Mobile Application Programs

1.Three UI Layout and Intent

AndroidManifest.xml:

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.threeuiandintent">

    <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/Theme.ThreeUIandIntent">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity
            android:name=".academic"
            android:exported="true">
        </activity>
        <activity
            android:name=".personal"
            android:exported="true">
        </activity>
    </application>

</manifest>
```

MainActivity,java:

```java
package com.example.threeuiandintent;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
```

```java
public class MainActivity extends AppCompatActivity
{
    Button bp, ba;
    Intent personal, academic;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        bp = findViewById(R.id.bper);
        ba = findViewById(R.id.baca);
        bp.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                personal = new Intent(getBaseContext(), personal.class);
                startActivity(personal);
            }
        });
        ba.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                academic = new Intent(getBaseContext(), academic.class);
                startActivity(academic);
            }
        });
    }
}
```

Academic.java:

```java
package com.example.threeuiandintent;

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

public class academic extends AppCompatActivity {
    Button b;
    Intent main;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_academic);
        b=(Button)findViewById(R.id.bahome);
        b.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
        public void onClick(View v) {
            main = new Intent(getBaseContext(), MainActivity.class);
            startActivity(main);
        }
    });
    }
}
```

Personal.java:

```
package com.example.threeuiandintent;

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

public class personal extends AppCompatActivity {
    Button b;
    Intent main;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_personal);
        b = (Button) findViewById(R.id.bphome);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                main = new Intent(getBaseContext(), MainActivity.class);
                startActivity(main);
            }
        });
    }
}
```

3.Layout Mangers and Event Listener

MainActivity.java:

```
package com.example.pg3;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.view.GestureDetectorCompat;
import android.view.GestureDetector;
import android.view.MotionEvent;
import android.widget.Toast;
import android.os.Bundle;
```

```java
public class MainActivity extends AppCompatActivity {
    private GestureDetectorCompat mGestureDetector;
    private class GestureListener extends
            GestureDetector.SimpleOnGestureListener {
        @Override
        public boolean onSingleTapConfirmed(MotionEvent e) {

            Toast.makeText(MainActivity.this,"onSingleTapConfirmed",Toast.LENGTH_SHORT)
                .show();
            setContentView(R.layout.layoutone);
            return super.onSingleTapConfirmed(e);
        }
        @Override
        public boolean onDoubleTap(MotionEvent e) {

            Toast.makeText(MainActivity.this,"onDoubleTap",Toast.LENGTH_SHORT).show();
            setContentView(R.layout.layouttwo);
            return super.onDoubleTap(e);
        }
    }
    public boolean onTouchEvent(MotionEvent event) {
        mGestureDetector.onTouchEvent(event);
        return super.onTouchEvent(event);
    }
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mGestureDetector = new GestureDetectorCompat(this, new
            GestureListener());
    }
}
```

4.Tourist Place and ListView

MainActivity.java :

```java
package com.example.tourist;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
```

```java
    ListView simpleList;
    String touristplaces[] = {"Bangalore", "Coorg", "Mysore", "Gokarna",
        "Madikeri", "Hampi", "Shimoga"};

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        simpleList = (ListView)findViewById(R.id.simpleListView);
        ArrayAdapter<String> arrayAdapter = new ArrayAdapter<String>(this,
            R.layout.activity_listview, R.id.textView, touristplaces);
        simpleList.setAdapter(arrayAdapter);
        simpleList.setOnItemClickListener((parent, view, position, id) -> {
            String s=(String)parent.getItemAtPosition(position);

            Toast.makeText(getBaseContext(),"You Have Selected " + s,Toast.LENGTH_LONG).show();
        }
        );
    }
}
```

6.Calculator

MainActivity.java:

```java
package com.example.calc;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    TextView res;
    EditText n1,n2;
    Button ba,bs,bm,bd;
    double val1,val2,r;

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

        res=(TextView)findViewById(R.id.result);
        n1=(EditText)findViewById(R.id.e1);
```

```java
    n2=(EditText)findViewById(R.id.e2);
    ba=(Button)findViewById(R.id.badd);
    bs=(Button)findViewById(R.id.bsub);
    bm=(Button)findViewById(R.id.bmul);
    bd=(Button)findViewById(R.id.bdiv);
    ba.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            val1=Double.parseDouble(n1.getText().toString());
            val2=Double.parseDouble(n2.getText().toString());
            r=val1+val2;
            res.setText(Double.toString(r));
        }
    });
    bs.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            val1=Double.parseDouble(n1.getText().toString());
            val2=Double.parseDouble(n2.getText().toString());
            r=val1-val2;
            res.setText(Double.toString(r));
        }
    });
    bm.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            val1=Double.parseDouble(n1.getText().toString());
            val2=Double.parseDouble(n2.getText().toString());
            r=val1*val2;
            res.setText(Double.toString(r));
        }
    });
    bd.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            val1=Double.parseDouble(n1.getText().toString());
            val2=Double.parseDouble(n2.getText().toString());
            r=val1/val2;
            res.setText(Double.toString(r));
        }
    });
}
}
```

7.Shapes

MainActivity.java:

