Slip 1:

Q.1) Write an application to create a splash screen.

```
// SplashScreenActivity.java
import android.content.Intent;
import android.os.Bundle;
import android.os.Handler;
import androidx.appcompat.app.AppCompatActivity;

public class SplashScreenActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_splash);
        new Handler().postDelayed(() -> {
            startActivity(new Intent(SplashScreenActivity.this, MainActivity.class));
            finish();
        }, 3000);
    }
}

// activity_splash.xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="@color/black">

    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:src="@drawable/logo"
```

```
    android:layout_centerInParent="true"/>
</RelativeLayout>
```

Q.2) Create table Student (roll_no, name, address, percentage). Create Application for performing the following operation on the table. (Using SQLite database). i] ii] Insert record of 5 new student details. Show all the student details.

```
// StudentDatabaseHelper.java
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

public class StudentDatabaseHelper extends SQLiteOpenHelper {
   private static final String DATABASE_NAME = "students.db";
   private static final String TABLE_NAME = "student";

   public StudentDatabaseHelper(Context context) {
      super(context, DATABASE_NAME, null, 1);
   }

   @Override
   public void onCreate(SQLiteDatabase db) {
      db.execSQL("CREATE TABLE " + TABLE_NAME + " (roll_no INTEGER PRIMARY KEY, name TEXT,
address TEXT, percentage REAL)");
   }

   @Override
   public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
      db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
      onCreate(db);
   }
```

```
    public boolean insertStudent(int rollNo, String name, String address, double percentage) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues values = new ContentValues();
        values.put("roll_no", rollNo);
        values.put("name", name);
        values.put("address", address);
        values.put("percentage", percentage);
        return db.insert(TABLE_NAME, null, values) != -1;
    }

    public Cursor getAllStudents() {
        SQLiteDatabase db = this.getReadableDatabase();
        return db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
    }
}
```

Slip 2

Q.1) Create an application that allows the user to enter a number in the textbox. Check whether the number in the textbox is perfect number or not. Print the message using Toast control.

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

public class PerfectNumberActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_perfect_number);

      EditText inputNumber = findViewById(R.id.inputNumber);
      Button checkButton = findViewById(R.id.checkButton);

      checkButton.setOnClickListener(v -> {
         int num = Integer.parseInt(inputNumber.getText().toString());
         int sum = 0;
         for (int i = 1; i < num; i++) {
            if (num % i == 0) sum += i;
         }
         String message = (sum == num) ? "Perfect Number" : "Not a Perfect Number";
         Toast.makeText(this, message, Toast.LENGTH_SHORT).show();
      });
   }
}
```

```
// activity_perfect_number.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:orientation="vertical"
    android:padding="20dp">

    <EditText
        android:id="@+id/inputNumber"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter a number"/>

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

Q.2) Java Android Program to perform all arithmetic Operations using Calculator.

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

```
public class CalculatorActivity extends AppCompatActivity {
    EditText num1, num2;
    TextView result;

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

        num1 = findViewById(R.id.num1);
        num2 = findViewById(R.id.num2);
        result = findViewById(R.id.result);
    }

    public void calculate(View view) {
        int n1 = Integer.parseInt(num1.getText().toString());
        int n2 = Integer.parseInt(num2.getText().toString());
        int res = 0;
        switch (view.getId()) {
            case R.id.addButton: res = n1 + n2; break;
            case R.id.subButton: res = n1 - n2; break;
            case R.id.mulButton: res = n1 * n2; break;
            case R.id.divButton: res = n1 / n2; break;
        }
        result.setText("Result: " + res);
    }
}

// activity_calculator.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:orientation="vertical"
    android:padding="20dp">

    <EditText android:id="@+id/num1" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter first number"/>
    <EditText android:id="@+id/num2" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter second number"/>
    <TextView android:id="@+id/result" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Result:"/>
    <Button android:id="@+id/addButton" android:onClick="calculate"
android:layout_width="wrap_content" android:layout_height="wrap_content" android:text="+"/>
    <Button android:id="@+id/subButton" android:onClick="calculate"
android:layout_width="wrap_content" android:layout_height="wrap_content" android:text="-"/>
    <Button android:id="@+id/mulButton" android:onClick="calculate"
android:layout_width="wrap_content" android:layout_height="wrap_content" android:text="*"/>
    <Button android:id="@+id/divButton" android:onClick="calculate"
android:layout_width="wrap_content" android:layout_height="wrap_content" android:text="/"/>
</LinearLayout>
```

Slip 3

Q.1) Create an application that allows the user to enter a number in the textbox. Check whether the number in the textbox is Armstrong or not. Print the message accordingly in the label control.

```
// ArmstrongNumberActivity.java

import android.os.Bundle;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;


public class ArmstrongNumberActivity extends AppCompatActivity {

   @Override

   protected void onCreate(Bundle savedInstanceState) {

      super.onCreate(savedInstanceState);

      setContentView(R.layout.activity_armstrong);


      EditText inputNumber = findViewById(R.id.inputNumber);

      Button checkButton = findViewById(R.id.checkButton);

      TextView resultText = findViewById(R.id.resultText);


      checkButton.setOnClickListener(v -> {

         int num = Integer.parseInt(inputNumber.getText().toString());

         int originalNum = num, sum = 0;

         while (num > 0) {

            int digit = num % 10;

            sum += digit * digit * digit;

            num /= 10;

         }

         resultText.setText((sum == originalNum) ? "Armstrong Number" : "Not an Armstrong
Number");

      });
```

```
    }
}

// activity_armstrong.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:orientation="vertical"
    android:padding="20dp">

    <EditText
        android:id="@+id/inputNumber"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter a number"/>

    <Button
        android:id="@+id/checkButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Check"/>

    <TextView
        android:id="@+id/resultText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
</LinearLayout>
```

Q.2) Create an Android application which examine a phone number entered by a user with the given format.

• Area code should be one of the following: 040, 041, 050, 0400, 044

• There should 6 - 8 numbers in telephone number (+ area code).

```
// PhoneNumberValidationActivity.java
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class PhoneNumberValidationActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_phone_validation);

      EditText phoneNumber = findViewById(R.id.phoneNumber);
      Button validateButton = findViewById(R.id.validateButton);
      TextView validationResult = findViewById(R.id.validationResult);

      validateButton.setOnClickListener(v -> {
         String phone = phoneNumber.getText().toString();
         String[] validAreaCodes = {"040", "041", "050", "0400", "044"};
         boolean isValid = false;
         for (String code : validAreaCodes) {
            if (phone.startsWith(code) && phone.length() >= 6 + code.length() && phone.length() <= 8
+ code.length()) {
               isValid = true;
               break;
            }
         }
         validationResult.setText(isValid ? "Valid Phone Number" : "Invalid Phone Number");
```

```
        });
    }
}

// activity_phone_validation.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:orientation="vertical"
    android:padding="20dp">

    <EditText
        android:id="@+id/phoneNumber"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter phone number"/>

    <Button
        android:id="@+id/validateButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Validate"/>

    <TextView
        android:id="@+id/validationResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
</LinearLayout>
```

Slip 4:

Q.1) Construct image switcher using setFactory().

```
// ImageSwitcherActivity.java
import android.os.Bundle;
import android.widget.Button;
import android.widget.ImageSwitcher;
import android.widget.ImageView;
import androidx.appcompat.app.AppCompatActivity;

public class ImageSwitcherActivity extends AppCompatActivity {
   private ImageSwitcher imageSwitcher;
   private int[] images = {R.drawable.image1, R.drawable.image2, R.drawable.image3};
   private int index = 0;

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

      imageSwitcher = findViewById(R.id.imageSwitcher);
      imageSwitcher.setFactory(() -> new ImageView(getApplicationContext()));
      imageSwitcher.setImageResource(images[index]);

      Button nextButton = findViewById(R.id.nextButton);
      nextButton.setOnClickListener(v -> {
         index = (index + 1) % images.length;
         imageSwitcher.setImageResource(images[index]);
      });
   }
}
```

```
// activity_image_switcher.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:orientation="vertical"
   android:gravity="center"
   android:padding="20dp">

   <ImageSwitcher
      android:id="@+id/imageSwitcher"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"/>

   <Button
      android:id="@+id/nextButton"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Next Image"/>
</LinearLayout>
```

Q.2) Write a program to search a specific location on Google Map.

```
// GoogleMapsSearchActivity.java
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;

public class GoogleMapsSearchActivity extends AppCompatActivity {
```

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

        EditText locationInput = findViewById(R.id.locationInput);
        Button searchButton = findViewById(R.id.searchButton);

        searchButton.setOnClickListener(v -> {
            String location = locationInput.getText().toString();
            Uri gmmIntentUri = Uri.parse("geo:0,0?q=" + location);
            Intent mapIntent = new Intent(Intent.ACTION_VIEW, gmmIntentUri);
            mapIntent.setPackage("com.google.android.apps.maps");
            startActivity(mapIntent);
        });
    }
}

// activity_google_maps.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:orientation="vertical"
    android:padding="20dp">

    <EditText
        android:id="@+id/locationInput"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter location"/>
```

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

Slip 5:

Q.1) Java Android Program to Demonstrate Alert Dialog Box.

