EASWARI ENGINEERING COLLEGE

(Autonomous)
Bharathi Salai, Ramapuram, Chennai 600 089.

Department : .....

Laboratory : .....

Name :

Roll No. :

Semester :

Branch :

Subject :

EASWARI ENGINEERING COLLEGE

(Autonomous)
Bharathi Salai, Ramapuram, Chennai 600 089.

Department : .....

PRACTICAL EXAMINATIONS ..... (Month / Year)

BONAFIDE CERTIFICATE

This is to certify that this practical work titled .....
(code)

.....
(Name of the Laboratory)

is the bonafide work of Mr./Miss.....
(Name of the Student)

with Register Number..... in

Semester..... of..... Year in the Department of

.....during the

academic year 20..... –20 .....

Faculty Incharge **Head of the Department**

Submitted for Practical Examination held on ...../...../..... at Easwari

Engineering College, Ramapuram, Chennai – 89.

Internal Examiner **External Examiner**

Index

Exp No: 1	Develop an application using GUI components, layout manager and event listener.
Date:	

AIM

To develop an application that uses GUI components, layout manager and event listener.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno1” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → res → layout → activity_main.xml and design the layout.
Step 7: Click on app → java → com.example.exno1 → MainActivity and type the java code.
Step 8: Run the project.

PROGRAM

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"
   android:orientation="vertical"
   tools:context=".MainActivity">

   <LinearLayout
      android:layout_width="match_parent"
      android:layout_height="match_parent"
      android:orientation="vertical">

      <TextView
         android:id="@+id/textView"
         android:layout_width="match_parent"
         android:layout_height="wrap_content"
         android:layout_marginTop="200dp"
         android:gravity="center"
         android:text="0"
         android:textSize="24sp" />

      <LinearLayout
         android:layout_width="match_parent"
         android:layout_height="match_parent">
```

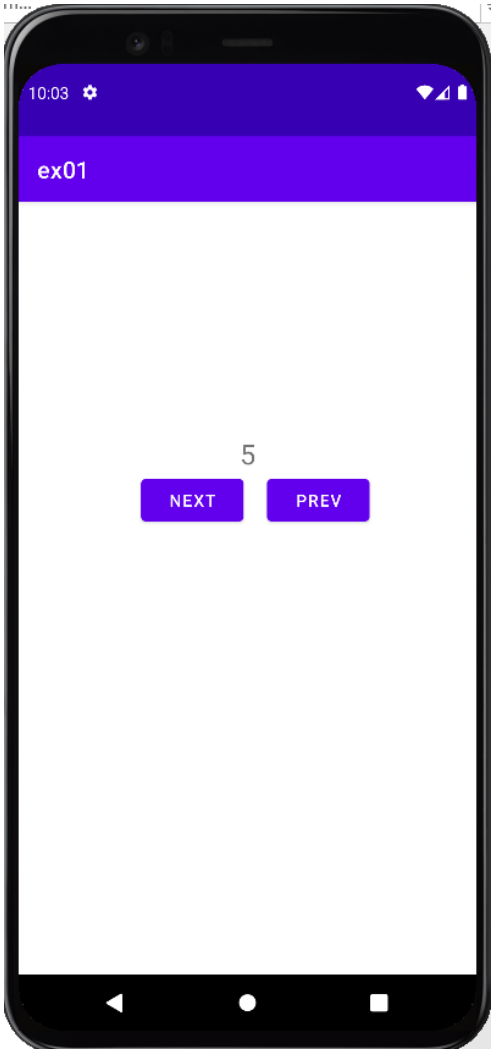
```
        <Button
            android:id="@+id/increase"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="105dp"
            android:layout_marginRight="20dp"
            android:gravity="center"
            android:text="Next" />

        <Button
            android:id="@+id/decrease"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:gravity="center"
            android:text="Prev" />

    </LinearLayout>
  </LinearLayout>
</RelativeLayout>
```

MainActivity.java

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

public class MainActivity extends AppCompatActivity {
  int counter=0;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    TextView tv = (TextView) findViewById(R.id.textView);
    Button add = (Button) findViewById(R.id.increase);
    add.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick (View view){
        counter++;
        tv.setText(Integer.toString(counter));
      }
    });
    Button sub = (Button) findViewById(R.id.decrease);
    sub.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
        public void onClick (View view){
            if(counter!=0) {
                counter--;
                tv.setText(Integer.toString(counter));
            }
        }
    });
  }
}
```

OUTPUT



RESULT:

Thus a simple android application that uses GUI components, layout manager and event listener has been developed and executed successfully.

Exp No: 2	Develop an application to stimulate a keyboard.
Date:	

AIM

To develop an application to stimulate a keyboard.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno2” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → res → layout → activity_main.xml and design the layout.
Step 7: Click on app → java → com.example.exno2 → MainActivity and type the java code.
Step 8: Run the project.

PROGRAM

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"
   android:orientation="vertical"
   tools:context=".MainActivity" >

   <LinearLayout
      android:layout_width="match_parent"
      android:layout_height="match_parent"
      android:orientation="vertical">

      <TextView
         android:id="@+id/textView"
         android:layout_width="match_parent"
         android:layout_height="wrap_content"
         android:layout_marginTop="200dp"
         android:gravity="center"
         android:text=""
         android:scrollbars="vertical"/>

      <TableLayout
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
```

```
android:layout_marginLeft="75dp"
android:layout_marginTop="50dp">

<TableRow
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:padding="10dp">

   <Button
      android:id="@+id/button"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="1" />

   <Button
      android:id="@+id/button2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="2" />

   <Button
      android:id="@+id/button3"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="3" />

</TableRow>

<TableRow
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:padding="10dp">

   <Button
      android:id="@+id/button4"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="4" />

   <Button
      android:id="@+id/button5"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="5" />

   <Button
```

```
            android:id="@+id/button6"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="6" />

        </TableRow>

        <TableRow
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:padding="10dp">

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

            <Button
                android:id="@+id/button8"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="0" />

            <Button
                android:id="@+id/button9"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Delete" />
        </TableRow>


    </TableLayout>
  </LinearLayout>
</RelativeLayout>
```

MainActivity.java

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

public class MainActivity extends AppCompatActivity {

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

```
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
TextView tv = (TextView) findViewById(R.id.textView);
Button one = (Button) findViewById(R.id.button);
one.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View view) {
      tv.append("1");
   }
});
Button two = (Button) findViewById(R.id.button2);
two.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View view) {
      tv.append("2");
   }
});
Button three = (Button) findViewById(R.id.button3);
three.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View view) {
      tv.append("3");
   }
});
Button four = (Button) findViewById(R.id.button4);
four.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View view) {
      tv.append("4");
   }
});
Button five = (Button) findViewById(R.id.button5);
five.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View view) {
      tv.append("5");
   }
});
Button six = (Button) findViewById(R.id.button6);
six.setOnClickListener(new View.OnClickListener() {
   @Override
   public void onClick(View view) {
      tv.append("6");
   }
});
Button enter = (Button) findViewById(R.id.button7);
```

```
        enter.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                tv.append("\n");
            }
        });
        Button zero = (Button) findViewById(R.id.button8);
        zero.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                tv.append("0");
            }
        });
        Button del = (Button) findViewById(R.id.button9);
        del.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if(tv.getText().toString().length()!=0)
                    tv.setText(tv.getText().toString().substring(0,tv.getText().toString().length()-1));
            }
        });
    }
}
```

OUTPUT

RESULT:

Thus an android application that stimulates a keyboard has been developed and executed successfully.

Exp No: 3	Create an application that uses graphical primitive.
Date:	

AIM

To develop an application that uses graphical primitive.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno3” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → res → layout → activity_main.xml and design the layout.
Step 7: Click on app → java → com.example.exno3 → MainActivity and type the java code.
Step 8: Run the project.

PROGRAM

activity_main.xml

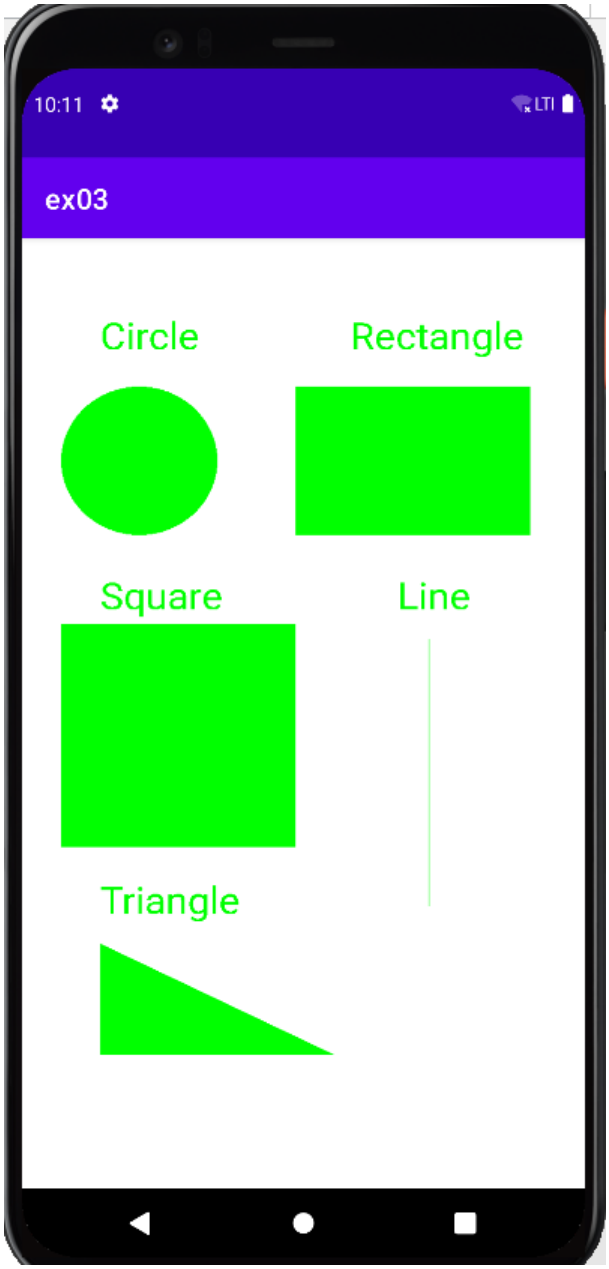
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

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

</LinearLayout>
```

