainActivity.this, "Data  
Inserted",Toast.LENGTH_LONG).show();  
  
            }  
  
            else {  
  
                Toast.makeText(MainActivity.this,"Data Not  
Inserted",Toast.LENGTH_LONG).show();  
  
            }  
  
        }  
    });  
}  
  
public void viewAll(){  
    btnviewall.setOnClickListener(new View.OnClickListener() {  
  
        @Override  
  
        public void onClick(View view) {  
  
            Cursor res = mydb.getAllData();  
  
            if(res.getCount()==0){  
  
                showMessage("Error","Nothing found");  
  
            }  
  
            StringBuffer buffer = new StringBuffer();  
  
            while(res.moveToNext()){
```

```
        buffer.append("Name:"+res.getString(0)+"\n");

        buffer.append("Surname:"+res.getString(1)+"\n");
        buffer.append("Id:"+res.getString(2)+"\n");
        buffer.append("Mail:"+res.getString(3)+"\n");
    }
    showMessage("Data",buffer.toString());
    });
}

public void showMessage(String title,String Message){
    AlertDialog.Builder builder = new AlertDialog.Builder(this);
    builder.setCancelable(true);
    builder.setTitle(title);
    builder.setMessage(Message);
    builder.show();
}
}
```

➤ Output:

2:42 2:42 LTE

Name ABC

Surname XYZ

EnrollNo 1

Email ABC@gmail.com

Add Data View All

Update Delete

?123 , .

Practical-6

Aim: Develop an android application that uses GPS location information

➤ Activity_mail.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#4caf50"
    android:gravity="center"
    android:orientation="vertical">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="sans-serif-black"
        android:text="Latitude:" />

    <TextView
        android:id="@+id/latTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Latitude will be here! "
        android:textColor="#f5f5f5" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="sans-serif-black"
        android:text="Longitude:" />

    <TextView
        android:id="@+id/lonTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Longitude will be here! "
        android:textColor="#f5f5f5" />

    <Button
```

102046712

android:id="@+id/button"

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```
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:text="Button" />
```

```
</LinearLayout>
```

➤ MainActivity.java

```
package com.example.myapplication;  
  
import android.Manifest;  
import android.annotation.SuppressLint;  
import android.content.Context;  
import android.content.Intent;  
import android.content.pm.PackageManager;  
import android.location.Location;  
import android.location.LocationManager;  
import android.net.Uri;  
import android.os.Bundle;  
import android.os.Looper;  
import android.provider.Settings;  
import android.view.View;  
import android.widget.Button;  
import android.widget.TextView;  
import android.widget.Toast;  
  
import androidx.annotation.NonNull;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.app.ActivityCompat;
```

```
import com.google.android.gms.location.FusedLocationProviderClient;
import com.google.android.gms.location.LocationCallback;
import com.google.android.gms.location.LocationRequest;
import com.google.android.gms.location.LocationResult;
import com.google.android.gms.location.LocationServices;
import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;

public class MainActivity extends AppCompatActivity {

    FusedLocationProviderClient mFusedLocationClient;
    TextView latitudeTextView, longitTextView;
    Button btn;
    int PERMISSION_ID = 44;

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

        latitudeTextView = findViewById(R.id.latTextView);
        longitTextView = findViewById(R.id.lonTextView);
        btn = findViewById(R.id.button);
        mFusedLocationClient = LocationServices.getFusedLocationProviderClient(this);
        getLastLocation();

        btn.setOnClickListener(new View.OnClickListener() {
            @Override public void onClick(View view) {
```



```
String URL="https://www.google.com/maps/search/?api=1&query=" +
latitudeTextView.getText() + "," + longitTextView.getText();

Intent intent=new Intent(Intent.ACTION_VIEW, Uri.parse(URL));

startActivity(intent);

}

});

}
```

```
@SuppressWarnings("MissingPermission")

private void getLastLocation() {

    if (checkPermissions()) {

        if (isLocationEnabled()) {

            mFusedLocationClient.getLastLocation().addOnCompleteListener(new
OnCompleteListener<Location>() {

                @Override

                public void onComplete(@NonNull Task<Location> task) {

                    Location location = task.getResult();

                    if (location == null) {

                        requestNewLocationData();

                    } else {

                        latitudeTextView.setText(location.getLatitude() + "");
                        longitTextView.setText(location.getLongitude() + "");