```java
package com.example.shapes;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Context;
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.os.Bundle;
import android.view.View;


public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(new myView(this));
    }

    private static class myView extends View {
        Paint myPaint;
        public myView(Context context) {
            super(context);
            init();
        }
        private void init() {
            myPaint = new Paint();
            myPaint.setColor(Color.BLUE);
            myPaint.setStyle(Paint.Style.FILL_AND_STROKE);
            myPaint.setStrokeWidth(7);
        }

        @Override
        protected void onDraw(Canvas canvas) {
            super.onDraw(canvas);
            canvas.drawRect(400, 200, 650, 450, myPaint);
            canvas.drawCircle(200, 350, 150, myPaint);
            canvas.drawRect(50, 750, 200, 950, myPaint);
            canvas.drawLine(520, 850, 520, 950, myPaint);
        }
    }

}
```

8.Database

MainActivity.java:

```java
package com.example.db8prg;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity implements android.view.View.OnClickListener {
    EditText Rollno,Name,Marks;
    Button Insert,Delete,Update,View,ViewAll;
    SQLiteDatabase db;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Rollno=(EditText)findViewById(R.id.Rollno);
        Name=(EditText)findViewById(R.id.Name);
        Marks=(EditText)findViewById(R.id.Marks);
        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);
// Creating database and table
        db=openOrCreateDatabase("StudentDB", Context.MODE_PRIVATE, null);
        db.execSQL("CREATE TABLE IF NOT EXISTS student(rollno INT PRIMARY KEY,name
VARCHAR,marks VARCHAR);");
    }
    public void onClick(View view)
    {
// Inserting a record to the Student table
        if(view==Insert)
        {
// Checking for empty fields
            if(Rollno.getText().toString().trim().length()==0||
```

```java
                    Name.getText().toString().trim().length()==0||
                    Marks.getText().toString().trim().length()==0)
        {
           showMessage("Error", "Please enter all values");
           return;
        }
        db.execSQL("INSERT INTO student VALUES('"+Rollno.getText()+"','"+Name.getText()+
                    "','"+Marks.getText()+"');");
        showMessage("Success", "Record added");
        clearText();
    }
// Deleting a record from the Student table
    if(view==Delete)
    {
// Checking for empty roll number
        if(Rollno.getText().toString().trim().length()==0)
        {
           showMessage("Error", "Please enter Rollno");
           return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'",
        null);
        if(c.moveToFirst())
        {
           db.execSQL("DELETE FROM student WHERE rollno='"+Rollno.getText()+"'");
                showMessage("Success", "Record Deleted");
        }
        else
        {
           showMessage("Error", "Invalid Rollno");
        }
        clearText();
    }
// Updating a record in the Student table
    if(view==Update)
    {
// Checking for empty roll number
        if(Rollno.getText().toString().trim().length()==0)
        {
           showMessage("Error", "Please enter Rollno");
           return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'",
        null);
        if(c.moveToFirst()) {
           db.execSQL("UPDATE student SET name='" + Name.getText() +
                "',marks='" + Marks.getText() +
                "' WHERE rollno='"+Rollno.getText()+"'");
           showMessage("Success", "Record Modified");
        }
        else {
```

```java
                showMessage("Error", "Invalid Rollno");
            }
            clearText();
        }
// Display a record from the Student table
        if(view==View)
        {
// Checking for empty roll number
            if(Rollno.getText().toString().trim().length()==0)
            {
                showMessage("Error", "Please enter Rollno");
                return;
            }
            Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'",
            null);
            if(c.moveToFirst())
            {
                Name.setText(c.getString(1));
                Marks.setText(c.getString(2));
            }
            else
            {
                showMessage("Error", "Invalid Rollno");
                clearText();
            }
        }
// Displaying all the records
        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("Rollno: "+c.getString(0)+"\n");
                buffer.append("Name: "+c.getString(1)+"\n");
                buffer.append("Marks: "+c.getString(2)+"\n\n");
            }
            showMessage("Student Details", buffer.toString());
        }
    }
    public void showMessage(String title,String message)
    {
        Builder builder=new Builder(this);
        builder.setCancelable(true);
        builder.setTitle(title);
        builder.setMessage(message);
```