MainActivity.java

```
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.*;
import android.graphics.drawable.BitmapDrawable;
import android.os.Bundle;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

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

        Bitmap bg = Bitmap.createBitmap(720, 1280, Bitmap.Config.ARGB_8888);
        ImageView iv =(ImageView)findViewById(R.id.imageView);
        iv.setBackgroundDrawable(new BitmapDrawable(bg));
        Canvas canvas= new Canvas(bg);
        Paint paint = new Paint();

        paint.setColor(Color.GREEN);
        paint.setTextSize(50);

        canvas.drawText("Rectangle", 420, 150, paint);
        canvas.drawRect(350, 200, 650, 400, paint);

        canvas.drawText("Circle", 100, 150, paint);
        canvas.drawCircle(150, 300, 100, paint);

        canvas.drawText("Square", 100, 500, paint);
        canvas.drawRect(50, 520, 350, 820, paint);

        canvas.drawText("Line", 480, 500, paint);
        canvas.drawLine(520, 540, 520, 900, paint);

        canvas.drawText("Triangle", 100, 910, paint);
        Path path= new Path();
        Point a = new Point(100, 950);
        Point b = new Point(100, 1100);
        Point c = new Point(400, 1100);
        path.lineTo(a.x, a.y);
        path.lineTo(b.x, b.y);
        path.lineTo(c.x, c.y);
        path.lineTo(a.x, a.y);
        path.close();
        canvas.drawPath(path, paint);

    }
}
```

OUTPUT



RESULT:

Thus an android application that uses graphical primitive has been developed and executed successfully.

Exp No: 4	Develop an application that make use of database.
Date:	

AIM

To develop an application that make use of database.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno4” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → res → layout → activity_main.xml and design the layout.
Step 7: Click on app → java → com.example.exno4 → MainActivity and type the java code.
Step 8: Run the project.

PROGRAM

activity_main.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:layout_gravity="center"
   android:orientation="vertical">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Student Details"
      android:textSize="30sp" />

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Enter Name:"
      android:textSize="20sp" />

   <EditText
      android:id="@+id/Name"
      android:layout_width="150dp"
      android:layout_height="wrap_content"
      android:digits="a-z A-Z"
      android:inputType="text"
      android:textSize="20sp" />
```

```
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Enter Register No:"
   android:textSize="20sp" />

<EditText
   android:id="@+id/RegisterNo"
   android:layout_width="150dp"
   android:layout_height="wrap_content"
   android:inputType="number"
   android:textSize="20sp" />

<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Enter CGPA:"
   android:textSize="20sp" />

<EditText
   android:id="@+id/CGPA"
   android:layout_width="150dp"
   android:layout_height="wrap_content"
   android:inputType="number"
   android:textSize="20sp" />

<LinearLayout
   android:layout_width="match_parent"
   android:layout_height="wrap_content"
   android:orientation="horizontal">

   <Button
      android:id="@+id/Insert"
      android:layout_width="160dp"
      android:layout_height="wrap_content"
      android:text="Insert"
      android:textSize="30dp" />

   <Button
      android:id="@+id/Delete"
      android:layout_width="165dp"
      android:layout_height="wrap_content"
      android:text="Delete"
      android:textSize="30dp" />
```

```
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <Button
            android:id="@+id/Update"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Update"
            android:textSize="30dp" />

        <Button
            android:id="@+id/View"
            android:layout_width="165dp"
            android:layout_height="wrap_content"
            android:text="View"
            android:textSize="30dp" />

    </LinearLayout>

    <Button
        android:id="@+id/ViewAll"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:text="View All"
        android:textSize="30dp" />

</LinearLayout>
```

MainActivity.java

```
import android.app.Activity;
import android.app.AlertDialog;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.Cursor;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.view.View.OnClickListener;
import android.view.View;

public class MainActivity extends Activity implements OnClickListener {
```

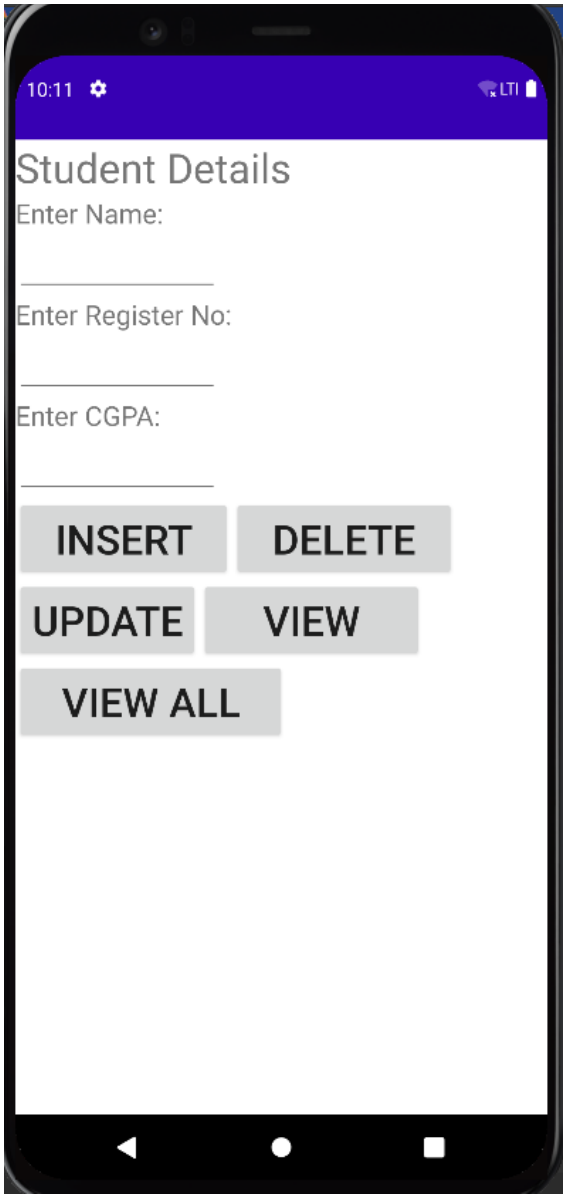
```
    EditText RegisterNo, Name, CGPA;
    Button Insert, Delete, Update, View, ViewAll;
    SQLiteDatabase db;

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

        RegisterNo=(EditText)findViewById(R.id.RegisterNo);
        Name=(EditText)findViewById(R.id.Name);
        CGPA=(EditText)findViewById(R.id.CGPA);
        Insert=(Button)findViewById(R.id.Insert);
        Delete=(Button)findViewById(R.id.Delete);
        Update=(Button)findViewById(R.id.Update);
        View=(Button)findViewById(R.id.View);
        ViewAll=(Button)findViewById(R.id.ViewAll);
        Insert.setOnClickListener(this);
        Delete.setOnClickListener(this);
        Update.setOnClickListener(this);
        View.setOnClickListener(this);
        ViewAll.setOnClickListener(this);

        db = openOrCreateDatabase("StudentDB", Context.MODE_PRIVATE, null);
        db.execSQL("CREATE TABLE IF NOT EXISTS student(RegisterNo VARCHAR,
Name VARCHAR, CGPA Varchar);");

    }

    public void onClick(View view){
        if(view==Insert){
            if(RegisterNo.getText().toString().trim().length()==0||
                    Name.getText().toString().trim().length()==0||
                    CGPA.getText().toString().trim().length()==0)
            {
                showMessage("Error", "Please enter all values");
                return;
            }
            db.execSQL("INSERT INTO student
VALUES('"+RegisterNo.getText()+"','"+Name.getText()+ "','"+CGPA.getText()+"');");
            showMessage("Success", "Record added");
            clearText();
        }

        if(view==Delete){
            if(RegisterNo.getText().toString().trim().length()==0)
```

```
        {
            showMessage("Error", "Please enter RegisterNo");
            return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE
RegisterNo="'+RegisterNo.getText()+"'", null);
        if(c.moveToFirst())
        {
            db.execSQL("DELETE FROM student WHERE
RegisterNo="'+RegisterNo.getText()+"'");
            showMessage("Success", "Record Deleted");
        }
        else
        {
            showMessage("Error", "Invalid Register No");
        }
        clearText();
    }

    if(view==Update){
        if(RegisterNo.getText().toString().trim().length()==0)
        {
            showMessage("Error", "Please enter RegisterNo");
            return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE
RegisterNo="'+RegisterNo.getText()+"'", null);
        if(c.moveToFirst()) {
            db.execSQL("UPDATE student SET name='" + Name.getText() + "',CGPA='" +
                    CGPA.getText() +
                    "' WHERE RegisterNo="'+RegisterNo.getText()+"'");
            showMessage("Success", "Record Modified");
        }
        else {
            showMessage("Error", "Invalid RegisterNo");
        }
        clearText();
    }

    if(view==View){
        if(RegisterNo.getText().toString().trim().length()==0)
        {
            showMessage("Error", "Please enter RegisterNo");
            return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE
```