                    }

                }

            });

        } else {

            Toast.makeText(this, "Please turn on" + " your location...",
Toast.LENGTH_LONG).show();

        }

    }

}
```

```
        Intent intent = new Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
        startActivity(intent);
    }
} else {
    requestPermissions();
}
}

@SuppressWarnings("MissingPermission")
private void requestNewLocationData() {
    LocationRequest mLocationRequest = new LocationRequest();
    mLocationRequest.setPriority(LocationRequest.PRIORITY_HIGH_ACCURACY);
    mLocationRequest.setInterval(5);
    mLocationRequest.setFastestInterval(0);
    mLocationRequest.setNumUpdates(1);
    mFusedLocationClient = LocationServices.getFusedLocationProviderClient(this);
    mFusedLocationClient.requestLocationUpdates(mLocationRequest, mLocationCallback,
        Looper.myLooper());
}

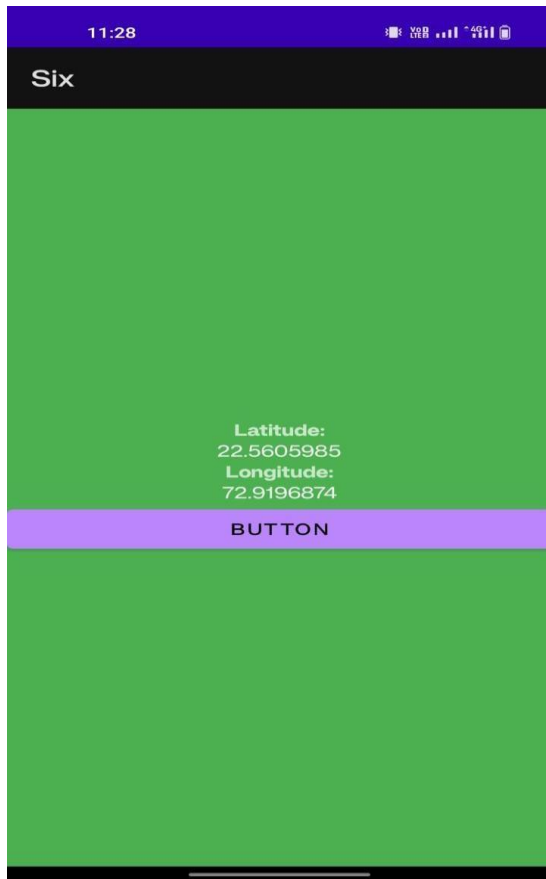
private LocationCallback mLocationCallback = new LocationCallback() {

    @Override
    public void onLocationResult(LocationResult locationResult) {
        Location mLastLocation = locationResult.getLastLocation();
        latitudeTextView.setText("Latitude: " + mLastLocation.getLatitude() + "");
        longitTextView.setText("Longitude: " + mLastLocation.getLongitude() + "");
    }
};
```

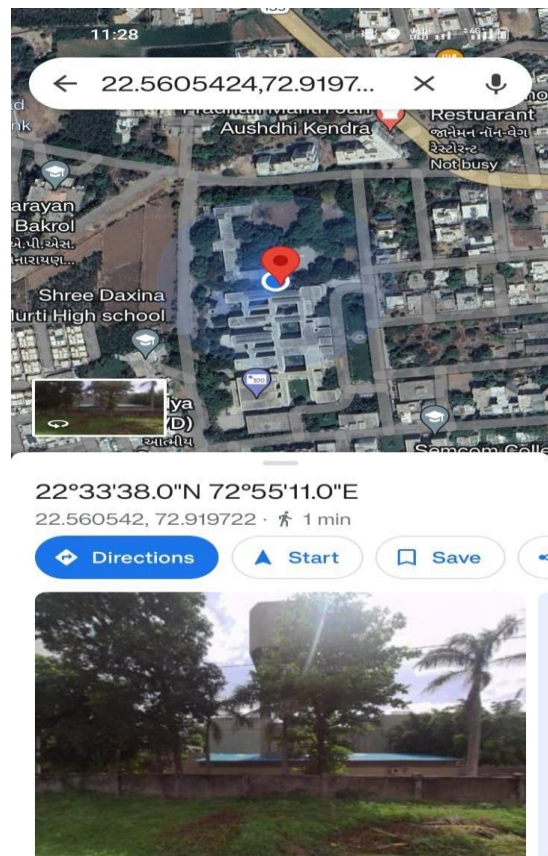
```
private boolean checkPermissions() {  
    return ActivityCompat.checkSelfPermission(this,  
Manifest.permission.ACCESS_COARSE_LOCATION) ==  
PackageManager.PERMISSION_GRANTED && ActivityCompat.checkSelfPermission(this,  
Manifest.permission.ACCESS_FINE_LOCATION) ==  
PackageManager.PERMISSION_GRANTED;  
  