```
// AlertDialogActivity.java
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;

public class AlertDialogActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_alert_dialog);

      Button showDialogButton = findViewById(R.id.showDialogButton);
      showDialogButton.setOnClickListener(v -> {
         new AlertDialog.Builder(this)
            .setTitle("Alert")
            .setMessage("This is an Alert Dialog")
            .setPositiveButton("OK", (dialog, which) -> dialog.dismiss())
            .show();
      });
   }
}

// activity_alert_dialog.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:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <Button
        android:id="@+id/showDialogButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Show Alert"/>
</LinearLayout>
```

Q.2) Create an Android application which will ask the user to input his / her name. A message should display the two items concatenated in a label. Change the format of the label using radio buttons and check boxes for selection. The user can make the label text bold, underlined or italic as well as change its color. Also include buttons to display the message in the label, clear the text boxes as well as label. Finally exit.

```
// FormattedNameActivity.java
import android.graphics.Typeface;
import android.os.Bundle;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class FormattedNameActivity extends AppCompatActivity {
    private TextView displayText;
    private EditText inputName;
    private CheckBox boldCheck, italicCheck, underlineCheck;
    private RadioButton redColor, blueColor;
```

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

        inputName = findViewById(R.id.inputName);
        displayText = findViewById(R.id.displayText);
        boldCheck = findViewById(R.id.boldCheck);
        italicCheck = findViewById(R.id.italicCheck);
        underlineCheck = findViewById(R.id.underlineCheck);
        redColor = findViewById(R.id.redColor);
        blueColor = findViewById(R.id.blueColor);
        Button showButton = findViewById(R.id.showButton);
        Button clearButton = findViewById(R.id.clearButton);

        showButton.setOnClickListener(v -> {
            String name = inputName.getText().toString();
            displayText.setText(name);
            int style = Typeface.NORMAL;
            if (boldCheck.isChecked()) style |= Typeface.BOLD;
            if (italicCheck.isChecked()) style |= Typeface.ITALIC;
            displayText.setTypeface(null, style);
            if (underlineCheck.isChecked()) displayText.setPaintFlags(displayText.getPaintFlags() |
android.graphics.Paint.UNDERLINE_TEXT_FLAG);
            if (redColor.isChecked())
displayText.setTextColor(getResources().getColor(android.R.color.holo_red_dark));
            else if (blueColor.isChecked())
displayText.setTextColor(getResources().getColor(android.R.color.holo_blue_dark));
        });

        clearButton.setOnClickListener(v -> {
            inputName.setText("");
```

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

// activity_formatted_name.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:orientation="vertical"
    android:padding="20dp">

    <EditText
        android:id="@+id/inputName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Name"/>

    <CheckBox
        android:id="@+id/boldCheck"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Bold"/>

    <CheckBox
        android:id="@+id/italicCheck"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Italic"/>
```

```
<CheckBox
   android:id="@+id/underlineCheck"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Underline"/>

<RadioButton
   android:id="@+id/redColor"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Red"/>

<RadioButton
   android:id="@+id/blueColor"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Blue"/>

<Button
   android:id="@+id/showButton"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Show"/>

<Button
   android:id="@+id/clearButton"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Clear"/>

<TextView
```

```
        android:id="@+id/displayText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
</LinearLayout>
```

Slip 6:

Q.1) Java Android Program to demonstrate login form with validation.

```
// LoginActivity.java
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class LoginActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_login);

      EditText username = findViewById(R.id.username);
      EditText password = findViewById(R.id.password);
      Button loginButton = findViewById(R.id.loginButton);

      loginButton.setOnClickListener(v -> {
         String user = username.getText().toString();
         String pass = password.getText().toString();
         if (user.equals("admin") && pass.equals("1234")) {
            Toast.makeText(this, "Login Successful", Toast.LENGTH_SHORT).show();
         } else {
            Toast.makeText(this, "Invalid Login", Toast.LENGTH_SHORT).show();
         }
      });
   }
}
```

```
// activity_login.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:orientation="vertical"
    android:padding="20dp">

    <EditText
        android:id="@+id/username"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Username"/>

    <EditText
        android:id="@+id/password"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Password"
        android:inputType="textPassword"/>

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

Q.2) Write a program to search a specific location on Google Map.

```
// GoogleMapsSearchActivity.java
import android.content.Intent;
import android.net.Uri;
```

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

public class GoogleMapsSearchActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_google_maps);

        EditText locationInput = findViewById(R.id.locationInput);
        Button searchButton = findViewById(R.id.searchButton);

        searchButton.setOnClickListener(v -> {
            String location = locationInput.getText().toString();
            Uri gmmIntentUri = Uri.parse("geo:0,0?q=" + location);
            Intent mapIntent = new Intent(Intent.ACTION_VIEW, gmmIntentUri);
            mapIntent.setPackage("com.google.android.apps.maps");
            startActivity(mapIntent);
        });
    }
}

// activity_google_maps.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:orientation="vertical"
    android:padding="20dp">
```

```
    <EditText
        android:id="@+id/locationInput"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter location"/>

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

Slip 7

Q.1] Java Android Program to Demonstrate ProgressBar.

```
// ProgressBarActivity.java
import android.os.Bundle;
import android.os.Handler;
import android.widget.ProgressBar;
import androidx.appcompat.app.AppCompatActivity;

public class ProgressBarActivity extends AppCompatActivity {
    private ProgressBar progressBar;
    private int progressStatus = 0;
    private Handler handler = new Handler();

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

        progressBar = findViewById(R.id.progressBar);

        new Thread(() -> {
            while (progressStatus < 100) {
                progressStatus += 10;
                handler.post(() -> progressBar.setProgress(progressStatus));
                try {
                    Thread.sleep(500);
                } catch (InterruptedException e) {
                    e.printStackTrace();
                }
            }
        }).start();
```

```
    }
}

// activity_progress_bar.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:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <ProgressBar
        android:id="@+id/progressBar"
        style="?android:attr/progressBarStyleHorizontal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>
</LinearLayout>
```

Q.2] Create table Employee (E_id, name, address, ph_no). Create Application for performing the following operation on the table. (Using SQLite database).

i] Insert record of 5 new Employees.

ii] Show all the details of Employee.

```
// EmployeeDatabaseHelper.java
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

public class EmployeeDatabaseHelper extends SQLiteOpenHelper {
```

```
    private static final String DATABASE_NAME = "employees.db";
    private static final String TABLE_NAME = "employee";

    public EmployeeDatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, 1);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("CREATE TABLE " + TABLE_NAME + " (E_id INTEGER PRIMARY KEY, name TEXT,
address TEXT, ph_no TEXT)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
        onCreate(db);
    }

    public boolean insertEmployee(int id, String name, String address, String phone) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues values = new ContentValues();
        values.put("E_id", id);
        values.put("name", name);
        values.put("address", address);
        values.put("ph_no", phone);
        return db.insert(TABLE_NAME, null, values) != -1;
    }

    public Cursor getAllEmployees() {
        SQLiteDatabase db = this.getReadableDatabase();
```

```
        return db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
    }
}
```

Slip 8:

Q.1] Create a Application which shows Life Cycle of Activity.

```
// ActivityLifecycleActivity.java
import android.os.Bundle;
import android.util.Log;
import androidx.appcompat.app.AppCompatActivity;

public class ActivityLifecycleActivity extends AppCompatActivity {
   private static final String TAG = "Lifecycle";

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_lifecycle);
      Log.d(TAG, "onCreate called");
   }

   @Override
   protected void onStart() {
      super.onStart();
      Log.d(TAG, "onStart called");
   }

   @Override
   protected void onResume() {
      super.onResume();
      Log.d(TAG, "onResume called");
   }

   @Override
```

```
    protected void onPause() {
        super.onPause();
        Log.d(TAG, "onPause called");
    }

    @Override
    protected void onStop() {
        super.onStop();
        Log.d(TAG, "onStop called");
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d(TAG, "onDestroy called");
    }
}

// activity_lifecycle.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:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Activity Lifecycle Demo"/>
</LinearLayout>
```

Q.2] Create table Customer (id, name, address, ph_no). Create Application for performing the following operation on the table. (Using SQLite database). i] ii] Insert new customer details (At least 5 records). Show all the customer details.

```
// CustomerDatabaseHelper.java

import android.content.ContentValues;

import android.content.Context;

import android.database.Cursor;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;


public class CustomerDatabaseHelper extends SQLiteOpenHelper {

   private static final String DATABASE_NAME = "customers.db";

   private static final String TABLE_NAME = "customer";


   public CustomerDatabaseHelper(Context context) {

      super(context, DATABASE_NAME, null, 1);

   }


   @Override

   public void onCreate(SQLiteDatabase db) {

      db.execSQL("CREATE TABLE " + TABLE_NAME + " (id INTEGER PRIMARY KEY, name TEXT, address TEXT, ph_no TEXT)");

   }


   @Override

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

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

      onCreate(db);

   }


   public boolean insertCustomer(int id, String name, String address, String phone) {

      SQLiteDatabase db = this.getWritableDatabase();
```

```
        ContentValues values = new ContentValues();
        values.put("id", id);
        values.put("name", name);
        values.put("address", address);
        values.put("ph_no", phone);
        return db.insert(TABLE_NAME, null, values) != -1;
    }

    public Cursor getAllCustomers() {
        SQLiteDatabase db = this.getReadableDatabase();
        return db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
    }
}
```

Slip 9

Q.1] Create an application that allows the user to enter a number in the textbox named „getnum". Check whether the number in the textbox „getnum" is Palindrome or not. Print the message accordingly in the label when the user clicks on the button „Check".

```
// PalindromeActivity.java

import android.os.Bundle;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;


public class PalindromeActivity extends AppCompatActivity {

   @Override

   protected void onCreate(Bundle savedInstanceState) {

      super.onCreate(savedInstanceState);

      setContentView(R.layout.activity_palindrome);


      EditText inputNumber = findViewById(R.id.inputNumber);

      Button checkButton = findViewById(R.id.checkButton);

      TextView resultText = findViewById(R.id.resultText);


      checkButton.setOnClickListener(v -> {

         String num = inputNumber.getText().toString();

         String reversed = new StringBuilder(num).reverse().toString();

         resultText.setText(num.equals(reversed) ? "Palindrome" : "Not a Palindrome");

      });

   }

}


// activity_palindrome.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:orientation="vertical"
    android:padding="20dp">

    <EditText
        android:id="@+id/inputNumber"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter a number"/>

    <Button
        android:id="@+id/checkButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Check"/>

    <TextView
        android:id="@+id/resultText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
</LinearLayout>
```

Q.2] Java android program to create simple calculator.