```
RegisterNo="'+RegisterNo.getText()+"'", null);
        if(c.moveToFirst())
        {
           Name.setText(c.getString(1));
           CGPA.setText(c.getString(2));
        }
        else
        {
           showMessage("Error", "Invalid RegisterNo");
           clearText();
        }
     }

     if(view==ViewAll){
        Cursor c=db.rawQuery("SELECT * FROM student", null);
        if(c.getCount()==0)
        {
           showMessage("Error", "No records found");
           return;
        }
        StringBuffer buffer=new StringBuffer();
        while(c.moveToNext())
        {
           buffer.append("RegisterNo: "+c.getString(0)+"\n");
           buffer.append("Name: "+c.getString(1)+"\n");
           buffer.append("CGPA: "+c.getString(2)+"\n\n");
        }
        showMessage("Student Details", buffer.toString());
     }

  }

  private void clearText() {
     RegisterNo.setText("");
     Name.setText("");
     CGPA.setText("");
     RegisterNo.requestFocus();
  }

  private void showMessage(String error, String please_enter_all_values) {
     AlertDialog.Builder builder=new AlertDialog.Builder(this);
     builder.setCancelable(true);
     builder.setTitle(error);
     builder.setMessage(please_enter_all_values);
     builder.show();
```

```
    }
}
```

OUTPUT



RESULT:

Thus an android application that uses database has been developed and executed successfully.

Exp No: 5	Implement an application that uses multithreading.
Date:	

AIM

To develop an application that uses multithreading.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno5” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → res → layout → activity_main.xml and design the layout.
Step 7: Click on app → java → com.example.exno5 → MainActivity and type the java code.
Step 8: Run the project.

PROGRAM

activity_main.xml

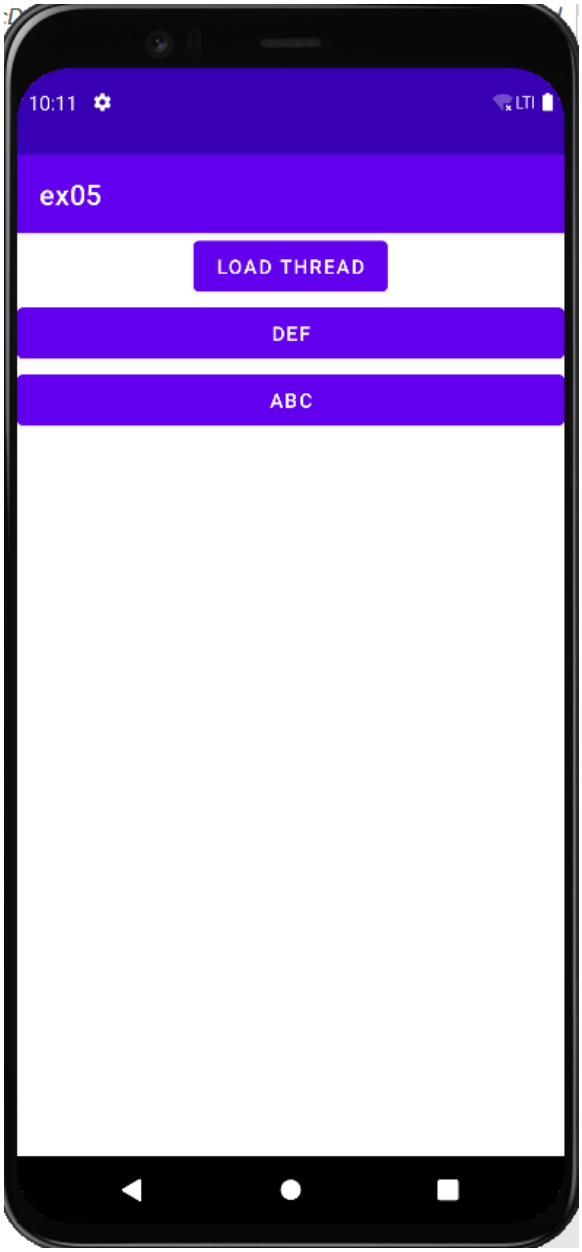
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">

   <Button
      android:id="@+id/button"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_gravity="center"
      android:text="Load Thread" />

   <Button
      android:id="@+id/button2"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="ABC" />

   <Button
      android:id="@+id/button3"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="ABC" />
```

```
</LinearLayout>
```

MainActivity.java

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

public class MainActivity extends AppCompatActivity {
    Button btn1, btn2, btn3;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        btn1 = (Button)findViewById(R.id.button);
        btn2 = (Button)findViewById(R.id.button2);
        btn3 = (Button)findViewById(R.id.button3);

        btn1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                new Thread(new Runnable() {
                    @Override
                    public void run() {
                        btn2.setText("DEF");
                    }
                }).start();
                new Thread(new Runnable() {
                    @Override
                    public void run() {
                        try {
                            Thread.sleep(3000);
                        } catch (InterruptedException e) {
                            e.printStackTrace();
                        }
                        btn3.setText("DEF");
                    }
                }).start();
            }
        });

    }
}
```

OUTPUT



RESULT:

Thus an android application that uses multithreading has been developed and executed successfully.

Exp No: 6	Develop an application that uses GPS location information.
Date:	

AIM

To develop an application that uses GPS location information.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno6” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → manifests → AndroidManifest.xml and give location and internet permission.
Step 7: Click on app → res → layout → activity_main.xml and design the layout.
Step 8: Click on app → java → com.example.exno6 → MainActivity and type the java code.
Step 9: Click on app → java → com.example.exno6 → GpsTracker and type the java code.
Step 10: Run the project.

PROGRAM

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
   android:orientation="vertical"
   tools:context=".MainActivity">

   <TextView
      android:layout_width="match_parent"
      android:layout_height="50dp"
      android:text="Latitude"
      android:textSize="18sp"
      android:textStyle="bold"/>

   <TextView
      android:id="@+id/latitude"
      android:layout_width="match_parent"
      android:layout_height="50dp"
      android:text="-"
      android:textSize="20sp"
      android:textStyle="bold"/>
```

```
    <TextView
        android:layout_width="match_parent"
        android:layout_height="50dp"
        android:text="Longitude"
        android:textSize="18sp"
        android:textStyle="bold"/>


    <TextView
        android:id="@+id/longitude"
        android:layout_width="match_parent"
        android:layout_height="50dp"
        android:textSize="20sp"
        android:textStyle="bold"
        android:text="-"/>


    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:onClick="getLocation"
        android:text="GET LOCATION" />

</LinearLayout>
```

MainActivity.java

```
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.view.View;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;

public class MainActivity extends AppCompatActivity {

    private GpsTracker gpsTracker;
    private TextView tvLatitude,tvLongitude;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        tvLatitude = (TextView)findViewById(R.id.latitude);
        tvLongitude = (TextView)findViewById(R.id.longitude);
```

```
        try {
            if (ContextCompat.checkSelfPermission(getApplicationContext(),
android.Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED ) {
                ActivityCompat.requestPermissions(this, new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION}, 101);
            }
        } catch (Exception e){
            e.printStackTrace();
        }
    }

    public void getLocation(View view){
        gpsTracker = new GpsTracker(MainActivity.this);
        if(gpsTracker.canGetLocation()){
            double latitude = gpsTracker.getLatitude();
            double longitude = gpsTracker.getLongitude();
            tvLatitude.setText(String.valueOf(latitude));
            tvLongitude.setText(String.valueOf(longitude));
        }else{
            gpsTracker.showSettingsAlert();
        }
    }
}
```

GpsTracker.java

```
import android.Manifest;
import android.app.Activity;
import android.app.Service;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.os.IBinder;
import android.provider.Settings;
import android.util.Log;

import androidx.appcompat.app.AlertDialog;
import androidx.core.app.ActivityCompat;

class GpsTracker extends Service implements LocationListener {
    private final Context mContext;
```

```
    // flag for GPS status
    boolean isGPSEnabled = false;

    // flag for network status
    boolean isNetworkEnabled = false;

    // flag for GPS status
    boolean canGetLocation = false;

    Location location; // location
    double latitude; // latitude
    double longitude; // longitude

    // The minimum distance to change Updates in meters
    private static final long MIN_DISTANCE_CHANGE_FOR_UPDATES = 10; // 10 meters

    // The minimum time between updates in milliseconds
    private static final long MIN_TIME_BW_UPDATES = 1000 * 60 * 1; // 1 minute

    // Declaring a Location Manager
    protected LocationManager locationManager;

    public GpsTracker(Context context) {
        this.mContext = context;
        getLocation();
    }

    public Location getLocation() {
        try {
            locationManager = (LocationManager)
mContext.getSystemService(LOCATION_SERVICE);

            // getting GPS status
            isGPSEnabled =
locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER);

            // getting network status
            isNetworkEnabled = locationManager
                    .isProviderEnabled(LocationManager.NETWORK_PROVIDER);

            if (!isGPSEnabled && !isNetworkEnabled) {
                // no network provider is enabled
            } else {
                this.canGetLocation = true;
                // First get location from Network Provider
```