    ActivityCompat.checkSelfPermission(this,  
Manifest.permission.ACCESS_BACKGROUND_LOCATION) ==  
PackageManager.PERMISSION_GRANTED  
}  
  
private void requestPermissions() {  
    ActivityCompat.requestPermissions(this, new String[]{  
        Manifest.permission.ACCESS_COARSE_LOCATION,  
        Manifest.permission.ACCESS_FINE_LOCATION}, PERMISSION_ID);  
}  
  
private boolean isLocationEnabled() {  
    LocationManager locationManager = (LocationManager)  
getSystemService(Context.LOCATION_SERVICE);  
  
    return locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER) ||  
locationManager.isProviderEnabled(LocationManager.NETWORK_PROVIDER);  
}  
  
@Override  
public void  
onRequestPermissionsResult(int requestCode, @NonNull String[] permissions, @NonNull  
int[] grantResults) {  
    super.onRequestPermissionsResult(requestCode, permissions, grantResults);  
  
    if (requestCode == PERMISSION_ID) {  
        if (grantResults.length > 0 && grantResults[0] ==
```

```
        PackageManager.PERMISSION_GRANTED) {  
            getLastLocation();  
        }  
    }  
}  
  
@Override  
public void onResume() {  
    super.onResume();  
    if (checkPermissions()) {  
        getLastLocation();  
    }  
}  
}  
}  
  
➤ Output:
```

102046712



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Practical-7

Aim: Develop an android application that draws basic graphical primitives (Rectangle, circle etc.) on the screen.

➤ Activity_main.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">

    <ImageView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/imageView" />

</RelativeLayout>
```

➤ MainActivity.java

```
package com.example.exno4;
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;
```

```
public class MainActivity extends Activity
{
    @Override
    public void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

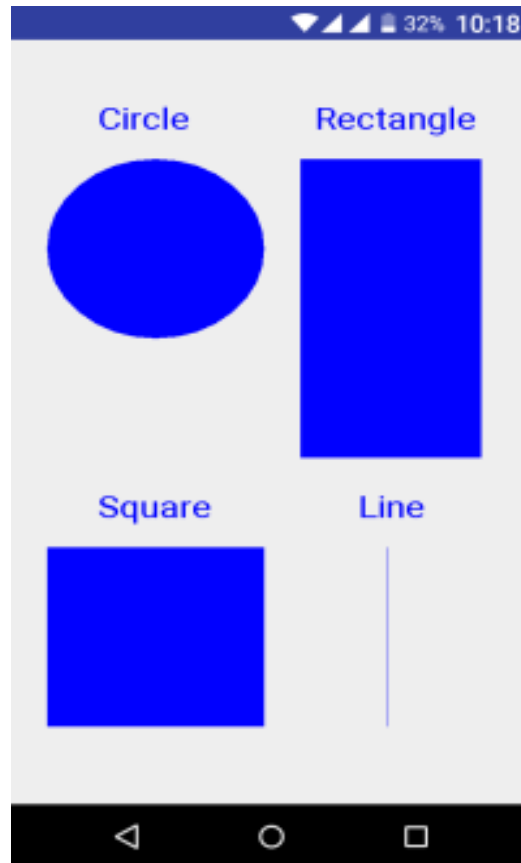
        Bitmap bg = Bitmap.createBitmap(720, 1280, Bitmap.Config.ARGB_8888);

        ImageView i = (ImageView) findViewById(R.id.imageView);
        i.setBackgroundDrawable(new BitmapDrawable(bg));
        Canvas canvas = new Canvas(bg);

        Paint paint = new Paint();
        paint.setColor(Color.BLUE);
        paint.setTextSize(50);

        canvas.drawText("Rectangle", 420, 150, paint);
        canvas.drawRect(400, 200, 650, 700, paint);
        canvas.drawText("Circle", 120, 150, paint);
        canvas.drawCircle(200, 350, 150, paint);
        canvas.drawText("Square", 120, 800, paint);
        canvas.drawRect(50, 850, 350, 1150, paint);
        canvas.drawText("Line", 480, 800, paint);
        canvas.drawLine(520, 850, 520, 1150, paint);
    }
}
```

➤ Output:



Practical-8

Aim: Create an android application that writes data to SD Card.