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

```
public class CalculatorActivity extends AppCompatActivity {
    EditText num1, num2;
    TextView result;

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

        num1 = findViewById(R.id.num1);
        num2 = findViewById(R.id.num2);
        result = findViewById(R.id.result);
    }

    public void calculate(View view) {
        int n1 = Integer.parseInt(num1.getText().toString());
        int n2 = Integer.parseInt(num2.getText().toString());
        int res = 0;
        switch (view.getId()) {
            case R.id.addButton: res = n1 + n2; break;
            case R.id.subButton: res = n1 - n2; break;
            case R.id.mulButton: res = n1 * n2; break;
            case R.id.divButton: res = n1 / n2; break;
        }
        result.setText("Result: " + res);
    }
}

// activity_calculator.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:orientation="vertical"
    android:padding="20dp">

    <EditText android:id="@+id/num1" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter first number"/>
    <EditText android:id="@+id/num2" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter second number"/>
    <TextView android:id="@+id/result" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Result:"/>
    <Button android:id="@+id/addButton" android:onClick="calculate"
android:layout_width="wrap_content" android:layout_height="wrap_content" android:text="+"/>
    <Button android:id="@+id/subButton" android:onClick="calculate"
android:layout_width="wrap_content" android:layout_height="wrap_content" android:text="-"/>
    <Button android:id="@+id/mulButton" android:onClick="calculate"
android:layout_width="wrap_content" android:layout_height="wrap_content" android:text="*"/>
    <Button android:id="@+id/divButton" android:onClick="calculate"
android:layout_width="wrap_content" android:layout_height="wrap_content" android:text="/"/>
</LinearLayout>
```

Slip 10:

Q.1] Create an application that allows the user to enter a number in the textbox named getnum. Check whether the number in the textbox getnum is Armstrong or not. Print the message using Toast control when the user clicks on the button Check.

```
// ArmstrongNumberToastActivity.java
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
```

```
public class ArmstrongNumberToastActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_armstrong_toast);

        EditText inputNumber = findViewById(R.id.inputNumber);
        Button checkButton = findViewById(R.id.checkButton);

        checkButton.setOnClickListener(v -> {
            int num = Integer.parseInt(inputNumber.getText().toString());
            int originalNum = num, sum = 0;
            while (num > 0) {
                int digit = num % 10;
                sum += digit * digit * digit;
                num /= 10;
            }
            Toast.makeText(this, (sum == originalNum) ? "Armstrong Number" : "Not an Armstrong
Number", Toast.LENGTH_SHORT).show();
        });
    }
}

// activity_armstrong_toast.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:orientation="vertical"
    android:padding="20dp">
```

```
    <EditText
        android:id="@+id/inputNumber"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter a number"/>

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

Q.2] Write a program to draw GUI by using Spinner, Buttons.

```
// SpinnerButtonActivity.java
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.Spinner;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class SpinnerButtonActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_spinner_buttons);

        Spinner spinner = findViewById(R.id.spinner);
```

```
        Button button = findViewById(R.id.button);

        String[] options = {"Option 1", "Option 2", "Option 3"};
        ArrayAdapter<String> adapter = new ArrayAdapter<>(this,
android.R.layout.simple_spinner_dropdown_item, options);
        spinner.setAdapter(adapter);

        button.setOnClickListener(v -> Toast.makeText(this, "Selected: " +
spinner.getSelectedItem().toString(), Toast.LENGTH_SHORT).show());
    }
}

// activity_spinner_buttons.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:orientation="vertical"
    android:padding="20dp">

    <Spinner
        android:id="@+id/spinner"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Show Selection"/>
</LinearLayout>
```

Slip 11:

Q.1] Create an Android Application to accept two numbers to calculate its Power and Average. Create two buttons: Power and Average. Display the appropriate result on the next activity on Button click.

```
// PowerAverageActivity.java
import android.content.Intent;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;

public class PowerAverageActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_power_average);

        EditText num1 = findViewById(R.id.num1);
        EditText num2 = findViewById(R.id.num2);
        Button powerButton = findViewById(R.id.powerButton);
        Button averageButton = findViewById(R.id.averageButton);

        powerButton.setOnClickListener(v -> {
            int base = Integer.parseInt(num1.getText().toString());
            int exponent = Integer.parseInt(num2.getText().toString());
            int result = (int) Math.pow(base, exponent);
            navigateToResult("Power: " + result);
        });

        averageButton.setOnClickListener(v -> {
```

```
            int n1 = Integer.parseInt(num1.getText().toString());
            int n2 = Integer.parseInt(num2.getText().toString());
            int result = (n1 + n2) / 2;
            navigateToResult("Average: " + result);
        });
    }

    private void navigateToResult(String message) {
        Intent intent = new Intent(this, ResultActivity.class);
        intent.putExtra("result", message);
        startActivity(intent);
    }
}

// ResultActivity.java
import android.os.Bundle;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class ResultActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_result);

        TextView resultText = findViewById(R.id.resultText);
        String result = getIntent().getStringExtra("result");
        resultText.setText(result);
    }
}
```

// activity_power_average.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:orientation="vertical"
   android:padding="20dp">

   <EditText android:id="@+id/num1" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter first number"/>
   <EditText android:id="@+id/num2" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter second number"/>
   <Button android:id="@+id/powerButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Power"/>
   <Button android:id="@+id/averageButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Average"/>
</LinearLayout>
```

// activity_result.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:gravity="center"
   android:padding="20dp">

   <TextView android:id="@+id/resultText" android:layout_width="wrap_content"
android:layout_height="wrap_content"/>
</LinearLayout>
```

Q.2] Create an Android Application to perform following string operation according to user selection of radio button.

// StringOperationsActivity.java

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

public class StringOperationsActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_string_operations);

        EditText inputText = findViewById(R.id.inputText);
        RadioButton uppercase = findViewById(R.id.uppercase);
        RadioButton lowercase = findViewById(R.id.lowercase);
        Button applyButton = findViewById(R.id.applyButton);
        TextView resultText = findViewById(R.id.resultText);

        applyButton.setOnClickListener(v -> {
            String text = inputText.getText().toString();
            if (uppercase.isChecked()) {
                resultText.setText(text.toUpperCase());
            } else if (lowercase.isChecked()) {
                resultText.setText(text.toLowerCase());
            }
        });
    }
}

// activity_string_operations.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:orientation="vertical"
   android:padding="20dp">

   <EditText android:id="@+id/inputText" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter text"/>
   <RadioButton android:id="@+id/uppercase" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Uppercase"/>
   <RadioButton android:id="@+id/lowercase" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Lowercase"/>
   <Button android:id="@+id/applyButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Apply"/>
   <TextView android:id="@+id/resultText" android:layout_width="wrap_content"
android:layout_height="wrap_content"/>
</LinearLayout>
```

Slip 12:

Q.1] Construct an Android app that toggles a light bulb ON and OFF when the user clicks on toggle button.

```
// LightBulbActivity.java
import android.os.Bundle;
import android.widget.ImageView;
import android.widget.ToggleButton;
import androidx.appcompat.app.AppCompatActivity;

public class LightBulbActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
```

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

        ToggleButton toggleButton = findViewById(R.id.toggleButton);
        ImageView bulbImage = findViewById(R.id.bulbImage);

        toggleButton.setOnCheckedChangeListener((buttonView, isChecked) -> {
            if (isChecked) {
                bulbImage.setImageResource(R.drawable.bulb_on);
            } else {
                bulbImage.setImageResource(R.drawable.bulb_off);
            }
        });
    }
}

// activity_light_bulb.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:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <ToggleButton
        android:id="@+id/toggleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Toggle Light"/>
```

```
    <ImageView
        android:id="@+id/bulbImage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:src="@drawable/bulb_off"/>
</LinearLayout>
```

Q.2] Create an Android application which will ask the user to input his / her name. A message should display the two items concatenated in a label. Change the format of the label using radio buttons and check boxes for selection. The user can make the label text bold, underlined or italic as well as change its color. Also include buttons to display the message in the label, clear the text boxes as well as label. Finally exit.