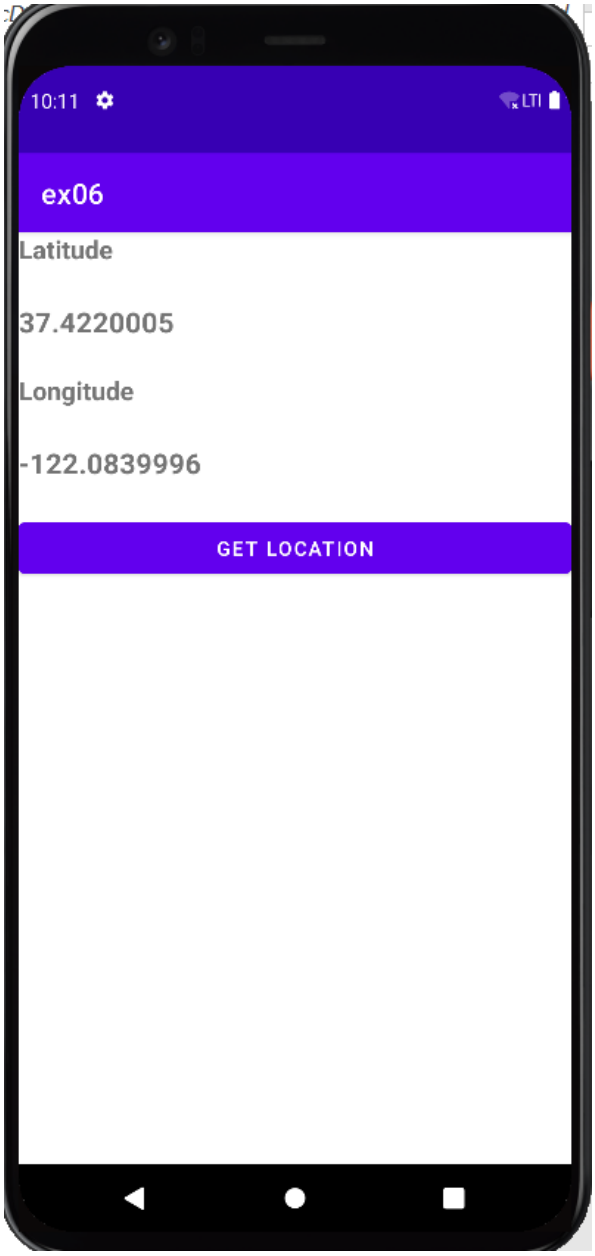
```
            if (isNetworkEnabled) {
                //check the network permission
                if (ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED &&
ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
                    ActivityCompat.requestPermissions((Activity) mContext, new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION,
Manifest.permission.ACCESS_COARSE_LOCATION}, 101);
                }
                locationManager.requestLocationUpdates(
                        LocationManager.NETWORK_PROVIDER,
                        MIN_TIME_BW_UPDATES,
                        MIN_DISTANCE_CHANGE_FOR_UPDATES, this);

                Log.d("Network", "Network");
                if (locationManager != null) {
                    location = locationManager
                            .getLastKnownLocation(LocationManager.NETWORK_PROVIDER);

                    if (location != null) {
                        latitude = location.getLatitude();
                        longitude = location.getLongitude();
                    }
                }
            }

            // if GPS Enabled get lat/long using GPS Services
            if (isGPSEnabled) {
                if (location == null) {
                    //check the network permission
                    if (ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED &&
ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
                        ActivityCompat.requestPermissions((Activity) mContext, new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION,
Manifest.permission.ACCESS_COARSE_LOCATION}, 101);
                    }
                    locationManager.requestLocationUpdates(
                            LocationManager.GPS_PROVIDER,
                            MIN_TIME_BW_UPDATES,
```

```
                    MIN_DISTANCE_CHANGE_FOR_UPDATES, this);

                Log.d("GPS Enabled", "GPS Enabled");
                if (locationManager != null) {
                   location = locationManager
                         .getLastKnownLocation(LocationManager.GPS_PROVIDER);

                   if (location != null) {
                      latitude = location.getLatitude();
                      longitude = location.getLongitude();
                   }
                }
             }
          }
       }

    } catch (Exception e) {
       e.printStackTrace();
    }

    return location;
}

/**
 * Stop using GPS listener
 * Calling this function will stop using GPS in your app
 * */

public void stopUsingGPS(){
    if(locationManager != null){
       locationManager.removeUpdates(GpsTracker.this);
    }
}

/**
 * Function to get latitude
 * */

public double getLatitude(){
    if(location != null){
       latitude = location.getLatitude();
    }

    // return latitude
    return latitude;
}
```

```
/**
 * Function to get longitude
 * */

public double getLongitude(){
    if(location != null){
        longitude = location.getLongitude();
    }

    // return longitude
    return longitude;
}

/**
 * Function to check GPS/wifi enabled
 * @return boolean
 * */

public boolean canGetLocation() {
    return this.canGetLocation;
}

/**
 * Function to show settings alert dialog
 * On pressing Settings button will lauch Settings Options
 * */

public void showSettingsAlert(){
    AlertDialog.Builder alertDialog = new AlertDialog.Builder(mContext);

    // Setting Dialog Title
    alertDialog.setTitle("GPS is settings");

    // Setting Dialog Message
    alertDialog.setMessage("GPS is not enabled. Do you want to go to settings menu?");

    // On pressing Settings button
    alertDialog.setPositiveButton("Settings", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog,int which) {
            Intent intent = new Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
            mContext.startActivity(intent);
        }
    });

    // on pressing cancel button
```

```
        alertDialog.setNegativeButton("Cancel", new DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int which) {
                dialog.cancel();
            }
        });
        alertDialog.show();
    }

    @Override
    public void onLocationChanged(Location location) {
    }

    @Override
    public void onProviderDisabled(String provider) {
    }

    @Override
    public void onProviderEnabled(String provider) {
    }

    @Override
    public void onStatusChanged(String provider, int status, Bundle extras) {
    }

    @Override
    public IBinder onBind(Intent arg0) {
        return null;
    }
}
```

OUTPUT



RESULT:

Thus an android application that uses GPS location information has been developed and executed successfully.

Exp No: 7	Implement an application that writes data to SD card.
Date:	

AIM

To develop an application that writes data to SD card.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno7” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → manifests → AndroidManifest.xml and give SD card permission.
Step 7: Click on app → res → layout → activity_main.xml and design the layout.
Step 8: Click on app → java → com.example.exno7 → MainActivity and type the java code.
Step 9: Run the project.

PROGRAM

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

    <Button
        android:id="@+id/write"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Write Data" />
    <Button
        android:id="@+id/read"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Read Data" />
    <Button
```

```
    android:id="@+id/clear"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Clear Data" />

</LinearLayout>
```

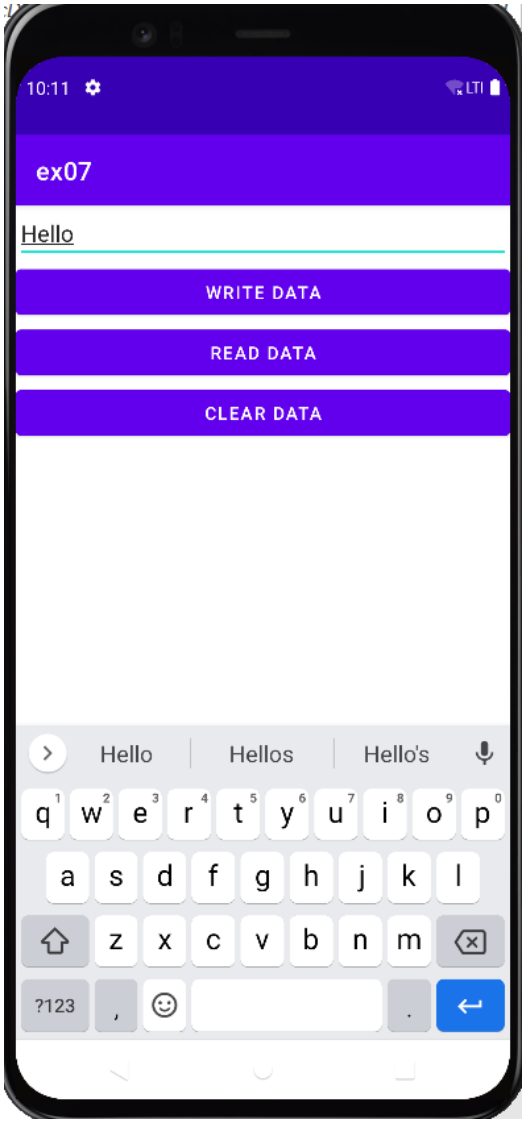
MainActivity.java

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.os.Environment;
import android.view.View;
import android.widget.*;
import java.io.*;

public class MainActivity extends AppCompatActivity {

   EditText edit;
   Button write, read, clear;

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

      edit = (EditText) findViewById(R.id.editText);
      write = (Button) findViewById(R.id.write);
      read = (Button) findViewById(R.id.read);
      clear = (Button) findViewById(R.id.clear);

      write.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            String message = edit.getText().toString();
            try {
               File folder = null;
               if (android.os.Build.VERSION.SDK_INT >=
android.os.Build.VERSION_CODES.KITKAT) {
                  folder =
Environment.getExternalStoragePublicDirectory(Environment.DIRECTORY_DOCUMENTS
);
               }
               File f = new File(folder, "myfile.txt");
               f.createNewFile();
               FileOutputStream fos = new FileOutputStream(f);
               OutputStreamWriter osw = new OutputStreamWriter(fos);
```

```
                osw.append(message);
                osw.close();
                fos.close();
                Toast.makeText(getBaseContext(), "Data written to SD card",
Toast.LENGTH_LONG).show();
            } catch (Exception e) {
                Toast.makeText(getBaseContext(), e.getMessage(),
Toast.LENGTH_LONG).show();
            }
        }
    });

    read.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            String message;
            String buf = "";
            try {
                File folder = null;
                if (android.os.Build.VERSION.SDK_INT >=
android.os.Build.VERSION_CODES.KITKAT) {
                    folder =
Environment.getExternalStoragePublicDirectory(Environment.DIRECTORY_DOCUMENTS
);
                }
                File f = new File(folder, "myfile.txt");
                FileInputStream fin = new FileInputStream(f);
                BufferedReader br = new BufferedReader(new InputStreamReader(fin));
                while((message = br.readLine()) != null){
                    buf += message;
                }
                edit.setText(buf);
                br.close();
                fin.close();
                Toast.makeText(getBaseContext(), "Data read from SD card",
Toast.LENGTH_LONG).show();
            } catch (Exception e) {
                Toast.makeText(getBaseContext(), e.getMessage(),
Toast.LENGTH_LONG).show();
            }
        }
    });

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