➤ **Activity_Manifest.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="example.javatpoint.com.externalstorage">
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <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 version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="example.javatpoint.com.externalstorage.MainActivity">

    <EditText
        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentRight="true"
        android:layout_alignParentTop="true"
        android:layout_marginRight="20dp"
        android:layout_marginTop="24dp"
        android:ems="10" >

        <requestFocus />
    </EditText>

    <EditText
        android:id="@+id/editText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
android:layout_alignRight="@+id/editText1"
android:layout_below="@+id/editText1"
android:layout_marginTop="24dp"
android:ems="10" />
```

<TextView

```
android:id="@+id/textView1"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignBaseline="@+id/editText1"
android:layout_alignBottom="@+id/editText1"
android:layout_alignParentLeft="true"
android:text="File Name:" />
```

<TextView

```
android:id="@+id/textView2"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignBaseline="@+id/editText2"
android:layout_alignBottom="@+id/editText2"
android:layout_alignParentLeft="true"
android:text="Data:" />
```

<Button

```
android:id="@+id/button1"
android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"
android:layout_alignLeft="@+id/editText2"
android:layout_below="@+id/editText2"
android:layout_marginLeft="70dp"
android:layout_marginTop="16dp"
android:text="save" />
```

<Button

```
android:id="@+id/button2"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_alignBaseline="@+id/button1"
android:layout_alignBottom="@+id/button1"
android:layout_toRightOf="@+id/button1"
android:text="read" />
```

</RelativeLayout>

➤ MainActivity.java

```
package example.javatpoint.com.externalstorage;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
```

```
import java.io.BufferedReader;
import java.io.File;
import java.io.FileInputStream;
import java.io.FileNotFoundException;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.InputStreamReader;
import java.io.OutputStreamWriter;

public class MainActivity extends AppCompatActivity {
    EditText editTextFileName,editTextData;
    Button saveButton,readButton;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        editTextFileName=findViewById(R.id.editText1);
        editTextData=findViewById(R.id.editText2);
        saveButton=findViewById(R.id.button1);
        readButton=findViewById(R.id.button2);

        saveButton.setOnClickListener(new View.OnClickListener(){

            @Override
            public void onClick(View arg0) {
                String filename=editTextFileName.getText().toString();
```

```
String data=editTextData.getText().toString();

FileOutputStream fos;

try {

    File myFile = new File("/sdcard/"+filename);
    myFile.createNewFile();

    FileOutputStream fOut = new FileOutputStream(myFile);
    OutputStreamWriter myOutWriter = new OutputStreamWriter(fOut);
    myOutWriter.append(data);
    myOutWriter.close();
    fOut.close();

    Toast.makeText(getApplicationContext(),filename +
"saved",Toast.LENGTH_LONG).show();

    } catch (FileNotFoundException e) {e.printStackTrace();}
    catch (IOException e) {e.printStackTrace();}

}

});

readButton.setOnClickListener(new View.OnClickListener(){

@Override

public void onClick(View arg0) {

    String filename=editTextFileName.getText().toString();
    StringBuffer stringBuffer = new StringBuffer();
    String aDataRow = "";
    String aBuffer = "";
    try {

        File myFile = new File("/sdcard/"+filename);
        FileInputStream fln = new FileInputStream(myFile);
```