```
// FormattedNameActivity.java
import android.graphics.Typeface;
import android.os.Bundle;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class FormattedNameActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_formatted_name);

        EditText inputName = findViewById(R.id.inputName);
        TextView displayText = findViewById(R.id.displayText);
        CheckBox boldCheck = findViewById(R.id.boldCheck);
        CheckBox italicCheck = findViewById(R.id.italicCheck);
```

```
        CheckBox underlineCheck = findViewById(R.id.underlineCheck);
        RadioButton redColor = findViewById(R.id.redColor);
        RadioButton blueColor = findViewById(R.id.blueColor);
        Button showButton = findViewById(R.id.showButton);
        Button clearButton = findViewById(R.id.clearButton);

        showButton.setOnClickListener(v -> {
            String name = inputName.getText().toString();
            displayText.setText(name);
            int style = Typeface.NORMAL;
            if (boldCheck.isChecked()) style |= Typeface.BOLD;
            if (italicCheck.isChecked()) style |= Typeface.ITALIC;
            displayText.setTypeface(null, style);
            if (underlineCheck.isChecked()) displayText.setPaintFlags(displayText.getPaintFlags() |
android.graphics.Paint.UNDERLINE_TEXT_FLAG);
            if (redColor.isChecked())
displayText.setTextColor(getResources().getColor(android.R.color.holo_red_dark));
            else if (blueColor.isChecked())
displayText.setTextColor(getResources().getColor(android.R.color.holo_blue_dark));
        });

        clearButton.setOnClickListener(v -> {
            inputName.setText("");
            displayText.setText("");
        });
    }
}

// activity_formatted_name.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:orientation="vertical"

   android:padding="20dp">


   <EditText android:id="@+id/inputName" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter Name"/>

   <CheckBox android:id="@+id/boldCheck" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Bold"/>

   <CheckBox android:id="@+id/italicCheck" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Italic"/>

   <CheckBox android:id="@+id/underlineCheck" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Underline"/>

   <RadioButton android:id="@+id/redColor" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Red"/>

   <RadioButton android:id="@+id/blueColor" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Blue"/>

   <Button android:id="@+id/showButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Show"/>

   <Button android:id="@+id/clearButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Clear"/>

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

</LinearLayout>
```

Slip 13:

Q.1] Java android program to demonstrate Registration form with validation.

```
// RegistrationActivity.java
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class RegistrationActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_registration);

      EditText name = findViewById(R.id.name);
      EditText email = findViewById(R.id.email);
      EditText password = findViewById(R.id.password);
      Button registerButton = findViewById(R.id.registerButton);

      registerButton.setOnClickListener(v -> {
         if (name.getText().toString().isEmpty() || email.getText().toString().isEmpty() ||
password.getText().toString().isEmpty()) {
            Toast.makeText(this, "All fields are required!", Toast.LENGTH_SHORT).show();
         } else {
            Toast.makeText(this, "Registration Successful", Toast.LENGTH_SHORT).show();
         }
      });
   }
}
```

```
// activity_registration.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:orientation="vertical"
   android:padding="20dp">

   <EditText android:id="@+id/name" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter Name"/>
   <EditText android:id="@+id/email" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter Email"/>
   <EditText android:id="@+id/password" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter Password"
android:inputType="textPassword"/>
   <Button android:id="@+id/registerButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Register"/>
</LinearLayout>
```

Q.2] Write a Java Android Program to Demonstrate List View Activity with all operations Such as: Insert, Delete, Search

```
// ListViewCRUDActivity.java
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ListView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.util.ArrayList;
```

```
public class ListViewCRUDActivity extends AppCompatActivity {
    private ArrayList<String> items;
    private ArrayAdapter<String> adapter;
    private ListView listView;
    private EditText inputItem;

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

        listView = findViewById(R.id.listView);
        inputItem = findViewById(R.id.inputItem);
        Button addButton = findViewById(R.id.addButton);
        Button removeButton = findViewById(R.id.removeButton);

        items = new ArrayList<>();
        adapter = new ArrayAdapter<>(this, android.R.layout.simple_list_item_1, items);
        listView.setAdapter(adapter);

        addButton.setOnClickListener(v -> {
            String item = inputItem.getText().toString();
            if (!item.isEmpty()) {
                items.add(item);
                adapter.notifyDataSetChanged();
                inputItem.setText("");
            } else {
                Toast.makeText(this, "Enter an item", Toast.LENGTH_SHORT).show();
            }
        });
```

```
        removeButton.setOnClickListener(v -> {
            if (!items.isEmpty()) {
                items.remove(items.size() - 1);
                adapter.notifyDataSetChanged();
            } else {
                Toast.makeText(this, "List is empty", Toast.LENGTH_SHORT).show();
            }
        });
    }
}
```

// activity_listview_crud.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:orientation="vertical"
    android:padding="20dp">

    <EditText android:id="@+id/inputItem" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter Item"/>
    <Button android:id="@+id/addButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Add"/>
    <Button android:id="@+id/removeButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Remove Last"/>
    <ListView android:id="@+id/listView" android:layout_width="match_parent"
android:layout_height="wrap_content"/>
</LinearLayout>
```

Slip 14:

Q.1] Construct an Android application to accept a number and calculate and display Factorial of a given number in TextView.

```
// FactorialActivity.java
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class FactorialActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_factorial);

      EditText inputNumber = findViewById(R.id.inputNumber);
      Button calculateButton = findViewById(R.id.calculateButton);
      TextView resultText = findViewById(R.id.resultText);

      calculateButton.setOnClickListener(v -> {
         int num = Integer.parseInt(inputNumber.getText().toString());
         int fact = 1;
         for (int i = 1; i <= num; i++) {
            fact *= i;
         }
         resultText.setText("Factorial: " + fact);
      });
   }
}
```

```
// activity_factorial.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:orientation="vertical"
   android:padding="20dp">

   <EditText android:id="@+id/inputNumber" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter a number"/>
   <Button android:id="@+id/calculateButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Calculate"/>
   <TextView android:id="@+id/resultText" android:layout_width="wrap_content"
android:layout_height="wrap_content"/>
</LinearLayout>
```

Q.2] Create an Android application, which show Login Form. After clicking LOGIN button display the "Login Successful…" message if username and password is same else display "Invalid Login" message in Toast Control.

```
// LoginToastActivity.java
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class LoginToastActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_login_toast);

      EditText username = findViewById(R.id.username);
```

```
        EditText password = findViewById(R.id.password);
        Button loginButton = findViewById(R.id.loginButton);

        loginButton.setOnClickListener(v -> {
            String user = username.getText().toString();
            String pass = password.getText().toString();
            if (user.equals("admin") && pass.equals("1234")) {
                Toast.makeText(this, "Login Successful", Toast.LENGTH_SHORT).show();
            } else {
                Toast.makeText(this, "Invalid Login", Toast.LENGTH_SHORT).show();
            }
        });
    }
}

// activity_login_toast.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:orientation="vertical"
    android:padding="20dp">

    <EditText android:id="@+id/username" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter Username"/>
    <EditText android:id="@+id/password" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter Password"
android:inputType="textPassword"/>
    <Button android:id="@+id/loginButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Login"/>
</LinearLayout>
```

Slip 15

Q1] Construct an Android application to accept two numbers in two EditText, with four buttons as ADD, SUB, DIV and MULT and display Result using Toast Control.

```
// ArithmeticOperationsActivity.java

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;


public class ArithmeticOperationsActivity extends AppCompatActivity {

  @Override

  protected void onCreate(Bundle savedInstanceState) {

    super.onCreate(savedInstanceState);

    setContentView(R.layout.activity_arithmetic_operations);


    EditText num1 = findViewById(R.id.num1);

    EditText num2 = findViewById(R.id.num2);

    Button addButton = findViewById(R.id.addButton);

    Button subButton = findViewById(R.id.subButton);

    Button mulButton = findViewById(R.id.mulButton);

    Button divButton = findViewById(R.id.divButton);


    View.OnClickListener listener = v -> {

      int n1 = Integer.parseInt(num1.getText().toString());

      int n2 = Integer.parseInt(num2.getText().toString());

      int result = 0;

      switch (v.getId()) {

        case R.id.addButton: result = n1 + n2; break;

        case R.id.subButton: result = n1 - n2; break;
```

```
            case R.id.mulButton: result = n1 * n2; break;
            case R.id.divButton: result = n1 / n2; break;
        }
        Toast.makeText(this, "Result: " + result, Toast.LENGTH_SHORT).show();
    };

    addButton.setOnClickListener(listener);
    subButton.setOnClickListener(listener);
    mulButton.setOnClickListener(listener);
    divButton.setOnClickListener(listener);
  }
}

// activity_arithmetic_operations.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:orientation="vertical"
  android:padding="20dp">
  <EditText android:id="@+id/num1" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter first number"/>
  <EditText android:id="@+id/num2" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter second number"/>
  <Button android:id="@+id/addButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="+"/>
  <Button android:id="@+id/subButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="-"/>
  <Button android:id="@+id/mulButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="*"/>
  <Button android:id="@+id/divButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="/"/>
</LinearLayout>
```