```
            edit.setText("");
        }
    });
  }
}
```

OUTPUT



RESULT:

Thus an android application that writes data to SD card has been developed and executed successfully.

Exp No: 8	Implement an application that sends a SMS and create an alert.
Date:	

AIM

To develop an application that sends a SMS and create an alert.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno8” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → res → layout → activity_main.xml and design the layout.
Step 7: Click on app → java → com.example.exno8 → MainActivity and type the java code.
Step 8: Click on File → New → Activity → Empty Activity to create a new activity.
Step 9: Click on app → res → layout → activity_second.xml and design the layout.
Step 10: Click on app → java → com.example.exno8 → SecondActivity and type the java code.
Step 11: Run the project.

PROGRAM

activity_main.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:layout_margin="10dp"
   android:orientation="vertical">

   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Message"
      android:textSize="30sp" />

   <EditText
      android:id="@+id/editText"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:singleLine="true"
      android:textSize="30sp" />

   <Button
      android:id="@+id/button"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="30dp"
    android:layout_gravity="center"
    android:text="Notify"
    android:textSize="30sp"/>

</LinearLayout>
```

MainActivity.java

```
import android.app.Notification;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity
{
   Button notify;
   EditText e;
   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);

      notify= (Button) findViewById(R.id.button);
      e= (EditText) findViewById(R.id.editText);

      notify.setOnClickListener(new View.OnClickListener()
      {
         @Override
         public void onClick(View v)
         {
            Intent intent = new Intent(MainActivity.this, SecondActivity.class);
            PendingIntent pending = PendingIntent.getActivity(MainActivity.this, 0, intent, 0);
            Notification noti = new
Notification.Builder(MainActivity.this).setContentTitle("New
Message").setContentText(e.getText().toString()).setSmallIcon(R.mipmap.ic_launcher).setC
ontentIntent(pending).build();
            NotificationManager manager = (NotificationManager)
```

```
getSystemService(NOTIFICATION_SERVICE);
            noti.flags |= Notification.FLAG_AUTO_CANCEL;
            manager.notify(0, noti);
        }
    });
  }
}
```

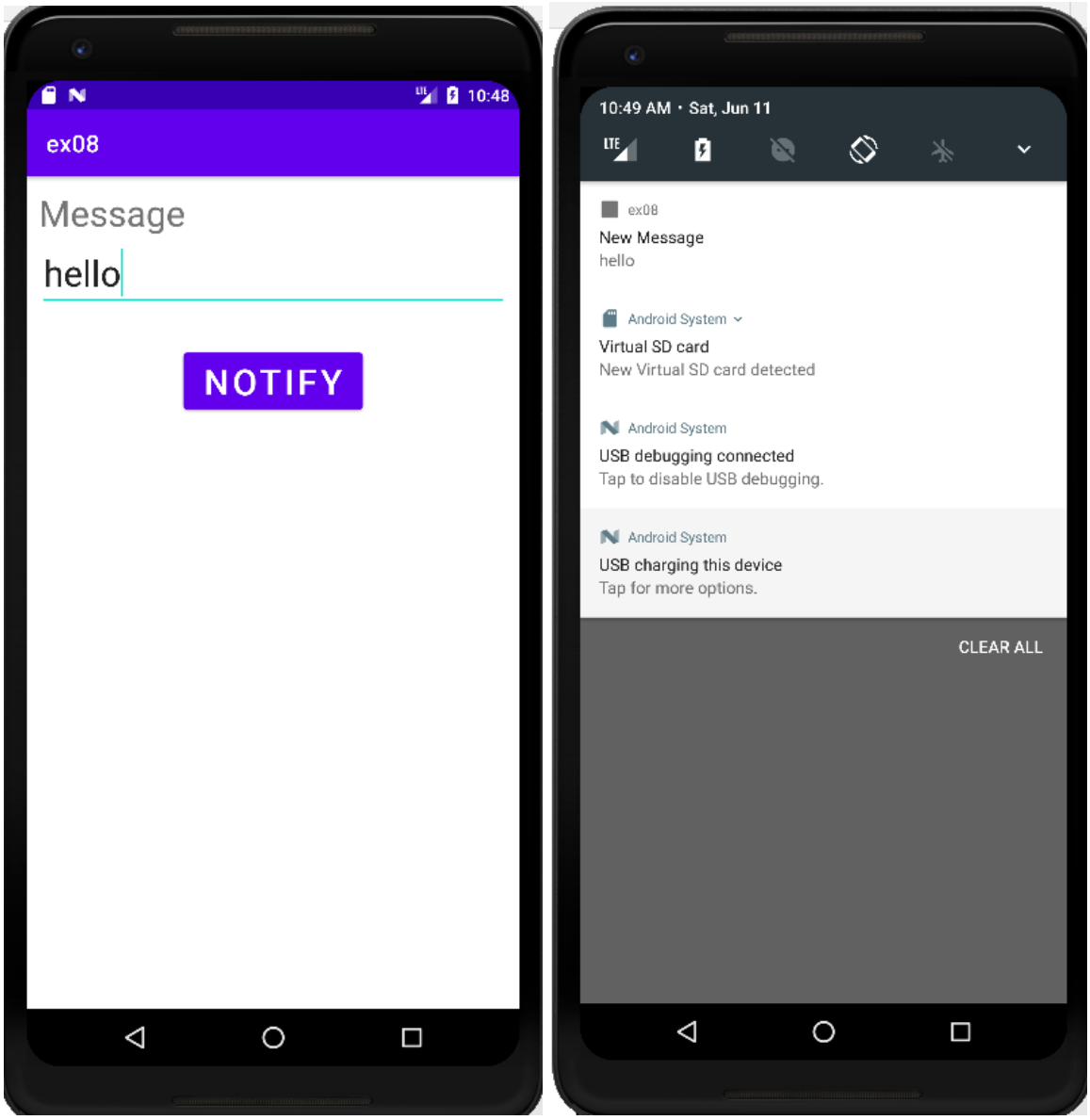
activity_second.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:orientation="vertical"
  android:layout_height="match_parent"
  tools:context=".SecondActivity">

  <TextView
    android:id="@+id/text1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Notification"/>

  <TextView
    android:id="@+id/text2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" />

</LinearLayout>
```

SecondActivity.java

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;

public class SecondActivity extends AppCompatActivity {

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

  }
```

OUTPUT



RESULT:

Thus an android application that sends a SMS and creates an alert has been developed and executed successfully.

Exp No: 9	Create an app that make use of menu.
Date:	

AIM

To develop an application that make use of menu.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno1” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → res → layout → activity_main.xml and design the layout.
Step 7: Click on app → res and create a new folder “menu” and two files inside the menu folder named “menu_example.xml” and “options_menu.xml”.
Step 8: Click on app → java → com.example.exno9 → MainActivity and type the java code.
Step 9: Run the project.

PROGRAM

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:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Hello World!"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintLeft_toLeftOf="parent"
      app:layout_constraintRight_toRightOf="parent"
      app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

menu_example.xml

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

```
    <item android:id="@+id/mail"
        android:icon="@drawable/ic_mail"
        android:title="@string/mail" />
    <item android:id="@+id/upload"
        android:icon="@drawable/ic_upload"
        android:title="@string/upload"
        app:showAsAction="ifRoom" />
    <item android:id="@+id/share"
        android:icon="@drawable/ic_share"
        android:title="@string/share" />
</menu>
```

options_menu.xml

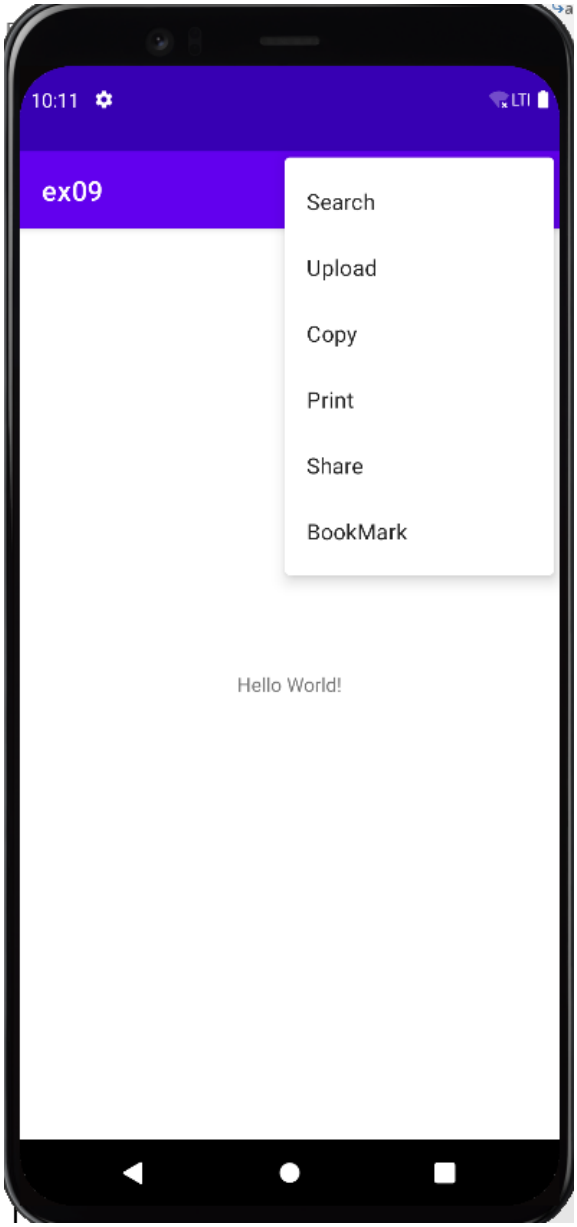
```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android" >
    <item android:id="@+id/search_item"
        android:title="Search" />
    <item android:id="@+id/upload_item"
        android:title="Upload" />
    <item android:id="@+id/copy_item"
        android:title="Copy" />
    <item android:id="@+id/print_item"
        android:title="Print" />
    <item android:id="@+id/share_item"
        android:title="Share" />
    <item android:id="@+id/bookmark_item"
        android:title="BookMark" />
</menu>
```