```
      builder.show();
   }
   public void clearText()
   {
      Rollno.setText("");
      Name.setText("");
      Marks.setText("");
      Rollno.requestFocus();
   }
}
```

9.MultiThreading

MainActivity.java:

```java
package com.example.multithreadprg9;

import androidx.appcompat.app.AppCompatActivity;
import android.media.MediaPlayer;
import android.os.Bundle;
import android.view.View;

public class MainActivity extends AppCompatActivity {
   MediaPlayer mp;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      mp = MediaPlayer.create(getBaseContext(),R.raw.music);
   }
   public void mplay(View v)
   {
      mp.start();
   }
   public void mpause(View v)
   {
      mp.pause();
   }
   public void mstop(View v)
   {
      mp.stop();
      mp = MediaPlayer.create(getBaseContext(),R.raw.music);
   }
}
```

SplashActivity.java:

```java
package com.example.multithreadprg9;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
```

```java
public class Splashactivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_splashactivity);
        Thread t = new Thread()
        {
            public void run()
            {
                try {
                    Thread.sleep(5000);
                }
                catch(InterruptedException e)
                {
                    e.printStackTrace();
                }
                finally{
                    Intent i = new Intent(Splashactivity.this, MainActivity.class);
                    startActivity(i);
                }
            }
        };
        t.start();
    }
}
```

13.Alarm Clock

AndroidManifest.xml:

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    package="com.example.alarm">

    <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/Theme.Alarm">
        <activity
            android:name=".MainActivity"
            android:exported="true"
            tools:ignore="Instantiatable">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
```

```xml
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity android:name=".Alarm"
            tools:ignore="Instantiatable" />
        <receiver android:name=".Alarm"></receiver>
    </application>
    <uses-permission android:name="android.permission.RECEIVE_SMS"></uses-permission>

</manifest>
```

MainActivity.java :

```java
package com.example.alarm;

import static android.content.Context.ALARM_SERVICE;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.app.AlarmManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.view.View;
import android.widget.TimePicker;
import android.widget.Toast;
import android.widget.ToggleButton;
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 = findViewById(R.id.timePicker);
        alarmManager = (AlarmManager) getSystemService(ALARM_SERVICE);
    }

    public void OnToggleClicked(View view) {
        long time;
        if (((ToggleButton) view).isChecked()) {
            Toast.makeText(MainActivity.this, "ALARM ON", Toast.LENGTH_SHORT).show();

            // Set calendar to the current time
            Calendar calendar = Calendar.getInstance();
```

```java
        calendar.set(Calendar.HOUR_OF_DAY, alarmTimePicker.getCurrentHour());
        calendar.set(Calendar.MINUTE, alarmTimePicker.getCurrentMinute());

        Intent intent = new Intent(MainActivity.this, Alarm.class);
        pendingIntent = PendingIntent.getBroadcast(MainActivity.this, 0, intent,
            PendingIntent.FLAG_UPDATE_CURRENT | PendingIntent.FLAG_IMMUTABLE);

        // Set the alarm time
        time = (calendar.getTimeInMillis() - (calendar.getTimeInMillis() % 60000));
        if (System.currentTimeMillis() > time) {
            if (calendar.get(Calendar.AM_PM) == Calendar.AM) {
                time += 1000 * 60 * 60 * 12;  // Add 12 hours if AM
            } else {
                time += 1000 * 60 * 60 * 24;  // Add 24 hours if PM
            }
        }

        // Set repeating alarm
        alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, time, 10000, pendingIntent);
    } else {
        alarmManager.cancel(pendingIntent);
        Toast.makeText(MainActivity.this, "ALARM OFF", Toast.LENGTH_SHORT).show();
    }
  }
}
```

Alarm.java :

```java
package com.example.alarm;

import android.app.Activity;
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.Bundle;
import android.widget.Toast;



public class Alarm extends BroadcastReceiver {
    @Override
    public void onReceive(Context context, Intent intent) {
        // TODO: This method is called when the BroadcastReceiver is receiving
        // an Intent broadcast.
        Toast.makeText(context, "Alarm! Wake up! Wake up!", Toast.LENGTH_LONG).show();
        Uri alarmUri =
            RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
```

```java
        if (alarmUri == null)
        {
            alarmUri =
                RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
        }
        Ringtone ringtone = RingtoneManager.getRingtone(context, alarmUri);
        ringtone.play();
    }
}
```