Q2] Construct a bank app to display different menu like withdraw, deposit etc.

```
// BankTransactionActivity.java
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class BankTransactionActivity extends AppCompatActivity {
    private double balance = 1000.00;

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

        EditText amountInput = findViewById(R.id.amountInput);
        Button depositButton = findViewById(R.id.depositButton);
        Button withdrawButton = findViewById(R.id.withdrawButton);
        TextView balanceText = findViewById(R.id.balanceText);
        balanceText.setText("Balance: $" + balance);

        depositButton.setOnClickListener(v -> {
            double amount = Double.parseDouble(amountInput.getText().toString());
            balance += amount;
            balanceText.setText("Balance: $" + balance);
            Toast.makeText(this, "Deposited: $" + amount, Toast.LENGTH_SHORT).show();
        });
```

```
        withdrawButton.setOnClickListener(v -> {
            double amount = Double.parseDouble(amountInput.getText().toString());
            if (amount > balance) {
                Toast.makeText(this, "Insufficient Funds!", Toast.LENGTH_SHORT).show();
            } else {
                balance -= amount;
                balanceText.setText("Balance: $" + balance);
                Toast.makeText(this, "Withdrawn: $" + amount, Toast.LENGTH_SHORT).show();
            }
        });
    }
}

// activity_bank_transaction.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:orientation="vertical"
    android:padding="20dp">

    <EditText android:id="@+id/amountInput" android:layout_width="match_parent"
android:layout_height="wrap_content" android:hint="Enter amount"/>
    <Button android:id="@+id/depositButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Deposit"/>
    <Button android:id="@+id/withdrawButton" android:layout_width="wrap_content"
android:layout_height="wrap_content" android:text="Withdraw"/>
    <TextView android:id="@+id/balanceText" android:layout_width="wrap_content"
android:layout_height="wrap_content"/>
</LinearLayout>
```

Slip 16

Q1] Create a Simple Android Application Which Send —Hello‖ message from one activity to another with help of Button (Use Intent).

```
// MainActivity.java
package com.example.hellomessage;

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

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

        Button btnSend = findViewById(R.id.btnSend);
        btnSend.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(MainActivity.this, SecondActivity.class);
                intent.putExtra("message", "Hello");
                startActivity(intent);
            }
        });
    }
}
```

```
// SecondActivity.java
package com.example.hellomessage;

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

public class SecondActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_second);

        TextView txtMessage = findViewById(R.id.txtMessage);
        String message = getIntent().getStringExtra("message");
        txtMessage.setText(message);
    }
}

<!-- activity_main.xml -->
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">

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

```
</LinearLayout>

<!-- activity_second.xml -->
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   android:gravity="center">

   <TextView
      android:id="@+id/txtMessage"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Message will appear here"
      android:textSize="20sp" />
</LinearLayout>
```

Q2] Create an Android application, with two activity first activity will have an EditText and a Button where the user can enter player name and after clicking on button the entered name will be display in another Activity. Second activity has the BACK button to transition to first activity (Using Intent).

```
// FirstActivity.java
package com.example.playername;

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 FirstActivity extends AppCompatActivity {
```

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

        EditText edtPlayerName = findViewById(R.id.edtPlayerName);
        Button btnSubmit = findViewById(R.id.btnSubmit);

        btnSubmit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String playerName = edtPlayerName.getText().toString();
                Intent intent = new Intent(FirstActivity.this, SecondActivity.class);
                intent.putExtra("player_name", playerName);
                startActivity(intent);
            }
        });
    }
}

// SecondActivity.java
package com.example.playername;

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

public class SecondActivity extends AppCompatActivity {
```

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

        TextView txtPlayerName = findViewById(R.id.txtPlayerName);
        Button btnBack = findViewById(R.id.btnBack);

        String playerName = getIntent().getStringExtra("player_name");
        txtPlayerName.setText("Player Name: " + playerName);

        btnBack.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(SecondActivity.this, FirstActivity.class);
                startActivity(intent);
            }
        });
    }
}
<!-- activity_first.xml -->
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">

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

```
        android:hint="Enter Player Name" />

    <Button
        android:id="@+id/btnSubmit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit" />
</LinearLayout>

<!-- activity_second.xml -->
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">

    <TextView
        android:id="@+id/txtPlayerName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Player Name: "
        android:textSize="20sp" />

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

Slip 17:

Q1] Write an Android Program to demonstrate Activity life Cycle.

```
package com.example.lifecycleapp;
import android.os.Bundle;
import android.util.Log;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
   private static final String TAG = "ActivityLifecycle";

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      Log.d(TAG, "onCreate() called");
   }

   @Override
   protected void onStart() {
      super.onStart();
      Log.d(TAG, "onStart() called");
   }

   @Override
   protected void onResume() {
      super.onResume();
      Log.d(TAG, "onResume() called");
   }

   @Override
   protected void onPause() {
```

```
        super.onPause();
        Log.d(TAG, "onPause() called");
    }

    @Override
    protected void onStop() {
        super.onStop();
        Log.d(TAG, "onStop() called");
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d(TAG, "onDestroy() called");
    }
}
```

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Activity Life Cycle Example"
        android:textSize="20sp" />
</LinearLayout>
```

Q2] Write a PhoneGap application to create a contact. Options are:

- **Searching for Contacts**
- **Cloning Contacts**
- **Removing Contacts.**

1. Install Cordova & Create a New Project

```
sh
CopyEdit
npm install -g cordova
cordova create ContactApp com.example.contactapp ContactApp
cd ContactApp
cordova platform add android
cordova plugin add cordova-plugin-contacts
```

2. Modify `www/index.html`

```
html
CopyEdit
<!DOCTYPE html>
<html>
<head>
    <title>Contact App</title>
    <script src="cordova.js"></script>
    <script>
        function createContact() {
            var myContact = navigator.contacts.create({"displayName": "John
Doe"});
            myContact.save(
                function() { alert("Contact saved successfully!"); },
                function(error) { alert("Error: " + error.code); }
            );
        }

        function findContacts() {
            var options = new ContactFindOptions();
            options.filter = "";
            options.multiple = true;
            var fields = ["displayName", "name"];
            navigator.contacts.find(fields, function(contacts) {
                alert("Found " + contacts.length + " contacts.");
            }, function(error) {
                alert("Error: " + error.code);
            }, options);
        }

        function cloneContact() {
            var options = new ContactFindOptions();
            options.filter = "John Doe";
            options.multiple = false;
            navigator.contacts.find(["displayName"], function(contacts) {
                if (contacts.length > 0) {
                    var newContact = contacts[0].clone();
                    newContact.displayName = "John Doe Clone";
                    newContact.save(
```

```
                        function() { alert("Contact cloned successfully!");
},
                        function(error) { alert("Error: " + error.code); }
                    );
                } else {
                    alert("No contact found to clone.");
                }
            }, function(error) {
                alert("Error: " + error.code);
            }, options);
        }

        function removeContact() {
            var options = new ContactFindOptions();
            options.filter = "John Doe";
            options.multiple = false;
            navigator.contacts.find(["displayName"], function(contacts) {
                if (contacts.length > 0) {
                    contacts[0].remove(
                        function() { alert("Contact removed
successfully!"); },
                        function(error) { alert("Error: " + error.code); }
                    );
                } else {
                    alert("No contact found to remove.");
                }
            }, function(error) {
                alert("Error: " + error.code);
            }, options);
        }
    </script>
</head>
<body>
    <h1>PhoneGap Contact App</h1>
    <button onclick="createContact()">Create Contact</button>
    <button onclick="findContacts()">Find Contacts</button>
    <button onclick="cloneContact()">Clone Contact</button>
    <button onclick="removeContact()">Remove Contact</button>
</body>
</html>
```

Run using:

cordova run android

Slip 18

Q1] Create an Android Application that will change color of the screen and change the font size of text view using xml.

```
package com.example.colorfontsizeapp;


import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.RelativeLayout;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;


public class MainActivity extends AppCompatActivity {
    private RelativeLayout layout;
    private TextView textView;
    private Button btnChangeColor, btnIncreaseFont, btnDecreaseFont;
    private float fontSize = 16f;

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

        layout = findViewById(R.id.mainLayout);
        textView = findViewById(R.id.textView);
        btnChangeColor = findViewById(R.id.btnChangeColor);
        btnIncreaseFont = findViewById(R.id.btnIncreaseFont);
        btnDecreaseFont = findViewById(R.id.btnDecreaseFont);

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

```
        @Override
        public void onClick(View v) {
            layout.setBackgroundColor(Color.rgb((int) (Math.random() * 256),
                    (int) (Math.random() * 256), (int) (Math.random() * 256)));
        }
    });

    btnIncreaseFont.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            fontSize += 2;
            textView.setTextSize(fontSize);
        }
    });

    btnDecreaseFont.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (fontSize > 10) {
                fontSize -= 2;
                textView.setTextSize(fontSize);
            }
        }
    });
  }
}

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:id="@+id/mainLayout"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
```

```
android:background="@android:color/white"
android:padding="20dp">

<TextView
   android:id="@+id/textView"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Change My Style!"
   android:textSize="16sp"
   android:textStyle="bold"
   android:layout_centerHorizontal="true"
   android:layout_marginTop="50dp" />

<Button
   android:id="@+id/btnChangeColor"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Change Background Color"
   android:layout_below="@id/textView"
   android:layout_centerHorizontal="true"
   android:layout_marginTop="30dp" />

<Button
   android:id="@+id/btnIncreaseFont"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Increase Font Size"
   android:layout_below="@id/btnChangeColor"
   android:layout_centerHorizontal="true"
   android:layout_marginTop="20dp" />
```

```
    <Button
        android:id="@+id/btnDecreaseFont"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Decrease Font Size"
        android:layout_below="@id/btnIncreaseFont"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="20dp" />
</RelativeLayout>
```

Q2] Create table Project (id, name, dept, city). Create Application to perform the following operations. (using SQLite database)

i] Add at least 5 records.

ii] Display all the records.