MainActivity.java

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.options_menu, menu);
        return true;
```

```
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        Toast.makeText(this, "Selected Item: " +item.getTitle(),
Toast.LENGTH_SHORT).show();
        switch (item.getItemId()) {
            case R.id.search_item:
                // do your code
                return true;
            case R.id.upload_item:
                // do your code
                return true;
            case R.id.copy_item:
                // do your code
                return true;
            case R.id.print_item:
                // do your code
                return true;
            case R.id.share_item:
                // do your code
                return true;
            case R.id.bookmark_item:
                // do your code
                return true;
            default:
                return super.onOptionsItemSelected(item);
        }
    }
}
```

OUTPUT



RESULT:

Thus an android application that make use of menu has been developed and executed successfully.

Exp No: 10	Develop an application to build an alarm clock.
Date:	

AIM

To develop an application to build an alarm clock.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno10” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → manifests → AndroidManifest.xml and give vibrate and wake lock permission.
Step 7: Click on app → res → layout → activity_main.xml and design the layout.
Step 8: Click on app → java → com.example.exno10 → MainActivity and type the java code.
Step 9: Click on app → java → com.example.exno10 → AlarmReceiver and type the java code.
Step 10: Run the project.

PROGRAM

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
   android:orientation="vertical"
   tools:context=".MainActivity">

   <TimePicker
      android:id="@+id/timePicker"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_gravity="center" />

   <ToggleButton
      android:id="@+id/toggleButton"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_gravity="center"
      android:layout_margin="20dp"
      android:checked="false"
      android:onClick="OnToggleClicked" />
```

```
</LinearLayout>
```

MainActivity.java

```
import android.app.AlarmManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.TimePicker;
import android.widget.Toast;
import android.widget.ToggleButton;

import androidx.appcompat.app.AppCompatActivity;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity {
    TimePicker alarmTimePicker;
    PendingIntent pendingIntent;
    AlarmManager alarmManager;

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

        alarmTimePicker = (TimePicker) findViewById(R.id.timePicker);
        alarmManager = (AlarmManager) getSystemService(ALARM_SERVICE);

    }

    // OnToggleClicked() method is implemented the time functionality
    public void OnToggleClicked(View view) {
        long time;
        if (((ToggleButton) view).isChecked()) {
            Toast.makeText(MainActivity.this, "ALARM ON", Toast.LENGTH_SHORT).show();
            Calendar calendar = Calendar.getInstance();

            // calendar is called to get current time in hour and minute
            calendar.set(Calendar.HOUR_OF_DAY, alarmTimePicker.getCurrentHour());
            calendar.set(Calendar.MINUTE, alarmTimePicker.getCurrentMinute());

            // using intent i have class AlarmReceiver class which inherits
            // BroadcastReceiver
            Intent intent = new Intent(this, AlarmReceiver.class);
```

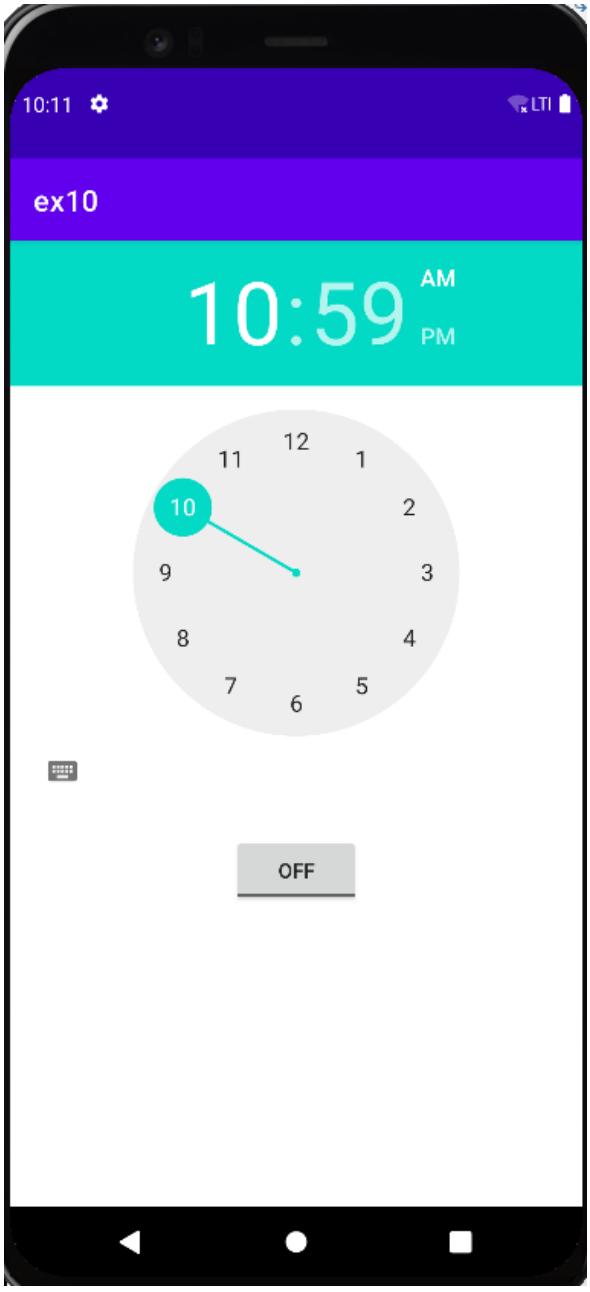
```
        // we call broadcast using pendingIntent
        pendingIntent = PendingIntent.getBroadcast(this, 0, intent, 0);

        time = (calendar.getTimeInMillis() - (calendar.getTimeInMillis() % 60000));
        if (System.currentTimeMillis() > time) {
           // setting time as AM and PM
           if (calendar.AM_PM == 0)
              time = time + (1000 * 60 * 60 * 12);
           else
              time = time + (1000 * 60 * 60 * 24);
        }
        // Alarm rings continuously until toggle button is turned off
        alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, time, 10000,
pendingIntent);
        // alarmManager.set(AlarmManager.RTC_WAKEUP, System.currentTimeMillis() +
(time * 1000), pendingIntent);
      } else {
        alarmManager.cancel(pendingIntent);
        Toast.makeText(MainActivity.this, "ALARM OFF",
Toast.LENGTH_SHORT).show();
      }
   }
}
```

AlarmReceiver.java

```
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.media.Ringtone;
import android.media.RingtoneManager;
import android.net.Uri;
import android.os.Build;
import android.os.Vibrator;
import android.widget.Toast;

import androidx.annotation.RequiresApi;

public class AlarmReceiver extends BroadcastReceiver {
   @RequiresApi(api = Build.VERSION_CODES.Q)
   @Override
   // implement onReceive() method
   public void onReceive(Context context, Intent intent) {

      // we will use vibrator first
      Vibrator vibrator = (Vibrator)
```

```
context.getSystemService(context.VIBRATOR_SERVICE);
        vibrator.vibrate(4000);

        Toast.makeText(context, "Alarm! Wake up! Wake up!",
Toast.LENGTH_LONG).show();
        Uri alarmUri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
        if (alarmUri == null) {
            alarmUri =
RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
        }

        // setting default ringtone
        Ringtone ringtone = RingtoneManager.getRingtone(context, alarmUri);

        // play ringtone
        ringtone.play();
    }
}
```

OUTPUT



RESULT:

Thus an android application to build an alarm clock has been developed and executed successfully.

Exp No: 11	Implement a hybrid mobile application.
Date:	

AIM

To develop a hybrid mobile application.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as “exno11” and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Click on app → res → layout → activity_main.xml and design the layout.
Step 8: Click on app → java → com.example.exno11 → MainActivity and type the java code.
Step 9: Run the project.