```
        BufferedReader myReader = new BufferedReader(
            new InputStreamReader(fIn));
        while ((aDataRow = myReader.readLine()) != null) {
            aBuffer += aDataRow + "\n";
        }myReader.close();
    } catch (IOException e) {
        e.printStackTrace();
    }
    Toast.makeText(getApplicationContext(),aBuffer,Toast.LENGTH_LONG).show();
}
});
}
}
```

➤ Output:

102046712

External Storage

File Name:

Data:

SAVE READ

This screenshot shows the 'External Storage' app interface. The title bar is blue with the text 'External Storage'. Below it, there are two input fields: 'File Name:' and 'Data:'. Both fields are currently empty. At the bottom right, there are two buttons labeled 'SAVE' and 'READ'. The status bar at the top shows the time as 5:58. The bottom navigation bar shows the standard Android icons.

12002040601037

External Storage

File Name:

Data:

SAVE READ

q w e r t y u i o p
a s d f g h j k l
z x c v b n m
?123 , .

This screenshot shows the 'External Storage' app interface with data entered. The 'File Name' field now contains the text 'Employee'. The 'Data' field contains the text 'Name: Prem, id: 101; Name: Raj, id 102'. The 'SAVE' and 'READ' buttons are still present. A virtual keyboard is visible at the bottom, showing the letters 'q' through 'p' on the first row, 'a' through 'l' on the second row, and 'z' through 'm' on the third row, along with punctuation and a space bar. The status bar at the top shows the time as 5:52. The bottom navigation bar shows the standard Android icons.

Practical-9

Aim: Configuring Flutter Development Environment.

➤ Installation in Windows

Step 1: Go to URL, <https://flutter.dev/docs/get-started/install/windows> and download the latest Flutter SDK. As of April 2019, the version is 1.2.1 and the file is flutter_windows_v1.2.1-stable.zip.

Step 2: Unzip the zip archive in a folder, say C:\flutter\

Step 3: Update the system path to include flutter bin directory.

Step 4: Flutter provides a tool, flutter doctor to check that all the requirement of flutter development is met. flutter doctor

Step 5: Running the above command will analyze the system and show its report as shown below:
Doctor summary (to see all details, run flutter doctor -v):

- ➔ Flutter (Channel stable, v1.2.1, on Microsoft Windows [Version 10.0.17134.706], locale en-US)
- ➔ Android toolchain - develop for Android devices (Android SDK version 28.0.3)
- ➔ Android Studio (version 3.2) [✓] VS Code, 64-bit edition (version 1.29.1) [!] Connected device
- ! No devices available

! Doctor found issues in 1 category.

The report says that all development tools are available but the device is not connected. We can fix this by connecting an android device through USB or starting an android emulator.

Practical-10

Aim: Develop a flutter application that uses GUI components, Font and Color.

Platform independent / basic widgets

Flutter provides large number of basic widgets to create simple as well as complex user interface in a platform independent manner.

1. Text

Text widget is used to display a piece of string. The style of the string can be set by using style property and TextStyle class.

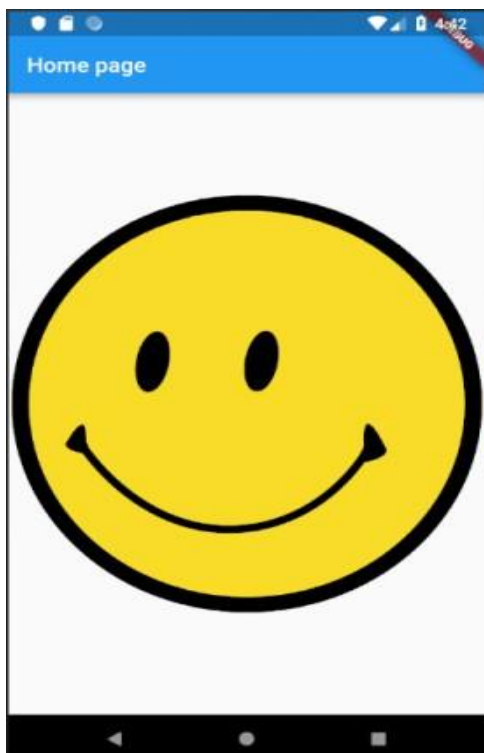
```
Text('Hello World!', style: TextStyle(fontWeight: FontWeight.bold))
```

2. Image

Image widget is used to display an image in the application. Image widget provides different constructors to load images from multiple sources and they are as follows:

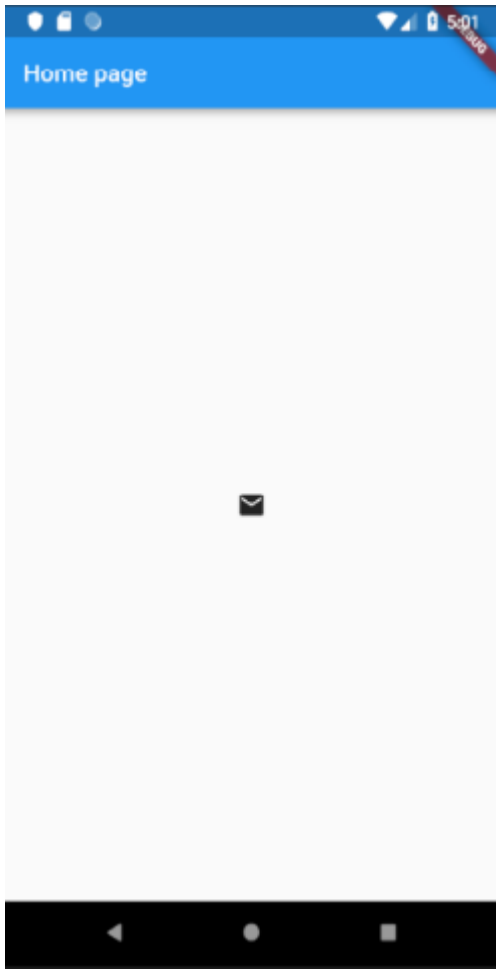
- Image - Generic image loader using ImageProvider
- Image.asset - Load image from flutter project's assets
- Image.file - Load image from system folder
- Image.memory - Load image from memory
- Image.Network - Load image from network