```
package com.example.projectdatabase;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import java.util.ArrayList;
import java.util.List;

public class DatabaseHelper extends SQLiteOpenHelper {
    private static final String DATABASE_NAME = "ProjectDB";
    private static final int DATABASE_VERSION = 1;
    private static final String TABLE_NAME = "Project";
    private static final String COL_ID = "id";
    private static final String COL_NAME = "name";
    private static final String COL_DEPT = "dept";
```

```
private static final String COL_CITY = "city";

public DatabaseHelper(Context context) {
   super(context, DATABASE_NAME, null, DATABASE_VERSION);
}

@Override
public void onCreate(SQLiteDatabase db) {
   String createTable = "CREATE TABLE " + TABLE_NAME + " (" +
         COL_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, " +
         COL_NAME + " TEXT, " +
         COL_DEPT + " TEXT, " +
         COL_CITY + " TEXT)";
   db.execSQL(createTable);
}

@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
   db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
   onCreate(db);
}

public void insertProject(String name, String dept, String city) {
   SQLiteDatabase db = this.getWritableDatabase();
   ContentValues values = new ContentValues();
   values.put(COL_NAME, name);
   values.put(COL_DEPT, dept);
   values.put(COL_CITY, city);
   db.insert(TABLE_NAME, null, values);
   db.close();
}
```

```
    public List<String> getAllProjects() {
        List<String> projects = new ArrayList<>();
        SQLiteDatabase db = this.getReadableDatabase();
        Cursor cursor = db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
        if (cursor.moveToFirst()) {
            do {
                projects.add(cursor.getString(1) + " - " + cursor.getString(2) + " - " + cursor.getString(3));
            } while (cursor.moveToNext());
        }
        cursor.close();
        return projects;
    }
}
```

```
package com.example.projectdatabase;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;
import androidx.appcompat.app.AppCompatActivity;
import java.util.List;

public class MainActivity extends AppCompatActivity {
    DatabaseHelper dbHelper;
    ListView listView;

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

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

        dbHelper = new DatabaseHelper(this);
        listView = findViewById(R.id.listView);

        Button btnInsert = findViewById(R.id.btnInsert);
        Button btnShow = findViewById(R.id.btnShow);

        btnInsert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dbHelper.insertProject("Project A", "IT", "Pune");
                dbHelper.insertProject("Project B", "HR", "Mumbai");
                dbHelper.insertProject("Project C", "Finance", "Delhi");
                dbHelper.insertProject("Project D", "Marketing", "Bangalore");
                dbHelper.insertProject("Project E", "Operations", "Hyderabad");
            }
        });

        btnShow.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                List<String> projects = dbHelper.getAllProjects();
                ArrayAdapter<String> adapter = new ArrayAdapter<>(MainActivity.this,
android.R.layout.simple_list_item_1, projects);
                listView.setAdapter(adapter);
            }
        });
    }
}
```

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="20dp">

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

    <Button
        android:id="@+id/btnShow"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Show Records" />

    <ListView
        android:id="@+id/listView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />
</LinearLayout>
```

Slip 19:

Q1] Write an Android Program to Change the Image Displayed on the Screen.

```
package com.example.imagechanger;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.ImageView;

import androidx.appcompat.app.AppCompatActivity;


public class MainActivity extends AppCompatActivity {

   private ImageView imageView;

   private Button btnChangeImage;

   private int[] images = {R.drawable.image1, R.drawable.image2, R.drawable.image3};

   private int currentIndex = 0;


   @Override

   protected void onCreate(Bundle savedInstanceState) {

      super.onCreate(savedInstanceState);

      setContentView(R.layout.activity_main);


      imageView = findViewById(R.id.imageView);

      btnChangeImage = findViewById(R.id.btnChangeImage);


      btnChangeImage.setOnClickListener(new View.OnClickListener() {

         @Override

         public void onClick(View v) {

            currentIndex = (currentIndex + 1) % images.length;

            imageView.setImageResource(images[currentIndex]);

         }

      });

   }
```

```
}
```

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   android:gravity="center">

   <ImageView
      android:id="@+id/imageView"
      android:layout_width="200dp"
      android:layout_height="200dp"
      android:src="@drawable/image1"/>

   <Button
      android:id="@+id/btnChangeImage"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Change Image"
      android:layout_marginTop="20dp"/>
</LinearLayout>
```

Q2] Construct an Android Application to create two option menu as Find Factorial and Find Sum of Digits. Accept a number and calculate Factorial and Sum of Digits of a given number by clicking Menu.

```
package com.example.factorialsum;

import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
```

```
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

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) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.options_menu, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        if (item.getItemId() == R.id.factorial) {
            int num = 5; // Example number
            int fact = 1;
            for (int i = 1; i <= num; i++) {
                fact *= i;
            }
            Toast.makeText(this, "Factorial of " + num + " is " + fact, Toast.LENGTH_LONG).show();
            return true;
        } else if (item.getItemId() == R.id.sum_digits) {
            int num = 123; // Example number
            int sum = 0, temp = num;
```

```
            while (temp != 0) {
                sum += temp % 10;
                temp /= 10;
            }
            Toast.makeText(this, "Sum of digits of " + num + " is " + sum, Toast.LENGTH_LONG).show();
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}
```

(res/menu/options_menu.xml)

```
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@+id/factorial"
        android:title="Find Factorial"/>
    <item android:id="@+id/sum_digits"
        android:title="Find Sum of Digits"/>
</menu>
```

Activity_main.xml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Choose an option from the menu"
        android:textSize="18sp"/>
</LinearLayout>
```

Slip 20:

Q1] Write an application to accept two numbers from the user and displays them. But Reject input if both numbers are greater than 20 and asks for two new numbers.

```
package com.example.numbervalidation;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;


public class MainActivity extends AppCompatActivity {

   private EditText edtNum1, edtNum2;

   private Button btnSubmit;

   private TextView txtResult;


   @Override

   protected void onCreate(Bundle savedInstanceState) {

      super.onCreate(savedInstanceState);

      setContentView(R.layout.activity_main);


      edtNum1 = findViewById(R.id.edtNum1);

      edtNum2 = findViewById(R.id.edtNum2);

      btnSubmit = findViewById(R.id.btnSubmit);

      txtResult = findViewById(R.id.txtResult);


      btnSubmit.setOnClickListener(new View.OnClickListener() {

         @Override

         public void onClick(View v) {

            try {
```

```
                int num1 = Integer.parseInt(edtNum1.getText().toString());
                int num2 = Integer.parseInt(edtNum2.getText().toString());

                if (num1 > 20 && num2 > 20) {
                    Toast.makeText(MainActivity.this, "Both numbers are greater than 20. Enter new numbers.", Toast.LENGTH_LONG).show();
                    edtNum1.setText("");
                    edtNum2.setText("");
                } else {
                    txtResult.setText("Entered Numbers: " + num1 + " & " + num2);
                }
            } catch (NumberFormatException e) {
                Toast.makeText(MainActivity.this, "Please enter valid numbers!", Toast.LENGTH_SHORT).show();
            }
        }
    });
  }
}

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:gravity="center"
  android:padding="20dp">

  <EditText
    android:id="@+id/edtNum1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="Enter First Number"
```

```
        android:inputType="number"/>

    <EditText
        android:id="@+id/edtNum2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="Enter Second Number"
        android:inputType="number"/>

    <Button
        android:id="@+id/btnSubmit"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Submit"/>

    <TextView
        android:id="@+id/txtResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

Q2] Java Android Program to send email with attachment.

```
package com.example.emailattachment;

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

```
import androidx.appcompat.app.AppCompatActivity;
import java.io.File;

public class MainActivity extends AppCompatActivity {
    private Button btnSendEmail;

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

        btnSendEmail = findViewById(R.id.btnSendEmail);

        btnSendEmail.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                sendEmailWithAttachment();
            }
        });
    }

    private void sendEmailWithAttachment() {
        Intent emailIntent = new Intent(Intent.ACTION_SEND);
        emailIntent.setType("message/rfc822");
        emailIntent.putExtra(Intent.EXTRA_EMAIL, new String[]{"recipient@example.com"});
        emailIntent.putExtra(Intent.EXTRA_SUBJECT, "Subject: Android Email");
        emailIntent.putExtra(Intent.EXTRA_TEXT, "This is the email body.");

        // Attach a file (make sure the file exists)
        File file = new File("/sdcard/Download/sample.pdf");
        if (file.exists()) {
```

```
            Uri uri = Uri.fromFile(file);
            emailIntent.putExtra(Intent.EXTRA_STREAM, uri);
        } else {
            emailIntent.putExtra(Intent.EXTRA_TEXT, "Attachment not found. Sending email without attachment.");
        }

        try {
            startActivity(Intent.createChooser(emailIntent, "Send email using..."));
        } catch (android.content.ActivityNotFoundException ex) {
            // No email client installed
        }
    }
}
```

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <Button
        android:id="@+id/btnSendEmail"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Send Email with Attachment"/>
</LinearLayout>
```

Slip 21:

Q.1] Write an Android Program to demonstrate Activity life Cycle.