PROGRAM

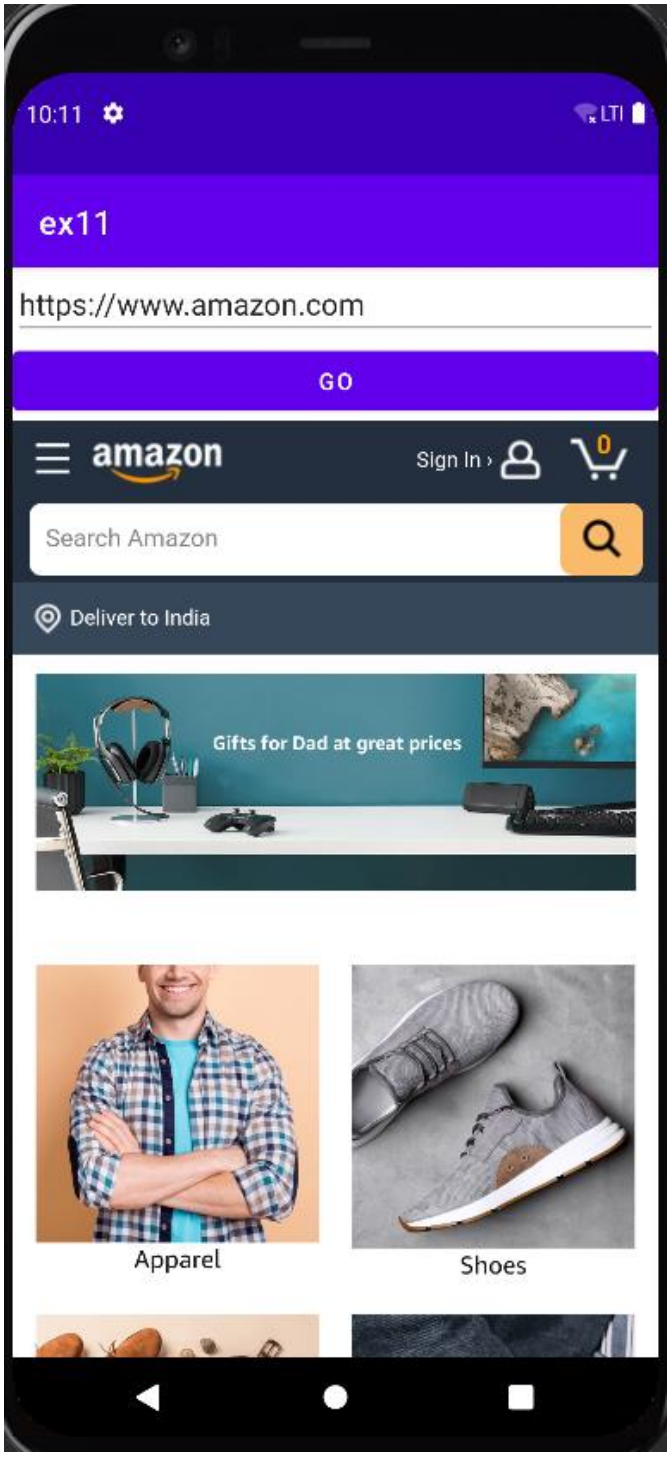
activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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"
   android:orientation="vertical"
   tools:context=".MainActivity">

   <EditText
      android:id="@+id/website_name"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"/>

   <Button
      android:id="@+id/go"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="Go"/>

   <WebView
      android:id="@+id/webview"
      android:layout_width="match_parent"
      android:layout_height="match_parent"/>

</LinearLayout>
```

MainActivity.java

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.webkit.WebView;
import android.webkit.WebViewClient;
import android.widget.*;

public class MainActivity extends AppCompatActivity {

   Button go;
   EditText site;
   WebView myWebView;

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

      site = (EditText)findViewById(R.id.website_name);
      go = (Button)findViewById(R.id.go);

      myWebView = (WebView) findViewById(R.id.webview);
      myWebView.setWebViewClient(new MyBrowser());

      go.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View view) {
            String url = site.getText().toString();
            myWebView.loadUrl(url);
         }
      });
   }

   private class MyBrowser extends WebViewClient {
      @Override
      public boolean shouldOverrideUrlLoading(WebView view, String url) {
         view.loadUrl(url);
         return true;
      }
   }

}
```

OUTPUT



RESULT:

Thus a hybrid mobile application has been developed and executed successfully.

Exp No: 12	Develop a Mobile application for simple needs (Mini project)
Date:	

AIM

To develop an application for Prescription Viewer.

ALGORITHM

Step 1: Open Android Studio and then click on File → New → New Project.
Step 2: Type the Application name as "PrescriptionViewer" and click Next.
Step 3: Select Empty Activity and click Next.
Step 4: Click Finish.
Step 5: It will build and load the project.
Step 6: Get patient's prescription details from the doctor.
Step 7: Store each patient's data as a pdf in SD card.
Step 8: Get the data to store it in history from the database.
Step 9: Run the project.

PROGRAM

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"
   android:layout_marginTop="25sp"
   tools:context=".MainActivity">

   <EditText
      android:id="@+id/name"
      android:backgroundTint="@color/colorPrimary"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_margin="15dp"
      android:hint="Name"
      android:lines="1"/>

   <EditText
      android:id="@+id/address"
      android:backgroundTint="@color/colorPrimary"
      android:lines="1"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_below="@id/name"
      android:layout_margin="15dp"
```

```
    android:hint="Address" />

  <EditText
    android:id="@+id/symptoms"
    android:backgroundTint="@color/colorPrimary"
    android:lines="1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@id/address"
    android:layout_margin="15dp"
    android:hint="Symptoms" />

  <EditText
    android:id="@+id/prescription"
    android:backgroundTint="@color/colorPrimary"
    android:lines="1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@id/symptoms"
    android:layout_margin="15dp"
    android:hint="Prescription" />

  <LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_below="@id/prescription"
    android:layout_marginTop="15dp"
    android:gravity="center">

    <Button
      android:id="@+id/btn_save"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_below="@id/prescription"
      android:background="@color/colorPrimary"
      android:text="SAVE "
      android:textColor="#ffffff" />

    <Button
      android:id="@+id/btn_print"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_below="@id/btn_save"
      android:layout_marginLeft="15dp"
      android:background="@color/colorPrimary"
      android:text="History"
```

```
        android:textColor="#ffffff" />
    </LinearLayout>
</RelativeLayout>
```

activity_retrieve_previous_prescription.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=".RetrievePreviousPrescription">

    <ir.androidexception.datatable.DataTable
        android:id="@+id/data_table"
        android:layout_width="403dp"
        android:layout_height="match_parent"
        android:layout_marginStart="8dp"
        android:layout_marginTop="3dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        app:corner_radius="8dp"
        app:direction="ltr"
        app:header_background_color="#fff"
        app:header_gravity="center"
        app:header_horizontal_padding="0dp"
        app:header_text_color="#000"
        app:header_text_size="4sp"
        app:header_vertical_padding="16dp"
        app:persian_number="false"
        app:row_background_color="#fff"
        app:row_gravity="center"
        app:row_text_color="#000"
        app:row_text_size="4sp"
        app:row_vertical_padding="16dp"
        app:shadow="8dp" />

</RelativeLayout>
```

MainActivity.java

```
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.graphics.Canvas;
```

```
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.pdf.PdfDocument;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import java.io.File;
import java.io.FileOutputStream;
import java.io.IOException;
import java.text.SimpleDateFormat;
import java.util.Date;

public class MainActivity extends AppCompatActivity {
    Button save, print;
    EditText name,address,news,prescription,symptoms;

    DatabaseClass databaseClass;
    SQLiteDatabase sqLiteDatabase;
    Date date = new Date();

    SimpleDateFormat simpleDateFormat = new SimpleDateFormat("dd-MM-yyyy");
    SimpleDateFormat timepatternFormat = new SimpleDateFormat("hh:mm a");
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        save = findViewById(R.id.btn_save);
        print = findViewById(R.id.btn_print);
        name = findViewById(R.id.name);
        news = findViewById(R.id.on);
        prescription = findViewById(R.id.prescription);
        symptoms = findViewById(R.id.symptoms);
        address = findViewById(R.id.address);

        databaseClass = new DatabaseClass(this);
        sqLiteDatabase = databaseClass.getWritableDatabase();

        save.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String userName = String.valueOf(name.getText());
                String userAddress = String.valueOf(address.getText());
                String userSymptoms = String.valueOf(symptoms.getText());
```

```
            String userPrescription = String.valueOf(prescription.getText());

databaseClass.insert(userName,userAddress,date.getTime(),userSymptoms,userPrescription);

            Toast.makeText(getApplicationContext(),"Saved in Storage",
Toast.LENGTH_SHORT).show();

            printInvoice();
            name.setText("");
            address.setText("");
            symptoms.setText("");
            prescription.setText("");

        }
      });
      print.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
          Intent intent = new Intent(MainActivity.this,RetrievePreviousPrescription.class);
          startActivity(intent);
        }
      });

  }

  private void printInvoice() {
      PdfDocument pdfDocument = new PdfDocument();
      Paint paint = new Paint();
      String[] columns = {"invoiceNo","Name","address","date","symptoms","prescription"};
      Cursor cursor = sqLiteDatabase.query("myTable",columns,null,null,null,null,null);
      cursor.move(cursor.getCount());

      PdfDocument.PageInfo pageInfo = new
PdfDocument.PageInfo.Builder(1000,900,1).create();
      PdfDocument.Page page = pdfDocument.startPage(pageInfo);
      Canvas canvas = page.getCanvas();

      paint.setTextSize(80);
      canvas.drawText("Hospital Name",250,80,paint);

      paint.setTextSize(30);
      canvas.drawText("Dr. XYZ", 30, 150,paint);

      paint.setTextAlign(Paint.Align.RIGHT);
      canvas.drawText("Invoice No: ",canvas.getWidth()-70,150,paint);
      canvas.drawText(String.valueOf(cursor.getInt(0)),canvas.getWidth()-40,150,paint);
```

```
        paint.setTextAlign(Paint.Align.LEFT);

        paint.setColor(Color.BLACK);
        canvas.drawText("Date:",30,200, paint);
        canvas.drawText(simpleDateFormat.format(cursor.getLong(3)),120,200,paint);

        canvas.drawText("Time:",750,200,paint);
        paint.setTextAlign(Paint.Align.RIGHT);
        canvas.drawText(timepatternFormat.format(cursor.getLong(3)),canvas.getWidth()-
40,200,paint);
        paint.setTextAlign(Paint.Align.LEFT);

        paint.setColor(Color.BLACK);
        canvas.drawText("Patient Name:",30,350,paint);

        canvas.drawText("Address:",620,350,paint);
        paint.setTextAlign(Paint.Align.RIGHT);
        paint.setTextAlign(Paint.Align.LEFT);

        paint.setColor(Color.BLACK);
        canvas.drawText(cursor.getString(1),30,380,paint);
        canvas.drawText(cursor.getString(2),620,380,paint);
        paint.setTextAlign(Paint.Align.RIGHT);

        paint.setTextAlign(Paint.Align.LEFT);
        paint.setColor(Color.BLACK);
        canvas.drawText("Symptoms:",30,450,paint);
        canvas.drawText(cursor.getString(4),30,480,paint);

        canvas.drawText("Prescription:",620,450,paint);
        canvas.drawText(cursor.getString(5),620,480,paint);

        paint.setTextAlign(Paint.Align.RIGHT);
        canvas.drawText("STAY HEALTHY",900,800,paint);
        pdfDocument.finishPage(page);

        File file = new File(this.getExternalFilesDir("/"),cursor.getString(1)+"-
prescription.pdf");

        try {
            pdfDocument.writeTo(new FileOutputStream(file));
        } catch (IOException e) {
            e.printStackTrace();
        }
        pdfDocument.close();
```

```
    }
}
```