```
Image.asset('assets/smiley.png')
```



3. Icon

Icon widget is used to display a glyph from a font described in IconData class.



4. Checkbox

Checkbox in flutter is a material design widget. It is always used in the Stateful Widget as it does not maintain a state of its own. We can use its *onChanged* property to interact or modify other widgets in the flutter app. Like most of the other flutter widgets, it also comes with many properties like *activeColor*, *checkColor*, *mouseCursor*, etc,

5. Radio Button

Radio buttons are a widget that allows users to select one option from a group of options. In Flutter, we can easily implement radio buttons using the `Radio` widget and a `RadioListTile` widget for a more convenient and user-friendly experience.

Practical-11

Aim: Develop login signup application using flutter

```
import 'package:flutter/material.dart';
import 'package:form_field_validator/form_field_validator.dart';
import 'package:flutter/foundation.dart';
```

```
class Register extends StatefulWidget { const
Register({Key? key}) : super(key: key);
```

```
@override
State<Register> createState() => _RegisterState();
}
```

```
class _RegisterState extends State<Register> {
Map userData = {};
final _formkey = GlobalKey<FormState>();
@override
Widget build(BuildContext context) {
```

```
    return Scaffold(
      appBar: AppBar(
        title: Text('register'),
      ),
      body: SingleChildScrollView(
        child: Padding(
          padding: const EdgeInsets.all(12.0),
          child: Form(
```

```
key: _formkey,
child: Column(
  crossAxisAlignment: CrossAxisAlignment.start,
  children: <Widget>[
    Padding(
      padding: const EdgeInsets.only(top: 20.0),
      child: Center(
        child: Container(
          width: 200,
          height: 150,
          //decoration: BoxDecoration(
            //borderRadius: BorderRadius.circular(40),
            //border: Border.all(color: Colors.blueGrey)),
          child: Image.asset('assets/logo.png'),
        ),
      ),
    ),
    Padding(
      padding: const EdgeInsets.all(12.0),
      child: TextFormField (validator:
        MultiValidator([
          RequiredValidator(errorText: 'Enter
first named'),
          MinLengthValidator(3,
            errorText: 'Minimum 3 charecter filled name'),
        ]),
```

```
        decoration: InputDecoration(
          hintText: 'Enter first Name',
          labelText: 'first named',
          prefixIcon: Icon(
            Icons.person,
            color: Colors.green,
          ),
          errorStyle: TextStyle(fontSize: 18.0),
          border: OutlineInputBorder(
            borderSide: BorderSide(color: Colors.red),
            borderRadius: BorderRadius.all(Radius.circular(9.0))),
        ),
      ),
      Padding(
        padding: const EdgeInsets.all(8.0),
        child: TextFormField(
          validator: MultiValidator([
            RequiredValidator(errorText: 'Enter last
            named'), MinLengthValidator(3, errorText:'Last
            name should be atleast 3 charater'),
```