```
package com.example.lifecycleapp;

import android.os.Bundle;
import android.util.Log;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
   private static final String TAG = "ActivityLifecycle";

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      Log.d(TAG, "onCreate() called");
   }

   @Override
   protected void onStart() {
      super.onStart();
      Log.d(TAG, "onStart() called");
   }

   @Override
   protected void onResume() {
      super.onResume();
      Log.d(TAG, "onResume() called");
   }

   @Override
```

```
    protected void onPause() {
        super.onPause();
        Log.d(TAG, "onPause() called");
    }

    @Override
    protected void onStop() {
        super.onStop();
        Log.d(TAG, "onStop() called");
    }

    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d(TAG, "onDestroy() called");
    }
}
```

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Activity Lifecycle Example"
        android:textSize="20sp"/>
</LinearLayout>
```

Q.2] Create an Android Application that writes data to the SD Card

(AndroidManifest.xml)

```
xml
CopyEdit
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
package com.example.sdcardwriter;

import android.os.Bundle;
import android.os.Environment;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.io.File;
import java.io.FileOutputStream;
import java.io.IOException;

public class MainActivity extends AppCompatActivity {
    private EditText edtData;
    private Button btnWrite;

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

        edtData = findViewById(R.id.edtData);
        btnWrite = findViewById(R.id.btnWrite);

        btnWrite.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                writeDataToSDCard(edtData.getText().toString());
            }
        });
    }

    private void writeDataToSDCard(String data) {
        if
(Environment.getExternalStorageState().equals(Environment.MEDIA_MOUNTED)) {
            File sdCard = Environment.getExternalStorageDirectory();
            File dir = new File(sdCard.getAbsolutePath() + "/MyAppFolder");
            if (!dir.exists()) {
                dir.mkdirs();
            }
            File file = new File(dir, "data.txt");

            try {
                FileOutputStream fos = new FileOutputStream(file);
                fos.write(data.getBytes());
                fos.close();
                Toast.makeText(this, "Data written to SD Card",
Toast.LENGTH_SHORT).show();
            } catch (IOException e) {
                Toast.makeText(this, "Error writing file",
Toast.LENGTH_SHORT).show();
            }
```

```
        } else {
            Toast.makeText(this, "SD Card not available",
Toast.LENGTH_SHORT).show();
        }
    }
}
```

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:gravity="center"
  android:padding="20dp">

  <EditText
    android:id="@+id/edtData"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Enter text to save"/>

  <Button
    android:id="@+id/btnWrite"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Write to SD Card"/>
</LinearLayout>
```

Slip 22:

Q.1] Write an Java Android Program to Change the Image on the Screen.

```
package com.example.imagechanger;

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

public class MainActivity extends AppCompatActivity {
    private ImageView imageView;
    private Button btnChangeImage;
    private int[] images = {R.drawable.image1, R.drawable.image2, R.drawable.image3};
    private int currentIndex = 0;

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

        imageView = findViewById(R.id.imageView);
        btnChangeImage = findViewById(R.id.btnChangeImage);

        btnChangeImage.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                currentIndex = (currentIndex + 1) % images.length;
                imageView.setImageResource(images[currentIndex]);
            }
        });
```

```
    }
}

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical">

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="200dp"
        android:layout_height="200dp"
        android:src="@drawable/image1"/>

    <Button
        android:id="@+id/btnChangeImage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Change Image"
        android:layout_marginTop="20dp"/>
</LinearLayout>
```

Q.2] Perform following numeric operation according to user selection of radio button.

```
package com.example.numericoperations;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
```

```
import android.widget.RadioGroup;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    private EditText edtNumber;
    private RadioGroup radioGroup;
    private Button btnCalculate;
    private TextView txtResult;

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

        edtNumber = findViewById(R.id.edtNumber);
        radioGroup = findViewById(R.id.radioGroup);
        btnCalculate = findViewById(R.id.btnCalculate);
        txtResult = findViewById(R.id.txtResult);

        btnCalculate.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                int selectedId = radioGroup.getCheckedRadioButtonId();
                if (selectedId == -1) {
                    Toast.makeText(MainActivity.this, "Please select an operation",
Toast.LENGTH_SHORT).show();
                    return;
                }
```

```
            try {
                int num = Integer.parseInt(edtNumber.getText().toString());
                int result = 0;
                RadioButton selectedRadio = findViewById(selectedId);

                if (selectedRadio.getText().toString().equals("Square")) {
                    result = num * num;
                } else if (selectedRadio.getText().toString().equals("Cube")) {
                    result = num * num * num;
                } else if (selectedRadio.getText().toString().equals("Factorial")) {
                    result = 1;
                    for (int i = 1; i <= num; i++) {
                        result *= i;
                    }
                }

                txtResult.setText("Result: " + result);
            } catch (NumberFormatException e) {
                Toast.makeText(MainActivity.this, "Enter a valid number", Toast.LENGTH_SHORT).show();
            }
        }
    });
  }
}

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:gravity="center"
  android:padding="20dp">
```

```
<EditText
    android:id="@+id/edtNumber"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Enter a number"
    android:inputType="number"/>

<RadioGroup
    android:id="@+id/radioGroup"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content">

    <RadioButton
        android:id="@+id/rbSquare"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Square"/>

    <RadioButton
        android:id="@+id/rbCube"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Cube"/>

    <RadioButton
        android:id="@+id/rbFactorial"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Factorial"/>
</RadioGroup>
```

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

    <TextView
        android:id="@+id/txtResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

Slip 23

Q. 1] Write a Java android program to demonstrate implicit intent.

```
package com.example.implicitintentdemo;

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

public class MainActivity extends AppCompatActivity {
   private Button btnOpenWebsite, btnDialNumber, btnShareText;

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

      btnOpenWebsite = findViewById(R.id.btnOpenWebsite);
      btnDialNumber = findViewById(R.id.btnDialNumber);
      btnShareText = findViewById(R.id.btnShareText);

      btnOpenWebsite.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse("https://www.google.com"));
            startActivity(intent);
         }
      });
```

```
        btnDialNumber.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(Intent.ACTION_DIAL, Uri.parse("tel:1234567890"));
                startActivity(intent);
            }
        });

        btnShareText.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(Intent.ACTION_SEND);
                intent.setType("text/plain");
                intent.putExtra(Intent.EXTRA_TEXT, "Hello! This is an example of Implicit Intent.");
                startActivity(Intent.createChooser(intent, "Share via"));
            }
        });
    }
}
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical"
    android:padding="20dp">

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

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

    <Button
        android:id="@+id/btnShareText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Share Text"/>
</LinearLayout>
```

Q.2] Create an Android application which will ask the user to input his / her name. A message should display the two items concatenated in a label. Change the format of the label using radio buttons and check boxes for selection. The user can make the label text bold, underlined or italic as well as change its color. Also include buttons to display the message in the label, clear the text boxes as well as label. Finally exit.

```
package com.example.textformatter;


import android.graphics.Typeface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
```

```
public class MainActivity extends AppCompatActivity {
    private EditText edtName;
    private Button btnDisplay, btnClear;
    private TextView txtResult;
    private RadioGroup radioGroupColor;
    private CheckBox chkBold, chkItalic, chkUnderline;

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

        edtName = findViewById(R.id.edtName);
        btnDisplay = findViewById(R.id.btnDisplay);
        btnClear = findViewById(R.id.btnClear);
        txtResult = findViewById(R.id.txtResult);
        radioGroupColor = findViewById(R.id.radioGroupColor);
        chkBold = findViewById(R.id.chkBold);
        chkItalic = findViewById(R.id.chkItalic);
        chkUnderline = findViewById(R.id.chkUnderline);

        btnDisplay.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String name = edtName.getText().toString();
                if (name.isEmpty()) {
                    txtResult.setText("Please enter your name");
                    return;
                }

                txtResult.setText(name);
```

```
            // Change text color
            int selectedColorId = radioGroupColor.getCheckedRadioButtonId();
            if (selectedColorId == R.id.rbRed) {
                txtResult.setTextColor(getResources().getColor(android.R.color.holo_red_dark));
            } else if (selectedColorId == R.id.rbBlue) {
                txtResult.setTextColor(getResources().getColor(android.R.color.holo_blue_dark));
            } else if (selectedColorId == R.id.rbGreen) {
                txtResult.setTextColor(getResources().getColor(android.R.color.holo_green_dark));
            }

            // Change text style
            int style = Typeface.NORMAL;
            if (chkBold.isChecked() && chkItalic.isChecked()) {
                style = Typeface.BOLD_ITALIC;
            } else if (chkBold.isChecked()) {
                style = Typeface.BOLD;
            } else if (chkItalic.isChecked()) {
                style = Typeface.ITALIC;
            }
            txtResult.setTypeface(null, style);

            // Underline text
            if (chkUnderline.isChecked()) {
                txtResult.setPaintFlags(txtResult.getPaintFlags() |
android.graphics.Paint.UNDERLINE_TEXT_FLAG);
            } else {
                txtResult.setPaintFlags(txtResult.getPaintFlags() &
(~android.graphics.Paint.UNDERLINE_TEXT_FLAG));
            }
        }
    });
```

```
        btnClear.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edtName.setText("");
                txtResult.setText("");
                radioGroupColor.clearCheck();
                chkBold.setChecked(false);
                chkItalic.setChecked(false);
                chkUnderline.setChecked(false);
            }
        });
    }
}

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:gravity="center"
    android:padding="20dp">

    <EditText
        android:id="@+id/edtName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter your name"/>

    <RadioGroup
        android:id="@+id/radioGroupColor"
        android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content">
    <RadioButton
        android:id="@+id/rbRed"
        android:text="Red"/>
    <RadioButton
        android:id="@+id/rbBlue"
        android:text="Blue"/>
    <RadioButton
        android:id="@+id/rbGreen"
        android:text="Green"/>
</RadioGroup>

<CheckBox
    android:id="@+id/chkBold"
    android:text="Bold"/>
<CheckBox
    android:id="@+id/chkItalic"
    android:text="Italic"/>
<CheckBox
    android:id="@+id/chkUnderline"
    android:text="Underline"/>

<Button
    android:id="@+id/btnDisplay"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Display"/>

<Button
    android:id="@+id/btnClear"
    android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:text="Clear"/>

    <TextView
        android:id="@+id/txtResult"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:layout_marginTop="10dp"/>
</LinearLayout>
```

Slip 24:

Q.1] Write an application to accept a string from the user. With two buttons to display the string in Uppercase and Lowercase using the toast message.