DatabaseClass.java

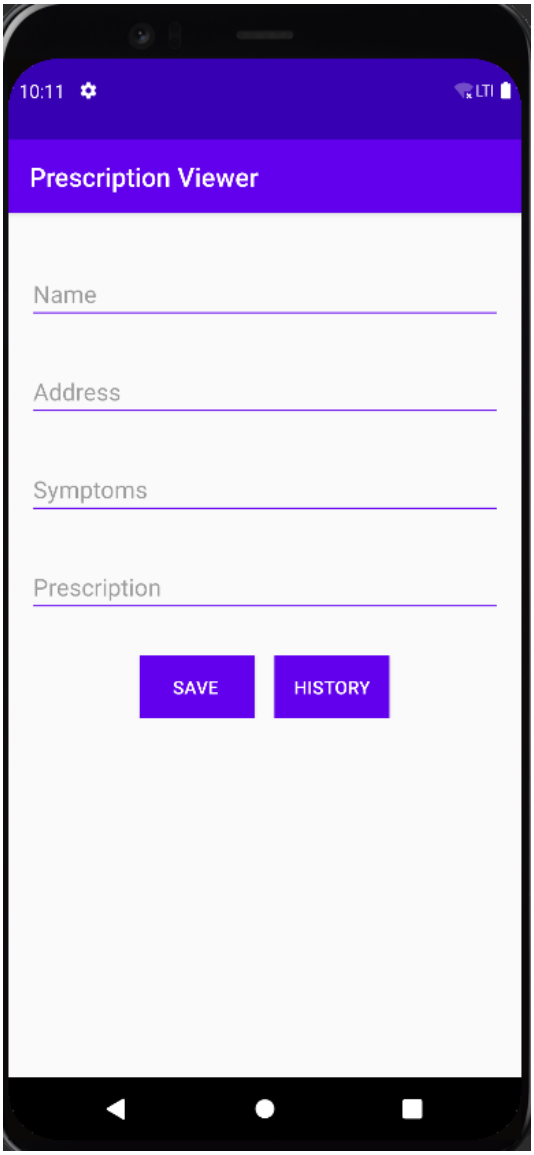
```
import android.content.ContentValues;
import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import androidx.annotation.Nullable;

public class DatabaseClass extends SQLiteOpenHelper {
    public DatabaseClass(@Nullable Context context) {
        super(context, "MyDatabase", null, 1);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {

        String createTable = "create table myTable(invoiceNo INTEGER PRIMARY KEY
AUTOINCREMENT, Name TEXT, address STRING, date INTEGER, symptoms STRING,
prescription SRTING);";
        db.execSQL(createTable);
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {

    }

    public void insert(String name, String address, Long date, String symptoms, String
prescription) {
        SQLiteDatabase sqLiteDatabase = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();

        contentValues.put("Name", name);
        contentValues.put("address", address);
        contentValues.put("date", date);
        contentValues.put("symptoms",symptoms);
        contentValues.put("prescription",prescription);
        sqLiteDatabase.insert("myTable",null,contentValues);

    }
}
```

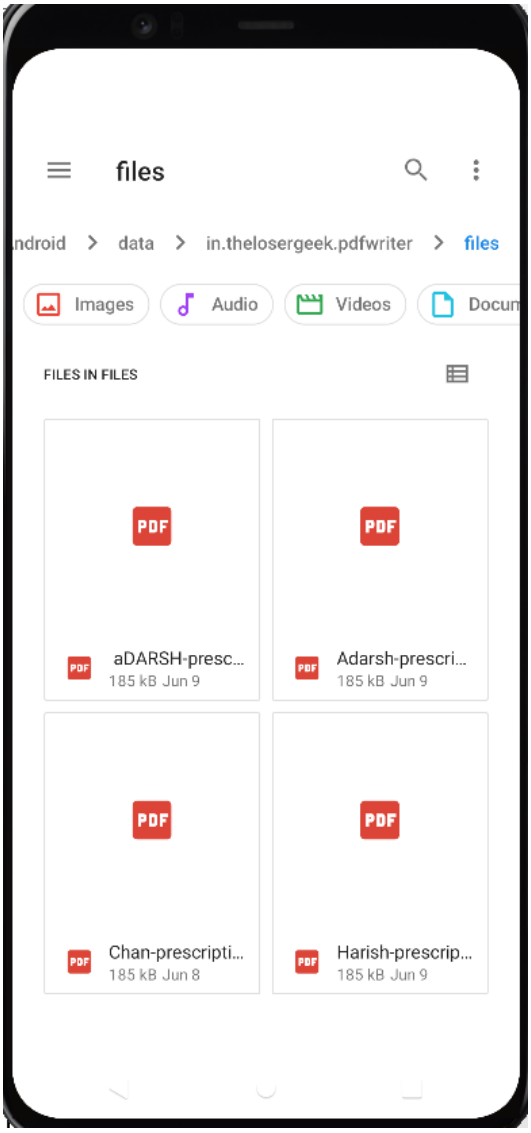
RetrievePreviousPrescription.java

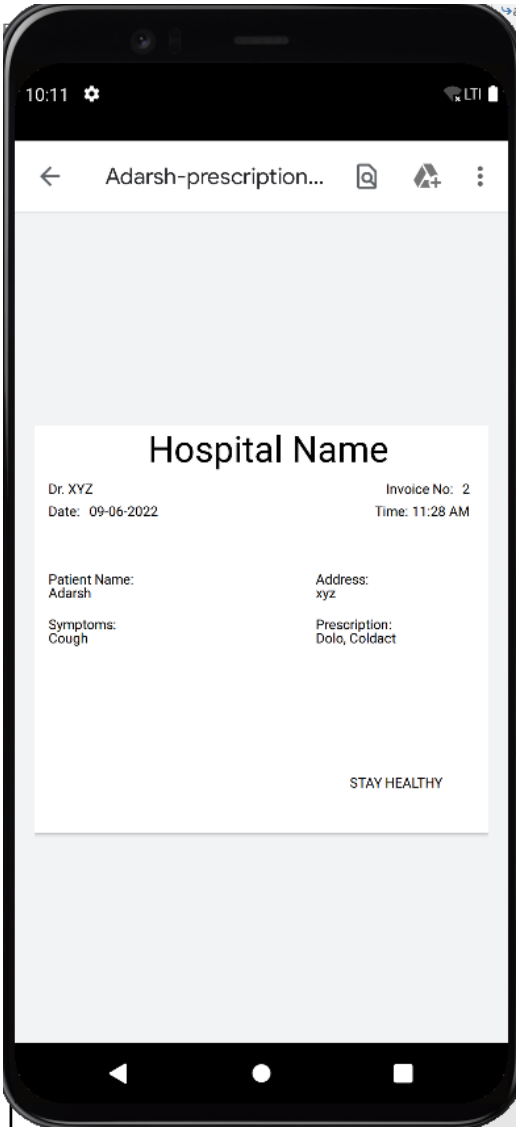
```
import androidx.appcompat.app.AppCompatActivity;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.Date;
import ir.androidexception.datatable.DataTable;
import ir.androidexception.datatable.model.DataTableHeader;
import ir.androidexception.datatable.model.DataTableRow;

public class RetrievePreviousPrescription extends AppCompatActivity {

    DataTable dataTable;
    DatabaseClass databaseClass;
    SQLiteDatabase sqLiteDatabasel;

    Date date = new Date();
    SimpleDateFormat simpleDateFormat = new SimpleDateFormat("dd-MM-yyyy");
    SimpleDateFormat timepatternFormat = new SimpleDateFormat("hh:mm a");

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_retrieve_previous_prescription);
        dataTable = findViewById(R.id.data_table);
        databaseClass = new DatabaseClass(this);
        sqLiteDatabasel = databaseClass.getWritableDatabase();
        DataTableHeader dataTableHeader = new DataTableHeader.Builder()
                .item("Invoice No.", 5)
                .item("Patient Name", 5)
                .item("Date", 5)
                .item("Time", 5)
                .build();

        ArrayList<DataTableRow> rows = new ArrayList<>();
        String[] columns = {"invoiceNo", "Name", "address", "date"};
        Cursor cursor = sqLiteDatabasel.query("myTable", columns, null, null, null, null, null);
        for (int i = 0; i < cursor.getCount(); i++) {
            cursor.moveToNext();
            DataTableRow row = new DataTableRow.Builder()
                    .value(String.valueOf(cursor.getInt(0)))
                    .value(cursor.getString(1))
                    .value(simpleDateFormat.format(cursor.getLong(3)))
                    .value(timepatternFormat.format(cursor.getLong(3)))
```

```
                .build();
            rows.add(row);
        }
        dataTable.setHeader(dataTableHeader);
        dataTable.setRows(rows);
        dataTable.inflate(this);
    }
}
```

OUTPUT







RESULT:

Thus an android application for Prescription Viewer has been developed and executed successfully.