```
    ]),  
    decoration: InputDecoration(  
      hintText: 'Enter last Name',  
      labelText: 'Last named',  
      prefixIcon: Icon(  
        Icons.person,  
        color: Colors.grey,  
      ),  
      errorStyle: TextStyle(fontSize: 18.0),  
      border: OutlineInputBorder(  
        borderSide: BorderSide(color: Colors.red),  
        borderRadius: BorderRadius.all(Radius.circular(9.0))),  
    ),  
  ),  
  Padding(  
    padding: const EdgeInsets.all(8.0),  
    child: TextFormField(  
      validator: MultiValidator([  
        RequiredValidator(errorText: 'Enter email address'),  
        EmailValidator(  

```

```
        errorText: 'Please correct email filled'),
    )),
    decoration: InputDecoration(
        hintText: 'Email',
        labelText: 'Email',
        prefixIcon: Icon(
            Icons.email,
            color: Colors.lightBlue,
        ),
        errorStyle: TextStyle(fontSize: 18.0),
        border: OutlineInputBorder(
            borderSide: BorderSide(color: Colors.red),

            borderRadius: BorderRadius.all(Radius.circular(9.0))),
    ),
    ),
    Padding(
        padding: const EdgeInsets.all(8.0),
        child: TextFormField(
            validator: MultiValidator([
                RequiredValidator(errorText: 'Enter mobile number'),
                PatternValidator(r'^[0,9]{10}$'),

                errorText: 'enter vaid mobile number'),
            ]),
            decoration: InputDecoration(
```



```
        hintText: 'Mobile',
        labelText: 'Mobile',
        prefixIcon: Icon(
          Icons.phone,
          color: Colors.grey,
        ),
        border: OutlineInputBorder(
          borderSide:
            BorderSide(color:Colors.red),
          borderRadius:
            BorderRadius.all(Radius.circular(9))),
      ),
    ),
    Center(
      child: Padding(
        padding: const EdgeInsets.all(18.0),
        child: Container(
          // margin: EdgeInsets.fromLTRB(200, 20, 50, 0),
          child: RaisedButton(
            child: Text(
              'Register',
              style: TextStyle(color: Colors.white, fontSize: 22),
            ),
            onPressed: () {
              if (_formkey.currentState!.validate()) {
                print('form submiitted');
```

```
        }  
      },  
      shape: RoundedRectangleBorder( borderRadius:  
        BorderRadius.circular(30)),  
      color: Colors.blue,  
    ),  
  
    width: MediaQuery.of(context).size.width,  
  
    height: 50,  
  ),  
  )),  
  
  Center(  
    child: Padding(  
      padding: EdgeInsets.only(top: 20),  
      child: Center(  
        child: Text(  
          'Or Sign Up Using',  
          style: TextStyle(fontSize: 18, color: Colors.black),  
        ),  
      ),  
    ),  
  ),  
  Center(  
    child: Padding(  
      padding: EdgeInsets.only(top: 20, left: 90),  
      child: Row(  
        
```

```
children: [  
    Container(  
        height: 40,  
        width: 40,  
        child: Image.asset(  
            'assets/google.png',  
            fit: BoxFit.cover,  
        )),  
    Container(  
        height: 70,  
        width: 70,  
        child: Image.asset(  
            'assets/vishal.png',  
            fit: BoxFit.cover,  
        ),  
    ),  
    Container(  
        height: 40,  
        width: 40,  
        child: Image.asset(  
            'assets/google.png',  
            fit: BoxFit.cover,  
        ),  
    ),  
],  
),
```

```
        ),  
        Center(  
          child: Container(  
            padding: EdgeInsets.only(top: 60),  
            child: Text(  
              'SIGN IN',  
              style: TextStyle(  
                fontSize: 20, fontWeight: FontWeight.bold),  
              ),  
            ),  
          ),  
        ],  
      )),  
    ),  
  ));  
}  
}
```

➤ **Output:**

The image shows a mobile application interface for a registration form. At the top, the status bar displays the time 02:01, signal strength, and battery level at 22%. The app's header is blue with a back arrow and the title 'register'. Below the header, there are four input fields: 'first named' with the value 'vishal', 'Last named' with the value 'm', 'Email' with the value 'admin@gmail.com', and 'Mobile' with the value '123456'. Each field has a corresponding icon (person, person, envelope, and phone). Below the fields is a large blue 'Register' button. At the bottom, there is a virtual keyboard with a numeric keypad, symbols, and a text area showing 'English'.