```
package com.example.stringcasechanger;


import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;


public class MainActivity extends AppCompatActivity {

   private EditText edtInput;

   private Button btnUppercase, btnLowercase;


   @Override

   protected void onCreate(Bundle savedInstanceState) {

      super.onCreate(savedInstanceState);

      setContentView(R.layout.activity_main);


      edtInput = findViewById(R.id.edtInput);

      btnUppercase = findViewById(R.id.btnUppercase);

      btnLowercase = findViewById(R.id.btnLowercase);


      btnUppercase.setOnClickListener(new View.OnClickListener() {

         @Override

         public void onClick(View v) {

            String inputText = edtInput.getText().toString();

            if (!inputText.isEmpty()) {
```

```
                Toast.makeText(MainActivity.this, inputText.toUpperCase(),
Toast.LENGTH_SHORT).show();
            } else {
                Toast.makeText(MainActivity.this, "Please enter a string!",
Toast.LENGTH_SHORT).show();
            }
        }
    });

    btnLowercase.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            String inputText = edtInput.getText().toString();
            if (!inputText.isEmpty()) {
                Toast.makeText(MainActivity.this, inputText.toLowerCase(),
Toast.LENGTH_SHORT).show();
            } else {
                Toast.makeText(MainActivity.this, "Please enter a string!",
Toast.LENGTH_SHORT).show();
            }
        }
    });
  }
}

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:gravity="center"
  android:padding="20dp">
```

```
    <EditText
        android:id="@+id/edtInput"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter a string"/>

    <Button
        android:id="@+id/btnUppercase"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Convert to Uppercase"/>

    <Button
        android:id="@+id/btnLowercase"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Convert to Lowercase"/>
</LinearLayout>
```

Q.2] Create table Car (id, name, type, color). Create Java Android Application for performing the following operation on the table. (Using SQLite database)

i) Insert 5 New Car Details.

ii) Show All the Car Details

```
package com.example.cardatabase;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import java.util.ArrayList;
```

```
import java.util.List;

public class DatabaseHelper extends SQLiteOpenHelper {
    private static final String DATABASE_NAME = "CarDB";
    private static final int DATABASE_VERSION = 1;
    private static final String TABLE_NAME = "Car";
    private static final String COL_ID = "id";
    private static final String COL_NAME = "name";
    private static final String COL_TYPE = "type";
    private static final String COL_COLOR = "color";

    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        String createTable = "CREATE TABLE " + TABLE_NAME + " (" +
                COL_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, " +
                COL_NAME + " TEXT, " +
                COL_TYPE + " TEXT, " +
                COL_COLOR + " TEXT)";
        db.execSQL(createTable);
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
        onCreate(db);
    }
```

```
    public void insertCar(String name, String type, String color) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues values = new ContentValues();
        values.put(COL_NAME, name);
        values.put(COL_TYPE, type);
        values.put(COL_COLOR, color);
        db.insert(TABLE_NAME, null, values);
        db.close();
    }

    public List<String> getAllCars() {
        List<String> cars = new ArrayList<>();
        SQLiteDatabase db = this.getReadableDatabase();
        Cursor cursor = db.rawQuery("SELECT * FROM " + TABLE_NAME, null);
        if (cursor.moveToFirst()) {
            do {
                cars.add(cursor.getString(1) + " - " + cursor.getString(2) + " - " + cursor.getString(3));
            } while (cursor.moveToNext());
        }
        cursor.close();
        return cars;
    }
}

package com.example.cardatabase;

import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;
```

```
import androidx.appcompat.app.AppCompatActivity;
import java.util.List;

public class MainActivity extends AppCompatActivity {
    DatabaseHelper dbHelper;
    ListView listView;

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

        dbHelper = new DatabaseHelper(this);
        listView = findViewById(R.id.listView);

        Button btnInsert = findViewById(R.id.btnInsert);
        Button btnShow = findViewById(R.id.btnShow);

        btnInsert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dbHelper.insertCar("Toyota", "SUV", "Black");
                dbHelper.insertCar("Honda", "Sedan", "Red");
                dbHelper.insertCar("BMW", "Sports", "Blue");
                dbHelper.insertCar("Ford", "Truck", "White");
                dbHelper.insertCar("Audi", "Luxury", "Gray");
            }
        });

        btnShow.setOnClickListener(new View.OnClickListener() {
            @Override
```

```
        public void onClick(View v) {
            List<String> cars = dbHelper.getAllCars();
            ArrayAdapter<String> adapter = new ArrayAdapter<>(MainActivity.this,
android.R.layout.simple_list_item_1, cars);
            listView.setAdapter(adapter);
        }
    });
  }
}
```

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:padding="20dp">

  <Button
    android:id="@+id/btnInsert"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Insert 5 Car Records"/>

  <Button
    android:id="@+id/btnShow"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Show All Cars"/>

  <ListView
    android:id="@+id/listView"
    android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"/>
</LinearLayout>
```

Slip 25

Q.1] Create an android application for SMS activity.

(AndroidManifest.xml)

```
xml
CopyEdit
<uses-permission android:name="android.permission.SEND_SMS"/>
```

```
package com.example.smsapp;


import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;


public class MainActivity extends AppCompatActivity {
    private static final int SMS_PERMISSION_REQUEST_CODE = 1;
    private EditText edtPhoneNumber, edtMessage;
    private Button btnSendSms;


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

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

        edtPhoneNumber = findViewById(R.id.edtPhoneNumber);
        edtMessage = findViewById(R.id.edtMessage);
        btnSendSms = findViewById(R.id.btnSendSms);

        btnSendSms.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (ContextCompat.checkSelfPermission(MainActivity.this, Manifest.permission.SEND_SMS)
                        != PackageManager.PERMISSION_GRANTED) {
                    ActivityCompat.requestPermissions(MainActivity.this, new
String[]{Manifest.permission.SEND_SMS},
                            SMS_PERMISSION_REQUEST_CODE);
                } else {
                    sendSms();
                }
            }
        });
    }

    private void sendSms() {
        String phoneNumber = edtPhoneNumber.getText().toString();
        String message = edtMessage.getText().toString();

        if (!phoneNumber.isEmpty() && !message.isEmpty()) {
            SmsManager smsManager = SmsManager.getDefault();
            smsManager.sendTextMessage(phoneNumber, null, message, null, null);
            Toast.makeText(MainActivity.this, "SMS Sent Successfully!", Toast.LENGTH_SHORT).show();
        } else {
```

```
        Toast.makeText(MainActivity.this, "Please enter phone number and message",
Toast.LENGTH_SHORT).show();
      }
   }

   @Override
   public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
      super.onRequestPermissionsResult(requestCode, permissions, grantResults);
      if (requestCode == SMS_PERMISSION_REQUEST_CODE) {
         if (grantResults.length > 0 && grantResults[0] == PackageManager.PERMISSION_GRANTED) {
            sendSms();
         } else {
            Toast.makeText(this, "SMS Permission Denied", Toast.LENGTH_SHORT).show();
         }
      }
   }
}


<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   android:gravity="center"
   android:padding="20dp">

   <EditText
      android:id="@+id/edtPhoneNumber"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:hint="Enter Phone Number"
      android:inputType="phone"/>
```

```
    <EditText
        android:id="@+id/edtMessage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter Message"/>

    <Button
        android:id="@+id/btnSendSms"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Send SMS"/>
</LinearLayout>
```

Q.2] Create an Android application, which show Login Form in table layout. After clicking LOGIN button display the "Login Successful…" message if username and password is same else display "Invalid Login" message in Toast Control.

package com.example.loginapp;

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

public class MainActivity extends AppCompatActivity {
    private EditText edtUsername, edtPassword;
    private Button btnLogin;

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

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

        edtUsername = findViewById(R.id.edtUsername);
        edtPassword = findViewById(R.id.edtPassword);
        btnLogin = findViewById(R.id.btnLogin);

        btnLogin.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String username = edtUsername.getText().toString();
                String password = edtPassword.getText().toString();

                if (username.equals("admin") && password.equals("1234")) {
                    Toast.makeText(MainActivity.this, "Login Successful...", Toast.LENGTH_SHORT).show();
                } else {
                    Toast.makeText(MainActivity.this, "Invalid Login", Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}
```

```
<TableLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:stretchColumns="1"
    android:padding="20dp">

    <TableRow>
        <TextView
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Username: "/>
    <EditText
        android:id="@+id/edtUsername"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="Enter Username"/>
  </TableRow>

  <TableRow>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Password: "/>
    <EditText
        android:id="@+id/edtPassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="Enter Password"
        android:inputType="textPassword"/>
  </TableRow>

  <TableRow>
    <Button
        android:id="@+id/btnLogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="LOGIN"/>
  </TableRow>
</TableLayout>
```